The 4th International Conference on Healthcare System Preparedness and Response to Emergencies & Disasters

Abstract eBook
Dear colleagues,

Following the great success of the previous IPRED conferences conducted in 2010, 2012, and 2014, we are proud and happy to welcome you to IPRED IV; January 10-13, 2016, Tel Aviv, Israel. The Israeli Ministry of Health and the IDF Home Front Command will be hosting the 4th International Conference on Healthcare System Preparedness and Response to Emergencies and Disasters. The conference will provide a unique opportunity for professionals from world-wide, to learn, share and present the latest findings and insights regarding health system readiness, preparedness and functioning in disasters and emergencies. IPRED IV will provide a platform for networking with the world’s leading experts, focusing on reviewing and assessing best practices and State of the Art preparedness to emergencies, along with non-formal joint learning, founded on the experience of the participants.

The conference program includes workshops, presentations, round-table discussions and hands-on experiences, based on advanced training tools. International renowned keynote speakers will give the main plenary presentations. One of the highlights of the conference is a regional, comprehensive Mass Toxicological Event (MTE) drill that will be conducted in the southern region of Israel on the 3rd day of the conference. The drill will simulate a chemical terror attack, and the response, management and treatment provided for the mock casualties will be based on lessons learnt from large-scale MTE exercises and real-life events. The drill will include Home Front Command medical teams, civilian emergency medical services, hospitals and other primary care organizations, both medical and non-medical professionals. The conference participants are invited to participate in the exercise.

In addition to the conference, we invite you to enjoy the beautiful city of Tel Aviv, which provides attractive entertainment, night life and a beautiful beach. We thank you for your presence at the IPRED IV conference.

Sincerely,

Col. Eyal Furman
Chief Surgeon
Home Front Command
Chairman, IPRED IV
Dear respected colleagues,

I am honored to welcome you to the 4th International conference on Preparedness and Response of healthcare systems to Emergencies and Disasters (IPRED), taking place between 10–13 January 2016, Tel Aviv, Israel.

The year 2014 was characterized by frequent natural disasters occurring world-wide, renewing the concerns about global warming and other life threatening incidents. The massive cold wave that swept North America affected close to 240 million people, forcing schools and local governments to shut down. The massive Afghan landslide caused by heavy rains, buried homes, killing thousands and displacing extensive populations. The Typhoon Hagupit that struck the Philippines necessitated the evacuation of over 1.2 million people. These are just a few examples of emergency events caused by nature. Additional man–made emergencies such as the civil war in Syria or emergence of biological threats, such as the Ebola outbreak, also pose significant threats to the well–being of the civil populations and public health.

Effective management of these events necessitates international collaboration and assistance, as frequently one nation cannot solely manage the horrific repercussions of such disasters. International cooperation and collaboration facilitate a joint response which saves lives, maintains functional management and enhance national and global capacity building.

Considering this important element of decision making in emergency management, the Israeli Ministry of Health and the Home Front Command have established a tradition of providing an international platform for sharing ideas, knowledge, and experience for practitioners and researchers in the fields of preparedness and response to disasters and emergencies.

The Ipred IV conference will provide an excellent platform and opportunity for international networking as well as enhancement of research, in order to contribute towards the development of the Science of Emergency Preparedness and Response.

Following the success of IPRED I (2010), IPRED II (2012), and IPRED III (2014), we strongly believe that the 4th IPRED conference will likewise provide an opportunity for the world’s leading experts from the field, academic bodies, governing institutions, and interface agencies world–wide, to meet and discuss various topics relating to emergency preparedness and response.

We thank you for your presence and your active participation at the IPRED IV conference.

Sincerely yours,

Prof. Shimon Reisner
Deputy Director, Rambam Health Care Campus
Chairman, Scientific Committee
## Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Information</td>
<td>5</td>
</tr>
<tr>
<td>Scientific and Organizing Committees</td>
<td>8</td>
</tr>
<tr>
<td>Scientific Program</td>
<td>12</td>
</tr>
<tr>
<td>Keynote Speakers</td>
<td>44</td>
</tr>
<tr>
<td>Abstracts of Oral Presentations</td>
<td>50</td>
</tr>
<tr>
<td>Abstracts of Poster Presentations</td>
<td>288</td>
</tr>
</tbody>
</table>
General Information

Location
Hilton Tel Aviv Hotel, 205 Hayarkon Street, Independence Park, Israel

Registration/Hospitality Desks
The Registration/Hospitality Desks will be located at the Hilton Tel Aviv Hotel, Hayarkon Street and will be open to coincide with sessions on each day of the Conference. On the day before the conference there will a temporary desk from 10:00 - 16:00.

Opening Hours
Sunday 10th January, 10:00 - 16:00
Monday 11th January, 07:30 - 18:00
Tuesday 12th January, 07.30 - 18:00
Wednesday 13th January, Mass Toxicological Incident Drill, 07:00 - 17:00
One coach will leave the Drill and will make its way straight to Ben Gurion Airport.

Conference Badge
Upon arrival at the Hilton, please visit the registration desk where you will receive your conference kit which includes your conference badge. Please wear your badge at all sessions and social events.
In addition, you will receive passes to the conference lunches and the Dinner Event.
Entry into these events will be allowed with these passes only.

CME Accreditation
CME credits will be allocated to participants that will fill the evaluation forms supplied at the registration desk, dependant on the return of the filled forms to the organizing committee at the end of the conference.

E-Poster Boards
Electronic Posters will be on display in the e-poster area on the 11th and 12th of January from 07.30 - 18:00.
Exhibition
A scientific and technical exhibition, open to manufacturers and distributors of materials, services and equipment of specialized medical and emergency medical products to civil, military, law enforcement and homeland security departments, will be held during the conference.

The exhibition hall is adjacent to the conference presentation rooms.

Monday 11th January from 08:00 – 18:00
Tuesday 12th January from 08:00 – 18:00
Coffee breaks are held at the exhibition hall.

Language
English is the official language of the conference.

Special Services
IPRED IV Organizing Committee wishes to ensure that no individual with a disability is excluded, denied services, segregated or otherwise treated differently because of the absence of auxiliary aids and services. If you require auxiliary aids or services, please indicate your needs on the registration form enclosed in this program.

Dress Code
The dress code for civilian participants is informal for all occasions, including the Dinner Event.

Military representatives are to participate at the conference in uniform, with the exception of the Dinner Event.

Please note that it can be cold and raining near the seashore in Tel Aviv at this time of year so please bring warm clothing for the duration of your stay in particular for the day of the Mass Toxicological Incident Drill.

Social Events
The cocktail reception will take place at the Hilton Tel Aviv, on Sunday 10th January at 19:30 in the hotel foyer.

The “Summer for Winter” Dinner Event will take place at the Hilton Tel Aviv, on Monday 11th January at 19:30 in the Ballroom.
Emergency Mega Mass Toxicological Incident Drill

The conference will conduct a practical field simulation drill of a mega-mass Toxicological Incident Drill. Participants of the drill will embark on buses from the Hilton, Tel Aviv bright and early on Wednesday the 13th of January, 2016. The drill will coordinate all aspects of emergency response infrastructure and will display the challenges of collaboration between various emergency organizations, including ground and aerial evacuation forces, pre-hospital and hospitals deployment, emergency medical services, search and rescue units, control and command operations, as well as additional interface agencies, and providing care for different types of casualties. The exercise will simulate the need to provide emergency care to hundreds of casualties, thus highlighting the various challenges that must be met in order to save lives.

This hands-on experience based on advanced training tools will be one of the highlights of the conference.
Scientific Committee Chairman:
Prof. Reisner Shimon – Rambam Medical Center, Israel

Scientific Committee Coordinator:
Ms. Ronit Ringel – Ministry of Health, Israel

Members:
Dr. Adini Bruria – Ministry of Health & Ben-Gurion University of the Negev, Israel
Prof. Aharonson Daniel Limor – Ben-Gurion University of the Negev, Israel
Dr. Aizenkraft Arik – Ministry of Defense, Israel
Prof. Arquilla Bonnie – Emergency Medicine, SUNY Downstate Medical Center, USA
Dr. Arafat Raed – Ministry of Health, Romania
Prof. Ashkenazi Isaac – Ben-Gurion University of the Negev & Harvard University, Israel
Dr. Ashkenazi Itamar – Hillel Yaffe Medical Center, Israel
Dr. Atsmon Kobi – Tel Aviv Sorasky Medical Center, Israel
Dr. Azaria Bella – Assuta Medical Center, Israel
Prof. Bar-On Elhanan – Schneider Children’s Medical Center, Israel
Prof. Balicer Ran – Clalit Health Services, Israel
Dr. Berger Abraham – Beth Israel, USA
Dr. Biederbick Walter – Ministry of Health, Germany
Dr. Blumenfeld Amir – Ministry of Health, Israel
Dr. Dagan Dudu – IDF Medical Corps, Israel
Dr. Debacker Michel – Disaster Medicine University, Belgium
Dr. Downey Erin – Harvard Humanitarian Initiative, USA
Mrs. Erel Anna – Ministry of Health, Israel
Dr. Ezra Vered – Ministry of Health, Israel
Prof. Francesco Della Corte – EuSEM, Maggiore Hospital School of Medicine, Università del Piemonte Orientale, Italy
Dr. Frogel Michael – APF, MCS, USA
Dr. Furman Eyal – IDF Home Front Command, Israel
Dr. Galwankar Sagar – Chairman INDUSEM, USA
Prof. Goldberg Avishay – Ben–Gurion University of the Negev, Israel
Prof. Grotto Itamar – Ministry of Health, Israel
Dr. Halberthal Michael – Medical Administration – Rambam Management, Israel
Prof. Halpern Pinchas – Tel Aviv Sorasky Medical Center, Israel
Dr. Harald Veen – ICRC, Switzerland
Mrs. Hyams Gila – Rambam Medical Center, Israel
Prof. Israeli Avi – Hadassah–Hebrew University & Ministry of Health, Israel
Prof. General. Jiake Chai – Director of the Burn and Trauma Institute of People Liberation Army, China
Dr. Kassirer Michael – IDF Medical Corps, Israel
Dr. Klausner Howard A. – Henry Ford Hospital, USA
Prof. Knobler Haim – Peres Academic Center, Israel
Prof. Koenig Kristi – University of California at Irvine, USA
Mrs. Krasner Esther – Ministry of Defense, Israel
Prof. Krassimir Metodiev – Medical University Varna, Bulgaria
Prof. Lahad Mooli – Tel Hai College & Mashabim Center, Israel
Prof. Latastach Leo – Frankfurt Health Department, Germany
Dr. Lev Boaz – Ministry of Health, Israel
Prof. Lynn Mauricio – FACS, Surgery Ryder Trauma Center Jackson Memorial Hospital University of Miami, USA
Dr. Mapar Jalal – Department of Homeland Security, USA
Dr. McGlown Joanne – International Medical Corps, USA
Prof. Merin Ofer – Shaarei Zedek Medical Center, Israel
Dr. Michaelson Moshe – Rambam Medical Center, Israel
Dr. Nelson Olim - ICRC Senior Surgeon, Switzerland
Dr. Ofir Anna - Hiller Yaffe Medical Center, Israel
Prof. Peleg Kobi - Tel Aviv University & Gertner Research Center, Israel
Dr. Pillgram–Larsen Johan - Norwegian Armed Forces, Department of Cardiothoracic Oslo University Hospital, Norway
Dr. Preblick Christine - Mount Sinai, Beth Israel, USA
Dr. Strugo Refael - Magen David Adom, Israel
Dr. Tadmor Boaz - Beilinson Medical Center, Israel
Dr. Tal–Or Eran - Poria Hospital, Israel
Dr. Tekes Manova Dorit - Sheba Medical Center, Israel
Dr. Topaz Morris - Hillel Yaffe Medical Center, Israel
Mrs. Utitz Liora - Rambam Medical, Israel
Mrs. Vaknin Nurit - Soroka Medical Center, Israel
Prof. Yao Jing - Director International Relations 1st, Hospital of School of Medicine, Shihezi University, China
Organizing Committee

Mr. Uzi Keren - Ministry of Health, Israel
Organizing Committee Chairman

Mr. Ran Adelstain - Ministry of Health, Israel
Dr. Bruria Adini - Ministry of Health, Israel
Mr. Yair Amikam - Ministry of Health, Israel
Dr. Bella Azaria - Assuta Medical Center, Israel
Maj. Erica Fleshler - IDF, Home Front Command, Israel
Col. Dr. Eyal Furman - IDF, Home Front Command, Israel
LtC. Tali Hemo - IDF, Home Front Command, Israel
Mrs. Noa Hasdai - Ministry of Health, Israel
Mr. Shmulik Kalmi - Ministry of Health, Israel
Maj. Adham Kezil - IDF, Home Front Command, Israel
LtC. Aviv Ohana - IDF, Home Front Command, Israel
Mrs. Ronit Ringel - Ministry of Health, Israel
Maj. Merav Shabi Sultan - IDF, Home Front Command, Israel
Mr. Tomer Simon - Amdocs, Israel
Dr. Eran Tal-Or - Poriya Hospital, Israel
Scientific Program

Sunday – January 10th, 2016

10:00–16:00 Registration Desk Open
19:30 Cocktail Reception at the Conference Venue

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Monday – January 11th, 2016

07:30–18:00 Registration Desk Open
08:45–09:00 Plenary Session Moderated by
Prof. Shimon Reisner, IPRED IV Chairman of the Scientific Committee
Prof. Arnon Afek, Associate Director General (acting) of the Ministry of Health
Col. Dr. Eyal Furman, IPRED IV Chairman
IDF Surgeon General, Brig. Gen. Dr David Dagan

09:00 – 09:30 Commander of Home Front Command -

09:30–10:00 Rear Admiral (RADM) Dr. Boris D. Lushniak –
Partnerships in Emergency Response – The Path from Inception to Implementation of the Medical Units

10:00–10:30 Dr. Ian Norton – International Medical Teams; Have the Ebola and Nepal responses changed anything?

10:30–11:00 Coffee Break
Parallel Sessions

**Hall 1**

**Emergency Medicine in Mass Gatherings**

11:00–12:15

**Chairpersons:**
Rafael Strugo & Jetri Regmi

- **Gennady Kipor,** Russia – Experience of disaster medicine preparedness for mass gathering events
- **Leo Latasch,** Germany – Medical preparation for the Ironman 2015 in Frankfurt
- **Leo Latasch,** Germany – Medical preparation for the J.P Morgan Corporate Challenge Serie 2015 in Frankfurt
- **Alessandra Rossodivita,** Italy – EXPO 2015: Hospital Preparedness for Emergency and Bioterrorism RESPONSE. The Italian Experience
- **Naama Constantini,** Israel – Medical Security of mass gatherings; recommendation of the Israeli National Committee
- **Raed Arafat,** Romania – Dealing with a mass casualty incident involving over 180 burnt patients including 88 critical patients in a Bucharest club fire

**Hall 2**

**Controversies in Emergency and Disaster Management**

11:00–12:15

**Chairpersons:**
Itamar Ashkenazi & Michael Frogel

- **Adam Aluisio,** U.S. – The Regional Anaesthesia for Painful Injuries after Disasters (RAPID) Study: a randomized controlled trial protocol
- **Pinchas Halpern,** Israel – Intranasal Ketamine for Acute Traumatic Pain: A Prospective, Randomized Clinical Trial of Efficacy and Safety
- **Ariel Hirschhorn,** Israel – Paradigm shift in victim identification – from forensic odontology to craniofacial forensics
- **Mauricio Lynn,** U.S. – Breaking the great myths of mass casualty management
- **Ronit Krispin,** Israel – The influence of new technology on the next financial, political or social crisis
- **Gary Mann,** Canada – Cashing in on Pay for Results
**Hall 3**  
**Disease Outbreaks and Epidemics, Prevention and Control**

11:00-12:15  
**Chairpersons:** Meir Oren & Luca Rosi

- **Tal Brosh-Nissimov**, Israel - Preparing for Imported Ebola Cases in Israel, 15-2014
- **Jack Herrmann**, U.S. - Building Resilient and Sustainable Health Systems to Respond to Global Infectious Disease Outbreaks
- **Shugang Li**, China - An Analysis on the Epidemiological Characteristics and Causes of First-aid Trauma in Urumqi, Xinjiang
- **Pavel Castulik**, Czech Republic - Trial experience of the Czech EMS with transportation of an infection suspect in the Portable Isolation Units
- **Lion Poles**, Israel - From SARS to EBOLA - The evolution of Temporary High Level Isolation Units In Israel

**Hall 4: Pomegranate**  
**Advanced Research in Disaster Management**

11:00-12:15  
**Chairpersons:** Arik Eisenkraft & Brigitte Serreault

- **Clive Goodchild**, UK - EDEN - End User Driven Demonstration for CBRNe
- **Brigitte Serreault**, France - EDEN STORE AND ITS TOT
- **Jürgen Schreiber**, Germany - An innovative tool for initial medical assessments in CBRN-MCI - the PRIOR-CBRN system
- **Clive Goodchild**, UK - Generic Ground Station
- **Catherine Bertrand**, France - Lessons learnt from EU projects to improve civilian FR³s protection against CBRNe threats
- **Bruria Adini**, Israel - Expecting the unexpected and know how to respond Multidisciplinary international collaboration DARWIN project
**Hall 5: Olive/ Palm/ Sycamore**

**Ethics in Emergencies and Disasters**

**Chairpersons:**
Yoram Blachar & Cham Dallas

**11:00-12:15**

**Ofer Merin,** Israel - Treating terrorists and victims: a moral dilemma

**Eli Yaffe,** Israel - Priorities in preliminary, on-site triage and assessment in multiple casualty situations

**Moshe Z. Abramowitz,** Israel - What can we learn from the resilience and post traumatic growth of Holocaust survivors?

**Nethaniel Laor,** Israel - Changes in Bio-Ethics from the Nuremberg trials until today

**Nufar Wolfer,** Israel - Hospital Emergency Teams

**Hall 6: King Solomon AB**

**The Role of Nurses in Disaster Management**

**Chairpersons:**
Gila Hyams & Chad Priest

**11:00-12:15**

**Jorie Klein,** U.S. - The Role of Nurses in Preparedness for mass casualty event in the United states

**Karen Hammad,** Australia - Understanding the lived experience of nursing in the emergency department (ED) during a disaster

**Chad Priest,** U.S. - The Role of Nurses as Global Citizens

**Gila Hyams,** Israel - Trauma Nurse Coordinators Role in MCS - Learning from the past, planning for the future

**12:15-12:30**  
Change Halls Break
### Hall 1

**Lessons Learned from recent Emergencies and Disasters**

**12:30–13:45**

**Chairpersons:** Kobi Peleg & Michel Debacker

- **Michael Frogel**, U.S. - Had The Time Square Bomb Exploded: How Would Your Emergency Room Have Responded to a Surge of Pediatric Victims?
- **Michael L. Alkan**, Israel - ISRAID Medical Mission to Nepal, Responding to the Earthquake
- **Yinying Liu**, China - Chinese military medical team contribute to clinical management of Ebola virus disease in Sierra Leone
- **Ashika Jain**, U.S. - Chief Complaints Pre and Post 2015 Earthquake in Rural Nepal

### Hall 2

**Managing Blood Resources during Emergencies**

**12:30–13:45**

**Chairpersons:** Eilat Shinar & Richard Gonzales

- **Carmen Bell**, U.S. - The US Military Blood Support in Response to National Disasters
- **Richard Gonzales**, U.S. - The blood industry considerations in supporting responses to national disasters
- **Eilat Shinar**, Israel - The Israeli National Blood Response Program
- **Avraham Yitzhak**, Israel - "My brother Keeper” plan and the IDF RDCR protocol
- **Mark Yazer**, U.S. - Whole blood–What's Old is New Again
Parallel Sessions

Hall 3  Medical Education and Training
12:30-13:45  Chairpersons: Leonid Eidelman & Leonard Cole

Deborah Persell, U.S. - Inter-Professional Education for Disaster Preparedness
Yung-Fang Chen, U.K. - An evaluation of the ‘Emergency Response Exercise Programme’ in Taiwan
Diana Vinitsky Hertzog, Israel - Exercising Hospital Evacuation in Israel
Seema Biswas, Israel - Disaster and Conflict Medicine for Medical Students

Hall 4: Pomegranate  Epidemiology and Public Health
12:30-13:45  Chairpersons: Ran Balicer & Alessandra Rossodivita

Khetam Hussein, Israel - Preparing for treating Ebola patients in a dedicated Hospital
Shulin Li, China - The Epidemiological Characteristics and Disease Spectrum of the patients with Prehospital Medical Emergency Service in Urumqi, Xinjiang
Sohil Pothiawala, Singapore - Designing the Emergency Department for improving Infection Control
Nadia Baranchuk, U.S. - Physician Attitude towards Mandatory Ebola Training: not all agree
Basheer Halhal, Israel - PERTUSSIS epidemic amongst soldiers during basic training- the need for updated protocols
Holistic Approach to Emergency Preparedness

Chairpersons: Bella Azaria & Dagan Schwartz

12:30–13:45

David Fuchs, Israel – Disaster preparedness in small district hospital
Gal Horowitz, Israel – Paramedics’ attitudes regarding expanding the authority to determine death by a paramedic
Ido Hadari, Israel – MCI+Media=??
Hong Chen, China – The practice and enlightenment of Southwest Hospital’s participation in Lushan earthquake medical rescue

Emergencies and Disasters Nursing

Chairpersons: Liora Utitz & Karen Hammad

12:30–13:45

Odeda Benin Goren, Israel – Preparedness Ukraine Nurses for Nursing Work in Disaster
Krongdai Unhasuta, Thailand – Strengthening communities respond to emergencies and disasters
Carolina Tannenbaum-Baruchi, Israel – Barriers to Nurses Communication with Deaf People in Israel
Amran Jaber, Israel – A Very Challenging Quest: Breaking Bad News by the Nurses Staff
Xinhui Li, China – Investigation and Analysis of Disaster Cognition and Family Disaster Preparedness of General Practitioners and Community Nurses in XPCC

13:45–14:45 Lunch
Emergency Management and Sheltering of Animals in Disasters

14:45-16:15

Chairpersons: Patricia Andrade & Robin Chadwin

It’s not just about the animals: Table top exercise - an interactive session:

Patricia Andrade & Robin Chadwin, U.S. - Community preparedness and public health considerations: Planning for emergency response to include animal
Introduction to Emergency Animal Sheltering (EAS): Role of veterinarians and non-veterinary volunteers; needs of animals and staff
Emergency Shelter Design and Animal Transport/Tracking: Estimating animal populations, shelter layout, biosecurity, triage
Exercise - small group discussions to provide solutions to dilemmas

Multi-Professional Capacity Building

14:45-16:15

Chairpersons: Boaz Tadmor & Jorie Klein

Stephen Sussman, U.S. - Reaching beyond standard assessment: The role of global self esteem in first responder training
David Ratner, Israel - The Role of the Spokeperson in Disaster Preparation and Management
Chad Priest, U.S. - An Update on Federal Training Opportunities for Healthcare Responders in the U.S.

Panel Discussion: Liora Utitz, Mira Wilhelm Kafil, Anna Ofir, Efim Fainstein, Lydia Lanxner, Gila Margalit - Nurses as ‘leaders’ of emergency preparedness
International Humanitarian Action

**Hall 4: Pomegranate**

14:45-16:15  **Chairperson: Bruria Adini & Erin Downey**

- **Cham Dallas**, U.S. - Developing a Nuclear Global Health Workforce Amid the Increasing Threat of a Nuclear Crisis
- **Zeyn Mahomed**, South Africa - Africa helping Africa
- **Elhanan Bar-On**, Israel - Field Hospital Versatility - Maintaining Capabilities in Diverse Operational Scenarios
- **Tarif Bader**, Israel - Extending a Helping Hand - Lessons Learned from Recent Israeli Defense Forces Humanitarian Missions
- **Kumaran Rasappan**, Singapore - Considerations in Humanitarian Medical Relief Work in the High Altitude Himalayan Village

Emerging CBRNe Threats

**Hall 5: Olive/Palm/Sycamore**

14:45-16:15  **Chairpersons: Kobi Atsmon & Dan Hanfling**

- **Arkadiusz Trzos**, Poland - CBRN-related Mass Casualty Incidents - coordination of activities of the Emergency Medical Services and the National Firefighting and Rescue System. Propositions of system-based solutions
- **Gad Pinhasi**, Israel - Consequence Analysis for Toxic, Explosive and Flammable Gas Spills. A Case Study: Compressed Natural Gas (CNG) Storage
- **Toyoaki Sawano**, Japan - Health of decontamination workers in Fukushima: underlying disease observable in presentation of stroke
- **Vasily Afanasiev**, Russia - Cytoprotectors are an important supplement in treatment of mass casualties during toxicological disasters
- **S.M. Becker**, U.S. - Challenges to Recovery after a Radiological or Nuclear Incident: Early Lessons from Fukushima Dai-ichi

14:45-16:15  **Parallel Sessions**
Parallel Sessions

14:45–16:15

**Trauma Management**

**Hall 6: King Solomon AB**

**Chairpersons:**
Osnat Lev-Zion & Raphael Barishansky

**14:45–16:15**

- **Gilbert Sebbag**, Israel – The Soroka Medical Center
  challenges during the July 2014 Operation Protective Edge – Preparedness and management in a hospital under fire

- **Itzhak Siev-Ner**, Israel – The Role of Rehabilitation in a Military Conflict

- **Avi Benov**, Israel – Between 2 conflicts – change in battlefield mortality, from Second Lebanon War to Operation Protective Edge

- **Wayne Yap**, Singapore – Lessons from the 2015 Nepal Earthquake: Our experience as Orthopaedic Surgical Residents rendering disaster aid

- **Miklosh Bala**, Israel – Intentional Running-Over Attacks: A Summary of the Recent Jerusalem Experience

- **Michael Rozenfeld**, Israel – Space settings of terror explosions: physical vs. contexturals

**16:15–16:45**

*Coffee break*
### Hall 1: Promoting Emergency Preparedness by International Organizations

**Chairpersons:** Eli Yaffe & Dorit Nitzan Kaluski

- **Dorit Nitzan Kaluski,** WHO - WHO Emergency Response in Ukraine
- **Barbara Rizzoli,** ICRC - Restoring Family Links in times of emergency by the International Red Cross and Red Crescent Movement
- **Saeda Al Barawi,** ICRC - ICRC post-operative hospital physiotherapy project: preparing also for humanitarian emergencies
- **Frederik Siem,** Norway - Ambulance services operating in situations of risk: best practice of twelve National Societies
- **Johannes S. Schad,** Germany - From Ebola Emergency to Health System restoration: Severe Infections Temporary Treatment Unit
- **Patricia Kormoss,** WHO - Mobile Emergency Primary Care Units - W.H.O. Experience

### Hall 3: Social Networks and Volunteering

**Chairpersons:** Mooli Lahad & Christopher Kramer

- **Alan Kirschenbaum,** Israel - When Plans Fail: Contingency Plans Based on Social Networks
- **Patrick Drews & Jana Eiser-Mauthner,** Germany - Interactive Lecture: Spontaneous Volunteer Management Programs for Emergency Management - A European perspective
- **Denis Havlik,** Austria - Crowdtasking in crisis situations
- **Eli Weissbart,** Israel - Successfully operating unorganized volunteers during crisis
- **Daniel Hahn,** U.S. - Public-Private Partnerships: A case study and best practices
Logistic Management of Emergencies and Disasters

Chairpersons: Ran Edelshtein & Angelo Agostini

**Donna Thomson**, Canada - CritiCall Ontario - A provincial solution to healthcare planning and optimization (on a daily basis and in emergencies and disaster)

**Joram Rubinstein**, Israel - Resolving the challenges and dilemmas in securing hospitals

**Michael Frogel**, U.S. - Creating Disaster Planning Resources for Obstetric and Newborn Services - Lessons Learned from the NYC Pediatric Disaster Coalition (PDC)

**Itamar Ashkenazi**, Israel - THREATS Project: Increasing resilience of EU hospitals as critical infrastructure by improving their protection capability and security awareness against terrorist attacks

**David Siegel**, U.S. - Gaps in Drug Dosing for Obese Children and Adults: A Systematic Review of the Medical Countermeasures in the Strategic National Stockpile

Military and Civilian Collaboration

Chairpersons: Ofer Merin & David Wilmot

**Gennady Kipor**, Russia - Civil Military Collaboration in National Disaster Medicine Service

**Gayathri Nadarajan**, Singapore - Mosaic Civilian–Military Disaster Medical Response Team: A Unique Singapore Experience

**David Wilmot**, U.S. - Tiered Response to CBRN Incidents

**Deborah Kim**, U.S. - Destruction of the Utah Chemical Weapons Stockpile and the development of the CSEPP Program

**Salman Zarka**, Israel - Hospital Operation in Emergencies
Parallel Sessions

**Models of Healthcare Emergency Planning**

**Chairpersons:**
Avishay Goldberg & Mauricio Lynn

- **16:45-18:00**
  - Eli Rohn, Israel - Do we have an emergency?
  - Oleg Mazurenko, Ukraine - A simulation modeling for International Health response after Natural Disasters
  - Moshe Farchi, Israel - The SIX C’s Model Psychological First Aid guidelines for NON professionals
  - Dan Hanfling, U.S. - Emergency Mass Critical Care - An Update

**19:30**
'Summer for Winter'
Special Israeli Style Dinner Event
Tuesday – January 12th, 2016

07:30–18:00 Registration Desk Open

08:30–09:00 Plenary Session Moderated by Prof. Shimon Reisner, IPRED IV Chairman of the Scientific Committee

Mr. Itay Engel – ISIS as the global threat

09:00–09:30 Dr. Thomas Inglesby – Preparing for Bioterrorism and Public Health Emergencies

09:30–10:00 Greetings:

Minister of Health MP Rabbi Yaakov Litsman

Prof. Zou Li, Chief Representative of SAFEA/CAIEP, Israel

Prof. Virginia Murray – The Sendai Framework on Disaster Risk Reduction: what does it mean for disaster medicine?

10:00–10:30 Coffee Break
Hall 1  
**Simulation Tools in Triage**

**Chairpersons:** Bridget Berg & Steven Storbakken

*10:30-12:00 Parallel Sessions*

**Tom Schmitz**, Belgium - Measuring in-hospital over- and undertriage using simulation software in emergency nurses

**Tom Schmitz**, Belgium - Measuring in-hospital over- and undertriage using simulation software in emergency physician residents

**Bridget Berg**, U.S. - SurgeTrain Online Learning Platform Improves Hospital Clinical Surge Disaster Response

**Interactive presentation** of a training tool to promote triage capabilities in the emergency department during a surge event

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Hall 2  
**Expert Session – Novel Technologies in Emergency and Disaster Medicine**

**Chairpersons:** David Dagan & Christopher Lamb

*10:30-12:00 Parallel Sessions*


**Narayan Iyer**, U.S. - BARDA and MediWound response to Romania Fire incident

**Elon Glassberg**, Israel - Technology as a life-saving tool - from the battlefield to the pre-hospital setting

**Panel Discussion** – My prediction of the technology of tomorrow
Parallel Sessions

10:30–12:00  
**Hall 3**  
**Critical Infrastructure Resilience: Threats, Vulnerabilities, Cascading Effects & Interdependencies**

**Chairpersons:**  
Avi Israeli & Jalal Mapar

10:30–12:00

Yacov Haimes, U.S. - Risk Modeling and Analysis of Cyber-Physical Complex and Resilient Interdependent Systems of Systems

J. Michael Barrett, U.S. - Ensuring resilience by applying Total Security Management (TSM) principles to complex systems

Tim McPherson, U.S. - Infrastructure System Analysis for Community Resilience Assessment

Rachael Piltch-Loeb, U.S. - A Balancing Act: Recovery from Hurricane Sandy and Compensating Capitals

Josh Wander, Israel - Bottom-up Preparedness
Managing Acute Stress Reactions

Chairpersons: Nathaniel Laor & Joan Hunter

10:30-12:00

David Abramson, U.S. - Merging Disasters: A cross-cohort comparison of mental health after large-scale natural and technological disasters
Zhang Guiqing, China - Research traumatic event memory content changes after a trauma
Joan Hunter, U.S. - The National Guard Bureau Psychological Health Program: Traumatic Event Management
Xiuzhu Zhang, China - Worries about the future of families associated with the presence of posttraumatic stress disorder in Chinese trauma population
Moshe Farchi, Israel - Preliminarily test and validate a brief Acute Stress Reaction (ASR) scale
Menachem Ben-Ezra, Israel - Psychological Reactions Following the Charlie Hebdo Terror Attack
Nir Klein, Israel - Stress Reaction of first responders

Quality Assurance of Disaster Preparedness

Chairpersons: Dorit Tekes-Manova & Gary Mann

10:30-12:00

Kathrin Pientka, Germany - Results from the evaluation: The web-based tool “BEPE” in daily work routine
Veith Bosenbecker, Germany - Needs analysis and development planning for fire services. How much fire service does a city need?
Asaf Harris, U.S. - Civilian ED usage during conflict: analysis of a major Israeli emergency department
### Managing the Ebola Crisis

**Chairpersons:** Elhanan Bar-On & Rene Gottschalk

#### 10:30–12:00

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Country</th>
<th>Title</th>
</tr>
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<tbody>
<tr>
<td>Richard Klomp</td>
<td>U.S.</td>
<td>Reducing Risk of Improper Deployment During Ebola Response in West Africa</td>
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<tr>
<td>Calvin Kong</td>
<td>U.S.</td>
<td>Ebola Response: Emergency Room Staff Perceptions of Ebola training</td>
</tr>
<tr>
<td>Huijuan Duan</td>
<td>China</td>
<td>Medical Emergency Response to the Ebola Outbreak in West Africa by Chinese PLA medical teams</td>
</tr>
<tr>
<td>Raymond E. Swienton</td>
<td>U.S.</td>
<td>Ebola in the U.S, Epicenter: Dallas, Texas</td>
</tr>
<tr>
<td>Regina Ellwanger</td>
<td>Germany</td>
<td>EFFO Ebola - Efficiency by Edification: A train-the-trainer program to promote hospital preparedness for Ebola</td>
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<td>Itay Fogel</td>
<td>Israel</td>
<td>Self-Perceived Efficacy of Using Personal Protective Equipment Does Not Predict Objective Performance</td>
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<td>David Wilmot</td>
<td>U.S.</td>
<td>Lessons Learned from Operation United Assistance</td>
</tr>
</tbody>
</table>

#### 12:00–12:10  
**Change Halls Break**
Humanity in Treating Refugees and Migrants

Chairpersons: Pinchas Halpern & Itamar Grotto

Pinchas Halpern, Israel – Provision of Emergency Medical Services to secure medical treatment for Refugees
Michael Dor, Israel – Operating a designated clinic for medical treatment of refugees
Alexander Lerner, Israel – Humanitarian treatment victims of Syrian civil war in Ziv Medical Center, Zefat, Israel
Elon Glassberg, Israel – The combined Israeli military-civilian medical humanitarian response aiding victims of the Syrian civil war – dilemmas and lessons learned
Itamar Grotto, Israel – Screening practices for infectious diseases among newly arrived migrants – the Israeli experience

Emergency Medicine Education

Chairpersons: David Siegel & Deborah Persell

Katarzyna Długosz, Poland – Organization of Emergency Rescue Operations in CBRN incidents. Training program for representatives of government services and medical students
Juliana Poh, Singapore – CODE BLUE RESPONSE TO A BSL3 INCIDENT
Leonard Cole, U.S. – The Value of a Course on Terror Medicine
Cecil Holliman, U.S. – Operation Bushmaster: A Unique Educational Exercise
André Baumann, Germany – From ‘Rettungsassistent’ (EMT-Intermediate) to ‘Notfallsanitäter’ (EMT-Paramedic)
Ben Godder, U.S. – All Hazards Training: Incorporating a “Certificate of Disaster Preparedness” into the Dental School Curriculum
**Parallel Sessions**

**Hall 3**

**Multi-level Exercises: ‘How-to’ Session**

**Chairpersons:**
Eyal Furman & Francesco Foti

**12:10-13:40**

Eyal Furman, Israel - Characteristics of Hospitals' drills

Dov Smaletz, Brazil - First integrated exercise on disasters management in Sao Paulo - Brasil (Public and Private forces)

Zahi Dagan, Israel - MTE Drills and Reality -What we had Learned

Lion Poles, Israel - Training systems and the individuals for emergencies - ‘Orange Flame’ Concept and changing methods of emergency training in Israel

Liora Utitz, Israel - Collaboration between Medical Centers - a model for success in mass disaster training

Amir Blumenfeld, Israel - MCE drills, the basic and the advanced

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**Hall 5: Olive/ Palm/ Sycamore**

**Utilizing Social Media in Emergency Management**

**Chairpersons:**
Limor Aharonson-Daniel & Steven Becker

**12:10-13:40**

Eli Yaffe, Israel - Emergency Social Application connected to a national EMS Dispatch - Crowdsourcing To Locate Victims In Emergency Situations

Rebecca Florsheim, U.S. - Optimizing Global Relief Efforts after Mass Casualty Disasters: Suggestion for a Specialized Social Network after Responding to Haiti and Nepal

Dmitry Leykin, Israel - Automatic Assessment of Personal Coping Strategies from the social media: An Aid for Crisis Communication with the Public

Rivka Klein, Israel - Did belonging to a WhatsApp group of women with siblings in active military service during operation ‘Protective Edge’ contribute to their personal or community resilience?

Tomer Simon, Israel - Involvement of emergency responders in spread of rumors on social media during terror attacks
Christopher Kramer, U.S - Effective public communication during crises and emergencies
Gilead Shenhar, Israel - Effectiveness comparison of two earthquake awareness campaigns in Israel (2011-2013)

Hall 6: King Solomon AB  
Tools and Models in Emergency Response

12:10-13:40 Chairpersons: Eran Tal-Or & Raed Arafat

Raphael Barishansky, U.S. - Understanding Mobile Intergrated Health in the US
Michel Debacker, Belgium - SIMEDIS: a discrete event simulation tool for testing the response to mass casualty events
Simone Wurster, Germany - Determining the value of public safety solutions: the benefit of early warning apps to protect lives and critical infrastructure
Fabio Racy, Brazil - Hospital Disaster Plan
Patricia Andrade, U.S. - Veterinary Medical Schools and Clinics in Mass Casualty Disaster Response: an Additional Source of Medical Personnel, Emergency Equipment and Hospital Surge Capacity

13:40–14:40 Lunch break
Parallel Sessions

**Hall 1**

**Technological Innovations in Emergency Management**

14:40–16:10  
Chairpersons: Isaac Ashkenazi & Joseph Martin

Rimona Margalit, Israel – Inhalational therapy of LPS-exposed mice by anti-oxidant and steroid drugs formulated in hyaluronan liposomes

Oren Milstein, Israel – Novel Protection from Radiation Induced Cancer and Sickness (ARS)

Mohammad Naeem, U.S. – The Role of Diagnostic Medical Imaging in 4th and 5th Generation Warfare

Li Linfeng, China – The Relation Between the Symptoms Characteristics of Post Traumatic Stress Disorder (PTSD) and the Efficacy of Eye Movement Desensitization and Reprocessing (EMDR)

Moris Topaz, Israel – A Novel Damage Control Approach for Soft Tissue Injury Applying Tension Relief System, Vacuum Combined with Wound Oxygenation and Irrigation for Early Primary Closure of Large Wounds

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**Hall 2**

**Triage Systems and Mechanisms during Disasters**

14:40–16:10  
Chairpersons: Michael Halberthal & Leo Latasch

Michel Debacker, Belgium – Does triage decreases mortality in mass casualty incidents? A simulation study of an aircraft crash at Brussel Airport

Kelly Klein, U.S. – Triage, the next step

Brigitte Serreault, France – NORIA solution (New Operational Readable Identification Application)

Michael Frogel, U.S. – NYC Pediatric Disaster Coalition: a Model for Disaster Preparedness

Gary Mann, Canada – Life or Limb – Prioritizing priorities
Marcel Van der Auwera, Belgium - Monitoring mental well-being of students during a training course in disaster medicine

Hongwei Zhang, China - Chinese regular and military college students need more training to enhance the consciousness of disaster prevention and the disaster rescue skills

Dabney Evans, U.S. - Practical training for public health emergency preparedness among graduate students

Deanna Sykes, Canada - Does earthquake training influence willingness to report to work (WRT) among hospital employees (HEs) in an earthquake?

Amelia Breyre, U.S. - Emergency Medicine Resident Physician Disaster Preparedness in Anticipation of an Urban Papal Visit

Barbara Lopes Cardozo, U.S. - Promoting resilience among primary health care workers in post-conflict Kosovo

Daniel Hahn, U.S. - The effect of social capital on an individual’s potential resilience

Shiri Daniels, Israel - Pass it on - Psycho-social training in the aftermath of typhoon Yolanda in the Philippines

Smadar Cooper Caesari, Israel - The efficacy of a structured program using puppetry in kindergarten children living under threat

Aviva Goral, Israel - Resource loss, gain and mental distress in individuals exposed to ongoing security related stress

Kelly Klein, U.S. - Will they come if there was a radiological or nuclear event
<table>
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<tr>
<th>Time</th>
<th>Session Details</th>
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<tr>
<td>14:40–16:10</td>
<td><strong>Parallel Sessions</strong></td>
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<td><strong>Hall 6: King Solomon AB</strong></td>
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<td><strong>Trauma Management + Preparedness in Specific Circumstances &amp; Populations</strong></td>
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<td><strong>Chairpersons:</strong> Moshe Michaelson &amp; Richard Klomp</td>
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<td>Pia Daniel, U.S. - Exercise Based Management of Blast Injuries vs. General Trauma Injuries by US Emergency Medicine Physicians in Training</td>
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<td>Arthur Cooper, U.S. - Developing and Implementing Neonatal Disaster Plans through Full Scale Exercises</td>
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<td>Lior Rosenberg, Israel - The Role Of Effective, Fast &amp; Specific Enzymatic Debriding Agent (NexoBrid)</td>
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<td>Lianyang Zhang, China - Motor Vehicle Crashes influenced the self-development of “Trauma-center” facilities in Mainland China</td>
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<td>Andreas Ruhs, Germany - Experiences of fire and rescue team</td>
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<td>Yaron Shoham, Israel - The role of NexoBrid rapid enzymatic debridement in the treatment of fire disasters in view of the recent Romanian mass casualty incident</td>
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<td>16:10–16:30</td>
<td><strong>Coffee Break</strong></td>
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16:30–18:00  **Plenary:**
Closing Ceremony  Moderated by Col. Dr. Eyal Furman, IPRED IV Chairman
Awards for Best Posters

**Interactive Session:**
Challenges and Dilemmas in international humanitarian action - Dr. Ian Norton
and Prof. Kobi Peleg
Presentation of Mass Toxicological Incident Exercise - Col. Dr. Eyal Furman
Take Home Messages - Col. Dr. Eyal Furman

**Wednesday – January 13th, 2016**

07:00–17:00  **Mass Toxicological Incident Drill**
*Sponsored by:*

![Sponsored by Persys Medical](image-url)
IPRED IV TOXICOLOGY DRILL - SOROKA UNIVERSITY MEDICAL CENTER

On January 13th, 2016 the IPRED IV Conference final event takes place in the Beer Sheva area with the presentation of a large scale regional toxicological drill. The drill will involve first emergency response of local and regional Emergency Systems at the simulated event site; then a large Mass Casualty Event (MCE) management at the Soroka Medical Center – affiliated to BGU.

In the site of the event various emergency scenarios will be demonstrated, including accidents and terror attacks; the treatment is similar in all of them. Among the first responders that will take part in the exercise are the police, MDA (EMS) and fire fighters. In the second lag, military and municipal teams will join forces to reinforce and support the treatment and decontamination efforts. In routine emergency events, the commander of the scene is the senior police officer. The main efforts will include: Containment of the contaminated area, Identification of the hazardous material, Treatment and evacuation of the casualties, Decontamination of the event site, Risk communication and guidance of the public, Decontamination of the first responders.

Observe and participate in a large scale regional Mass Toxicological Exercise.
Introduction:  
The likelihood of a civilian toxicological MCE happening in the Beer Sheva vicinity is high, due to the presence of numerous chemical industries in the town surroundings. A toxicological MCE after a terrorist attack is also possible, with a lesser probability. SOROKA happens to deal on a yearly basis with real limited toxicological casualty events. 
The SOROKA capability to contain a toxicological MCE is high, unto over 250 victims, thanks to the hospital size, number of beds (1055) and efficient personnel.

The Soroka Toxicological MCE Drill  
The drill organization  
* Israel Ministry of Health Emergency Division  
* Israel defense Force  
  - Home Front Command  
  - Medical Corps NBC Branch  
The Soroka Response to Toxicological MCE  
* Emergency & Contingency Team  
* Medical management team  
* One Toxicology specialist  
* The Emergency Response staff to MCE - around 250 trained personnel  

Expected Count of Casualties  
* Overall 100 - including 10% pediatric victims

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<th>Severe</th>
<th>Moderate</th>
<th>Light &amp; stress</th>
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IPRED IV TOXICOLOGY DRILL - SOROKA UNIVERSITY MEDICAL CENTER

The Soroka Modus Operandi in a Toxicological MCE

Cross confirmation of the first notice of a big event happening in Beer Sheva area

Medical emergency responders recruitment
* In-house staff immediate recruitment
* Call to the ED of emergency responders support

Emergency Department reorganization to handle the Toxicological MCE
* Decontamination area designation
* "Yellow line" demarcation between contaminated and clean areas
* Protection gear for medical, security and orderly emergency responders working in the decontamination area

Management of the Toxicological MCE in the ED arrival (schema)
* Triage in contaminated area
  - Immediate – goes to resuscitation before decontamination
  - Walking – light and/or stress injuries
  - Unable to walk - severe injuries
* Decontamination for both walking and decumbent patients
* Passing the "yellow line" from contaminated to clean areas of the ED
* Medical Triage in clean area
  - Trauma site – severe and combined chemical and trauma injury
  - Immediate site – moderate casualties
  - Light injuries site – Light casualties and stress reaction

Types of expected casualties
* Light
  - Toxicological
  - Stress reaction
* Moderate
  - Traumatic
  - Toxicological
  - Combination of both
* Severe life-threatening
  - Traumatic
  - Toxicological
  - Combination of both

Toxicological Agent Identification
* Coordination between the MoH, Home-Front command, special investigation teams and the SOROKA Chief Toxicologist
* Clinical assessment at SOROKA
* Forensic and special teams investigation at the event site

Treatment at SOROKA MCE Sites
* Trauma Crash Unit Site
  - Resuscitation
  - Medical treatment of toxicological effects
  - Control of combined traumatic & toxicological injuries
  - Transfer to immediate surgery o GICU
  - Psychological assessment
* Intermediate Site
  - Medical treatment of toxicological effects
  - Control of combined traumatic & toxicological injuries
  - Transfer to delayed surgery or hospitalization
  - Psychological assessment
* Light & Stress Site
  - Examination and observation
  - Transfer to immediate surgery
  - Psychological assessment
IPRED IV TOXICOLOGY DRILL -
SOROKA UNIVERSITY MEDICAL CENTER

Types of expected casualties
* Light
  - Toxicological
  - Stress reaction
* Moderate
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  - Control of combined traumatic & toxicological injuries
  - Transfer to immediate surgery or GICU
  - Psychological assessment

* Intermediate Site
  - Medical treatment of toxicological effects
  - Control of combined traumatic & toxicological injuries
  - Transfer to delayed surgery or hospitalization
  - Psychological assessment

* Light & Stress Site
  - Examination and observation
  - Transfer to immediate surgery
  - Psychological assessment
ALGORITHM OF TOXICOLOGICAL MCE MANAGEMENT at the SUMC

Casualty unloading from Ambulance

Triage

Decontamination Process

Medical Triage

Clean Area

Light & Stress Injuries Site

Moderate Injuries Site

Severe & Combined Injuries Site

Contaminated Area

Walking pts.

Severe lying pts.

Resuscitation without decontamination
Soroka University Medical Center – The Medical Iron Dome of the South

Soroka University Medical Center of Clalit Health Services is the only hospital in the Negev and among the largest in Israel, with more than 1,000 beds. The Medical Center serves as a “mega-hospital” for a population of over one million people who reside in an area that comprises some 60% of the State of Israel. As the sole tertiary hospital in the area, Soroka is a strategic asset for the State of Israel. Soroka is one of Clalit’s centers of power and a significant component of Israel’s health system.

Soroka is a leading hospital that provides advanced medical care of exceptional quality, putting patients and their needs at the center, and is also a model for education and medical research.

The School for Health Professions and the Joyce and Irving Goldman medical school of Ben-Gurion University of the Negev are located on the medical center’s campus.

Soroka Medical Center is the largest employer in the Negev and employs approximately 4,200 employees in a variety of different sectors.

Soroka Medical Center is a leader in a large number of fields, advanced services and research:

- The Cardiology Center: cardiothoracic surgery (surgery and cardiology)
- Bariatric Treatment: surgery for the treatment of morbid obesity
- The National Pediatric Infectious Disease Unit, a leader in research in Israel and abroad
- The Unit for Infection Prevention Control
- The Genetic Institute is a leader a range of activities and research
- Colorectal Surgery
- The Brain Imaging Research Center – brain imaging
- Intensive Care Units (general, internal medicine, and pediatric) with first-class clinical results
- Trauma Unit - The hospital operates the largest trauma unit in the country, with eight treatment stations, including a special station for treating children. Over 2,500 trauma cases are treated at Soroka each year by experienced trauma teams.

The delivery room at the Saban Maternity Center is the “most fertile” in Israel and consequently its medical staff is the most experienced. Personal attention is given to each and every mother. About 16,000 births take place each a year at Soroka.

Soroka Medical Center has been awarded the prestigious accreditation of The Joint Commission of Accreditation of Health Care Organizations (JCAHO/JCI). This certification is an international criterion for meeting the objectives of quality and safety in the field of health care that is awarded to health organizations.
Keynote Speakers
Thomas Inglesby, MD

Associate Professor of Medicine and Public Health at the University of Pittsburgh Schools of Medicine and Public Health.

Lecture title: Preparing for Bioterrorism and Public Health Emergencies

Dr. Inglesby is Director of the UPMC Center for Health Security, a nongovernmental organization dedicated to protecting people’s health from the consequences of epidemics and disasters and to ensuring that communities are resilient to those challenges. He is an Associate Professor of Medicine and Public Health at the University of Pittsburgh Schools of Medicine and Public Health. Dr. Inglesby’s work is internationally recognized in the fields of public health preparedness, pandemic flu and epidemic planning, and biosecurity. He is Chair of the Board of Scientific Counselors, Office of Public Health Preparedness and Response, US Centers for Disease Control and Prevention (CDC). He is Chair of the National Advisory Council of the Robert Wood Johnson Foundation National Health Security Preparedness Index. He is a member of the External Laboratory Safety Workgroup appointed by the CDC Director that is examining the biosafety practices of the CDC, the National Institutes of Health (NIH), and the Food and Drug Administration (FDA). He is on the Advisory Committee to the Biomedical Advanced Medical Research Authority (BARDA) in the Office of the Assistant Secretary of Preparedness and Response of the Department of Health and Human Services. He has also served on committees of the Defense Science Board and the National Academies of Sciences and in an advisory capacity to DHS and DARPA. During the past 15 years, Dr. Inglesby has authored or co-authored more than 90 peer-reviewed articles, reports, and editorials on a range of issues related to health and security. He is Editor-in-Chief of the journal Health Security, which he helped to establish 13 years ago as the first peer-reviewed journal in its field, under its original title, Biosecurity and Bioterrorism. He was a principal editor of the JAMA book Bioterrorism: Guidelines for Medical and Public Health Management. He has been invited to brief White House officials from the past 3 presidential administrations on national biosecurity challenges and priorities, and he has delivered Congressional testimony on public health preparedness and biosecurity. He is regularly consulted by major news outlets for his expertise. He is also on the Board of Directors of PurThread, a company dedicated to developing antimicrobial textiles. Dr. Inglesby completed his internal medicine and infectious diseases training at Johns Hopkins University School of Medicine, where he also served as Assistant Chief of Service in 1996–97. Dr. Inglesby received his MD from Columbia University College of Physicians and Surgeons and his BA from Georgetown University. He continues to see patients in a weekly infectious disease clinic.
Rear Admiral (RADM) Boris D. Lushniak, MD, MPH
Deputy US Surgeon General US, Public Health Service

Lecture title: Partnerships in Emergency Response – The Path from Inception to Implementation of the Medical Units

Rear Admiral (RADM) Boris D. Lushniak, MD, MPH, is the Deputy United States Surgeon General and was appointed to that position in November 2010. Dr. Lushniak assists the Surgeon General to articulate the best available scientific information to the public regarding ways to improve personal health and the health of the Nation. He also assists in overseeing the operations of the U.S. Public Health Service (USPHS) Commissioned Corps, comprised of approximately 6,700 uniformed health officers who serve in locations around the world to promote, protect, and advance the health and safety of our Nation. Dr. Lushniak served as Acting Surgeon General from July 17, 2013 to December 18, 2014 when he reassumed the duties of Deputy Surgeon General. RADM Lushniak was introduced to the USPHS in 1983 as a senior medical student when he completed an elective with the Indian Health Service in Winslow, Arizona. He began his USPHS career in 1988 as a Lieutenant, entering the service as part of the Epidemic Intelligence Service (EIS) at the Centers for Disease Control and Prevention (CDC) and initially was stationed with the CDC’s National Institute for Occupational Safety and Health (NIOSH) in Cincinnati, Ohio where he conducted epidemiological investigations of workplace hazards. In 1990 he was accepted for CDC’s long term training program and completed a three year residency in dermatology at the University of Cincinnati after which he established an occupational skin disease program at NIOSH. During his time at CDC he also served on special assignments and disaster response activities in Bangladesh, St. Croix, Russia, and Kosovo, was part of the CDC/NIOSH team at Ground Zero (World Trade Center) and part of the CDC team investigating the anthrax attacks in Washington, DC. In 2004 he transitioned from CDC to the Food and Drug Administration (FDA) as the Chief Medical Officer of the Office of Counterterrorism and was appointed FDA Assistant Commissioner in 2005. While at FDA he was deployed after Hurricane Katrina to serve as the Department of Health and Human Services representative in San Antonio and also served as the FDA Deputy Incident Commander for the 2009 pandemic response. He was promoted to Rear Admiral, Lower Half in 2006 and attained the rank of Rear Admiral, Upper Half in 2010. In 2010 RADM Lushniak completed his tour with the FDA as the FDA Assistant Commissioner, Counterterrorism Policy and Director of the Office of Counterterrorism and Emerging Threats within the Office of the Commissioner. Dr. Lushniak was born
in Chicago to post–World War II immigrants from Ukraine. He was admitted to the six-year Honors Program in Medical Education at Northwestern University and completed his Bachelor of Science degree in Medical Sciences in 1981 and obtained his medical degree (MD) in 1983. In 1984 he completed the Masters of Public Health (MPH) degree at Harvard University. He completed a residency in family medicine in 1987 at St Joseph Hospital in Chicago and a residency in dermatology at the University of Cincinnati in 1993. RADM Lushniak maintains board certifications in dermatology and preventive medicine (occupational). He served as a staff physician in dermatology at the National Naval Medical Center in Bethesda and is adjunct professor of dermatology at the Uniformed Service University of the Health Sciences. RADM Lushniak served as the co-executive director of the USPHS Music Ensemble from 2007–2011 and is a member of many professional organizations including the American Medical Association (AMA), the American Academy of Dermatology, the American College of Preventive Medicine, the American Dermatological Association, the American Contact Dermatitis Society, the Association of Military Surgeons of the United States (AMSUS), and the Ukrainian Medical Association of North America. He has received numerous USPHS awards including the Distinguished Service Medal, the Surgeon General’s Medallion, the Exemplary Service Medal, two Outstanding Service Medals, a Commendation Medal, and two Achievement Awards. In addition he has received the AMA Dr. William Beaumont Award in Medicine and the AMSUS Sustaining Member Lecture Award as well as DHHS Secretary and FDA Commissioner Awards. A firm believer in leadership by example, RADM Lushniak also promotes the core messages of the National Prevention Strategy via his active lifestyle. He is an avid long-distance bicyclist, runner and hiker. In 2013, he scaled the summit of the most heavily-glaciated peak in the United States, Washington’s 14–thousand foot Mount Rainier. He also leads community Surgeon General’s Walks throughout the United States. He resides in Rockville, Maryland with his wife Dr. Patricia Cusumano and two daughters Larissa and Stephanie.
**Dr. Ian Norton**  
*Emergency Physician, World Health Organisation HQ, Geneva*  
*Heading the new Foreign Medical Team Unit*

**Lecture title:** International Medical Teams; Have the Ebola and Nepal responses changed anything?

An Emergency Physician with post graduate qualifications in Surgery, International Health and Tropical Medicine Ian works for the World Health Organisation HQ in Geneva heading the new Foreign Medical Team Unit. Previously the director of disaster preparedness and response and the National Critical Care and Trauma Response Centre, Darwin, Australia, he led key developments in the Australian Medical Assistance Team (AUSMAT) initiative, in particular an innovative training programme for disaster response teams, and a fully self-sufficient capability for international field hospital deployment for the Australian Government. He has led Australian Government medical team deployments to the Ashmore reef boat explosion, Pakistan floods, Solomon Islands Dengue outbreak and Typhoon Haiyan in the Philippines including a 50 bedded surgical field hospital and tertiary referral trauma centre for Tacloban city within days of the storm. He is the lead author of the new WHO global classification and standards for Foreign Medical Team (FMT) deployment to sudden onset disasters which led to his appointment to the WHO. In that role he leads the development of a global registry of FMTs and the increasing role of WHO in their quality assurance and coordination. He was deployed for over 5 months to the West African Ebola outbreak 2014/15 and led the coordination of over 60 FMTs in three countries and the design and build of five large Ebola treatment centres in Monrovia, along with plans for building by the UK, US and WFP in the three worst affected countries. He led the coordination of 132 FMTs in Nepal during the earthquakes of April and May 2015. Lessons learned during these recent responses for a rapid and predictable international health response to all-hazards will reshape the FMT initiative along with the mechanisms of emergency health response within WHO, and is integral to the future of Dr. Norton’s portfolio at WHO.
Major General Yoel Strick

Commanding General
Home Front Command
Israel Defense Forces

Lecture title: Resilience in the civilian arena

General Strick is the 9th Commanding General of Home Front Command since March 31st, 2015.

He is responsible for both force development and force operation of HFC active and reserve duty components, such as command posts, Urban Search and Rescue, CBRN and medical units.

By Israeli law, General Strick is also the highest Civil Defense Authority and as such responsible for public preparedness and guidance, early warning and means of physical protection.

Strick was commissioned by IDF in 1985 and started his military career service in the IDF Paratroopers Brigade.

During the course of his career he was chosen for various command assignments, in the Givati Brigade (infantry), including the Brigade Commander, in IDF Central and Northern Commands.

General Strick served as Head of IDF Operations Division and as Commander of Company and Battalion Commanders Course.

Strick is a graduate of US College of Military and Security Studies, Carlisle, PA (class of 2004) and holds a BA degree in Middle Eastern Studies from Tel Aviv University.

He is married and the father of three.
Oral Presentations
Major General Yoel Strick

Commanding General
Home Front Command
Israel Defense Forces

Resilience in the civilian arena

Home Front Command is one of the leading agencies in Israel conducting operational life saving response but also allocating major efforts to ensure the preparedness of the nation for wide scope of emergency scenarios.

On the daily basis Home Front Command operates to develop and to augment the level of population resilience as the most important component of nation’s ability to cope successfully with challenges of emergency event, to minimize the loss of life’ and the disruption of life routine and eventually the ability to recover from a crisis as soon as possible.

The term resilience, mentioned in discussions amongst experts in emergency management community, mostly referred to as the critical element that has a direct and significant impact on level of readiness, the perception of the life routine disruption and the ability to recover from life or safety threatening event.

The brief will focus on the main causes and different types of scenarios that have a potential to decrease the level of resilience and trigger the need for intervention and support.

Following that, we’ll present the concept of population resilience, developed and used by Israel Home Front Command, specifically the measures undertaken by it, to support and strengthen the resilience during emergency times:

♦ Civil Defence guidelines
♦ Leadership
♦ Public Guidance & Information
♦ Critical Services
♦ Presence
♦ Efficacy
Gennady Kipor, Russia
Disaster Medicine, Administration, ARCDM “Zaschita”, Russia

Sergei Goncharov, ARCDM “Zaschita” and Natalia Pichugina, ARCDM “Zaschita”

Experience of disaster medicine preparedness for mass gathering events

Introduction: The main goal of presentation is info sharing the detailed mechanisms of preparedness for all types of mass gathering events. It is confirmed that the local medical manpower and resources have to be changed, adopted and supported from HQ Disaster medicine national service.

Methods: The process is presented by analysis of lessons learnt from preparedness for Sport championships, Universiades, Music festivals, Olympic Games, and all other mass gathering events organized in the country.

Results: This presentation gives examples and describes the main characteristics of an international humanitarian field experience of Disaster Medicine National System and its Head Quarter in major mass gathering events with accentuating on the humanitarian needs? Scale of any event and legislative basis. The results of medical care delivery are shown and analyzed. The best practices supposed to participate in medical care delivery in closed urgent symbiosis with special search and rescue teams. Misunderstanding within the framework of international medical teams and staff is a result of different national standards, different medical products, variety of equipment, and low level of language knowledge. That is why the international collaboration in mass gathering events needs to be discussed. The role of WHO has to include the large scale international exercises planning in events with an international model of fast international medical teams. The staff is to be specially prepared and the programs for special courses are to be promoted. This national pattern of standards and protocols is a keystone for further discussion and proposal for all other organizing medical support in mass gathering events.

Conclusions:
♦ Analysis of medical intervention in various mass gathering events
♦ Issues from the best practices of humanitarian assistance
♦ Criticism of an approach on the application of universal standards,
♦ Necessity to play an international grand scale exercise.
Leo Latasch, Germany
Anesthesiologist, Medical Director EMS for the city of Frankfurt/Germany

Medical preparation for the Ironman 2015 in Frankfurt

Introduction: The Ironman course consists of a 3.8km swim course in a lake near Frankfurt, water temperature usually between 22°C and 24°C. Next is the 180km bike course, two-loop through the middle of Frankfurt, and into surrounding small villages. The course, which is closed to traffic, is hilly mixed with some flat sections. Third part is running, 42km flat run course which consists of four laps, next to the river Main, no shade and in the middle of the city. The challenge this year was the heat at 39°C in shade.

Methods: Certain precautions were taken from problem knowledge in former Ironman races. One is a lab at the arriving scene, an intensive care unit (tent), treatment beds for 100 patients, 1 boat on the river Main with doctors. Overall 22 ambulances (incl. cardiac units), 3 emergency cars with doctors, 35MDs, 250 EMTs. At the lake there were 20 boats, mostly kajacs and another 5MDs. On every running loop (10.5 km) there were 5 full aid stations, 2 “water stations” and every 1.5 km, 2EMTs.

Results: Because of the heat, 400 athletes didn’t start at all, nearly 600 stopped during course. From the 2100 finisher, 380 people had to be treated, mostly volume deficit. They received Ringer-lactat as volume substitute. 47 were transported to nearby hospitals, 7 were treated in an ICU for 1 day. All except 3 were released after 24 hours. 1 patient died after approx. 8 hours in hospital from severe brain edema and beginning rhabdomyolysis. The cause of death known as EHA (Exercise–Associated Hyponatremia), 2 days after the race, he was declared as brain dead.

Conclusions: As can be seen, all! Precautions with such an amount of manpower, proved to be necessary. If a case of EHA will be seen again, treatment with 3% hypertonic saline solution will be used.
Medical preparation for the J.P Morgan Corporate Challenge Serie 2015 in Frankfurt

Introduction: The Corporate Challenge strives to make a difference through a donation to a not-for-profit organization in each host city, and through our operations initiatives designed to make the Corporate Challenge the world’s greenest road race. This year over 72,000 runners participated.

Methods: Nearly every year, 1 runner dies out of cardiological reason, so we provide 2 emergency cars with doctors, 6 ambulances (incl. cardiac units), 1 motorcycle with medical equipment and 1 intensive care unit hosted in a truck. The major problem is the amount of runners who use up the whole street, so getting to the patient is extremely difficult. Because of the sheer size, 4 major aid stations and 11 small stations were set up as well as approx. 20 EMT troops walking along the route.

Results: Aside from one patient, there were no major medical emergencies. The usual „emergencies“ included abrasions from falling and circulatory weakness. 1 patient died of a heart problem. The emergency doctor started the resuscitation 3.5 min. after the initial call came in. Overall resuscitation lasted 60 min. including a lysis therapy after that, the patient was transferred to a hospital. 1 hour after arrival he was pronounced dead.

Conclusions: The major problem, reaching the patient in case of an emergency, cannot be changed. The runners are already starting in two different lanes (street) and there will be no more space available. It will be part of participants to check their health as the 5.6 km seems to be an easy goal to reach even without training and health check.
EXPO 2015: Hospital Preparedness for Emergency and Bioterrorism RESPONSE. The Italian Experience

Introduction: Italy has the challenge of hosting EXPO 2015 - The Universal Exhibition in Milan, from May 1 to October 31, for 6 months; more than 20 millions of people are expected. With it came the challenges of hosting a mass gatherings of unprecedented scale in the region, and the responsibility of ensuring the safety of participants during this period of time. Gatherings of this scale require complex planning to ensure the availability of adequate public health care during the event, and also must integrate the needs of the venue into the existing medical resources of the Region. AREU - The Regional Emergency Service Company of Lumbardy was called to organize the health preparedness and response for EXPO.

Methods: AREU worked in prepare an integration model of intra and extra hospital preparedness and response, involving 7 Major Hospitals, that should be ready in 20 minutes to receive victims for conventional major medical events and also non conventional events. Sacco Hospital, a Medical and University Center of Milan, was deputy to manage Bioterrorism events and Infectious Diseases Emergencies, as referral centre for the northern of Italy biohazard. On April 2015, AREU organized a big drill to test all medical system.

Results: It was the first time in Italy that was organized a complex integrated health care response for a Mass Gatherings events such as EXPO. AREU organized this integrated all-hazards of intra-and extra hospital response, suggesting a new approach.

Conclusions: Hospital disaster preparedness is critical to community safety, especially as evidenced by the last emerging global infectious outbreaks, or due to terrorist attacks, or disasters that severely taxed local hospital resources. Standardizing hospital disaster planning and emergency preparedness is became a priority of all countries, by expanding the use of a standard template for all hospitals applying an all-hazards approach.
Naama Constantini, Israel

Hadassah Medical Center

Medical Security of mass gatherings; recommendation of the Israeli National Committee
Raed Arafat, Romania

Ministry of Internal Affairs, Secretary of State, Head of the Department of Emergency Situations

Dealing with a mass casualty incident involving over 180 burnt patients including 88 critical patients in a Bucharest club fire

On the 30th of October 2015, at 22:32, calls on the 112 emergency call number started coming to the fire dispatch announcing a fire in a club. After the first teams arrived within 11 minutes from the call, they realised they are facing a major incident involving a high number of injured and dead persons. The red plan was declared and a major rescue and evacuation operation was run. Patients were transferred to 12 emergency departments. 88 patients needed intensive care and ventilation having suffered from severe burns including airway and lung injuries. 26 persons were declared dead on the seen and one more after arrival to one of the emergency departments. Dealing with this incidents involved the Department for Emergency Situations in cooperation with the Ministry of Health and Ministry of Defense. within the first week 39 patients were transferred outside Romania, 34 of them using Romanian Air Force CJ27 airplanes and SMURD medical airplanes as well as a NATO C17 airplane evacuating patients to several European Countries whilst 5 patients were transferred using private means to Israel and Germany. The final death toll up to now is 63 with patients passing away in Romanian hospitals as well as in hospitals outside Romania were patients were transferred. The presentation will show the way the intervention and decisions were taken as well as the challenge faced by the authorities caused by the media and social media leading to the resignation of the government.
The Regional Anaesthesia for Painful Injuries after Disasters (RAPID) Study: a randomized controlled trial protocol

**Introduction:** Earthquakes account for the largest burden of injuries among all geophysical disasters with lower extremity traumas being the most frequent. Inadequate pain management is common in disaster settings and regional anesthesia (RA) may serve to reduce pain over current standards of care. RA can be administered using either anatomic landmark or ultrasound (US) guidance; however no high-quality evidence on the use of RA in acute humanitarian response settings exists.

**Methods:** This double-blind randomized controlled trial will evaluate whether RA, either with or without US-guidance, can improve analgesic treatment for earthquake-related injuries in an acute response settings. The trial will prospectively enroll victims with serious lower extremity injuries and randomize them in a 1:1:1 allocation to: control with standard care (parenteral morphine, 0.1 mg/kg); intervention with standard care plus landmark-guided fascia iliaca compartment block (FICB); or intervention with standard care plus US-guided femoral nerve block (FNB). General practice humanitarian response providers trained via a focused course in RA will perform nerve blocks using 0.5% levobupivacaine. Blinding will be achieved using US sham activities and placebo injections. The sample size will be 207 patients (69/arm). Participants will be adults who provide informed consent with > 1 lower limb injuries.

**Results:** The primary outcome will be the summed pain intensity difference attained using a standard numerical rating scale and reported by patients through 24-hours of follow-up. Secondary outcome measures will include overall analgesic requirements, adverse events and participant satisfaction.

**Conclusions:** This trial will be the first to prospectively enroll patients in the aftermath of a major earthquake to assess whether RA administered by generalists, either with or without US-guidance, can reduce suffering from lower limb injuries.
The study will be informative on the topic of acute pain management as well as on the broader subject of performing interventional research in the setting of an acute disaster.
Intranasal Ketamine for Acute Traumatic Pain: A Prospective, Randomized Clinical Trial of Efficacy and Safety

Introduction: Ketamine has been well studied for its efficacy as an analgesic agent. However, intranasal (IN) administration of ketamine has only recently been studied in the emergency setting.

Methods: Single-center, randomized, prospective, parallel clinical trial of efficacy and safety of IN compared to IV and IM morphine for analgesia in the emergency department (ED). A convenience sample of 90 patients aged 18-70 experiencing moderate to severe acute traumatic pain (≥80mm on 100mm Visual Analog Scale [VAS]) were randomized to receive either 1.0mg/kg IN ketamine, 0.1mg/kg IV MO or 0.15mg/kg IM MO. Pain relief and adverse effects were followed and recorded for 1 hour.

Results: Primary Outcomes: Primary outcome was efficacy of IN ketamine compared to IV and IM MO, measured by “time to onset” (defined as a ≥15mm pain decrease on VAS), as well as time to and degree of maximal pain reduction.

Results: The 3 study groups showed a highly significant, similar maximal pain reduction of 56±26mm for IN Ketamine, 59±22 for and 48±30 for IV MO and IM MO, respectively. IN Ketamine was non-inferior** to IV MO with regards to time to onset (14.3±11.2 v. 8.9±5.6 minutes, respectively) as well as in time to maximal pain reduction (40.4±16.3) versus (33.4±18), for IN Ketamine and IV MO, respectively.

Conclusions: IN ketamine shows efficacy and safety comparable to IV and IM MO. Given the benefits of this mode of analgesia in emergencies, it should be further studied for potential clinical applications.
Ariel Hirschhorn, Israel

Head of Medical Identification Liaison Division, Chaplaincy Corps, Department of Oral and Maxillofacial Surgery, the Chaim Sheba Medical Center, IDF

Gahl Greenberg, Department of Diagnostic Imaging, the Chaim Sheba Medical Center; David S. Gertz, Forensic Identification Unit, IDF Medical Corps & Institute for Research in Military Medicine, Faculty of Medicine, the Hebrew University of Jerusalem; Ronit Turgeman, Forensic Identification Unit, IDF Medical Corps; Alex Dobriyan, Forensic Identification Unit, IDF Medical Corps &. Department of Oral and Maxillofacial Surgery, the Chaim Sheba Medical Center

Paradigm shift in victim identification - from forensic odontology to craniofacial forensics

Introduction: The central dogma of forensic odontology (dental identification) is a comparison and match of postmortem dental remains with ante mortem records - written notes, study casts, clinical images, radiographs, etc. Individuals with history of numerous and complex dental surgeries are easier to identify than those with little or no treatment. The teeth not only represent a valuable repository for unique and identifying features, they also survive many peri- and post-mortem events that disrupt or change other body tissues. Accurate forensic dental identification usually requires point-by-point comparisons of a complete set of as many as 21 intra oral x-ray images. Obtaining postmortem radiographic evidence by conventional x-ray techniques is an invasive, complex and time consuming process, while accuracy and image quality are very much dependent on the experience and manual dexterity of the forensic dentist and the degree of rigor mortis of the victim. Burn victims present a special challenge

Methods: Full body postmortem computerized tomography (CT) imaging is now being widely used in the forensic setting, sometimes replacing a formal autopsy. We designed a novel protocol using high resolution skeletal CT to produce high quality panoramic images of the facial skeleton and dentition, which is adequate for identification purposes, from post-mortem CT scans.

Results: The proposed protocol exhibits significant advantages over the existing scheme by following parameters:
1. Addition of craniofacial comparison points.
2. Extremely short data acquisition time.
3. High Image Resolution.
4. Lack of invasiveness in acquisition of the data.
5. Versatility of data transfer.

**Conclusions:** Our extremely rapid and non-invasive method enhances standard dental data collection with additional craniofacial findings, thus saving time while improving identification accuracy. Efficiency of this method is of particular importance in mass casualty events when conventional dental identification is not feasible.
Mauricio Lynn, *U.S.*
Professor of Surgery, Surgery, Miller School of Medicine, University of Miami

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**Breaking the great myths of mass casualty management**

**Introduction:** Over the years, many myths regarding management of disasters and mass casualty incidents were created. This presentation will discuss and break the ten most common myths.

**Methods:** Review of past disasters and mass casualty incidents.

**Results:**

The myths:

1 - Multiple agencies are necessary for better disaster planning. 2 - “All hazards approach”. 3 - Scene chaos can be controlled. 4 - Use of HEICS for SMCI’s. 5 - Availability of empty beds is the most important aspect of surge capacity. 6 - Use of tourniquets is dangerous. 7 - Pre-hospital patient tracking is key to control a SMCI. 8 - “Greatest good for the greatest number”. 9 - Large amount of blood is needed in a conventional SMCI. 10 - Scene decontamination is feasible for chemical SMCI’s.

**Conclusions:** Evidence will be presented to break the ten most common myths.
Ronit Krispin, *Israel*
*Risk&Crisis mngr, New Technology, 1Risk1Solution*

**The influence of new technology on the next financial, political or social crisis**

**Introduction:** Disaster can be prevented! We have access to the tools that may be the most critical factors to prevent the next disaster.

**Methods:** Social, financial end even political disaster can be prevented, if we just pay attention to all data that runs in our media. This data, mostly free, available at all times, owned by nobody (or everybody – this is for another time J). This huge data can provide us knowledge. This knowledge can provide us wisdom, wisdom to prevent the next disaster.

Study case number 1 – financial disaster
Study case number 2 – social disaster
Study case number 3 – political\business\health

**Results:** The common of all these stories is simple: we could know it. We should have known it.
We could prevent the disaster. We should have!

**Conclusions:** True, some disasters can’t be prevented. But most of them can. Let’s make sure we do it!
Yes We Can!
Cashing in on Pay for Results

Introduction:
The Emergency Department (ED) Pay for Results (P4R) program was launched in 2008 at 23 sites through the Emergency Room and Alternate Level of Care (ER/ALC) Strategy to meet the government’s goal of reducing the ED length-of-stay (LOS) target for the two publicly reported LOS indicators:
• Four hours for patients with minor or uncomplicated conditions; and
• Eight hours for patients with complex conditions

The program expanded over the years and currently provides funding incentives to 74 high volume EDs (with over 30,000 annual visits) across the province, which represents more than 80% of total ED visits in Ontario. The funding is used to support the planning and implementation of local solutions to reduce ED LOS, increase patient access to quality health services, and improve the patient’s experience.

Methods: The program’s funding methodology rewards hospital sites for both continued performance improvement as well as high sustained performance. Hospitals are ranked and scored against their peers on current performance and improvement over time for admitted LOS; non-admitted complex LOS; minor/uncomplicated LOS; time to physician initial assessment; and time to in-patient bed. The total score is then adjusted based on volume and funding is provided based on the final volume adjusted score.

Results: Despite increases in ED volumes, the ED LOS for complex patients has decreased by 4.6 hours as seen in June 2015 (9.4 hours) data compared to April 2008 (14 hours). The ED LOS for minor/uncomplicated patients in June 2015 was 4.0 hours compared to 4.8 hours in April 2008; meeting the provincial target. The 4 hour target for minor/uncomplicated patients was also met in eight out of twelve months in fiscal year 2014–15, showing sustainability of gains.

Conclusions: As demonstrated by the data, the P4R program has shown success in reducing ED LOS and sustaining gains despite increases in ED volumes.
Preparing for Imported Ebola Cases in Israel, 2014-15

Introduction: During the last outbreak of Ebola virus disease (EVD), preventing spill-out outside West Africa posed many challenges for developed countries. In Israel, although the risk of importing single cases was assumed to be low, the implications of local transmission were great.

Methods: The presentation describes the preparedness plan for EVD of the Israeli Ministry of Health, advised by the Epidemic Management Team, with its unique dilemmas and solutions.

Results: Key elements were a sensitive case definition, designation of a single treatment center for suspected and proven cases, construction of a mobile unit using industrialized negative-pressure tents, and a vigorous national training program. There were no patients with EVD in Israel, but a few suspected cases were assessed.

Conclusions: The Israeli plan may provide a template for emergency infectious-disease response in other geographically small countries.
Building Resilient and Sustainable Health Systems to Respond to Global Infectious Disease Outbreaks

Introduction: Infectious disease outbreaks including those associated with the Ebola Virus Disease, SARS coronavirus, and H1N1 influenza virus have demonstrated that an outbreak in one part of the world can threaten the health of the entire globe. Countless lives have been lost, the impacted communities have suffered insurmountable social and economic challenges and the cost of responding to these incidents can climb into the billions (USD). These outbreaks have also pointed to the fact that many countries and regions do not have adequate health care, public health, and other critical infrastructure in place to mitigate the systemic burdens that result from these large scale public health emergencies. The need for enhanced and sustainable capacity to plan for and respond to global infectious diseases and other public health emergencies is evident. As well, an augmented framework is needed to identify and effectively respond to the contemporary challenges and realities that these emergencies present.

In 2015 August, the Institute of Medicine conducted a three-day workshop in Accra, Ghana bringing together health systems thought leaders and other global experts to discuss gaps in the current approaches to detecting and responding to infectious disease outbreaks, document key successes and lessons learned from these events, and identify the characteristics of and optimum approaches to building more sustainable and resilient health systems that can respond to emerging infectious disease threats. This presentation will report on this workshop and highlight the opportunities discussed for building more resilient and sustainable health systems to detect and respond to emerging infectious disease outbreaks of the future.

Methods: A workshop planning committee composed of global health systems leaders was created to identify potential presenters and topic areas covered for this three-day workshop conducted in Accra, Ghana on August 5–7, 2015. Over 40 subject matter experts from across the globe were selected to present and another 60 participated in the workshop. Plenary and breakout session formats
were utilized to seek participant input and feedback.

Results: Pending the August 5–7 workshop.

Conclusions: Pending the August 5–7 workshop.
An Analysis on the Epidemiological Characteristics and Causes of First-aid Trauma in Urumqi, Xinjiang

Introduction: Trauma gradually becomes more and more frequent, bringing a vital challenge to the medical aid system. Urumqi, as the capital city of Xinjiang, located in the remote north-west of China, has its own characteristics in populations, traffic system, life styles, cultures, etc. So far, we have not founded any papers about the epidemiological characteristics and causes of trauma. This study was designed to analyze the data of first-aid trauma to provide references for emergency medical system.

Methods: The information of the first-aid trauma patients were selected from the database of Urumqi Red Cross Emergency Center in 2014. All the diagnoses were conducted in 3 days after the patients were sent to the hospital. We did a call investigation about the causes of the trauma.

Results: There were 8704 trauma cases collected from the system, occupying 15.17% of the total number (57395) of valid ambulance service and it was in the second place of all the prehospital diseases. The types of the trauma were combined injury (33.48%), bone fracture (24.67%) and brain injury (15.61%). The main causes of the trauma were traffic accident (32.34%), fall damage (18.92%), fight injury (18.37%), occupational injury (14.32%), etc. A total number of 6408 cases of the trauma patients aged between 20 and 60 were found in the system, taking 73.62% of all the trauma patients. 69.96% of the traumas occurred from June to December and the average cases per month was 870. The proportion of male (67.28%) is higher than that of female (32.72%) (P<0.01). The distribution of trauma were different among months and age groups, (P<0.01, respectively).

Conclusions: The trauma is one of the most frequent first-aid diseases in Urumqi. Middle age and Male population suffered from the main traumas. Therefore the medical emergency system should prepare and response for trauma.
Trial experience of the Czech EMS with transportation of an infection suspect in the Portable Isolation Units

Introduction: Safe handling and transportation of a patient infected with the highly contagious diseases, e.g. Ebola, SARS, MERS requires high level of biosafety measures. The Czech EMS Biohazard Teams performed a series of the field mock exercises with admission of infected suspects and their transportation in the Portable Isolation Unit (PIU) to authorized contagious diseases medical facility. Different design features and variety performance of the PIUs initiate concerns on microclimate conditions, comfort and safety of the patients during transportation operations including uncontrolled ingress of the disinfection liquids during precautionary disinfection treatment.

Methods: Microclimate conditions and physiology status were evaluated by the volunteers with purposely elevated core body temperature for +38.5 °C and placed in a PIU. Volunteer’s rectal, skin temperature and heart rate were recorded during negative/positive pressure ventilation regime of a PIU, including microclimate parameters such as external/internal temperature, humidity, air flow, air pressure, air exchange rate, and CO2 concentration.

Results: Safe and comfortable microclimatic conditions in a PIU with simulated fever volunteers are significantly influenced by the air exchange rate in a chamber. Design features of some PIUs require the improvements in order to avoid uncontrolled ingress of disinfection liquids inside of a chamber exposing a patient.

Conclusions: It was concluded, that desirable nominal air exchange rate inside a PIU should be in the range of 40-50 times/hour compare to majority of commercially available PIUs with the insufficient air exchange rates of 12-15 time/hour. Low air exchange rates represent the serious health risks of heat stress to real infected patients with a fever body temperature. Presentation listed additional technical parameters required for the PIUs.
Lion Poles, *Israel*

*Special Consultant to MOH, Cath Lab Unit, Kaplan Medical Center*

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**From SARS to EBOLA - The evolution of Temporary High Level Isolation Units In Israel**

**Introduction:** Public health crises are opportunities for creative solutions for challenges of IC (IC). Preparing for SARS and Ebola uncovered gaps in the response system to adequately isolate patients with fatal communicable disease. In 2003 the problem was mainly shortage of Airborne High Level Isolation Units (HLIUs). During the Ebola crisis the problems were lack of isolation facilities that could appropriately contain the complex logistics and IC issues.

**Methods:** Isoark is a portable, temporary negative pressure HLIU that can be stored and timely erected with operational flexibility. This is an end product of collaboration between experts from the MOH – who specified needs and clinical operational processes – and industrialists of Beth-El Industries, that translated these to operational designs. Inputs by end-users were assimilated.

**Results:** Development of ISOARK following SARS epidemic, included a trial in Kaplan Medical Center’s ICU. Goal was a HLIU with ICU capabilities for patients with airborne transmissible disease. Subsequently, Isoarks were successfully used in number of ICUs; 24 were procured by MOH for the NSP and hospitals were trained for their construction. Facing Ebola, an urgent need was raised for larger space for doffing PPE and for dealing with highly contagious patient’s secretions. Available HLIUs were considered unsatisfactory. Several modifications were done in Isoark regarding size, addition of a washable floor, a lavatory and an improved disposal system. The ISOARK II was erected in the hospital designated for Ebola patients. Currently, 4 HLIUs adapted for the strict demands posed by hemorrhagic fever patients are operational.

**Conclusions:** Innovative solutions can be made for IC dilemmas encountered while preparing for a Usual Biological Event. Close collaboration between planners, end users and private industry may tackle these difficulties in time before the crisis evolves.
Clive Goodchild, UK
Technology Planning Manager, Innovation and Growth, BAE systems
Aneta Michalkiewicz, Astri Polska; Brigitte Serreault, Airbus Defence and Space and Patrick Sittaramane, Airbus Defence and Space

EDEN - End User Driven Demonstration for CBRNe

Introduction: The End–User Driven Demo for CBRNe Demonstration Project called EDEN, funded by the European Commission 7th Framework Research Programme on Secure Societies, represents the biggest research effort ever made in the CBRNe area in the European Union, with the primary objective to provide solutions to improve CBRNe resilience and allow enhanced interoperability and effectiveness between CBRNe operators. EDEN primarily aims at validating, through large-scale demonstration innovative solutions for improved CBRNe resilience to meet End–User needs.

Methods: With this project the European Commission intends to bring to a high level of maturity the resilience capacity of the EU society when it comes to CBRNe events. The demonstration activities are centered on three different sets of scenarios concerning Biological and Chemical threats in the food chain, attacks to industrial facilities and accidents involving toxic chemicals and Radiological, Nuclear and Explosive, emergencies arising from attack to nuclear facilities and from radiological dispersal devices Demonstration serves also as a test platform for EDEN Store - the open but secured platform with simple mechanisms for suppliers and users to enter new components, tools, systems and procedures in a secure and standardized way.

Results: An end–user assessment of needs and gaps has been completed which have been used to drive the selection of the EDEN tools for the demonstration activities. THE EDEN Store currently holds over >300 tools in the catalogue and radiological and chemical virtual, table–top and field demonstrations have been completed.

Conclusions: EDEN will demonstrate enhanced CBRNE resilience through these three themes which have been defined, and will be assessed by end users from numerous different member states and several non EU countries.
EDEN STORE AND ITS TOT

Introduction: EDEN is characterized by a highly innovative approach to develop CBRNE research activities in the EU, linking end-users, researchers and industrial experts. The focal points of the project are three large-scale Demonstration actions scheduled at the end of the research activities to validate the solutions sought in EDEN project climaxing in the EDEN (Trade) Fair in Brussels at the end of the project.

Methods: Based on user needs and in order to satisfy them following some objectives of EDEN projects has been determined:
♦ Develop a “system of systems” namely EDEN Toolbox of toolboxes (ToT)
♦ Integrate in EDEN ToT as much as possible of the existing tools improve standardization
♦ Take a special care of the population
♦ Implement a response with respect to the multiplicity in the situations

Results: The EDEN concept is based on the development of a CBRN Toolbox of Toolboxes that has the ability to integrate already existing Tools and Toolboxes, to upgrade them, develop new tools and propose a comprehensive larger approach. It is accessible by a Store: an open but secure portal, accessible to all with different levels of access, rights and confidentiality accessible to a wide spectrum of stakeholders.

The EDEN Store can be accessed and connected in static mode, virtual mode (for simulations and training) and in real time.

It includes functions such as:
♦ A User restricted forum and user networks,
♦ A scientific helpdesk providing scientific expertise and access to expert networks,
♦ a Market place to support the market development and the EU and associated countries competitiveness.

Conclusions: The aim of the EDEN project will be realised with the EDEN Store and EDEN Toolbox of Toolboxes approach and checked and improved throughout the demonstrations.
Jürgen Schreiber, Germany

Secretary General and Head of Section “Medical CBRN-Protection, Deutsche Gesellschaft für Katastrophenmedizin e.V. / German Society of Disaster Medicine
Ulrich Grüneisen, Vize President/ DGKM e.V

An innovative tool for initial medical assessments in CBRN-MCI - the PRIOR-CBRN system

Introduction: A mass casualty event has a disproportion between the medical needs of the affected persons and the capacity of first response on site. Each affected person has the right on adequate medical treatment at the same time. The medical supply has to prioritize the vital threatened victims and to manage every essential medical issue for adequate relief along its process-chain, this for each affected person. Known triage protocols are assessing injured victims, not ill patients. Either it needs highly experienced physicians use them, or easy handling protocols for other medical responders lose lots of vital threatened patients to lower triage-clusters. It was to develop a Triage-System to ensure the fast, easily but precise medical assessment of each affected person by each medical responder.

Methods: Evaluation of selected protocols, development and evaluation of PRIOR

Results:
The PRIOR-System consists of three parts:
The Protocol allows doing a standardized medical assessment, Indicators allow an additional guidance and the diamond tool to manage needs, consequences and medical operations.
The evaluation showed that 99% of the vital injured concerned classifies correctly and 92% of ill persons concerned classifies correctly. PRIOR sees 100% of the slightly injured or ill persons concerned properly but also arranges downed to the vital threat affected.

Conclusions: Additionally to PRIOR it is developed a PRIOR-CBRN System. The PRIOR-CBRN-protocol has three further steps, regarding the patient symptom related results of a CBRN-body exposition. The PRIOR-Indicators and the PRIOR-Diamond were also expanded to CBRN. PRIOR-CBRN should be evaluated in the EDEN project.
Clive Goodchild, UK

Technology Planning Manager, Innovation and Growth, BAE Systems
S Broatch, BAE Systems; D Jordan, BAE Systems and C Hetterley, BAE Systems

Generic Ground Station

Introduction: The Generic Ground Station (GGS) is a portable tactical command post designed to support the Bronze Level Incident Commander (IC) with integrated situation awareness and assessment for operations involving multiple manned and unmanned assets. The GGS accepts real-time surveillance information feeds from multiple assets and presents them in context on a map, or as separate pictures / videos / data displays, as appropriate.

Methods: The primary role of the GGS is to provide sufficient information to allow the GGS operator - the Incident Commander - to successfully task the available surveillance assets in response to higher level mission aims. Although originally intended for use with multiple unmanned vehicle (UV) assets, it is capable of including unmanned fixed surveillance assets, manned vehicle assets, and human beings (first responders) in the field.

Results: So far within the EDEN project the GGS has been employed at RN field exercises in Poland for communication with and monitoring of the first responders and their human-worn radiation sensors. Remote operation via the Internet has been demonstrated at a RN table-top exercise, with the GGS, operation control centre and first responders actually situated in different countries. The GGS and first responders with chemical sensors have been demonstrated in a large-scale industrial chemical accident field exercise in Belgium.

Conclusions: During the remainder of the project we expect to deploy the GGS in further RN and chemical field trials, thus demonstrating its value in facilitating integration and interoperability of fixed and mobile, manned and unmanned assets and first responders, providing the benefits through appropriate sharing of information and more effective coordination and control.
Lessons learnt from EU projects to improve civilian FR’s protection against CBRNe threats

Introduction: International events remind us that CBRNe incidents have multiple facets and concern the civilian population. Our goal is to take care of victims and to keep FRs safe while performing their tasks.

Methods: We had the opportunity to participate in EU projects and to work jointly with subject matter experts, manufacturers, end-users, decision makers and CBRNe institutes. The CBRNe guidance was monitored through academic reports, field exercises, laboratory testing and technological development. A survey conducted in ten countries helped identifying FR’s tasks at the scene and PPE worn.

Results: It is of utmost importance to define the real protection needs according to the level of risks (liquid, solid, vapor, particles, aerosols), the working zone, the duration of protection, the type of FR’s tasks (special forces, firefighters, EMS) and the level of confidence and training (which can be sporadic unlike military or professional responders) and, as a result, the requested type of PPE. A civilo-military exercise conducted in France highlighted the need to strike a balance between the level of protection and the level of FR’s operational efficiency (low physiological burden, negligible performance degradation factor, greater confidence provided by robust and easy use communication means and wide field of vision).

Conclusions: The first step is to build and share a common civilo-military doctrine, training and exercises, keeping in mind interoperability capacities. The second step derives from user requirements and is a twin track approach: professional FR would be allocated special logistical means and less trained civilian FR would be provided with an easy donning, breathing, wide vision PPE. The will to create a European community of end users should help establishing links among national CBRN emergency authorities dealing with recommendations and standardization needs.
Bruria Adini, *Israel*

*Faculty Member, Department of Emergency Medicine, Ben-Gurion University of the Negev*

Ivonne Herrera, PhD, DARWIN consortium

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**Expecting the unexpected and knowing how to respond - the DARWIN project**

**Introduction:** Recent crises (have shown that a resilient approach to preparing for and dealing with such events is needed. DARWIN aims to improve response to man–made and natural expected and unexpected crises, affecting critical infrastructures and social structures.

The main objective is to develop evolving European resilience management guidelines. These will improve the ability of stakeholders to anticipate, monitor, respond, adapt, learn and evolve, to operate efficiently in face of crises. Guidelines will be presented for easy usage and maintenance. To enable dynamic, user–friendly guidelines the project will adapt innovative tools, test and validate the guidelines, and establish knowledge on implementing guidelines to improve resilience.

**Methods:** A multidisciplinary approach is applied, involving experts in the field of resilience, crisis and risk management, social media and service providers in the Air Traffic Management and healthcare domains. To ensure transnational, cross-sector applicability and long–term relevance, a Community of Crisis and Resilience Practitioners (CoCRP) was established, including stakeholders and end-users from other domains and critical infrastructures and resilience experts. The CoCRP will be involved in an iterative evaluation process to provide feedback on the guidelines.

**Results:** Main results from the DARWIN project include 1) Catalogue of resilience concepts and requirements for resilience guidelines; 2) Generic resilience management guidelines; 3) Process and storage, which facilitate easy access and update; 4) Tools for simulation, serious games; 4) Resilience Guidelines adapted to specific domains Health care and Air traffic Management; 5) Community of Resilience and Crisis Practitioners (CoCRP); 6) Training modules on resilience guidelines; and 7) Pilot demonstration Health care and Air Traffic Management.

**Conclusions:** Target beneficiaries of DARWIN are crisis management actors and stakeholders responsible for public safety, such as critical infrastructures and service providers, which might be affected by a crisis, as well as the public and media.

**Keywords:** Resilience,Resilience Engineering,Serious Gaming,Social Media,Risk Reduction,Risk Management,Disaster Management.
DARWIN Partners: SINTEF (Norway); Technische Universität Braunschweig (Germany); Carr Communications International Communications Consultants (Ireland); Deep Blue SrL (Italy), ENAV (Italy), Istituto Superiore di Sanità (Italy); Totalförsvarets forskningsinstitut (Sweden); Katastrofmedicinskt centrum (Sweden) and Ben-Gurion University of Negev (Israel)
Ofer Merin, Israel

Director- trauma unit, cardiac surgery, Shaare Zedek medical center

Sara Goldberg, Shaare Zedek medical center and Avraham Steinberg, Shaare Zedek medical center

Treating terrorists and victims: a moral dilemma

Introduction: Terror attacks have become an international threat. In many of these incidents the terrorists themselves are injured and evacuated to medical centers for care. Medical personnel worldwide find themselves treating injured perpetrators of terror, raising fundamental legal, ethical and emotional issues.

Methods: There were 11 terror attacks in Jerusalem, Israel, between October–December, 2014 alone. Two of the injured terrorists arrived at our institution, alongside with their victims.

Results: Following standing triage protocol, the terrorists and their victims were prioritized. In one case the terrorist was prioritized to undergo surgery first since his medical condition was more critical than that of the victims.

Conclusions: The paper deals with the legal, ethical and emotional aspects of providing medical care to terrorists. Clinicians confronting with treatment of terrorists face a moral and emotional conflict. Therefore it is imperative to stress and clarify that their duty and obligation is to preserve life and restore health. Judgment should be the exclusive provenance of the legal system. physicians should practice their art without discrimination and with a clear conscience. We propose some guidelines to help clinicians facing this difficult moral dilemma.
Eli Yaffe, Israel

Director, Public & International and Training Division, Magen David Adom & Ben Gurion University

Moshe Z. Abramowitz, Hebrew University Hadassah Medical School; Haim Y. Knobler, Hebrew University Hadassah Medical School & Peres Academic Center

Priorities in preliminary, onsite triage and assessment in multiple casualty situations

Introduction: Mass casualty disasters lack the possibility to provide care for all of the victims. The ensuing necessity of triage is associated with profound ethical issues.

Methods: When triage it is required, there is an obligation to conform with humanitarian laws and honor human rights, therefore, triage should follow established medical criteria. Main ethical considerations include: who to treat first, who to treat last – or abandon entirely, and where should the few resources available be invested.

Results & Conclusions: These dilemmas should be specifically addressed within the timeframe during which the needs of the victims are more abundant than the ability to treat.

Theoretical and practical issues from past mass casualty events will be presented and discussed. The issue of treating terrorists, who caused the events, will be highlighted, concerning ethical and practical elements.
What can we learn from the resilience and post traumatic growth of Holocaust survivors?

Introduction: Research on Holocaust survivors in Israel has revealed that the common result of their massive psychological trauma was not necessarily post-traumatic stress disorder, but often better mental health and resilience. Recent population-based surveys revealed that the notion about the survivors’ substantial psychopathology was biased.

Methods: Most of the survivors, including those who overcame long-standing continuous atrocities, revealed evidence of post-traumatic growth. This understanding has led to a development in the lessons learned from the survivors’ experiences.

Results & Conclusions: One of the insights gained from working with survivors is the preparation of military and civilian high-risk groups for trauma exposure. Skills and practices that were helpful for Holocaust survivors were identified and adapted to create programs for mental preparedness and resilience. The findings must be considered when planning future PTSD prevention and treatment of survivors of massive psychological trauma.
Changes in Bio Ethics from the Nirenberg trials until today

Introduction: The current regulations of bio-medical research ethics are based on the conclusions of the Nuremberg trials, following the trauma of the 2nd World War.

Nazi doctors accused of war crimes and crimes against humanity, including performing medical experiments, had argued in their defense that no international law or guideline differentiated between legal and illegal human experimentation.

The summary of their trial, in 1947, included a section on “Permissible Medical Experiments”, known as the “Nuremberg Code”, the first international guidelines for human experiments.

Methods: Since the Nuremberg Code, several revisions and updates were added by the World Medical Association beginning with the “Declaration of Geneva” in 1948, and the “Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects” in 1964, that has been amended 9 times since. Additional bio-ethical restrictions added include the international guidelines of ICH-GCP (“Good Clinical Practice”), the requirements for manuscripts submitted to biomedical journals, national health laws, and more specific regulations drafted by different agencies and academic organizations.

Results & Conclusions: Current bio-ethical regulations have changed dramatically since “the Nuremberg Code”, and became over-complicated. The practice guidelines for interventional research in medicine enforces the researchers to invest immense financial and staff resources, making research feasible mostly to massive pharmaceutical companies, often using exclusive research companies. Paradoxically, these regulations hampers also research of post traumatic victims such as victims of genocide and other atrocities – even though their research usually does not include bio-medical invasive procedures or medication. Unique ethical dilemmas of PTSD research particularly under disaster conditions will be discussed.
Nufar Wolfer, Israel
Aviv Ohana, Home Front Command

Community Medical Preparedness Branch
Medical Department, Home Front Command

Experience dealing with the devastating earthquakes in the world shows that actions by citizens before, during and immediately after the earthquake have the greatest impact on reducing the number of casualties and property damage. Emergency response teams will also experience shortages in manpower. Significant organized help typically arrives a day or two after the incident, with their order of preference determined by the overall situation. Overall, there is no substitute for preparedness of the individual and groups in these situations. A solution to this gap in capability is to train of the population to extract light casualties immediately after an earthquake, and in the early days following until the arrival of professional forces.

The need for training in hospitals
As part of the training of hospitals for preparing and dealing with emergency scenarios, the HFC conducts a training program specifically suited for the hospitals so they are better equipped to cope with an earthquake scenario.

The purpose of the training
The goal is the establishment and training of primary self-help teams in hospitals in the case that the hospital is damaged. These teams consist of a variety of officials at the hospital and provide assistance immediately after a disaster strikes. They use simple equipment/measures in their rescue operations that exist in hospitals.

How the training will be executed
The course is taught by instructors from the SAR School of the HFC.

The training consists of several topics:

♦ Chapter of introductions.
♦ First aid.
♦ Firefighting.
♦ Civil defense and SAR.
The training program and exercises

In 2014–2015, a total of 11 training programs were conducted in hospitals. In order to maintain the knowledge and experience among the trained staff, HFC plans to hold an exercise specifically for this purpose, as part of an earthquake drill.
Jorie Klein, U.S.
Director, Trauma Program Rees-Jones Trauma Center
Parkland Health & Hospital System, Dallas, Texas

The Role of Nurses in Preparedness for mass casualty event in the United States

The International Council for Nurses defined nursing competencies for disaster nursing (World Health Organization and International Council of Nurses, 2009). They define competencies as the “level of performance demonstrating the effective application of knowledge, skill and judgment”. This implies that the nurse has the ability to perform specific activities that are outlined in the standards of care or standards of operation. The ability to gain the defined competencies is related to educational preparation, experience, specific training and mentorship programs. The International Council for Nurses defined common competencies for disaster nursing. Their goal is to ensure that the nurses who respond globally to disaster events have common competencies that have been deemed as essential. These competencies provide the building blocks to develop evidence-based practice.

The phases of the disaster response will utilize different combinations of the disaster competencies. The phases of the disaster response are the pre-event phase, the event, and post event phase.

Pre-Event
♦ Planning
♦ Preparedness & Mitigation
♦ Prevention

Event
♦ Response
♦ Health Care Management

Post-Event
♦ Recovery
♦ After Action Review
♦ Revisions of Response Plan
**Phases of Disaster Response**

Nurses have a key role in all phases of the disaster response. Nurses manage different populations, use critical-thinking and decision-making skills in their routine job functions. Nurses use their problem solving skills daily to address unpredicted circumstances in their work environment. Disaster nursing requires that the nurses build disaster management skills and incorporate their current knowledge base and skill set. In 2010, the American Nurses Association (ANA) identified barriers and opportunities such as the legal and ethical responsibilities that needed to be addressed for nurses responding to disaster. ANA identified that the federal government has the task of defining a seamless system that has measures in place to facilitate coordination, and ensure safety of the workers (American Nurses Association, 2010).

The nurses’ knowledge, skills, adaptability and critical-thinking skills bring significant value to all phases of disaster response. Nurses must be prepared for the various roles they may be requested to fulfill during an event. Nurses must understand how the system is integrated into the overall community response. Education that includes participation in disaster exercise, utilization of the incident command system and management of specific events such as biological, chemical, and terrorist events prepares the nurses for an expanded role.
The Experience of Emergency Nurses who have worked in the ED during a disaster

Introduction: Hospitals play an integral role as a place where people seek refuge and treatment when a disaster has impacted a community. Because of this nurses working in the emergency department (ED) are positioned as first responders triaging, treating and managing the care of people affected by the disaster. While there is a plethora of literature written about the healthcare response to disasters, there is a relatively small amount written about the role and experiences of nurses working in the ED and many of these publications are narrative accounts describing the ED response to a single event.

Methods: The aim of the research was to explore the lived experience of working as a nurse in the ED during a disaster. The study was underpinned by hermeneutic phenomenology, informed largely by van Manen. Nurses from across the world were interviewed about their experiences of working in the ED during different types of disasters. The data was analysed using a thematic analysis and guided reflection of the existential aspects of the experience.

Results: Findings from the study were presented as three different perspectives of the experience. The first perspective is a view of the experience through an existential lens. The second perspective includes five separate moments of disaster response which emerged from the experience of participants in this study and the final perspective draws together the moments and the existential discussion to discuss what it means to be a nurse working in the ED during a disaster response.

Conclusions: This study is the first of its kind to explore the commonalities that exist in nursing in the ED during a disaster across different geographical locations and different disaster types. This presentation will provide an overview of the study with a focus on the findings and recommendations of the research.
The Role of Nurses as Global Citizens

What is a “Global Citizen” and what is required to be one? Many refer to themselves as “global citizens”, but few know what it means or how to fill this role. The United Nations refers to those who are “world aware” – who serve others as they would wish to be served; and who live with a sense of urgency for all humankind. Citizenship usually refers to a legal and/or political status of a member of the community or state, with rights and responsibilities, governed by a general standard of behavior. In many countries, it is one way we may actually contribute to the political process in a complex and diverse society – beyond borders. The respect of physicians and nurses, and others in the healing arts is acknowledged worldwide; and those who have provided comfort, eased pain, and healed wounds in times of crisis have always been welcomed responders. In emergent times, medical teams who are qualified to respond will always be needed. Global health is in danger. The shortage of health workers and increasing demands for their skills threatens our ability to provide for our own, and less to outreach to the world. Through well-developed national response systems, leadership and collaborative partnerships at home and around the globe, nurses can and do serve as global citizens. This presentation will introduce the role of the disaster nurse as a global citizen, and the many responsibilities that accompany that distinction.
Gila Hyams, *Israel*

Director of the Teaching Center for Trauma Emergency and MCS, Trauma Coordinator and Director of Nursing, Rambam Health Care Campus, Haifa, Israel

**Trauma Nurse Coordinators (TNC) Role In MCS – Learning from the past planning for the future**

**Key words:** Trauma Coordinator, Mass Casualty Situation, Lessons Learned

**Objective:** Mass Casualty Situations are a professional challenge for nursing and medical teams.

In every MCS, there is great importance for effective functioning of the teams that manages the medical treatment.

**Method:** The role of the Trauma Coordinator in MCS due to terror attacks, War and other different scenarios was developed upon the everyday function of the TNC as a leading figure in the hospital trauma management.

The main role of the TNC is clinical and focuses on advancing quality of care, assisting the caregivers at the treatment bays with complex medical procedure and advancing the treatment according to the ATLS and assists in insuring the patient path at the different phases of the care especially in allocating the limited resources in a mass casualty event.

The presentation will deal with lessons learned from the trauma coordinators medical team experience all over Israel in dealing with casualty of terror attacks and wars.

Lessons Learned refers to preparing the treatment processes in the emergency department, advancing the clinical care and coordinating the management care plan and discussion making in using the hospital resources for the trauma patient needs.

The presentation will emphasize the coordinated treatment with a multidisciplinary team in all elements of the trauma system within and outside the hospital, the development of computerized systems in order to manage the care of the patient and the creation of database that is available for the entire range of caregivers.

**Conclusion:** The role of a Trauma coordinator in MCS is a vital factor in quality of care and coordination of the multidisciplinary trauma team. A teamwork organization will insure Excellent Performance.
Michael Frogel, *U.S.*  
*Principle Investigator- NYC Pediatric Disaster Coalition, Pediatrics, Maimonides Medical Center*

Avram Flamm, NYC Pediatric Disaster Coalition; Edward Conway, Mt. Sinai Hospital; Arthur Cooper, Harlem Hospital- Columbia University School of Medicine; Katherine Uranek, NYC Department of Health and Mental Hygiene; Mordechai Goldfedder, NYC Office of Emergency Management; George Foltin, Maimonides Medical Center

**Had The Time Square Bomb Exploded: How Would Your Emergency Room Have Responded to a Surge of Pediatric Victims?**

**Introduction:** On May 1st 2010, there was a failed car bombing in Times Square, New York City (NYC) which would likely have resulted in many critically injured children. A survey in 2011 determined that only 22% of pediatric critical care (PCC) beds in NYC are available at any given time. A MCE may result in an overwhelming number of critically injured children that exceeds PCC capacity. The NYC Department of Health and Mental Hygiene (DOHMH) created a Pediatric Disaster Coalition (PDC) to address gaps in disaster preparedness. Currently, the PDC includes 21 NYC hospitals and has helped 15 hospitals create PCC surge plans; thereby almost doubling capacity.

**Methods:** Seven hospitals with PCC surge plans tested them, with PDC assistance, via full-scale exercises (FSE). Hospitals used actors, including school children, and simulators for victims. Actors were moulaged and given an injury description card. The exercises included Emergency Department (ED) triage, patient evaluation, imaging, consultations and eventual disposition to surgery, hospital wards and PCC unit. After action conferences were completed to determine lessons learned.

**Results:** FSEs demonstrated gaps in: ED activation and notification, local ED incident command, patient tracking, identification of ED surge space, clearing ED upon notification, staffing, creating supervised overflow areas from ED for non admitted children. The need for family mental health center, one way patient flow, supplies, pharmacy, employee needs and one page protocols for unusual events was also demonstrated. Plans were operationalized based on after action reports and lessons learned.

**Conclusions:** FSEs of ED and PCC units, review of lessons learned, and after action plan revision are essential to operationalize pediatric surge plans. The ED plays an
essential role in providing for the unique needs of children and their families during a pediatric MCE. Joint ED and PCC surge planning are an integral component of pediatric disaster planning and exercises.
What is health impact caused by a nuclear accident?

Introduction: After the Fukushima Daiichi nuclear power plant accident in 2011, a considerable attention has been paid on radiation exposure level among the residents in Fukushima. However, there is a lot of health and healthcare problems caused by the nuclear accident, which is not owing to radiation. So far little incentive has been made on gaining holistic view of emerging health problems after the nuclear accident. Our aim is to share quantitative data about these issues and to appeal for the need of systematic approach to global assessment of health impact by the nuclear accident.

Methods: Experience data was collected from the experience of medical doctors and firefighters working at on-site hospital. Health data of the residents were collected by the Soma City local government.

Results: After the evacuation order by the national government, those who did not have access to the information, such as the elderly living alone, were left within the evacuation zone. This is shown by the fact that within a week after the evacuation order, 7 emergency calls were made from within the evacuation zone. Another case is that long-term evacuation to temporary housings deteriorate health of the elderly. Health check-ups conducted by Soma City local government revealed increased risks of muscle weakness, obesity and diabetes are apparent 1 year after the disaster. Not only health problems among the residents, those of decontamination workers are increasingly a burden of health facilities in Fukushima. Being seasonal workers under precarious employment, prevalence rates of pre-existing chronic conditions such as hypertension and diabetes are high among these workers. As a result, healthcare for these workers are now an increasing burden on the frontline health facilities.

Conclusions: To establish effective DRR for a nuclear accident, holistic view on health is required.
ISRAAID Medical Mission to Nepal, Responding to the Earthquake

Introduction: Following the 7.4 earthquake, ISRAAID manned a team of four doctors, an intern and three nurses who flew to Nepal. Upon arrival it became clear that the Kathmandu valley was saturated with medical teams, Nepali and foreign, and help was needed in remote villages.

Methods: The team supplemented the medical equipment with medication bought at local pharmacies, and made its way by car, on foot and by helicopter to three remote villages where the team was the first responder.

Results: Much of the medical work was primary care treatment, with several cases of injuries related to the earthquake. Medical care in these remote places is not adequate during normal times, and totally absent after the calamity. Statistics of the 634 cases seen by the team will be presented. A third of the patients were younger than 13 years. There was no gender predominance. The minority of the cases (21%) were surgical, and the most common medications used were painkillers and vitamins.

Upon the return of the team to Kathmandu they helped to assure adequate treatment to four premature babies born to Israeli parents, who were stranded due to the second earthquake, until they could be evacuated to Israel. The dedicated work of team member Adrienne Neta is greatly appreciated.

Conclusions: A small and mobile team is effective in responding to the needs of remote and inaccessible communities following a disaster.
Chinese military medical team contribute to clinical management of Ebola virus disease in Sierra Leone

**Introduction:** 3 Chinese military medical teams with 115 professionals from the 302 military hospital of China were successively deployed to Freetown, capital of Sierra Leone during the Ebola outbreak. Through exploring series of efficient clinical managing measures, they carried out Ebola virus diseases (EVD) patients screening and clinical treatment effectively, completed the medical aid mission safely.

**Methods:** Chinese military medical teams has explored China–Africa joint clinical managing modal in EVD holding and treatment (EHTC) center which leaded by Chinese PLA staff and collaborated with local health care workers. Standard staff training and evaluating, scientific staff collocating and classified managing stratagem funded the staff management system in China–Sierra Leone EHTC. Classified EVD case isolating and treating management, specialized infection prevention and control (IPC) expert responsible system ensured the safety and validity of EVD case treating procedure. Self sufficient pharmaceuticals and medical equipments provision system, computer assisted logistics materials application and supplement management were funded to support clinical work.

**Results:** Based on the re-constructed China–Sierra Leone EHTC, a proper of international to local staff collocating ratio as 1:2.65 was set and functioned. Through establishing 68 categories with 243 items of clinical regulation and IPC standard operating procedure (SOP), over 500 staffs have been trained and evaluated strictly, 773 EVD suspected patients have been admitted and treated (285 of them were confirmed, survival rate was 51.23%) from Sep 16, 2014 to March 18, 2015. Notably, Chinese military medical team has achieved the miracle of zero infection among its medical professional and zero cross infection among all inpatients, and always ranked top in weekly assessment of clinical quality indexes among 22 international medical teams in Freetown.
Conclusions: Experiences obtained through this mission, including staff collocation, clinical operation management, EVD case management, EHTC infection prevention and control should be very valuable references for other outbreaks control in the future.
Chief Complaints Pre and Post 2015 Earthquake in Rural Nepal

Introduction: Characterization of presenting complaints is key to establishing locally appropriate health care systems, resources, and facilities. Little data exists on the changes in chief complaints (CC) before and after a natural disaster. This study characterized the baseline CC of a village in rural Nepal and determined how these complaints changed immediately post-Earthquake.

Methods: We conducted a retrospective analysis of CC logs from Himalayan HealthCare (HHC), specifically from their work in the Lapa village. HHC provides free services in rural locations and records presenting complaints. This group was present pre- and post- the April 25, 2015 Earthquake. Data was aggregated from physician logs and trends between presenting complaints extracted.

Results: Overall 1,227 patients were seen, evaluated, and treated by HHC. During the 2.5 day service trip pre-earthquake a total of 366 patients presented for care (146.4 patients/day), with gastrointestinal (GI) (20%), orthopedic (13%) and ophthalmologic (10%) issues comprising the 3 most common CC. During the 5 day post-earthquake trip, 861 patients presented for care (172.2 patient/day). Primary CC were GI (38%), orthopedic (15%) and respiratory (7%). There was a significant change in CC for diarrhea, which rose from 6% to 23% pre-and post earthquake, respectively. Only 4 other diagnoses increased in frequency: GI (excluding Diarrhea), non-orthopedic trauma, orthopedics, neurology (which was driven by headaches and migraines).

Conclusions: As expected, we found an increased demand for trauma and orthopedic services after the 2015 earthquake. There was a significant increase in diarrheal disease, likely from the disruption of infrastructure; i.e. safe ingestible water, damaged toilets leading to open defecation and poor plumbing. More studies are required to better characterize the needs in these remote locations to strengthen the infrastructure and health systems to be more resilient in such disasters.
Carmen Bell, *U.S.*

_Deputy Director, Armed Services Blood Program, Falls Church, VA_

**The US Military Blood Support in Response to National Disasters**
Richard Gonzales, U.S.

Director, Grants Management & Gov Sponsored Research, TerumoBCT

Blood Medical Device Industry Considerations in Supporting Responses to National Disasters

Introduction: The blood Medical Device Industry (MDI) plays a critical role in ensuring a safe and adequate blood supply is available not only in normal circumstances but especially during a national disaster. The Standards of American Association of Blood Banks require blood banks to have a disaster plan as well as supplier qualification. Prior coordination and planning between blood centers and their suppliers of medical supplies is crucial to minimize the response time needed to ramp up blood collections.

Methods: Over the last twenty years, the US National Response Framework (NRF) has matured and is organized into fourteen Core Critical Capabilities (CCR). Although all CCRs are important, Core Capability 12 (Logistics and Supply Chain Management) and Core Capability 13 (Public Health, Healthcare and Emergency Medical Services) are the two areas which have the most immediate impact on providing a safe and adequate blood supply. An examination into previous national responses to various disasters (9/11 and Hurricane Katrina) provides several lessons learned to improve future responses.

Results: The US NRF is a living document which is constantly updated and provides a broad tiered framework requiring a broad level of coordinated support from industry, federal and local governments, blood centers, hospitals and individuals. The MDI must be able to meet the demand for supplies at the right time, place and quantity, in a cost effective manner.

Conclusions: The Lessons Learned from previous responses to national disasters is critical to continued improvements in preparing for the next disaster. Close coordination between all key responders will ensure a rapid reconstitution of the affected infrastructure. Blood centers must also look at alternatives to existing operating procedures for a flexible response to ensure a safe and reliable blood supply is available.
Eilat Shinar, Israel
Director, National Blood Services, Magen David Adom

The Israeli National Blood Response Program

Introduction: Israel continuously faces repeated hostile actions of terrorism, military operations and wars. The national blood preparedness plan secures self-sufficiency and availability, while minimizing outdating and wastage of this important resource. The program includes close collaboration between civilian and military authorities.

Methods: The National Blood program is operated by Magen David Adom (MDA) - a civilian, statutory, non-for-profit organization, responsible, by law, for the National Emergency Medical Services (EMS) and the Blood Services (BS). The BS responsibilities include blood collection from volunteer donors, testing, components’ preparation, supply and daily monitoring of the national inventory. Blood requirements for peace and emergencies are determined by the Ministry of Health.

Results: The daily operation is performed by the MDA-BS professional management and staff (trained phlebotomists, certified laboratory technicians) enables the yearly collection of 280,000 whole blood units, preparation and supply of 650,000 blood components to all the hospitals and the IDF. During emergencies, when a significantly increased inventory is needed, the regular staff is reinforced by a special designated phlebotomists unit (IDF Reservists Medics) and civilian laboratory technicians, who are regularly trained by MDA-BS, to preserve professional skills.

During Multi-Casualty Events (MCE) the EMS provide an early notification to BS, based on triage in the field, including the number and severity of the injured, and the trauma centers to which they are being evacuated. The BS proactively contact the admitting hospitals, to review their inventories and place their orders, which are urgently deployed by ground or air transportation.

Conclusions: The Israeli blood program is a model for a centralized national system, operated by a civil organization, with strong collaboration with the military. The national blood management plan in emergencies is based on the routine same program. “Real-time” reports from the EMS to the BS facilitate immediate response and blood supply during emergency situations.
Avraham Yitzhak, *Israel*

*Combat and trauma branch- IDF, Medical Corps, IDF*

“**My brother Keeper**” plan and the IDF RDCR protocol

**Introduction:** The IDF force build-up plan termed “My brother’s keeper” has resulted in tremendous changes in the reorganization of the medical units at the field level. The plan has also entailed changes and adaptations in the way the wounded get medical care at the point of injury.

**Methods:** We revise the IDF’s multi-year force build-up plan and examine its relevance to combat casualty care during OPE (Operation Protective Edge).

**Results:** The Case Fatality Rate during OPE was 9.2%, the lowest the IDF ever had during any of its major conflicts.

**Conclusions:** Combat Casualty Care is an intricate process, the quality of which we can examine on the battle field. The endpoint of decrease in case-fatality rate is a result of a multi-year and multi-layer force build-up plan.
Mark Yazer, U.S.

Professor of Pathology at the University of Pittsburgh, Associate Medical Director of the Centralized Transfusion Service in Pittsburgh

Whole blood—What’s Old is New Again

There is extensive military experience with the use of whole blood (WB) in the resuscitation of trauma patients. Much of this is borne out of the necessity of operating under austere conditions. However, its use in civilian trauma resuscitation is limited. There are some potential advantages of using WB instead of component therapy in this setting including a smaller fluid volume, less dilution of platelets and coagulation factors, and simplifying the logistics of the resuscitation as all of the required components are provided in one bag instead of up to 4. Furthermore there is some in vitro data suggesting that cold stored platelets might be more functional than those stored at room temperature. A potential limitation of using WB for trauma resuscitation is that in order for it to be issued before the recipient’s ABO blood group is known, it must be group O to avoid a hemolytic reaction. However, in using group O WB, recipients who are non-group O might be at risk for hemolysis from the anti-A and -B in the WB’s plasma component. In December 2014, the University of Pittsburgh Medical Center changed its practice for trauma resuscitation and has been using group O WB in these patients. Group O positive male donors (to mitigate the risk of transfusion related acute lung injury, TRALI) whose titers of both anti-A and -B are <100 (immediate spin, no incubation) are selected. Currently only male trauma patients are eligible to receive WB. Initially up to 2 units of WB could have been transfused per patient, and no hemolysis or transfusion reactions were detected in the >50 patients that were treated. The protocol now allows for up to 4 WB units to be transfused per patient. Studies of the safety and efficacy of using WB are ongoing.
Deborah Kim, U.S.

Senior Research Scientist, Health and Analytics/Medical Readiness and Response, Battelle Memorial Institute

Beth Hembree, RN, Battelle Memorial Institute; Marci Cattlett, MSN, RN, Battelle Memorial Institute; James Beddard, FACHE, Battelle Memorial Institute; Kevin Arthur, CHEC III, Primary Children’s Hospital/Intermountain Health Care


Introduction: The US Centers for Medicaid and Medicare Services (CMS) issued a proposed rule (CMS 3178-P) in December, 2013 for Federally Funded Medicare and Medicaid participating providers and suppliers. This proposed role affects not only hospitals but 16 other entities such as Long Term Care, Home Care, Rural Health Clinics, Organ Procurement Organizations, Rural Health Clinics, End Stage Renal Disease (dialysis) etc. The proposed rule mandates that organization develop not only an emergency preparedness plan but must also have an emergency preparedness program. This is a major shift in regulatory policy for US health care, and comes on the heel of widespread healthcare service disruption in several large US cities after hurricanes Katrina/Rita and Super Storm Sandy.

Methods: We evaluated the proposed CMS regulations for hospitals, and developed gap analysis tool, crosswalk and an inquiry process which compared these rules with existing Accreditation Standards. There are three (3) deeming entities that accredit US hospitals: The Joint Commission (TJC); Det Norske Vertias-GL; Health Facilities Accreditation Program (HFAP). The evaluation process took place in a no-threat environment, and provided a measurable “snapshot” of the organization’s capabilities. Hospital leadership at all levels including the one of the hospital medical directors participated in the process.

Results: The tool and process were tested in a large pediatric hospital which had a well- developed Emergency Preparedness plan and program. Gaps both expected and unexpected were identified. The process and written evaluation provided recommended actions, and underscored the importance of the Emergency Manager’s Plan and well developed program.

Conclusions: Building a culture of preparedness will be an organizational expense and change for many of the entities now required to have plans and processes in place. Existing Healthcare coalitions may be one way to ensure the success of this process and ensure a resilient healthcare community.
Inter-Professional Education for Disaster Preparedness

Introduction: Inter-Professional teamwork has been sited by the Institute of Medicine as one methodology to reduce medical errors. In a disaster it is critical health care professionals work collaboratively instead of in isolation. Incident Command Systems encourage and support collaboration among professionals, agencies and jurisdictions. However, in many After Action Reviews, communication and cooperation between these entities is identified as needing improvement. It then follows that including a disaster context for inter-professional education should reduce errors and enhance preparedness efforts.

Methods: This is a quasi-experimental design using a single intervention to expose health professions students to inter-professional practice with a pre/post test as the measurement. The study population is students enrolled in Basic Disaster Life Support (BDLS) at a state university in the United States. A series of eight videos featuring the role of specific health professions, in the context of disaster preparedness, were developed and presented during the transition between speakers. As BDLS is inherently multidisciplinary, a control group was part of the study to determine if findings were specific to the intervention or may be representative of BDLS alone.

Results: This study is ongoing. Preliminary findings do not indicate the intervention is statistically significant. However, findings do indicate that strong beliefs about other professions are evident across all the disciplines represented and that being exposed to other professions has not changed those beliefs. As additional data is collected these findings could change.

Conclusions: Students in this sample may have already entered their professional studies with bias regarding interactions with other professionals. Additional study is needed to identify where in the processes beliefs about other professionals are formed and what interventions would significantly impact inter-professional work in disaster preparedness.
Yung-Fang Chen, *U.K.*

Senior Lecturer, *Energy, Construction and Environment, Coventry University*

Shy-Yuan Maa, Ming Chuan University; Jieh-Jiuh Wang, Ming Chuan University; Yi-Yin Yang, Ridge Emergency Management and Security Affair Consultants Co. Ltd; Huan-Chang Hsiao, Taichung Fire Department

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An evaluation of the ‘Emergency Response Exercise Programme’ in Taiwan

**Introduction:** The ‘Emergency Response Exercise Programme’ is the first series of hybrid control-post and computer-based exercises that target at training tactic decision-makers to respond to disasters in Taiwan. The aim of the programme is to improve the coordination, communication and decision making skills of staff working in the Emergency Operation Centres (EOC). To improve the effectiveness of the exercises, the programme has five major features: flexible scenarios, localised contexts, integrated decision-making support systems such as hazard mapping and real-time GIS systems, search and rescue operation support system, dispatch systems, and database of disaster operations resources. systems and performance evaluation, recordable and traceable data. The programme does not only contain scenarios for different types and scales of natural and man-made hazards, but also provides scenarios to train personnel from different agencies and at different levels that are involved in responding to disasters.

The aim of the paper is to (1) explain how the ‘Emergency Response Exercise Programme’ was designed; (2) to assess the effectiveness of the exercise and participants’ performance; (3) and to provide recommendations for the future exercise designers.

**Methods:**

The Utilisation of questionnaire and hot debrief to evaluate the participants’ performance during the exercise. The criteria for evaluation include both technical and non-technical skills.

**Results:** It is shown that most participants felt they have done well in the teamwork and coordination; while in the technical skills, most of the participants felt they performed well in the decision making and able to seek for resources and information. Most of the participants felt that they were not familiar with the emergency plans and operational procedures.
Conclusions: The exercise utilises a full scale evaluation and debriefing methodology to enable participants to review and reflect on their performance post disasters. It is possible to share the successful experience with wider audience in the disaster management discipline.
Diana Vinitsky Hertzog, *Israel*

*Head of community medical preparedness section, Medical department, Home Front Command, IDF*

Aviv Ohana, Home Front Command, IDF

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**Exercising Hospital Evacuation in Israel**

**Introduction:** Health systems worldwide are engaged in assessing various emergency situations that could affect their performance and ability to provide top quality emergency care. Most theories relate to the concept of medical response, but usually do not deal with scenarios in which health care institutions themselves are affected by the emergency that demanded the response. In such scenarios, health institutions are required to participate in the response and to take measures to reduce the potential harm to patients, staff, visitors, and the institution’s infrastructures, all the while giving medical care to its patients.

**Methods:** Since 2012, five hospitals were exercised: four geriatric hospitals and one psychiatric hospital. The stakeholders that participated in the exercise were: the Home Front Command, all the emergency rescue organizations, representatives of the District Health Office and Local Authorities.

**Results:** Some lessons have to do with protocols and procedures, some with operational response, and some pertain to equipment and infrastructure. Following are the main lessons that have emerged so far in the exercises:

♦ It is important to plan the evacuation of respirators based on equipment and personnel that are available in the hospital rather than relying on external equipment or personnel.

♦ In order to expedite the evacuation of ventilator dependents, ambulances must be well managed in order to allow for evacuation with other types of vehicles.

♦ Any evacuation vehicle must be accompanied by a staff member of the evacuating hospital that will ensure the arrival of the evacuees to their hospitalization destination.

**Conclusions:** scenario of evacuation of a hospital is an extreme scenario, and we should continue exercising of hospitals in this scenario. The process of preparing each exercise thoroughly is essential in ensuring significantly improved preparedness, well-seasoned hospitals and the ability to deal with emergency hospital evacuation scenarios in particular.
Disaster and Conflict Medicine for Medical Students

Introduction: As Global Health becomes established within the undergraduate curriculum, there is a need to introduce medical students to the principles of humanitarian care and the work of international organisations with whom they might one day work. The Global Health curriculum is embedded in the standard biomedical course and integrates lectures with practical experience in the community and disaster workshops. The aim of the course is for students to graduate with competencies in Global Health which equip them for work with vulnerable communities at home, and in conflict and disaster zones.

Methods: Students receive lectures on disaster management, conflict and health, humanitarian assistance, refugee health and post-conflict development. They undertake practical attachments with local families including refugees, displaced communities, migrant workers and local organisations. Medical students meet and work directly with patients suffering the consequences of conflict and disaster. They undertake detailed case studies, research the health consequences of conflict, disaster and displacement, and gain first-hand experience of the determinants of health of vulnerable communities living in and fleeing conflict zones. The course requires a written case report and presentation of their work both to the class and to supervisors in communities in which they undertake their placements.

Results: The practical component of the course has increased over the last three years. Analysis of the course shows that practical work considerably enhances the coverage of learning competencies in Global Health. It also brings home real issues that patients face in accessing healthcare, communicating their health needs and in coping with adverse determinants of health.

Conclusions: The practical component of the course has been particularly important in developing knowledge of disaster medicine, humanitarian principles, refugee health, the Geneva Convention, human rights, asylum and immigration, humanitarian law and the socio-political determinants of health. Students gain skills in cross-cultural care, needs assessment and humanitarian diplomacy.
Khetam Hussein, *Israel*

*Director of infection control service, Infectious Disease Unit, Rambam Healthcare Campus*

Shimon Reisner, Rambam Healthcare Campus; Kobi Moskovitz, Rambam Healthcare Campus; Galit Rabino, Rambam Healthcare Campus; Orna Eluk, Rambam Healthcare Campus; Sigal Warman, Rambam Healthcare Campus; Liora Otis, Rambam Healthcare Campus

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### Preparing for treating Ebola patients in a dedicated Hospital

**Introduction:** Following the Ebola virus disease (EVD) outbreak in Africa, Rambam Healthcare Campus has been selected by the Ministry of health as referral center for EVD patients in Israel. Here we describe the process of establishing a dedicated department and training the staff.

**Methods:** As the only tertiary hospital in the northern of Israel it was very important that treating EVD patients will not interfere with other hospital’s daily activity. Also, it was clear that one important goal is the safety of the hospital’s staff and other hospitalized patients. So, it was decided to establish a new separated department in an isolated area in the underground fortified hospital. It composed of four isolation tents: two serving as patient’s rooms and two for a point of care laboratory, separate areas for doffing and donning personal protective equipment, nurses’ station, staff area, medical waste disposal area, bathrooms and a changing room in the entrance of the isolated area. only authorized staff are allowed to enter this area.

The next step was to train the volunteered staff intended to work in the department and the emergency room staff to recognize and treat suspected EVD patient. Guidelines for every team and process were written. And short movie of the doffing and donning PPE process was prepared.

**Results:** In four weeks the EVD department was established. Staff including nurses, Physicians, laboratory workers and housekeeping was trained intensively during the first month. Since then the staff is receiving a periodic training to keep them informed and qualified.

**Conclusions:** choosing a separate area to establish the EVD department was very essential and will enable us to treat EVD patients without interfering with the hospital activity. Choosing a qualified staff and training them contribute enormously for their preparedness when the time comes to treat the real patient.
Shulin Li, China

Dean, Department of administration, Urumqi Red Cross Emergency Center

Tingting Zhang, Urumqi Red Cross Emergency Center; Yuan Zhang, Urumqi Red Cross Emergency Center; Yanlin Feng, Urumqi Red Cross Emergency Center; Jianghong Dai, Department of Epidemiology and Health Statistics, School of Public Health, Xinjiang Medical University; Wensheng Liu, Health Bureau of Urumqi

The Epidemiological Characteristics and Disease Spectrum of the patients with Prehospital Medical Emergency Service in Urumqi, Xinjiang

Introduction: The disease spectrum of the patients with prehospital medical emergency service has changed a lot with the development of social activities and the life style. The analysis of the disease spectrum is helpful to medical resource allocation for the government. Urumqi, as the capital city of Xinjiang, far west of China, has representative characteristics of population, traffic system, life style, climate, etc. While no reports were found about the prehospital disease spectrum in Urumqi. This study aimed to analyze the epidemic characteristics of prehospital disease in Urmqi to provide the reference for the emergency system.

Methods: We collected the information of the patients with prehospital emergency medical service from Urumqi Red Cross Emergency Center. The Chi square test was used to compare the difference of the diseases proportion between ages, genders and seasons.

Results: The total number of 251978 emergency calls were received by emergency center, 57395 (22.78%) of them were effective to get the ambulances service. The top 6 rank of the disease are alcoholism(6.8%), accident trauma(6.2%), death(6.0%), fall damage(3.6%), injured wound(3.5%), and heart diseases(3.4%) respectively. The proportion of male(59.7%) is higher than that of female(39.8%) (P<0.05). Further more the proportion of >60 years old population is the highest age group (38.6%). The alcoholism more frequently occurs in January to February, While the traffic trauma arises in May to September and Heart diseases appears the peak in February to March.

Conclusions: The alcoholism and trauma are the frequent prehospital diseases due to certain season and life habits. Therefore the medical emergency system in Urumqi Xinjiang have to prepare and response for frequent diseases with the scientific medical resource allocation and plan.
Designing the Emergency Department for improving Infection Control

Introduction: The ease of travel in this modern era increases the risk of exposure to infections readily, as currently noted by the spread of Middle East Respiratory Syndrome Coronavirus (MERS CoV) and Ebola viruses. Emergency Departments (ED) have an important role to rapidly identify these patients and isolate them, and prevent the risk of transmission to other patients as well as healthcare staff. The physical design and infrastructure of the ED is an essential component of its infection control measures to minimize this risk.

Methods: At Singapore General Hospital, many lessons were learnt during the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003 which led to changes in structural layout, workflow processes as well as ventilation systems.

Results: At points of entry in the ED, patients are screened using a rapid questionnaire on their travel, fever history and symptoms. This screening is done outside the ED in a specially planned area before formal ED triage is done. The rationale is to identify the high risk patients as early as possible and channel them to be further managed in a designated fever area of the ED. This fever area has undergone structural re-engineering and upgrading of the ventilation system. Infected air from patients in this area is prevented from staying in the area and circulating in the corridor, by an exhaust system that filters it to the outside environment. Along with these infrastructure changes, great emphasis is also laid on staff training to remain highly compliant with guidelines and safe practices.

Conclusions: With the challenges of new and emerging infectious diseases and increasing public awareness, appropriate ED design should be taken into consideration from the initial planning phase of building hospitals. For existing hospitals, renovation and upgrading plans must incorporate these necessary changes.
Physician Attitude towards Mandatory Ebola Training: not all agree

Introduction: Emergency Physicians (EP) were extensively involved in Ebola preparedness. Despite rigorous requirements for ongoing training, little has been reported as to EP attitudes towards these mandated activities which often included time consuming and uncomfortable donning and doffing drills. The purpose of this study was to assess the perspective of EPs working in an urban teaching hospital with a large emergency medicine residency.

Methods: A nine-question online survey was sent to all 25 EPs eliciting their views on the institutional requirements for Ebola preparation, which included online and didactic instruction as well as repeated requirements for demonstrating the use of personal protective equipment.

Results: 23 of 25 (92%) unique responses were received. The median respondent’s years of practice were 11–15. 83% agreed that they knew “most” of the national guidelines and another 13% had read “some” of the guidelines. All 23 Attendings (100%) stated that they knew all or most of the donning or doffing procedures. Opinion was almost evenly divided as to whether the time and effort given to Ebola was “way out of proportion to its clinical significance”. 13/23 (57%) agreed or completely agreed with that proposition; 10/23 (43%) disagreed or were neutral (p=0.38). 35% opined that the institutional response to Ebola was “good”, while 13% categorized it as “a terrible waste of time and effort”. 78% clearly indicated they would work a shift knowing they would have to care for an Ebola patient; 3/23 (13%) stated they would not.

Conclusions: Academic EPs vary widely in their opinions regarding institutional responses to Ebola. Approximately 13% believe that Ebola preparations amount to a waste of time; a similar proportion would avoid coming to work if required to care for an Ebola patient. Despite conflicting opinions as to the value of the Ebola response all physicians expressed familiarity with personal protective equipment use.
Basheer Halhal, *Israel*

*Israel Defence Forces Medical Corps*

Yuval Glick; Inbal Galaor; Ran Ankory and Elon Glassberg - *Israel Defence Forces Medical Corps*

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**PERTUSSIS epidemic amongst soldiers during basic training - the need for updated protocols**

**Introduction:** Pertussis is a highly contagious, vaccine preventable URDI, caused by the fastidious gram negative coccobacillus Bordetella pertussis.

The incidence of the disease has been rising, possibly due to the introduction of the scPV. PEP is also available. No widely acceptable diagnosis and treatment algorithm has been introduced for cases of widespread outbreaks of the disease. The acPV is included as part of the Israeli national vaccination plan, with a 93% coverage of the 4 doses vaccination amongst the Israeli population.

**Methods:** Following the detection of the primary cases, a suspected epidemic was declared. Clinical and laboratory surveillances commenced. Specific antibody ELISA assays were performed for those suspected of being infected. The data was retrospectively analyzed.

**Results:** 1600 soldiers were clinically surveyed using a questionnaire and physicians’ interviews.

38.5% (60) of the 151 soldiers suspected to be infected were found to be serologically positive (IgG > 70 IU/ml). A PEP protocol, contained azithromycin 250 mg bid on the first day, followed by 250 mg once daily for 4 days, was prescribed to every soldier for whom there was a high level of suspicion for infection and met the criteria for our PEP protocol. The PEP protocol was also implemented in sub-units where more than 30% of the soldiers were suspected to be infected or more than 3 cases were serologically proven.

**Conclusions:** The effects of the post vaccination waning immunity amongst a vaccinated population were demonstrated, thus the need of maintaining a high index of suspicion of B. pertussis as a causative agent during respiratory diseases epidemic in young soldiers. The outbreak raises the question of the need for a booster dose prior to recruitment.

The current pertussis epidemic detection, diagnosis and prophylaxis protocols will be discussed, as well as the need for further improvements.
David Fuchs, *Israel*

*Trauma Co-ordinator, Emergency, Ziv Medical Center*

Mazal Bar, Ziv Medical Center; Alexander Braslavsky, Ziv Medical Center; Alexey Bukin, Ziv Medical Center; Oleg Efremov, Ziv Medical Center; Arkady Rapoport, Ziv Medical Center; Evgeny Solomonov, Ziv Medical Center

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**Disaster preparedness in small district hospital**

**Introduction:** Casualties from the Syrian civil war have been treated in Ziv medical centre, the closest hospital to the Israel–Syria border, since February 2013. These casualties are retrieved by the Israeli Defense Force, resuscitated in the field and brought to Ziv Medical Center. The way in which the level of injury and state of the patient is communicated is dependent on information available from the patient and what the IDF medical team are able to communicate.

**Methods:** Over the last two years, the lines of communication between IDF medical teams and Ziv Medical Centre have evolved. A key issue has been to establish the expected time of arrival in the hospital, the injury severity score and the exact injuries. Details communicated for each patient and correlation with preparedness of hospital staff and the Trauma Room have been recorded and analysed over the last 2 years.

**Results:** Analysis of the results show that the estimated time of arrival in Ziv Medical Centre varied from the actual time from 30 minutes to 6 hours. The effect on staff availability and preparedness of the Trauma Room was significant as, in two thirds of cases, patients arrived after normal working hours, when both staffing levels for nurses and for specialist doctors were sub-optimal.

**Conclusions:** Co-ordination of hospital transfers is a priority in optimising the care of patients. Moreover, as levels of civilian unrest and conflict increase worldwide, smaller hospitals must liaise more closely with emergency services and military staff in order to improve communication.
Paramedics’ attitudes regarding expanding the authority to determine death by a paramedic

Introduction: Until recently, in Israel, determination of a person’s death was authorized exclusively to physicians. Three years ago, the Ministry of Health authorized MDA paramedics to “declare death in specific cases without the presence of a doctor.” The aim of this study is to assess the attitudes of Israeli paramedics towards their expanded authority, in different scenarios taking into account occupational seniority.

Methods: cross-sectional study using snowball sampling distributed to qualified paramedics in Israel. Data was analyzed using SPSS and included descriptive and analytic approaches (frequencies, t-tests, ANOVA).

Results: Of 234 paramedics approached, 68 completed the survey (29% response rate), mean age was 30.3 (s.d. 11.8) years. A significant difference was found between the attitudes of experienced versus young paramedics as to expanding the authority for pre hospital determination of death, subject to the approval of a physician by phone. This finding was confirmed in the following scenarios: infants – up to 1 year, terminal cancer, drug overdose.

Paramedics in the study were reluctant to accept the authority without a physician’s confirmation by phone, in each scenario examined.

Conclusions: Paramedics expressed a desire to accept expansion of their authority to determine out of hospital death in most common cases, subject to a physician approval by telephone. Experienced paramedics were more interested in expanding their authority to determine death than young paramedics in the examined scenarios.
Ido Hadari, *Israel*

*Director, Communications, Maccabi Healthcare Services*

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**MCI+Media=??**

**Introduction:** The terrorist threat requires a comprehensive plan of action for trauma centers across Europe, the US and other countries. Alongside with medical and logistical preparations, it is important to develop clear policies regarding the interface between the Media and the Hospitals during an MCI. So far, hospitals have mainly dealt with domestic events but terror attracts attention from all over the world. Immediately after the attack, dozens of media crews from different nations rush to the site, especially if among of the injured are citizens of another country. Each media team has a different work routine and different “red lines” when it comes to reporting, compared to those of the country where the attack took place.

**Methods:** The presentation will include a breakdown of the challenges facing the hospital in a media context, the major planning stages for facing these challenges, recommendations and highlights based on Israeli experience and more.

**Results:** From the experience accumulated in Israel, after many years of mass casualty events, it is quite clear that a coherent policy alongside an appropriate preparation process increases the hospital’s ability to function without interruption while maintaining the patients’ rights to privacy as well as respecting the freedom of the press and freedom of speech.

**Conclusions:** The hospital is a key component of the home-front. It has an important role to play in public and national morale, especially during times of crisis. Working with the media in the right fashion can emphasize the strength and fortitude of the hospital, represent the heroic stories of injuries among first-response teams, and of course the high quality care those injured in the attack receive from the hospital staff.
Hong Chen, China
Colonel, professor of military medical support management, chief physician, vice president of Southwest Hospital, The Third Military Medical University
Lei Han, Hongyan Zhang - Department of Medical and Educational department, The Third Military Medical University, Chongqing 400038, China

The practice and enlightenment of Southwest Hospital’s participation in Lushan earthquake medical rescue

On April 20, 2013, an earthquake measuring 7 degree on the Richter Scale occurred in Lushan, Sichuan province. Southwest hospital respond immediately and dispatched a 58 persons rescue team rushed to the disaster area, implemented scientific and effective medical rescue, played an important role in disaster relief. Compared with Wenchuan earthquake relief and Yushu earthquake relief, Lushan earthquake relief showed more rapid response, more orderly organized, more effective of civil-military cooperation, and more timely task switching. The medical relief effect was greatly improved. On the basis of earthquake disaster medical rescue practice, we think that in the future the construction of command mechanism and legal system, the precision of the rescue ability relying on information system should be enhanced strengthened, and practical emergency medical equipment should be developed.

Keywords: earthquake, medical rescue, military
Odeda Benin Goren, Israel

Disaster Preparedness Consultant, Self Employee

Oleg V. Mazurenko, Department of Disaster Medicine, Kiev, Ukraine; Avi Hirsch, Global Medical Horizon, Givataim, Israel; Svitlana Pkhidenko, Emergency Response & Coordination, WHO Country Office in Ukraine; Dorit Nitzan, WHO representative to Ukraine and Head of WHO Country Office in Ukraine

Preparedness Ukraine Nurses for Nursing Work in Disaster

Introduction: The WHO and MASHAV (the Israeli MFA) provided a Disaster Preparedness Workshop for thirty Emergency Department’s Nurses and Mobile Emergency Primary Health Care Units Nurses in Ukraine. Half of the nurses came from East Ukraine after being exposed to military conflict, facing reality of wound and death, with limited medical capabilities.

The workshop provided the nurses the knowledge of Trauma Care, Emergency and Disaster Medicine in crisis.

No doubt: the impact of nursing work in crisis is significant; yet, the Ukraine nurses have limited authorities and responsibility. The need to increase access to quality health services in crisis, emphasis the important roles of nurses and the need of nursing empowering, especially during these days.

Methods: In order to evaluate baseline knowledge and level of knowledge at the end of training participants completed pre- and post- tests. The workshop designed as interactive workshop, combine lectures, simulations, exercise and table top drills.

Results: Comparison of the results of participants’ knowledge based on pre- and posts Tests; The average percentage of correct answers to test questions; pre test: 58% post test: 92%.

The participants practiced and successfully acquired skills in triage, in use of diverse analytical tools for decision making in times of disaster and emergency, learned how to fulfill key roles in the disaster, emergency preparedness and medical response. Participants increased their capacity for planning and response for Conventional and Non-Conventional Mass Casualty Events.

Conclusions: The structure of the workshop allowed the participants to achieve knowledge and skills which are necessary in order to facilitate advanced management in the trauma system. The interactive formula and the use of
simulation and tabletop drills allow the participants to experience managerial situation and decision making process that usually are not part of their work, and they realized that they are capable to face these challenges.
**Krongdai Unhasuta, Thailand**

*Academic Professional, Faculty of Nursing, Mahidol University*

Nongnuch Petchroung, Mahidol University, Thailand; Napaporn Phosri, 3Chaopraya Apaipubej Hospital, Thailand; Rungnapa Akharakunlachartl, Mahidol University, Thailand

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**Strengthening communities respond to emergencies and disasters**

**Introduction:** Community participation in disaster response is the active involvement of people from communities concerned in assessing risks and vulnerability, determining their own priorities in dealing with the problems that they face, and preparing for effective response to emergencies and disasters. The aim of this study is to evaluate the ability of community how to handle disaster risk reduction. For the reason, if people understand the problem, they will more readily act to solve it.

**Methods:** This study was a lesson in building strong communities respond to disaster preparedness, consisted of 2 phases. The first phase was 1) public hearing to analyze the previous disaster situations and management, and 2) determination learning content about disaster response. The second phase was 1) developing community program respond to disaster and workshops for the public, 2) workshops for community volunteers, and 3) visiting the communities for assessing how the participants develop their communities.

**Results:** There were 484 volunteers, 246 villages participated in the first phase. They concluded 1) Floods, drought, forest fire, flash flood, and road traffic were occurred continuously, 2) lately and inadequate assistance, and 3) lack of knowledge about emergency response. In the second phase, there were 352 community volunteers from 151 villages through workshops. The participants were satisfied with the workshops of more than 90%. From the visit to the village found that most of the village initiated system of preparedness, most had established village center services and assistance networks, the village map, and provided up-to-date information about disaster by the broadcast tower village.

**Conclusions:** Strengthened community is correlated with the process of community involvement at all stages. Recognition of the problems and designation community program to deal with true of disaster situation is the way not only to promote strong communities but also sustainable development.
Introduction: Background: Emergencies and disasters create conditions that can affect people with disabilities. Nurses must acquire tools to care for these vulnerable populations. Hearing impairment can interfere with the communication between nurses and patients and position the deaf and hard of hearing person at a disadvantage in the healthcare system. This study aims to explore the barriers to communication with nursing staff from the point of view of hearing nurses.

Objectives: To describe means of communication between deaf and hard of hearing persons and the healthcare system; to identify barriers to care; to suggest solutions for improving access for deaf and hard of hearing people.

Methods: A cross-sectional survey of 435 nurses was performed hearing nurses in Israel in pre-hospital and hospital settings. A self-administered questionnaire was developed inquiring about various aspects of the nurses interaction with deaf and hard of hearing patients. Sample was random at 15 out of the 24 general hospitals in Israel. Hospitals varied in terms of size, ownership, geographic location, etc.

Results: About one quarter of all respondents perceived themselves as having good capabilities to respond to a deaf patient’s emotional (24.4%) or technical (23.4%) needs. Training was significantly associated with the nurses’ perceived capabilities to provide assistance for both emotional and technical needs. Perceived capabilities to provide assistance for technical needs significantly decreased with the age of the nurse.

Conclusions: Recommendations: To place interpreters in healthcare facilities or use web based communication programs in order to increase linguistic accessibility.
of nursing services to deaf patients. Sign language and other communication methods should be inherent to nursing education programs.
Amran Jaber, Israel
Psychiatric Nurse Supervisor, Nursing management, Kfar Shaul

A Very Challenging Quest: Breaking Bad News by the Nurses Staff

Introduction: Breaking bad news is giving information that changes one's perspective of the future, causing emotional and behavioral problems persisting over time. Nowadays we’re faced with receiving injuries resulted from hostile acts and terrorism, as nurses of the medical staff, we deem it necessary to be prepared to deal with giving bad news to families of the injured and deceased. All of the above had raised the idea of passing training courses team that qualifies the nurses’ staff to give bad news.

Methods: In this study we examine the effectiveness of such a course on nursing staff of intensive care units and recovery units, who’d received the courses by qualified clinical instructors from the psychiatric field. Prior to commencement of the course, the nurses were asked to answer a questionnaire that examined the extent and depth of their understanding of the breaking bad new and emotional trauma, their desire to deliver bad news, and the ability to speak of the topic, and after the course, they answered the same questionnaire again. We checked the courses’ effectiveness and the nurses’ progress.

Results: 50% (before the course) versus 90% (after the course) Define bad news correctly, and demonstrated knowledge of theoretical issue, 40% (before) versus 95% (after) expressed a desire to deliver bad news, 10% (before) vs. 65% (after) expressed confidence in their ability to deliver bad news.

Conclusions: These preliminary results show that this course helps understanding the complexity of breaking bad news, provides tools that help in providing it. However, in order to turn it into a national project, it has to be passed at various hospitals in the country, in order to adjust it to diversity of society, and to include other issues such as serious illness or medical condition.
Xinhui Li, China

Head, Department of Nursing, School of Medicine, Shihezi University

Hongwei Zhang, The First Affiliated Hospital, School of Medicine, Shihezi University, China; Shugang Li, Department of Public health, School of Medicine, Shihezi University, China; Mingzhu He, Nursing Department, School of Medicine, Shihezi University, China

Investigation and Analysis of Disaster Cognition and Family Disaster Preparedness of General Practitioners and Community Nurses in XPCC

Introduction: The researches of doctors and nurses related to disaster in China, mainly concentrate on the first aid skills, rescue knowledge and post-disaster psychological assistance. Response is very critical during a disaster and after, but with the focus of disaster management was preposed, the importance of pre-disaster preparedness has been increasingly highlighting, and community doctors and nurses are playing an important role in this field. To find out the situation of disaster cognition and family disaster preparedness of general practitioners and community nurses in XPCC(Xinjiang Construction and Production Corp)is the objective.

Methods: The questionnaire included the knowledge of disaster and pre-disaster family preparation was conducted to 240 trainees in general practitioners and community nurses certificate training program in 2013 and 2014.

Results: General practitioners and community nurses in XPCC considered that the local common disaster types are serious traffic accidents (62.9%), earthquakes (22.1%) and heavy snow (20.4%). In family disaster preparation, all of family members know the fire escape route accounted for 54.2%, the families which reserved the amount of food and bottle water for 3 days accounted for 22.9% and 28.8%, 43.3% of the families have home first aid kit. The top three of items brought into the emergency escape are: commodity(food, water and medicine) (88.8%), mobile phone (86.3%), bankbook and valuable goods (82.5%).

Conclusions: It is very necessary to strengthen disaster cognition and family disaster preparedness training program for General practitioners and community nurses in XPCC.
**Introduction to session:**

Pet ownership can be considered as a population vulnerability factor during a disaster. If animals are considered in emergency response planning, it is possible to increase evacuation rates, improve public health outcomes and maximize resources.

Our focus as veterinarians is animals, but we have a strong commitment to a One Health approach to disaster management which emphasizes protecting the well-being of pet-owners, first responders, volunteers and general public. This topic highlights the importance of veterinary integration in multi-agency disaster response and community partner engagement.

Patricia Andrade DVM MPVM, Robin Chadwin DVM MPVM, U.S.

Community preparedness and public health considerations: Planning for emergency response to include animals.

Introduction to Emergency Animal Sheltering (EAS): Role of veterinarians and non–veterinary volunteers; needs of animals and staff. Emergency Shelter Design and Animal Transport/Tracking: Estimating animal populations, shelter layout, biosecurity, triage. Exercise – small group discussions to provide solutions to dilemmas.
Patricia Andrade, U.S.

Project Coordinator, Veterinary Medicine and Epidemiology, School of Veterinary Medicine, University of California, Davis, California

Developing Community Readiness for Companion Animal Emergency Response for Mass Care Events in Yolo County, California

Introduction: Pets are required to be included in US emergency plans because public health and animal welfare challenges result from people refusing to evacuate without their pets or abandoning their pets. The objective of this study was to provide animal emergency response (AER) planning guidelines and outline a method for communities to understand local level animal population sizes, personnel needs and resources for a mass care event.

Methods: This descriptive study estimated evacuation needs, analyzed survey responses and formulated recommendations for emergency operations in one county. Pet population estimates were made with American Veterinary Medical Association pet ownership formulas using three combinations of national and local data. Estimates of pets that could appear at shelters were made using maximum (20%) and minimum (2.6%) evacuation rates. National Animal Care and Control Association guidelines were used to estimate animal care personnel needed in evacuation shelters. Survey responses were collected from emergency responders, veterinarians, and animal care staff to assess interest and knowledge regarding AER.

Results: A minimum 2.6% evacuation rate for a county with a human population of 200,000 could result in over 2,000 pets appearing at shelters and would require over 100 animal care staff per day. The survey responses (204) indicated while a substantial number of respondents were interested in AER training (126), a majority had not participated in training (153), and did not understand evacuation protocols (174).

Conclusions: The target community studied is not prepared to handle an AER. There are inadequate numbers of trained personnel to staff evacuation shelters, and pet owners are needed to care for their own animals. Recommendations to emergency managers are to provide training for first responders and animal care supervisors; establish a local level county animal response team; establish co-location human/animal sheltering; educate pet owners of their AER duties; and register citizens as Disaster Service Workers.
Robin Chadwin, U.S.
Veterinarian, International Animal Welfare Training Institute, University of California, Davis

Public health implications of companion animals in disasters

Introduction: Whether kept for production or companionship, animals are an integral part of society. But when disaster strikes, evacuation and sheltering of companion animals is often overlooked. This can lead to evacuation noncompliance, illegal re-entry of evacuation sites, and psychological trauma if evacuees are forced to leave without their pets. It is crucial that emergency management organizations be prepared to evacuate and care for companion animals.

Methods: N/A

Results: N/A

Conclusions: The importance of the human–animal bond is broadly recognized. In one study, it was found that nurses consider pets more vulnerable to a natural disaster than children. Losing a pet can alter mental well being, leading to grief, depression, and suicide. This is especially true when owners are forced to abandon their pets in an emergency and are later wracked with guilt. An evacuation plan that includes pets is important for community safety and compliance. Studies in the United States have shown that pet owners are more likely to refuse evacuation orders than non-pet owners. Eight percent of all flood–related deaths in Australia are due to people trying to save animals. Evacuating pets with their owners can prevent these dangerous and sometimes fatal situations. Also important is training emergency responders to handle and care for frightened pets. Leashes and carriers should be provided for owners and responders. Climate controlled facilities supplied with food, water, and cages must be available. Caution should be taken by anyone handling pets, as dog and cat bite wounds are some of the most common injuries sustained during an evacuation. Community emergency preparedness should include plans for safely evacuating and caring for companion animals. Animal rescue organizations and veterinary medical associations are invaluable partners for planning, education, and training. Developing a comprehensive emergency management plan will ultimately save time, resources, and lives of animals and their human caretakers.
Stephen Sussman, U.S.

Dean, School of Professional And Career Education, Barry University

Carole Huberman, Barry University; Cynthia Davis Sbaschnig, Barry University

Reaching beyond standard assessment: The role of global self esteem in first responder training

Introduction: The evaluation and assessment of the efficacy of first responder training is common practice in the field. Generally, the focus of the evaluation and assessment is on the overall satisfaction with the training, as well as on specific trainee and trainer skills sets, whether or not the training was completed as intended. Few, if any studies, reach beyond such measuring points to expand training evaluation and assessment.

The goal of this study is to examine the relationship between global self-esteem, measured by the Self-Liking and Self-Competence Scale (SLCS-R; Tafarodi & Swann, 2001) and job suitability/satisfaction among entry-level first responder and Emergency Medical Technicians (EMTs) in training.

Methods: The study sample consists of 50 students of introductory EMT classes held at a Miami–based University. Participants completed a demographic questionnaire, the SLCS-R, and a job suitability/satisfaction scale written for this study that asks face valid questions about the training. With the exception of the demographic questionnaire, pre/post comparisons of the data were conducted.

Results: Results reflect on changes in satisfaction scores as an indicator of job suitability/satisfaction from pre to post, as well as on changes in self-liking and self-competence.

Conclusions: First responders provide important services to communities in times of emergencies. It is important to know that their training is successful on all levels. This study seeks to build on our knowledge and understanding of training success by providing insight not only into trainees’ job suitability and satisfaction, but also into the effects of the training on trainees’ global self esteem. The discussion will emphasize data changes in self-liking and self-competence pre and post training and the implications for future training courses.

Keywords: ‘emergency technician’, training, assessment, self-esteem, evaluation, ‘first responder’
Chad Priest, *U.S.*

*Assistant Dean, School of Nursing, Indiana University*

Joanne McGlown, International Medical Corps

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### An Update on Federal Training Opportunities for Healthcare Responders in the U.S.

Following the 1995 Aum Shinrikyo Sarin attack in Tokyo, attention was placed on the US Army’s training, skills and resources to prepare emergency responders in the US for such events. Recommendations of the “9/11 Commission Act of 2007” created the National Domestic Preparedness Consortium, a collaboration of prominent training centers across the nation, to develop and deliver training to State, local and tribal emergency response providers.

The Center for Domestic Preparedness, a Consortium member, was built on the “repurposed” Ft. McClellan Army base in September 1997. With thousands of graduates from this campus, participants may focus in two unique areas: CBRNE and Healthcare specialties, among others. Noble Training Facility (NTF) became the world’s first fully functional hospital training facility; and the Center for Domestic Preparedness - the only congressionally chartered All-Hazards CBRNE (Chemical, Biological, Radiological, Nuclear and High-Yield Explosive) training center in the US - offers a “live agent” training environment. Both facilities offer a rich and full complement of educational and training experiences, which are also available to non-US students on a space-available basis and after approvals have been granted.

Recent collaborations with the Federal Law Enforcement Training Centers, with campuses world-wide, promise to expand, enrich and standardize knowledge across emergency disciplines to ensure response readiness domestically and globally into the coming years.

This session will provide a basic overview of US Federal Training Resources for emergency responders, leaders and managers and will highlight the multi-agency relationships and integration that occur to ensure a coordinated and organized response to any situation. International outreach and inclusion of global students expands and strengthens capabilities of local responders by sharing best practices and highlights cultural, legal and organizational differences that affect the emergency response systems.
Cham Dallas, *U.S.*

*Professor and Director, Institute for Disaster Management, University of Georgia*

Frederick Burkle, Harvard Humanitarian Initiative

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**Developing a Nuclear Global Health Workforce Amid the Increasing Threat of a Nuclear Crisis**

**Introduction:** Any nuclear weapon exchange or major nuclear plant meltdown, in the categories of human systems failure and conflict-based crises, will immediately provoke an unprecedented public health emergency of international concern. Nuclear weapon detonations in particular will lead to excessive direct and indirect mortality and morbidity. Notwithstanding noteworthy nuclear triage and management plans and technical monitoring standards within the International Atomic Energy Agency (IAEA) and the World Health Organization (WHO), there remains a profound lack of capacity to rapidly deploy a robust well educated and trained professional staffing workforce with internal coordination and collaboration capabilities required for large scale nuclear crises.

**Methods:** A similar dilemma, evident in the early stages of the Ebola epidemic, was eventually managed utilizing worldwide infectious disease experts from the Global Outbreak Alert & Response Network and multiple multidisciplinary WHO supported Foreign Medical Teams. This success has led WHO to propose the development of a Global Health Workforce to better meet a myriad of global crises. A strategic format is proposed for nuclear preparedness and response, building and expanding on the current model for infectious disease outbreak currently under consideration.

**Results:** This study proposes the inclusion of a “Nuclear Global Health Workforce” under the technical expertise of the IAEA and WHO’s Radiation Emergency Medical Preparedness and Assistance Network leadership and supported by the International Health Regulations Treaty. Rationales are set forth for the development, structure and function of a nuclear workforce based on health outcomes research that define the unique health, health systems and public health challenges of a nuclear crisis.

**Conclusions:** Despite feelings of futility by some who may be discouraged with such planning for large scale nuclear events, recent research supports that substantial life-saving opportunities are possible, but only if a rapidly deployed and robust multidisciplinary response component exists.
Zeyn Mahomed, South Africa

Specialist Emergency Physician, Emergency Medicine, University of the Witwatersrand

Ahmed Bam, University of Johannesburg

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Africa helping Africa

**Introduction:** Africa and other “third world” regions have long been viewed solely as purely recipients of international humanitarian aid. The mentality where Africans should wait for “hand-outs” and always seek assistance from the developed nations has become entrenched in minds throughout the world. However, the authors want to change this mind-set.

**Methods:** The authors have reviewed all the responses made by South African teams to humanitarian crises within Africa as well as internationally. The number of responses, size of the teams, composition of teams, destination, number of patients treated, clinics and hospital rebuilt or established, type of operations/interventions performed as well as recognition/awards and accolades have been captured.

**Results:** The authors will present the above data, which will show the capability that Africa has, within the continent, to respond to disasters and humanitarian crises.

**Conclusions:** Africa has the capability to respond to disasters with the continent. Furthermore, it has the ability to respond to disasters outside the continent. This potential needs to be recognized by the international community so that our full potential can be reached.
Elhanan Bar-On, *Israel*

*Head, Pediatric Orthopedics, Schneider Children’s Medical Center*

Yitshak Kreiss, Sheba Medical Center; Tariﬁ Bader, IDF Medical Corps; David Dagan, IDF Medical Corps

**Field Hospital Versatility - Maintaining Capabilities in Diverse Operational Scenarios**

**Introduction:** During the past 25 years, the Israel Defense Forces Medical Corps (IDFMC) dispatched field hospitals to disaster zones worldwide, providing medical care in a wide variety of disaster scenarios including earthquakes, refugee camps, and ﬂooding. These field hospitals provided both medical and surgical care and operated either independently or in collaboration with local medical facilities. The wide variability both in needs and in function prompted us to analyze the methods in which the hospitals adapted to the varying and unpredictable situations in order to make recommendations for future field hospital planning and deployment.

**Methods:** Data was collected from IDFMC records regarding the deployment of 9 field hospitals. The data covered organizational structure, personnel, equipment and numbers of patients treated, pathologies encountered, organization of the hospitals and treatment delivered.

**Results:** The mission size varied from 33 to 118 total medical and paramedical personnel. The percentage of physicians varied from 35% to 54% and of nurses from 8% to 31%. The ratio between medical and surgical professions varied from 0.36:0.64 to 0.65:0.35. In the pathologies encountered, the ratio between injuries and medical problems varied from 1:9 to 7:3. Seven of the hospitals functioned as independent entities and two hospitals functioned in integration with a local facility. There was wide variation in needs and function both between the various disaster scenarios as well as along the timeframe in which the hospitals operated.

**Conclusions:** Field hospitals are deployed in a wide range of scenarios posing varying needs and challenges – both structural and medical. Mission planning must therefore ensure versatility, modularity and ﬂexibility. This was achieved by retention of a basic functional structure coupled with adaptation of personnel deployment and extensive task shifting. Capacities were greatly augmented by collaboration with local and international medical teams.
Extending a Helping Hand - Lessons Learned from Recent Israeli Defense Forces Humanitarian Missions

Introduction: During the past years, the Israeli Defense Forces (IDF) has conducted two main humanitarian missions - treating injured Syrian civilians arriving at Israel’s northern border, and dispatching aid delegations to disaster zones around the globe. Since 2010, humanitarian delegations were sent off to Haiti, Japan, the Philippines and Nepal.

Methods: Field hospitals were established, providing a variety of medical treatments - from delivery and care of pre-term neonates, orthopedic surgeries and search and rescue missions. As these destructive natural disasters occurred in unique landscapes and settings, a “tailored” approach was undertaken in order to put together the most effective medical aid delegation that was needed.

Results: Time required to solid logistic preparations must be finely balanced with the desire of medical professionals to arrive at the disaster as quickly possible in order to save more lives. Multinational collaboration both planned and ad hoc, whether with local health services or with international aid organizations, is necessary throughout the deployment. Rapid assembly of personnel and equipment for the specific situation, analyzing feedback from the scout team, mental support to the staff are just some of the issues that must be taken into consideration when preparing a humanitarian medical aid delegation.

Conclusions: This presentation will detail the decision-making processes, the challenges and the lessons that we have learned from these missions.
Considerations in Humanitarian Medical Relief Work in the High Altitude Himalayan Villages

Introduction: The 2,400 kilometre long Himalayan mountain range runs northwest to southeast, spanning five countries: India, Nepal, Bhutan, China and Pakistan. With a total population of about 40 million, the Himalayan settlements are scattered far and few between each other. The harsh environment, high altitude, terrain, inaccessibility and poor infrastructure pose unique challenges to humanitarian work.

Methods: With local support, peacetime medical aid was provided to the villages in the Khumbu region namely, Phortse, Kunde and Pangboche (20–30 kilometres south–west of Mount Everest, with an altitude ranging from 3500 to 4000 metres above sea level). Medical aid and health education was delivered over a period of 2.5 months during the spring of 2012. This article describes the range of medical conditions faced by the villagers and the challenges we encountered in the high altitude, remote environment.

Results: The only hospital (with 15 inpatient beds and 1 permanent doctor) at Kunde serves about 8000 villagers. One of the most prominent problems was that of accessibility. With no vehicular transport available due to the terrain, some of the villages are about a 3 days walk away from the hospital. Whilst stationed there, the main medical problems encountered were environment related (emergency evacuation, occupational hazards from mountaineering, high altitude conditions) common third world issues (hygiene, nutrition, maternal and children’s’ health) and population specific ailments.

Conclusions: Unlike that at sea level, rendering medical aid at high altitude poses unique challenges to the practitioner. The range of medical conditions seen and treatment strategies also varies. Working together with the local team is paramount to understanding the existing system and integrate to ensure a successful and sustainable project, which is maximally beneficial and welcomed by the locals.
Arkadiusz Trzos, Poland

Head of Department, The Department of Disaster Medicine and Emergency Care, the Chair of Anaesthesiology and Intensive Care, Jagiellonian University Medical College, Jagiellonian University Medical College

Nitecki Jacek, The Provincial Headquarters of the State Fire Service in Krakow; Łyziński Karol, The Department of Disaster Medicine and Emergency Care, the Chair of Anaesthesiology and Intensive Care, Jagiellonian University Medical College; Krakow Emergency Medical Services; Długosz Katarzyna, The Department of Disaster Medicine and Emergency Care, the Chair of Anaesthesiology and Intensive Care, Jagiellonian University Medical College

CBRN-related Mass Casualty Incidents - coordination of activities of the Emergency Medical Services and the National Firefighting and Rescue System. Propositions of system-based solutions

Introduction: Poland has two emergency systems – the Emergency Medical Services and The National Firefighting and Rescue System. Their activities differ in numerous contexts. The CBRN-related MCI may limit the effectiveness of operational activities of both systems. The aim of the research was to identify areas that require certain improvements, and to find solutions enabling effective emergency responses.

Methods: The analysis of both emergency systems includes:
♦ legal basis,
♦ education,
♦ competences of paramedics,
♦ access to personal protective equipment and specialized equipment,
♦ emergency and disaster management system.

Results: The obtained results proved weak aspects and indicated certain vulnerabilities, bottleneck moments within the sequence of the emergency responses. Both systems have different legal basis resulting in different operational possibilities and responsibilities. The research indicated the following problem areas:
♦ discrepancy between the level of training and possibilities of responses,
♦ limitation of paramedics’ responses of both services
♦ different admission criteria, physical and psychological aptitudes corresponding with different range of responses and dissimilar way of conduction postgraduate
trainings,
♦ lack of system-based solutions in the filed of shared educational model based on common procedures,
♦ lack of appropriate protection of emergency services,
♦ lack of common management system.

The indicated problems result in a drop of effectiveness, a lack of ability to carry out joint analysis and share experience gained. The research proved to exist the bottleneck areas regarding the initial response to CBRN-affected casualties such as preparations, initial stabilization and decontamination of casualties.

**Conclusions:** The results gave the view of the emergency services in the face of CBRN risks. The researches indicated areas of essential modifications and improvements. The Department of Disaster Medicine and Emergency Care, Jagiellonian University Medical College, formulated the proposal of modifications aimed at integrating both services into a single response system in the context of CBRN incidents.
Consequence Analysis for Toxic, Explosive and Flammable Gas Spills. A Case Study: Compressed Natural Gas (CNG) Storage

Introduction: Following the discovery of natural gas field off the coast of Israel a public concern was raised regarding the environmental and safety issues of the on-shore gas facilities. In the present study a systematic risk assessment associated with Compressed Natural Gas (CNG) storage and delivery was performed.

Methods: A model was developed for estimating and quantifying the risk poses by toxic, flammable or explosive events that initiated by the storage vessel or pipe failure. The model consists of five sub-models: Source term model, dispersion model, fire and explosion models and dose response model. The model was used to estimate the number of casualties in different scenarios. In particular, a statistical analysis was performed using the Monte Carlo method for different operational and environmental conditions data in site.

Results: The designed plant in the Hefer valley was taken as a test case. The developed model was used to calculate different scenarios in different meteorological conditions.

Conclusions: It is therefore important computational tools for safety assessment.
Health of decontamination workers in Fukushima: underlying disease observable in presentation of stroke

Introduction: The 2011 Fukushima Daiichi Nuclear Power Plant accident dispersed large amounts of radionuclides, causing widespread nuclear contamination. To reduce radiation contamination levels in residential areas, approximately 20,000 workers, mostly migrant workers from other areas of Japan, began decontamination work. Migrant workers are considered to have high risk of disease, however there is no information on the health of decontamination workers in Fukushima. To evaluate their health conditions, a retrospective investigation was conducted using medical records of decontamination workers who were admitted to Minamisoma Municipal General Hospital.

Methods: Medical records for migrant workers who were hospitalized from June 2012 to September 2014 were collected. Further information associated with daily lives was collected among those who were admitted with a diagnosis of stroke. (34)

Results: Thirty-four male decontamination workers were admitted to our hospital during the study period. Diagnoses at admission were 5 stroke, 3 ileus, 3 diverticulitis and 2 cellulitis cases. Additionally, 20 hypertension (58%), 7 hyperlipidemia (21%) and 8 diabetes mellitus (24%) cases were identified. Out of these cases, 16 hypertension (80%), 4 hyperlipidemia (71%) and 4 diabetes mellitus (50%) cases were untreated before admission. Among the 5 stroke patients, 3 were admitted within 1 month from their initiation to work, and 2 had not enlisted in national health insurance.

Conclusions: A high prevalence of uncontrolled chronic disease was seen among decontamination workers. Duration from employment to admission was short, suggesting that the workers may have had the conditions before starting decontamination work. This presence of underlying diseases suggests that decontamination workers have generally poor health. Low socio-economic-status may play a role in this outcome. In conclusion, health risks among decontamination
workers may not simply relate to radiation, but also to poorly controlled underlying diseases. Further investigation and intervention is warranted in order to prevent avoidable hospitalizations among these workers.
Cytoprotectors are an important supplement in treatment of mass casual ties during toxicological disasters

Introduction: In chemical catastrophes the origin of poison is often not known immediately. The capacity of poison treatment centers (PTC) and the amount of antidotes are limited. Poisoned victims often suffer from comorbidity, which exacerbate the poisoning. Cytoflavine (CYT), a Russian pharmaceutical consisting of nicotinamide, inosine, riboflavin, sodium succinate and glucamine has been associated with neuroprotective effects in hypoxic states.

Methods: Controlled retrospective clinical study (n=1020 patients), severely poisoned by industrial and pharmaceutical compounds (CO, exhaust gases, toxic solvents, alcohols, narcotics, and other CNS acting drugs) admitted to City Hospitals of SPB and PTC from 2010 to 2014. All patients were treated according to the standard protocols, antidotes (when possible) during the prehospital period, and ICU. The intervention group, which additionally received IV CYT 0,28 cc/kg.b.w in D5W b.i.d., consisted of 562 patients admitted in toxic/hypoxic coma (n= 412), poisonings + burns, and hypovolemic shock (n=90), respiratory arrest (n=40), and psychosis (n=20). Clinical outcome was assessed in terms of mortality, duration of CNS signs, respiratory status and other findings. Statistics were done using Wilcoxon rank-sum test for non-parametric data of all random variables (p=0,05).

Results: CYT administration (controls/treated) was associated with reduced duration of coma (28±0,1h/10,7± 0,3), respiratory complications (21%/12%), time in ICU (67±3h/28,2±1,8), and mortality rate (11%/4,5%). In severe poisonings by carbon monoxide (COHb=55±3.5%, with coma and myonecrosis) CYT was associated with more rapid recovery of consciousness.

Conclusions: CYT administration was associated with accelerated improvement in the neurological signs and other symptoms in severely poisoned patients by industrial chemicals and pharmaceuticals, and may serve as a supplement to supportive care in toxicological disasters.
S.M. Becker, U.S.

School of Community and Environmental Health, Old Dominion University - College of Health Sciences

Challenges to Recovery after a Radiological or Nuclear Incident: Early Lessons from Fukushima Dai-ichi

A wide variety of important lessons have been learned from the 2011 Fukushima Dai-ichi nuclear accident in Japan. Initially, many such lessons focused on emergency preparedness and response. But with the passage of time, new lessons are also beginning to emerge about the challenges and complexities of recovery in areas affected by large-scale contamination events. What factors have facilitated recovery? What factors have hindered recovery efforts? What unexpected problems have emerged? In this paper, several of the most salient recovery-related lessons from the Fukushima Dai-ichi experience are identified, and their broader implications are discussed.
Gilbert Sebbag, Israel

Director, Emergency & Contingency, Soroka Medical Center

Moty Klein, Soroka Medical Center; Nurit Vaknin, Soroka Medical Center; Yochanan Peiser, Soroka Medical Center; Gad Shaked, Soroka Medical Center; Orly Wainstein, Soroka Medical Center; Ehud Davidson, Soroka Medical Center

The Soroka Medical Center challenges during the July 2014 Operation Protective Edge - Preparedness and management in a hospital under fire

Introduction: The Soroka Medical Center (SMC) in Beer Sheva is periodically involved in the last 10 years conflict between Israel and Gaza Hamas. In July-August 2014 “Protective Edge” the SMC operated again as an un-protected bombarded hospital, while continuing to give regular medical services to surrounding populations and treating emergency civilian and military casualties from the frontline.

Methods: Our research focus was put on organizational measures to move unprotected hospitalized patients to safer areas, on the conflict repercussions upon SMC activity and on casualties’ data treated at the SMC. Retrospective data collection was performed from the SMC Emergency Team Standard Operation Procedures, from the SMC Headquarter minutes, from the SMC Clalit Health System ATD database and from the Israeli Trauma Registry.

Results: Seven unprotected departments had to be closed, transferring the patients to safer areas: overall 223 patients including 25 intensive care premature babies. Staff absenteeism was surprisingly low (5%) thanks to 5 daily in-hospital protected classes attended by overall 6900 staff children. Fourteen physicians among 54 SMC staffs were called to military reserve duty. Between July 5th and August 8th, 2014, 1117 casualties were admitted through the SMC Emergency Department, among them 376 civilians. We hospitalized 176 patients (16%), 31 in Intensive Care Unit (3%) for life-threatening condition. In-hospital mortality rate was 0.26% (3/1117). The SMC continued to function at 85% of activity with a financial loss of NIS 29 million.

Conclusions: We reported the SMC activity during the Protective Edge military 2014 conflict; highlighting the multiple challenges the SMC management team faced to operate a non-protected bombarded hospital.
The Role of Rehabilitation in a Military Conflict

Introduction: Whenever a conflict with a potential to multiple casualties starts, one can’t estimate the extent of the event in terms of length, number of casualties, severity and sort of injuries and the expected rate of flow of new patients. Having no military rehabilitation hospital, the Sheba Medical Center, Rehabilitation departments admitted most of the patients from the last conflict in Gaza in summer 2014.

Methods: Having a Rehabilitation Hospital within the General Hospital enables us to transfer the patients in a relatively earlier stage as if they would still need further medical and surgical care as well as evaluations like MRI, CT, etc., they can have them in rehabilitation. Starting the rehabilitation early, gives them a more optimistic prospective after severe injury and shortens the recovery period. We believe that the more rapid return to active life may improve the participation in the future, including return to service in their pre-injury position or at least in their military unit. That also serves the demand to release beds in the acute departments for “new” victims.

Results: In peaceful days the department of Orthopedic Rehabilitation has 40 beds, serving civil patients, we needed to continue their care and concomitantly to prepare beds for the casualties. Within 3 weeks of the start of the conflict, the 40 beds were occupied by the soldiers. Having all the soldiers together in the same department enabled them to get support from each other sharing the same experiences. The same psychologist followed the soldiers throughout the whole hospitalization period even while transferring from one department to the other. Comparing to 3 psychologists on the regular basis, 16 psychologists, all experts in rehabilitation, were recruited from the hospital staff.

Conclusions: Preparation of the rehabilitation should start parallel to the acute medical care organization and in coordinated with it.
Avi Benov, Israel
Officer, Trauma and Combat Medicine, I.D.F

Between 2 conflicts - change in battlefield mortality, from Second Lebanon War to Operation Protective Edge

Introduction: In 2012, the Israel Defense Forces Medical Corps (IDF-MC) set an organizational goal of reducing combat related mortality and eliminating preventable death on the battlefield. A 10 year force buildup plan entitled “My Brother Keeper” was launched, implemented throughout all services and branches - from the point of injury to the hospital. Operation Protective Edge (OPE), represented the first major challenge to this strategic medical plan. The aim of this work is to examine how military medical care provided across all roles of care has evolved due “my brother keeper”

Methods: Records of casualties during OPE from July 8th to August 26th 2014 were extracted and analyzed from the I.D.F Trauma Registry (ITR). Noncombat injuries and civilian injuries from missile attacks were excluded from this analysis.

Results: During the conflict, 704 were defined as casualties received care and were subsequently evacuated to advanced roles of care, 62 casualties were declared dead in POI or in the ER, and three more died of wounds during hospitalization, cumulating to Case Fatality Rate of 9.2%. For the first time in battlefield history ALS provider (Physician or Paramedic) was incorporated into each fighting company. life-saving interventions performed included endotracheal intubations, cricothyroidotomies, chest decompressions and tourniquets applications. Reconstituted Freeze Dried Plasma (FDP) was transfused for the first time in full scale conflict to 25 casualties and 98 casualties were treated with transexamic acid (TXA).

Conclusions: Significant changes in Combat Casualty Care have been made in recent years, it is the transformation from concept to doctrine and integration into a structured and Goal-Oriented Casualty Care System, especially augmentation of the point of injury care that led to the unprecedented survival rates in IDF as shown in this conflict.
Lessons from the 2015 Nepal Earthquake: Our experience as Orthopaedic Surgical Residents rendering disaster aid

Introduction: A 7.8 magnitude earthquake struck Nepal on 25th April 2015. More than 8500 people were killed and 18,500 people injured, with over 80,000 homes destroyed. This article aims to discuss our concerns and insights as orthopaedic surgical interns involved in disaster relief work during the Nepal earthquake.

Methods: A team comprising of 2 emergency physicians, 2 orthopaedic residents, 2 nurses and 3 relief aid workers from the Non-Governmental-Organisation, Mercy Relief Singapore, were deployed in Nepal from 3rd to 11th May 2015. Our base of operations was Dhulikhel Hospital, a 300-bed tertiary centre, located 30km south-east of Kathmandu. Our team had support from various local religious and non-governmental organisations. We also tied in with the mobile medical team from Dhulikhel Hospital to be deployed to the more remote areas surrounding Kathmandu.

Results: During the initial stages, the focus was primarily on accessibility of healthcare services and the utilisation and deployment of medical resources. Immediately following an earthquake, acute life and limb saving medical aid was rendered by orthopaedic, neuro and general surgeons. However, during the weeks following the earthquake, patients with unaddressed subacute spinal and limb injuries became more of a concern. Orthopaedic surgeons had to work around the clock and adopt strategies to cope with the high volume of patients. Our discussion will focus on the orthopaedic surgical concerns in disaster relief and what we, as surgical interns, have learnt being deployed in a resource limited third world country in a time of disaster.

Conclusions: Disaster aid relief is a continuum which spans from the initial stages where acute care is prioritised to chronic stages (spanning months to years) where the focus is on rebuilding, rehabilitation, education and adequate training of medical personnel. Key issues we faced during our deployment included situational command, communication and coordination of logistics.
Miklosh Bala, *Israel*

Director of Trauma and Acute Care Surgery Unit, Department of General Surgery, Department of General Surgery, Haddasah Medical Center

Asaf Kedar, Haddasah Medical Center; Gidon Almogy, Haddasah Medical Center; Sara Goldberg, RN, Shaare Zedek; Ofer Merin, Shaare Zedek medical center

Intentional Running-Over Attacks: A Summary of the Recent Jerusalem Experience

**Introduction:** We have recently noticed a surge in a novel mode of terrorism in which vehicles are used to intentionally injure pedestrians (intentional running-over attacks, ROA’s). We sought to describe and characterize this unique trauma phenomenon, and compare it with unintentional pedestrian trauma (PT).

**Methods:** Thirteen ROA’s took place in Israel from 2008–2014. 11 of those attacks (84.6%) were in the Jerusalem vicinity. Records of all admissions with the diagnosis of ROA were reviewed for demographics, ISS, ICU admission, length of stay, and mortality. Data of all consecutive adult pedestrians who were injured during a 12 month period was used to compare ROA to PT.

**Results:** 143 patients were injured following 7 ROA’s. 7 patients (4.9%) died at the scene. 70 patients (49%) were brought to the ED and 25 patients (35.7%) were admitted for hospitalization. There were 15 males (60%) and median age was 27 (range 17–68). Four patients (16%) died due to severe head trauma (n=2), severe abdominal (n=1) and chest trauma (n=1). 42 patients (22%) were brought to the ED due to acute stress reaction. Following ED discharge 4 patients (9.5%) required long-term treatment for PTSD.

Compared to patients in the PT group, patients in the ROA group were significantly younger (27 vs. 42.5, p<0.01). Median ISS was not different (10 vs. 9). Extremity trauma was more common in the ROA group (72% vs. 53.5%, p=0.1) Mortality was significantly higher in the ROA group (16% vs. 3.5%, p=0.02).

**Conclusions:** The armamentarium of terrorists to cause mass casualties has recently been expanded to include ROA’s. Injury pattern following ROA is different compared to PT but injury severity is similar. ROA is characterized by high-energy causing significant mortality. PTSD is disturbingly common following ROA. These findings should serve to guide trauma and general surgeons when treating victims of ROA.
Michael Rozenfeld, *Israel*

*Researcher, National Center for Trauma and Emergency Medicine Research, Gertner Institute*

Gili Shenhar, Gertner Institute; Adi Givon, Gertner Institute; Liran M. Rennert, Tel-Aviv University; Michael Hopmeier, Unconventional Concepts Inc.

**Space settings of terror explosions: physical vs. contextual**

**Introduction:** Recent research has expanded the known classification of terror explosion settings into five types: Inside a building (CS), Next to a building (SO), Inside a bus (IB), Next to a bus (NB) and In the Open (OS). What are the practical implications of this new knowledge in terms of improving our preparedness for terror attacks?

**Methods:** Data from two main sources: Israeli Trauma Registry provided information on patients hospitalized following 65 terrorist explosions in Israel between November 2000 and December 2005; Open sources provided information on the overall volume of casualties, the time of the explosion, the presence of security and the density of people at the scene. The parameters were compared between the five space setting categories.

**Results:** The setting types were found to be different in terms of density of people on site, with highest density in IB and SO settings, suggesting better ability of the attacker to appreciate the density correctly to maximize impact in these scenarios. In CS settings, high-density events had the highest impact on the volume of hospitalizations. Most explosions inside buses happen in the morning hours, while most explosions inside buildings tend to take place in the evening hours, as well as a serious proportion of other types of event. SO settings were characterized by the vast presence of security which was usually capable of recognizing the threat on time, but much less capable to prevent the damage.

**Conclusions:** In addition to the physical factors differentiating between the five explosion space types, the density of people and the security arrangements at the scene should be taken into account. Together these three factors constitute an “Explosion Space Triangle” – an analytical model useful for predicting the impact of the explosion for practical purposes.
WHO Emergency Response in Ukraine

Over the past year, the humanitarian crisis in Ukraine has affected the lives of more than 1.3 million internally displaced people (IDPs) with total around 5 million people in need of humanitarian assistance. As hostilities escalate in eastern Ukraine, human rights protection issues are of increasing concern and loss of life and injury continue.

The Ukrainian health system was over-stretched already before the crisis and is now struggling especially in areas with high IDP loads. The impact due to financial crisis is even greater.

WHO is leading the Health Cluster and is providing expertise to local and national authorities to ensure a coherent and coordinated response and effective implementation of health interventions. The Health and Nutrition Cluster’s key priorities include reducing gaps and enhancing access to quality preventive and curative health services, including medications and health technology. WHO is monitoring the health status and vital needs for the affected populations, assessing the access to and utilisation of primary and secondary care and public health services and identifies the gaps and priorities (mapping in-country capacities), while monitoring the implementation of the relief operations.

The WHO critical functions will be described, namely: leadership, technical expertise, provision of health services and information management. Data from the WHO web-based, real-time, people-centred Health Information System will be presented as well as information from the WHO network of Health Impact Specialists.

1WHO Country Office in Ukraine
Restoring Family Links in times of emergency by the International Red Cross and Red Crescent Movement

Introduction: The International Red Cross and Red Crescent Movement is the largest humanitarian network in the world. Composed of the ICRC, the Federation and 189 National Societies, including MDA, it has an essential role in disasters, which includes Restoring Family Links, as stated in the Movement’s 2008–2018 RFL Strategy. RFL needs in disaster include: needs of information and to respond to the anxiety caused; needs of separated and unaccompanied children and vulnerable adults; search for missing persons; dealing with unidentified dead bodies; support to hospitalized people without contact; and needs of unidentified sick or injured people.

Methods: Enquiries might come from family members outside the affected area, from across the world. That is one of the reasons why the Movement’s network can be of particularly added value. Practitioners dealing with different aspects of an emergency, such as shelter, food, water, might encounter those needs and should be able to refer them to RFL responders. A needs assessment is essential to provide a proper response: identification of areas affected, means of communication available, coping mechanisms used, and stakeholders involved directly or indirectly, etc. Especially in the case of a medical evacuation or of the general population, if the assessment is not rapid and carried out properly it can cause separation. Several examples of RFL work around the world are presented.

Results: The Movement has a wide variety of tools available, from provision of satellite/cell phones to the family link website, to Red Cross messages, tracing missing persons, liaising with the responsible authorities on dead body management and support to the concerned families.

Conclusions: While its tools and responses vary according to each context, the Movement has an essential role to support the responsible authorities to restore family links in any type of emergency.
Saeda Al Barawi, ICRC

ICRC Physiotherapist, ICRC Gaza Sub Delegation

Gregory Halford, ICRC ortho-prosthetist (P&O), ICRC Gaza Sub Delegation, from Australia

ICRC post-operative hospital physiotherapy project: preparing also for humanitarian emergencies

Introduction: During conflicts and emergencies, hospitals can be overwhelmed with mass casualties. Physiotherapy (PT) can help facilitate discharge of patients in emergency situations through expedited discharge planning, education, early mobilization and referral. This improved throughput allows lifesaving care to be provided to more patients as hospital beds become free more quickly, allowing new admissions. Development of PT services needs to be done pre-conflict to achieve these benefits. This presentation describes ICRC experience within conflict affected countries supporting hospital PTs to achieve desired humanitarian objectives.

Methods: ICRC support to hospital PT departments typically includes the following objectives:
- Organize PT departments.
- Improve quality of PT services.
- Ensure the inclusion of PTs in the multidisciplinary team.
- Ensure referral to appropriate outpatient services post discharge.

Results:
Examples of improvements in PT services have resulted in:
- Better organization including prioritization of PT work on early mobilization and discharge planning and a 24 hour emergency roster that minimized staff travel.
- Improved quality of services offered autonomously by PTs.
- Inclusion of PTs in teams allowing better collaboration and trust during mass casualty events.
- External referrals made to allow coordinated outpatient follow up and improved continuity of care.

Conclusions: Whilst during conflict in emergency contexts comprehensive PT might not always be delivered, maximization of each hospital bed’s utility is possible through appropriate expedited discharge planning. Improved organization, teamwork and quality of services has been shown to allow PT interventions to benefit patients and help alleviate humanitarian emergencies.
Ambulance services operating in situations of risk: best practice of twelve National Societies

**Introduction:** Ambulance and pre-hospital services are at the core of the work of many National Societies and when responding in risk situations, the teams often face high incidence of threats, attacks and considerable levels of stress. Sometimes, the teams are prevented from responding, which has a direct impact on the communities in need.

**Methods:** To address the above-mentioned challenges, Magen David Adom and the Norwegian Red Cross initiated a process to collect best practices via 2 regional workshops. The workshops included a total of 12 national societies operating ambulance and/or pre-hospital services and the results were published in a document entitled “Best Practice for Ambulance Services in Risk Situations”, on June 30th 2015.

**Results:** The recommendations touch upon several key elements, among them – code of conduct, standard operating procedures, training, risk perception and equipment. The workshops also identified some key operational dilemmas that are proposed for national societies to further reflect on, including providing personal protective equipment to volunteers and the concept of acceptable risk.

**Conclusions:** The Norwegian Red Cross would like to contribute to the IPRED IV, by presenting the report, as well as highlighting some key concerns and dilemmas. Not all best practices are relevant in all contexts, but we believe that any ambulance service in one country has something to learn from other ambulance services operating in other contexts. This report and the process leading up to it, is one step in the direction of facilitating such learning, at a technical level.
Johannes S. Schad, Germany
General Surgeon and Emergency Physician
Guenther Fröschl

From Ebola Emergency to Health System restoration: Severe Infections Temporary Treatment Unit

Introduction: A severe outbrake of Ebola Virus Desease (EVD) was detected in spring 2014 and hit primarily Sierra Leone, Liberia and Guinea. In all countries there was only low public awareness about EVD.

The decision to put up Ebola Treatment Units (ETU) resulted in an massiv upscale of ETUs in Monrovia. The bottle neck became the lack of trained medical staff. Many organisations were lacking internal SOPs to cope with the situation. The existing health structures collapsed as in total over 400 local medical staff died from EVD and most did not continue their work.

Methods: German Red Cross and German Army formed a joint operation on governmental request to provide medical services in the set up structure of a WHO-ETU in Monrovia.

But all registered EVD patients got sufficient treatment in Liberia by November 2014. The big gap became the number of patients which showed EVD like symptoms (e.g. Malaria, Tbc, Dengue etc.) but were tested negative. Local health structures refused to admit these cases at all.

Results: The Severe Infection Temporary Treatment Unit (SITTU) concept was then established in order to screen patients with EVD like symptoms. Once admitted and positive tested they have been referred to an ETU. Once admitted and twice negative tested the patients was either treated accordingly or transferred to an existing health structure.

About 700 patients showing EVD like symptoms were triaged and screened. In late outbrake stages non-Ebola illnesses outnumber by far the Ebola-cases. Collateral morbidity and mortality by non-Ebola-Illnesses are massive and have to be part of the outbrake management.

Conclusions: From the experiences made in this outbrake the SITTU concept is also applicable from the onset of an epidemic complementary to the ETUs.
Patricia Kormoss, WHO

Mobile Emergency Primary Care Units - W.H.O. Experience

**Introduction:** W.H.O. has established, in partnership with the Ministry of Health, the Ukraine Red Cross Society and the International Medical Corps, a number of Mobile Emergency Primary Health Care Units (MEPUs) to respond the needs in Eastern Ukraine and to deliver quality health services for internally displaced people (IDPs) and communities in conflict areas.

**Methods:** The study methodology based on lessons learned on own experience of MEPU organized and it activities.

**Results:** MEPUs are functioning under the tripartite Agreement on partnership between the Ukrainian Ministry of Health, W.H.O., and the Ukrainian Red Cross Society. Each MEPU consist of a 1 doctor, 2 nurses, and a driver/logistician.

At the beginning of MEPU project we identified an a) population health of affected area and b) risk analysis for Public health system. Based on the results obtained has been identified, improved and summarized a c) Protocols of medical care for IDP, d) completed an Essential Drugs list. The last stage was the organization of team Training.

For today a 16 MEPUs are operating in six administrative regions of Eastern Ukraine. Mobile team provides medical care in local ambulatoty or hospitals, places of temporary accommodation of displaced persons or quarters arranged by a NGO Red Cross.

Team provided over 1,600 health medical consultations weekly. Duration of each visit an average is 6–7 hours.

**Conclusions:** Initial results indicate that MEPU plays a key role in primary care for Internal Displaced Persons. Nursing is essential part in MEPU team.
When Plans Fail: Contingency Plans Based on Social Networks

Introduction: Mass Disasters not only strain resources but usually override the ability of crisis managers to provide adequate services. This is particularly true for psychosocial services. A solution for providing contingency planning when pre-determined plans falter, emerged as part of the international multidisciplinary EU project PsyCris (PSYcho-social Support in CRISis Management) and leans heavily on the leverage of informal social networking among psychosocial service providers.

Methods: Utilizing cross national on-line questionnaires, persons with psychosocial skills provided detailed information on social network matrices that were analysed by both uni and multivariate techniques as well as social network matrix analysis methods.

Results: The analysis of respondents showed a wide spread distribution of informal social network for professionals and non-professionals alike with whom the are in contact, either as providers of knowledge and experience or as seekers of such knowledge.

Conclusions: Evidence based conclusions demonstrated the utility of incorporating pre-determined social networks which allows for the development of local and cross-border informal communications networks. Such networks could be employed to facilitate the shifting of manpower and material resources as well as critical information from the field to command centre decision makers. Also psychosocial service providers outside the formal bureaucratic disaster agencies become available and can be utilized in case of an overwhelming disaster. By utilizing these networks as an integral part of mass disaster plans as part of contingency planning reflects a realistic cost-effective avenue to deal with mass disasters.
Patrick Drews, Jana Eiser-Mauthner & Christian Kloyber

**Interactive Lecture:** Spontaneous Volunteer Management Programs for Emergency Management - A European perspective

Patrick Drews, *Germany*

*Scientific Researcher, Institute for Human Factors and Technology Management (IAT), University of Stuttgart*

Jana Eiser-Mauthner, University of Stuttgart; Christian Kloyber, Austrian Red Cross Research GmbH

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**Spontaneous Volunteer Management Programs**

**Introduction:** Studies in sociology (Bourdieu, 2000), evolutionary anthropology (Henrich et.al., 2001) or experimental economics (Fehr & Fischbacher, 2003) give evidence that altruistic behavior is intrinsically human. Stallings & Quarantelli (1985) highlighted that citizens are often assisting emergency management operations and carrying out tasks, which are normally done by responder organizations. The spontaneous wish of the lay public to help may pose an additional challenge for this task unprepared responders. The need of proven concepts for managing volunteers is therefore an important aspect of contingency planning. Within the DRIVER project, several programs and concepts are tested with regard to their validity and usability for responder organizations. For that reason an experimentation campaign (Alberts & Hayes, 2005) with several workshops and a larger exercise is set up.

**Methods:** This workshop is part of the experimentation campaign. The first part will rely on an explorative world café approach examining the reasons and the usage of spontaneous volunteer management programs. The second part will be a desk-based simulation exercise in which participants take on different roles and will get a set of tools for management of spontaneous volunteers off and on scene. Therefore, a dedicated screenplay will be provided in which the scenario and the dedicated role, function, and task of the participant will be predefined.

**Results:** We expect that the results of the desk-based simulations are comparable with the outcomes of the field exercise while the explorative world café can serve to contextualize the results.

**Conclusions:** We assume that desk-based simulations are as valuable for program evaluations as full scale exercises when combined with an explorative
and contextualizing approach. Together they can serve to contribute to a broader evidence base regarding the validity and usefulness of spontaneous volunteer management approaches for response organizations across Europe. First conclusions will be drawn after the end of the experimentation campaign in summer 2016.
Volunteer management in emergency management. A European perspective

Introduction: In some European countries, a strong interconnection exists between professional and voluntary entities in emergency management (GHK 2010). Volunteers are either affiliated with organizations willingly providing services for the benefit of others without financial gain or unaffiliated to the existing emergency management system, spontaneously offering their support on scene. Facing a continuous decline in willingness of volunteers to get involved for a long period, as observed for some time in Germany, improving volunteer management in emergency response is considered crucial when addressing emergency management as a whole. Accordingly, the group of spontaneous volunteers has become more important in the practical and scientific discourse in the recent years. However especially not only due to a lack of understanding for this group its management remains a challenge.

Methods: This paper will outline main findings of the projects INKA and Driver with respect to existing definitions of unaffiliated volunteers. Based on the results of a literature research, narrative interviews and focus groups it will present different volunteer management approaches.

Results: In addition to concepts for the management of affiliated volunteers, there exist two main approaches for dealing with unaffiliated volunteers: (1) Physical volunteer management, such as Volunteer Reception Centers, and (2) Virtual Volunteer Management, for example preregistration of volunteers (Team Oesterreich) as well as remote activities such as crisis mappers.

Conclusions: As the number of affiliated volunteers declines, voluntary based organizations need to create and implement new programs and concepts for volunteer management (e.g. part time volunteering and school education). On the other hand spontaneous volunteer management has to be part of the training of professional responders also. This paper identifies key elements of the above mentioned volunteer management approaches and sheds light on implications for the practical implementation as well as future research activities.
Crowdtasking in crisis situations

Introduction: In 2007, the Austrian Red Cross has formed Team Österreich to improve the management of the loosely organised volunteers. This has proved very useful during the subsequent large scale floods and currently numbers over 35000 pre-registered members. Subsequently, the ARC has teamed up with AIT and Frequentis to develop an experimental platform and methodology that will allow individual management of such volunteers.

During this talk, we will introduce the resulting methodology and software and discuss the usability of crowdtasking in crisis management. Later on, the conference participants will be given an opportunity to test the platform during the IPRED IV drill.

Methods: The underlying idea of the crowdtasking is that a single “tasker” should be able to individually manage a large number of volunteers. For this, he or she needs a dedicated IT platform that distributes the tasks to the most appropriate volunteers and summarizes the resulting reports from the field.

Results: “Crowdtasker” platform and methodology were initially developed in the scope of RESILA project [1]. Further development and testing is currently co-financed by EC in the scope of the DRIVER project. Crowdtasker already fulfils the basic requirements on the crowdtasking process, but many questions are still under discussion, including the questions related to scaling, ethics, responsibility and acceptance of the crowdtasking by population.

Initial experiments have taught us that the tasks given to “crowd” are often complementary to standard crisis management tasks. For example, the platform users may be asked to clarify the situation in their neighbourhood, verify third-party reports, alert neighbours or simply stay out of the danger zones rather than directly helping the first responders.

Conclusions: Crowdtasking is a novel method for managing of the volunteers. It stands in-between the “institutional volunteer management” and crowdsourcing, where the crowd members are always addressed as a group and not individually tasked.
Eli Weissbart, *Israel*
Chairperson, Board, Lev Echad - Community Crisis Aid

Successfully operating unorganized volunteers during crisis

**Introduction:** Emergencies in Israel, pose significant threats to the well-being of the civil population. Events such as operation Protective Edge last summer challenge municipal authorities, who find themselves struggling to solely manage the sharp increase in local community requests for relief. The only way they can do so is by employing (and deploying) large masses of volunteers to meet these demands. Unfortunately municipal authorities are usually understaffed and unequipped to manage all these unorganized (mostly) first-time volunteers, while trying to restore community life to normal.

**Methods:** Effective management of these events necessitates the building and execution of a simple yet inclusive method of harnessing this untrained human force. Using lessons learned from our decade long experience in the field and our research of preparedness and response to emergencies, Lev Echad (One Heart) provides municipal authorities with a unique model (tested and modified with over 26,000 volunteers) of volunteer leadership coordination. This model utilizes the human resources available to the municipal authority in emergencies and disasters and enables it to effectively manage thousands of volunteers simultaneously, while transforming them from helpless civilian victims to effective dominant partners to the effort.

**Results:** Using the Lev Echad “Volunteers Operation Centers” saves lives, maintains functional management, enhances municipal capacity building and most importantly, Promotes population and systems’ resilience. Community members who feel helpless, now become useful, those who feel weak, are now empowered. This new mindset is a key factor in resilience building.

**Conclusions:** Volunteers are the best (and possibly the only) way for a municipal authority to respond to the increased number of demands from its community, and as a derivative of that, to protect its community’s resilience in times of emergency. To do so the municipal authority must be able to manage these volunteers effectively. For that purpose, Lev Echad is here.

Public-Private Partnerships: A case study and best practices

Introduction: In an age of political turmoil and mistrust of governments, having an outlet for creative problem solving that involves all aspects of communities during disasters, is critical. Additionally, outlets need to be utilized that save tax payer money for particular projects, such as road construction or infrastructure protection. Public-private partnerships are a way to accomplish all of these goals. Utilized correctly, a public-private partnership is a win-win situation for all participants. This presentation will make the case for the continued support from all sectors, for public-private partnerships.

Methods: Identify common issues on emergency preparedness for collaboration. Identify new resources in the community to mitigate the impact of critical incidents. Determine the challenges that participating organizations encounter. Create sustainability in the partnership through a needs assessment, setting goals, and task performance.

Results: A successful and replicable model as indicated by the success of the public private partnership described in the presentation, SAFER Santa Rosa.

Conclusions: Public-private partnerships are meant to engage all participants, regardless of the mission statement. It is important to understand that these partnerships must have a purpose, or participants will lose interest. Anytime there is a public-private partnership, having by laws, leadership, and political buy in are a must. Public-private partnerships can be driven by a contractual joint mission, as in the case of road maintenance or infrastructure protection, or it can be a loose knit collaboration of community partners ready to react to any challenge, but a public-private partnership is only as successful as its participants allow it to be.
CritiCall Ontario - A provincial solution to healthcare planning and optimization (on a daily basis and in emergencies and disaster)

**Introduction:** The province of Ontario, Canada is home to almost 14 million of the country’s 35 million people. Much of this population is based in the southern part of Ontario, a province that spans more than 1 million square kilometres. Ensuring that urgent and emergent care is available and accessible to all Ontario residents on a daily basis and during times of crisis has been one of the province’s biggest healthcare challenges. What began in the 1980’s as a local program to coordinate access to emergency care within Hamilton, Ontario, has since evolved into CritiCall Ontario, a single telephone number for hospital-based physicians to access support to care for urgent and emergent patients, regardless of their location within the province.

**Methods:** In order to improve its ability to efficiently and effectively facilitate an increasing volume of cases, CritiCall Ontario refined its case facilitation processes; and developed and introduced technological tools including an integrated online case documentation and telephone system as well as a web-based hospital resource inventory system detailing hospital locations, resources, services, and distance calculations.

**Results:** The results will demonstrate how methods employed by CritiCall Ontario enabled the organization to increase case volumes from 14,246 cases (2007/2008) to 30,549 (2014/2015) while continuing to reduce the number of calls made per case and physician response time.

**Conclusions:** The CritiCall Ontario model is based on resource identification, coordination and ongoing management. The principles that enable CritiCall Ontario’s success in daily case facilitation also enable the organization to effectively assist during times of local, regional or provincial disaster or crisis when coordination is critical to resource management. CritiCall Ontario plays a central role in ensuring access to urgent, emergent and critical care in Ontario and can serve as a model for other countries or regions with similar resource and geographical challenges.
Joram Rubinstein, *Israel*
Director of Security and Protection Division, CSO, Security, Israel Ministry of Health

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**Resolving the challenges and dilemmas in securing hospitals**

**Introduction:** Hospitals and medical facilities are not considered to be central targets for terror attacks.

In the western culture, attacking a medical facility is a taboo, making these facilities protected even in war times by international conventions, making difficult to perceive ruthless terror actions, perpetrated by Muslim extremists, unbound to western culture morals.

On the other hand, medical facilities and medical crews, are subject to daily violence, related to general public disorder and criminal action civil action.

In a reality of limited resources, there is a constant conflict between concentrating on protecting against the “improbable” terror attack or on trying to prevent the often but less deadly violence.

**Methods:** Historical and contemporary evidence of terror trends: establishing the existence of terror threat to medical facilities:
Past terror attempts to attack hospitals in Israel (Suicide bombers thwarted attacks).
Usage of medical facilities as military and terror infrastructures in Gaza during “Tsuk Eitan”.
Resent car-bomb and shooting attacks on hospitals in Yemen, Syria, and Pakistan.

Risk management: comparing the probability and possible damage of the different threats:
The severe damage caused by terror attacks combined even with a relatively low probability, leads to a high risk evaluation.
Analysis of security methods, intelligence, technology and concepts:
Reality of “no intelligence” against terror.
Limited technology solutions, unsuitable for the emergency and logistical needs and the public open character of medical facilities.

**Results:** Existing substantial terror threat to medical facilities.
Significant damage potential from terror attacks.
Limited security solutions in resources, intelligence, technology and human resources.

**Conclusions:** There is a need for allocation of additional resources for protection against terror attacks on medical facilities. Security concept for medical facilities should be based on behavioral pattern recognition, in combination with technology in several layers. Protection against violence should be combined organically within the concept and methods of protection against terror.
Creating Disaster Planning Resources for Obstetric and Newborn Services- Lessons Learned from the NYC Pediatric Disaster Coalition (PDC)

Introduction: The New York City (NYC) Pediatric Disaster Coalition (PDC) is funded by the NYC Department of Health and Mental Hygiene to improve NYC’s pediatric disaster response. After having created resources for planning in Neonatal Intensive Care Units (NICUs), the PDC realized that there was a dearth of planning for Obstetric Services (OB), fetal maternal medicine, and newborn nursery patients.

Methods: The PDC formed an Obstetric/Newborn Services Committee, comprised of physicians and nurses working in NICU and OB/newborn units, as well as emergency management professionals. The committee was charged with assessing the specific emergency planning needs of OB/newborn units and creating resources to fill those needs. The committee met bi-weekly via conference call and reviewed both existing PDC NICU plans and hospital based resources.

Results: The committee determined that all plans must be flexible and encompass NICU, Mother Baby Units (MBU), and Labor and Delivery. They identified supplies equipment and staffing challenges related to these unique patients. Actions taken included: Production of guidelines and template plans for evacuation and surge that addressed communication, inventory of beds, levels of care, special services, transport services and surge capacity. Best practices culled from existing NICU disaster policies and disaster plans as well a directory of city-wide neonatal resources were disseminated in print and online. Template plans were implemented at three NYC hospitals in 2015– lessons learned during the implementation of processes were used to streamline and improve the templates for future use.

Conclusions: OB/Newborn units have unique needs that should be addressed during emergency planning. Template plans specific to OB/Newborn needs lower
the barriers to creating specific annex plans to general hospital disaster plans. The guidelines and template plans and planning process were well received when distributed to NYC hospitals. This process can serve as a model for other localities.
THREATS Project: Increasing resilience of EU hospitals as critical infrastructure by improving their protection capability and security awareness against terrorist attacks

Introduction: The field of critical infrastructure protection (CIP) is complex. The sectors that constitute critical national infrastructure (CNI) are diverse, from finance and government to energy and water supply. The THREATS project aims to increase the resilience of EU hospitals as CNI by improving their protection capability and security awareness against terrorist attacks. Its aims are:

♦ To develop a reliable method for assessing the risks and vulnerabilities of major EU health infrastructures to terrorist attacks;
♦ To prepare specific security and threat assessment models and tools applicable to the Health sector using other EU projects;
♦ To challenge these tools through application to the San Raffaele Hospital in Milan;
♦ To disseminate guidelines designed to optimize the preparedness of hospitals’ healthcare infrastructures against terrorist attacks.

Methods: Survey of publicly available data on CIP in member states’ government websites; survey of EU funder projects that have addressed the risks, threats and mitigation; survey of hospital disaster coordinators in different EU countries.

Results: We have not identified any detailed work specific to the health as a sector of CNI. CIP activity within the health sector in different member states exists but the level of coordination is lacking. No acceptable standard exists to which systems may be evaluated or compared. Intelligence shared between security organizations and the health care system regarding threat, capability and intent of terrorist activity is limited.

Conclusions: Knowledge and policies produced concerning CIP in the health sector need to be collected, further developed and transformed into a user-friendly standard to be implemented across EUS member states. EU member states that have less resources and finance will benefit from this collaboration.
Gaps in Drug Dosing for Obese Children and Adults: A Systematic Review of the Medical Countermeasures in the Strategic National Stockpile

Introduction: Approximately 1 out of 6 children in the United States is obese. This has important implications for drug dosing and safety, as pharmacokinetic (PK) changes are known to occur in obesity due to altered body composition and physiology. Inappropriate drug dosing can limit therapeutic efficacy and increase drug-related toxicity for obese children. Few systematic reviews examining PK and drug dosing in obese children have been performed.

Methods: We identified 25 acute care drugs from the Strategic National Stockpile and Acute Care Supportive Drugs List and performed a systematic review for each drug in 3 study populations: obese children (2–18 years), normal weight children, and obese adults. For each study population, we first reviewed a drug’s FDA label, followed by a systematic literature review. From the literature, we extracted drug PK data, biochemical properties, and dosing information. We then reviewed data in 3 age subpopulations (2–7 years, 8–12 years, and 13–18 years) for obese and normal weight children and by route of drug administration (intramuscular, intravenous, by mouth, and inhaled). If sufficient PK data were not available by age/route of administration, a data gap was identified.

Results: Only 2/25 acute care drugs (8%) contained dosing information on the FDA label for obese children and adults compared with 22/25 (88%) for normal weight children. We found no sufficient PK data in the literature for any of the acute care drugs in obese children. Sufficient PK data were found for 7/25 acute care drugs (28%) in normal weight children and 3/25 (12%) in obese adults.

Conclusions: Insufficient information exists to guide dosing in obese children for any of the acute care drugs reviewed. This knowledge gap is alarming, given the known PK changes that occur in the setting of obesity. Future clinical trials examining the PK of acute care medications in obese children should be prioritized.
Gennady Kipor, Russia

Disaster Medicine, Administration, ARCDM “Zaschita”


Civil Military Collaboration in National Disaster Medicine Service

Introduction: The main goal of this paper to present the appearance, the development and current status of civil medicine – military medicine symbiosis in All Russian network of Disaster Medicine activities.

Methods: This presentation is based upon the revision of Structure and Functions of Modern Disaster Medicine Service in Russian Federation.

Results: The main participants of humanitarian intervention in major emergency in Russian Federation: Search and rescue teams of Emercom, Special Medical teams of Defense Ministry, and Medical teams and Multiprofile Mobil Hospitals of All Russian Disaster Medicine Centre “Zachita” (Protection) of Health Ministry. Disaster Medicine Service in the country is presented on the Federal, Interregional, Regional, Territorial, Municipal and Object levels. There are 82 Territorial Disaster medicine centres. The structure and specialization of any centre is closely related to the potential hazards on the corresponding territory. It is explained how and why on any level since the federal gestation till the municipal management in disaster medicine there is a close and fruitful collaboration between all the upper mentioned participants. The role played by any participant is explained issued from the needs of emergency occurred. It is realized in emergency preparedness, reserves formation, researching activities, contingency planning, emergency response, in gestation and in management. One of the main and most effective form of collaboration promotion is the development of mutual scenario played in field and analysis of lessons learnt.

Conclusions:
♦ Closed planning and preparedness
♦ Mutual scenario playing and field exercises
♦ Top – table exercises
♦ The main role in Emergency response belongs to the Health Ministry
Gayathri Nadarajan, *Singapore*
*Resident Emergency Physician, Emergency Medicine, Singhealth, Singapore*

Puneet Seth, Singhealth, Singapore

**Mosaic Civilian-Military Disaster Medical Response Team: A Unique Singapore Experience**

**Introduction:** On 25th April 2015, a 7.8 richter scale earthquake shook Nepal. As a G2G response, Singapore sent a team consisting of the Singapore Armed forces (SAF), Royal Brunei Armed Forces (RBAF) and Ministry of Health (MOH) team. It was the first time a civilian team was ‘embedded’ within the military for humanitarian work.

Military–Civilian collaboration is an essential aspect of humanitarian work as they both co-exist in crisis situation and its success can determine a favorable outcome. Hence there are existing guidelines for such collaboration- such as the UN-CMCoord (United Nations Humanitarian Civil–Military Coordination) and The Oslo Guidelines.

Our situation was unique as we civilians were working under the ‘military umbrella’. This paper aims to describe our experience, compare our different roles in humanitarian work and discuss the pros and cons of such collaboration.

**Methods:** For 12 days, the civilian MOH team (7 doctors and nurses) and the military team (21 doctors and medics) worked as a single composite unit to treat the earthquake stricken victims. We set up clinic in Gorkana village (in Kathmandu) which received 2161 patients. We also formed a mobile team of 5–7 people that traveled to smaller, more remote villages to treat the earthquake casualties.

**Results:** There were many benefits of such a system especially that of mutual learning and inter–operational readiness. However as with all collaborations between teams from vastly different areas of practice, there were challenges and teething troubles in the initial phases.

**Conclusions:** The Nepal Earthquake was an example where many teams, both civilian and military came forward to help. Non–Governmental Organisations are on a rise. Collaboration is crucial for effective humanitarian work to be done. Hence there is a greater need for teams to share their experiences as well as studies to be done to help develop a framework to guide such civil–military collaboration.
David Wilmot, *U.S.*

*Director, Surgeon General, National Guard Bureau*

Thomas Duggan, U.S., National Guard

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**Tiered Response to CBRN Incidents**

**Introduction:** Stood up in 2004, the National Guard’s CBRN Response Element, was developed to fulfill mass casualty response requirements identified by multiple state’s Emergency Management Agencies.

**Methods:** Response was developed using a tiered structure of force packages.

**Results:** Operational force of over 10,000 soldiers and airmen specially trained and equipped for operating in a contaminated environment.

**Conclusions:** Fully operational, nationwide capability for rapid, integrated, and modular response to CBRN incidents.
Deborah Kim, *U.S.*  
*Senior Research Scientist, Health and Analytics/Medical Readiness and Response, Battelle Memorial Institute*

Kevin Arthur, CHEC III, Primary Children’s Hospital/ Intermountain Health Care  

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**Destruction of the Utah Chemical Weapons Stockpile and the development of the CSEPP Program**

**Introduction:** In 1985, the US Congress directed the Department of Defense to dispose of its stockpile of lethal unitary chemical agents. The stockpiles, under the control of the US Army, were located in 8 separate locations across the US. A coordinated joint effort between the funding entity of the Department of the Army and the Department of Homeland Security, Federal Emergency Management Agency (FEMA) established the Chemical Stockpile Emergency Preparedness Program (CSEPP). Utah had the world’s largest portion of the stockpile (42%). No established Emergency Preparedness program or process had previously existed between the military and the affected civilian communities. We will discuss the Utah experience of military/civilian partnership that developed with the CSEPP program including lasting legacy of enhanced preparedness, resilience and community collaboration.

**Methods:** The Utah community met in 1992 to identify training and equipment needs. Programmatic efforts grew into the development of state and national integrated process teams (IPT’s). Planning tools, measures, PPE/decontamination training/exercise programs were established. Public oversight was also established as part of the community/military partnership through the formation of Citizen Advisory Commissions (CAC’s).

**Results:** From 1996 through 2012, participating Utah hospitals increased from 3 to 10. An existing Army Toxic Chemical Training Course grew into 8 hour OSHA all hazards awareness level class. Alert and notification technology was installed in communities in the Immediate Response Zone (IRZ). Identification of criteria for shelter in place or evacuation was developed. Yearly exercises involving on post and off post simulated casualties were carried out using standardized metrics for both Army and Civilian medical facilities.

**Conclusions:** The CSEPP Program is an example of a successful military/government /civilian partnership which supported the safe destruction of the chemical stockpile. It created a culture of cooperation and preparedness which enhanced Utah’s ability to host the 2002 Winter Olympics and other high profile events.
Salman Zarka, *Israel*

*Hospital Operation in Emergencies, Ziv Medical Center*

Calin Shapira, Ziv Medical Center; Radi Shahien, Ziv Medical Center; Tedgi Dalia, Ziv Medical Center; Arie Bitan, Ziv Medical Center; Osamah Hussein, Ziv Medical Center

### Hospital Operation in Emergencies

**Introduction:** Hospital operation modes can be divided into three main categories: routine operation, warlike situation and interim states of limited events that require special arrangements and operation of the hospital beyond routine situation. The hospital management strives to keep operating the hospital as in routine in any conditions, as much is possible, while addressing the circumstances of interim states or war.

**Methods:** In order to achieve the hospital goals an attention have to be focused on the way to operate the different challenges that emerge during emergencies. We will focus on the different between a concentrated manner when all its board is present at a centralized meeting, or in a graduated manner within hierarchical structure.

**Results:** Based on a model commonly used in military system we, at Ziv Medical Center, used a graduated structure of the board consists of central table and other branches separated from the central table and work according to instructions from the senior board in the center table.

**Conclusions:** The board has an important role in managing crises in the hospitals. The structure of the board and the arrangement of its parts in branches make it more efficient. The proposed method can be applied to a wide array of situations to which the hospital aims to prepare, with slight adjustments according to the scenario.
Chad Priest, U.S.
Assistant Dean, School of Nursing, Indiana University
Bobby Courtney, Indiana University Fairbanks School of Public Health; Pamela Napier, Indiana University Herron School of Art & Design

A Theoretical Framework for Healthcare Facility Emergency Management Program Development

Introduction: In this presentation we describe a new theoretical framework for emergency management (EM) in healthcare facilities. Traditional EM programs have relied on a four-phase model emphasizing: (1) mitigation, (2) preparedness, (3) response and (4) recovery. This model was developed in the early 1970’s in United States to promote coordination between federal and state emergency management programs (Baird, 2010). This model has been widely adapted for the healthcare sector and in the U.S. the Joint Commission requires programs to align with this framework for accreditation (Joint Commission, 2014).

The traditional framework may be inadequate for the needs of healthcare organizations. In one large urban area, healthcare systems demonstrated systematic process and cultural challenges preventing successful implementation of emergency management programs based on the traditional framework.

Methods: In 2013, a partnership of designers and healthcare emergency management professionals utilized human-centered design methods to build a new resilience framework for two major healthcare systems. Human-Centered Design is an approach and methodology combining design thinking and participatory design research methods in order to empower the people who ultimately use a product, service, or system to collaboratively create positive impact, innovation and improve quality of life. The framework was implemented in two major healthcare organizations during 2014/2015 and evaluation is ongoing.

Results: The result of the human centered design process was a new linear adjacent four-phase cycle that includes overlapping phases: (1) Intelligence; (2) Decision-Making; (3) Response; and (4) Rebound. Implementation of the new framework in the facilities served to focus attention on executive decision-making and situational awareness, major challenges in healthcare settings.

Conclusions: While not dramatically divergent from the traditional four-phase cycle, this new theoretical framework more accurately reflects the stages needed
to appropriately manage health sector emergency events. Further work will be needed to validate the impact of this framework on hospitals that adopt it.
Eli Rohn, Israel
Lecturer, Information Systems Engineering, Ben-Gurion University of the Negev

Do we have an emergency?

Introduction: Given a situation such as volcanic ash, bank bankruptcy, prolonged critical infrastructure failure, earthquake, flood, hazardous material spillage, epidemic, landslide, tornado, wildfire, how does one objectively determine if the situation is an emergency, and if so, what is its exact dimension and at what scale? Global? National? Regional? Given that extant scales are generally inadequate, since providing a quantitative answer without a solid universal model and a quantifiable scale is theoretically and practically impossible. Hence we developed the unified localizable emergency scale describe herein. Applicable to the measurement of any type of emergency or crisis, be it a natural or human-made event, the scale also enables users to compare dissimilar emergency events. This has significant social value when, for example, responses to several regional or national emergencies need to be managed in parallel. In such situations, emergency response managers can use the scale to evaluate the magnitudes and trajectories of co-occurring emergencies, which will enable them to prioritize resources allocation and to take commensurate managerial actions. The complexity of this mathematically-sound model is purposely downplayed in favor of explaining how managers can use the model, such as for predicting if and when events can lead to emergency scenarios or utilizing it to improve forecasts about and responses to emergencies. The efficacy and efficiency of the emergency scale is illustrated with one recent example

Methods: identification of underlying dimensions that exist in all emergency events, and formulate those into a mathematical model yielding a numerical scale which can be used at all levels of organizations and geographical scope as they prepare or respond to an event.

Results: The model is applicable to managing developing events as well as predicting if an event may result in an emergency or not. It has been verified empirically using various emergency events data, including epidemics.

Conclusions: Until now, no emergency event scale existed to objectively quantify an emergency event. We developed a “Richter Scale” for emergencies. Deployed and used correctly, the model can provide means of assessing and communicating existing emergency situations. The model can provide predictions on the direction
and magnitude of a situation, including assessing whether or not a situation may result in an emergency.
Oleg Mazurenko, Ukraine

Associated professor, Disaster medicine, National Medical Academy of Postgraduate Education named after P.L.Shupic

Georgiy Roshchin, National Medical Academy of Postgraduate education named after P.L.Shupic

A simulation modeling for International Health response after Natural Disasters

Introduction: According to international experts, coordination of national and international assistances is a “systemic problem”, which is observed in 40–90% of international disaster response.

Methods: On a statistical data of 876 official reports by UNOCHA, World Health Organization (WHO), ICRC has been built Simulation Model of International assistance after huge natural disasters.

Results: The research of PH natural disaster response shows the adequacy of international aid, but also reveals untimeliness of deployment to the affected areas. The study revealed the potential of International and National non-governmental organizations (NGOs) and teams of volunteers which collaborate with the WHO. In overcoming of the consequences of emergencies, international experts of Non-Governmental International Organizations solve tasks aimed to prevent mortality and morbidity in disaster affected area, coordinate and cooperate with other national governmental and non-governmental organizations.

Conclusions: A simulation model shows advancing dynamics of PH systems in providing advance international resource against dynamics in the number of patients injured in the affected area on 20% from the day sixth course of disaster. It proves needs in preparedness of National Health systems to function during acute disaster phase of disaster cycle. Engagement international NGOs to state level Disaster response scheme can accelerate an international response time by 24 hours.

Keywords: natural disaster, public health, international response, non-government organization (NGO), simulation modeling.
Moshe Farchi, *Israel*

*Head of Stress, Trauma & Resilience Studies, Department of Social Work, Tel-Hai College*

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**The SIX C’s Model Psychological First Aid guidelines for NON professionals**

**Introduction:** Recent studies demonstrate the importance of early Psychological First Aid (PFA) interventions following emergencies. The window of opportunity for effective interventions for reduction of the acute stress symptoms can last up to 48 hours post event.

Just as in primary physical first aid in which nonprofessional population can provide the immediate assistance the same need exists in the PFA interventions. The SIX C’s model is rooted in a known resilience models and emphasizes 2 major PFA aspects: cognitive communication and effective activation of the traumatized person.

**Methods:** All attendees to the anxiety center where screened for anxiety levels before and after intervention. GSE and PTSD questioners where given by phone after one month and 3 month post event.

**Results:** Significant reduction in anxiety levels where demonstrated after intervention. GSE Levels where significantly higher 3 month post event and PTSD where significantly lower whereas no significant chances where shown on the controls.

**Conclusions:** The SIX C’s model was found to be important and effective as a simple tool during emergencies. More longitudinal studies using the SIX C’s model are needed.
Dan Hanfling, U.S.
Co-chair, Forum on Medical and Public Health Preparedness for Catastrophic Disasters, National Academy of Sciences, Institute of Medicine

Sharon Einav, Hebrew University

Emergency Mass Critical Care - An Update

Surge in demand for healthcare services represents a mismatch between the demand for healthcare service delivery and the resources (personnel, materiel) that are available to respond to these needs. This becomes all the more difficult a situation to manage when the resources that are in short supply relate to the delivery of critical care services in the intensive care unit. Because so many threats can result in a large number of critically ill or injured patients, surge planning for critical care services is of utmost importance. Under the auspices of the American College of Chest Physicians, a multidisciplinary, international assembly of experts on disaster healthcare delivery was convened to update guidance on the delivery of “emergency mass critical care”. This resulted in the publication of a series of articles that provide an update to key recommendations related to emergency mass critical care planning. This presentation will provide an overview of the key recommendations delivered in those reports, with particular focus on the improvements suggested for critical care surge capacity planning. The presentation will highlight the extensive literature search conducted, the development of key suggestions, and the expert consensus development of recommendations. It will also review key concepts in the development of “crisis standards of care”, which details a systems approach to catastrophic disaster planning and response, and describes the shift in standards of care that can be expected as a result of practicing medicine under catastrophic conditions.
Virginia Murray,  
UK  
Consultant in Global Disaster Risk Reduction, Public Health England  
Vice-chair HYPERLINK “http://www.unisdr.org/partners/academia-research” UNISDR Scientific and Technical Advisory Group (STAG)  

The Sendai Framework on Disaster Risk Reduction: what does it mean for disaster medicine?

The substantial emphasis on health in the Sendai Framework for Disaster Risk Reduction 2015–2030, adopted on March, 18th 2015 by 187 UN Member States after extensive negotiations at the World Conference on Disaster Risk Reduction (DRR) and ratified by the UN General Assembly in June 2015, is a welcome development. This far reaching new framework for DRR highlights synergies among the three UN landmark agreements of 2015: the DRR framework, the climate change agreements and the sustainable development goals; and emphasises the need for more comprehensive and integrated DRR and the incorporation of bottom–up and top–down action, local scientific and technical knowledge.

This is a truly relevant framework for health – for people’s health across all sectors and the health sector itself – with more than 30 explicit references to health, referring to the implementation of an all–hazards approach to managing all types of disaster risk, including links to epidemics and pandemics, disaster medicine and several references to the International Health Regulations and to rehabilitation as part of disaster recovery.

The Sendai Framework aims to achieve the following outcome over the next 15 years: ‘The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries’. Actions with a public health focus have been agreed with local, national, regional and global partners as relevant. This greater focus on science and building evidence (not only in its own right but to support the health aspects of the framework) invites the health sector to contribute much more.
Introduction to session:

SurgeWorld is a critical learning tool that can bridge the gap in preparedness and ensure that your emergency responders are equipped with the knowledge and training to properly triage during a disaster. Users learn to track incoming ambulances, triage both adult and pediatric patients using START/JUMP Start, assign staff, manage beds and supplies, track patient progress and more – all while keeping score of their speed and accuracy comparing their score to other responders. (First 50 attendees will receive a free jump drive with Surgeworld Program).
Measuring in-hospital over- and undertriage using simulation software in emergency nurses

**Introduction:** Triage is a vital part in every emergency department’s (ED) organization. In our ED advanced medical triage is performed by a physician and a nurse although the end decision on triage level lies with the physician. The goal was to determine over- and undertriage levels in different experience groups.

**Methods:** 37 nurses with different years of experience assigned triage levels for 50 real case-based scenarios. The scenarios were validated by 7 consultants working at least 2 years in our ED. The exercise was done using ISEE Hospital® (Counterpoint, the Netherlands), a web-based simulator training software.

**Results:** 37 nurses (15 M & 22 F) with different levels of experience (0–1 year: 6; 1–2 year: 5; 2–3 year: 2; 3–4 year: 4; 4–5 year: 4; >5 year: 16) performed the exercise. The average total triage time was 29.4 minutes; no significant differences were measured between the groups. The average overtriage was 19.9% and no significant differences were measured between the groups. The average undertriage was 10.2% and a non-significant tendency to less undertriage with more experience was measured.

**Conclusions:** This study, using simulation training software, showed baseline over-and undertriage levels for nurses performing an in-hospital medical triage. Overall there is no evolution measured in time and performance with more experience. We observed a trend towards lower undertriage with more experience but more inclusions are needed to prove or discard this statement. These triage baseline measurements make the effect of training with this software measurable.
Tom Schmitz, Belgium

Clinical Head, Emergency Department UZBrussel, UZBrussel

Nima Hosseinpour Tabrizi, Emergency Department UZBrussel; Michel De Backer, Emergency Department UZBrussel; Ives Hubloue, Emergency Department UZBrussel

Measuring in-hospital over- and undertriage using simulation software in emergency physician residents

Introduction: Triage is a vital part in every emergency departments’ (ED) organization. In our ED advanced medical triage is performed by doctors using the Manchester triage system in which they can modify the assigned levels. Little is known about emergency physicians residents (EP) performing triage. The goal was to determine over– and undertriage levels in different experience groups.

Methods: 23 EP’s in different years of their training assigned triage levels for 50 real case-based scenarios. The scenarios were validated by 7 consultants working at least 2 years in our ED. The exercise was done using ISEE Hospital®(Counterpoint, the Netherlands), a web–based simulator training software.

Results: 23 EP’s (10 M & 13 F) with different levels of experience (0–1 year(A): 9; 1–2 year(B): 7; >2 year(C):7) performed the exercise. The average total triage time was 45.4 minutes for group A, 25.1 for group B and 30.1 for group C; a significant difference was measured between groups A en B (p 0.014), A and C (p 0.045) and B and C (p 0.049). The average overtriage was 26.2 % for group A, 12.9 % for group B and 16.3 % for group C; a significant difference was measured between groups A en B (p 0.0018) and groups A and C (p 0.043). The average undertriage was 5.8 % for group A, 10.3 % for group B and 9.7 % for group C, no significant differences were measured.

Conclusions: This study, using simulation training software, showed baseline over- and undertriage levels for EP’s performing an advanced medical triage in-hospital. Experience has an effect on overtriage rates but not on undertriage. Fastest triage was performed by the group with 1–2 year experience but in this group the highest number of undertriage was observed. More inclusions are needed to determine the power of these conclusions.
Bridget Berg, U.S.
Manager, Pediatric Disaster Resource Center, Pediatric Disaster Resource and Training Center, Children’s Hospital Los Angeles

Millicent Wilson, Los Angeles County Emergency Medical Services Agency; Steven Storbakken, Pomona Valley Hospital Medical Center; Doug Spice, Psychic Bunny

SurgeTrain Online Learning Platform Improves Hospital Clinical Surge Disaster Response

Introduction: We’ve developed a fun, innovative way to train our first responders in START and JumpSTART Triage, let them practice their logistical management skills, and master specific emergency preparedness objectives – whenever and wherever they want. Doctors, nurses, EMT’s and Emergency Preparedness professionals in and around Los Angeles teamed up with a local film/motion design company to create SurgeTrain, a first-of-its-kind web-based emergency response simulator that is interactive, customizable, educational and entertaining. This is cutting-edge mass casualty training for your whole staff.

Methods: SurgeTrain was proposed in 2014 by a planning committee consisting of leading emergency management professionals from LA County EMS, Children’s Hospital Los Angeles, Cedars-Sinai Medical Center, Providence St. Joseph Medical Center, and Pomona Valley Hospital. A software prototype was then developed and tested by film company Psychic Bunny. Beta testers were observed and surveyed by CHLA and Psychic Bunny staff and asked to provide recommendations for further development of the software.

Results: The current platform provides 24/7 simulated mass casualty training on a learning platform that resembles a computer game. Users track incoming ambulances, triage patients, assign staff, manage beds and supplies, track patient progress and more – all while keeping score of their speed and accuracy. SurgeTrain is currently making improvements based on user feedback for potential worldwide release.

Conclusions: Properly training emergency personnel to respond to mass casualty events can be very difficult and costly. SurgeTrain makes it cost effective, fun and easy. Let us show you how this critical learning tool can bridge the gap in preparedness and ensure that your emergency responders are equipped with the knowledge and training to react appropriately during a disaster.
Joseph Martin, *U.S.*

*Director Research & Development Partnerships Group, Science and Technology (S&T) Directorate, U.S. Department of Homeland Security (DHS)*

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**The Changing Nature of Homeland Security Based on the Evolution of Technology**

In today’s world, the increasing pace of innovation and the changing nature of threats significantly impact homeland security. Threats are increasingly complex, fast-paced, and global. To keep our nations and the world safe, we must work together and think differently about R&D in areas like cyber security, resilience, chemical and biological security, borders and maritime security, and emergency response. Dr. Griffin’s presentation will highlight examples of areas of focus for current and future R&D in the USA, and will highlight valuable collaboration underway with the international community, including ongoing work with Israel and European countries.
Narayan Iyer, *U.S.*

*Chief, Burn Medical Countermeasures, Division of Chemical, Biological, Radiological, and Nuclear (CBRN) Countermeasures, Biomedical Advanced Research and Development Authority (BARDA), Office of the Assistant Secretary for Preparedness and Response, Department of Health and Human Services*

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**BARDA and MediWound response to Romania Fire incident**

**Biomedical advanced research and development authority (BARDA)**

The Biomedical Advanced Research and Development Authority (BARDA), within the Office of the Assistant Secretary for Preparedness and Response in the U.S. Department of Health and Human Services, provides an integrated, systematic approach to the development and purchase of the necessary vaccines, drugs, therapies, and diagnostic tools for public health medical emergencies.

The mission of the Biomedical Advanced Research and Development Authority (BARDA) is to develop and procure medical countermeasures that address the public health and medical consequences of chemical, biological, radiological, and nuclear (CBRN) accidents, incidents and attacks, pandemic influenza, and emerging infectious diseases. Specifically, BARDA supports the advanced development and procurement of drugs, vaccines and other products that are considered priorities for national health security through its programmatic initiatives.

♦ **Core services**

BARDA supports a number of core services to assist the production of required products, in a manner that is timely, reliable and cost effective.

♦ **CBRN programs**

The Pandemic and All Hazards Preparedness Act (PAHPA) established BARDA as the focal point within HHS for the advanced development and acquisition of medical countermeasures to protect the American civilian population against CBRN and naturally occurring threats to public health.

♦ **Pandemic influenza**

BARDA uses a comprehensive portfolio approach to develop and acquire a broad array of medical countermeasures for pandemic flu, including vaccines, therapeutics, diagnostics, and non-pharmaceutical countermeasures and to build
and sustain their domestic manufacturing infrastructure.

♦ **Innovation**

BARDA’s Strategic Science and Technology Division helps bring innovation to our programs. The innovation programs identify and support the advancement of platform technologies that enhance capabilities for the development and manufacturing of medical countermeasures that focus on biodefense, pandemic influenza and other emerging infectious diseases.

♦ **Stockpile building**

Congress seeks to improve our Nation’s emergency preparedness with Project BioShield, which provides the government with the ability to develop, acquire, stockpile, and make available the medical countermeasures needed to protect the U.S. population against a public health threat.

BARDA funding and acquisitions bridge the “valley of death” characterizing the late stages of product development. BARDA’s support ensures continuity of funding for medical countermeasures developed by industry or emerging from the basic research and preclinical development activities sponsored by the National Institutes of Health (NIH). In procuring medical countermeasures for the Strategic National Stockpile, BARDA enhances the capabilities of the Centers for Disease Control and Prevention (CDC) to organize an effective response.

BARDA manages Project BioShield, which includes the procurement and advanced development of medical countermeasures for chemical, biological, radiological, and nuclear agents, as well as the advanced development and procurement of medical countermeasures for pandemic influenza and other emerging infectious diseases that fall outside the auspices of Project BioShield. In addition, BARDA manages the Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) and is a key partner in implementing the PHEMCE strategies.

Sourced from: https://www.medicalcountermeasures.gov/barda.aspx
Elon Glassberg, Israel

General Surgeon, Chief Medical Officer of the Northern Command, Israel Defense Forces (IDF) Medical Corps

Life-saving technologies in the battlefield

Whether technology drives changes or serves as the platform that allows them, the way we practice medicine has changed dramatically over the last few decades, as new technologies have been adopted. Providing advanced medical care in austere environments, on both military and humanitarian medical missions, presents a unique challenge. In many ways, there is a growing need to balance between the raising standards of care available under regular, technology abundant, conditions, and the available solutions made fit to the scenario.

During the last few years we developed and adopted new technologies and had the chance to rest them in many operational scenarios. These lifesaving technologies to augment the deployed medical capabilities that matured to allow adaptation in the pre-hospital and austere environments will be presented and discussed, as well as directions for future development.
Jalal Mapar, USA

DHS Science & Technology Directorate

Introduction to Topic:

The critical infrastructure in the world has become a complex system that is increasingly reliant on cyber systems to provide service and capacity for many vital areas such as energy, communication, water, finance, and transportation. Energy is considered as the top critical infrastructure as many other sectors rely on its availability. The ever increasing attacks on the cyber based systems are creating an international challenge to protect and defend against known and unknown threats on the infrastructure and ensure their resilience. Many countries around the world have developed and deployed various technological solutions to investigate security in the electric power, gas supply chain, port distribution and supply chain, and the entire resilience value chain.

To address this resilience challenge it is vital that we have the means and capabilities to identify the threats and vulnerabilities, understand their impact on the infrastructure, and develop strategies to enable resilience to ensure the continuity of services and minimize disruptions in our major systems. One of the major capabilities to ensure resilience against such threats is new methods to assess risk, identify and understand the cascading effects and interdependencies involved in order to better be prepared, train our operators, and to quantify impacts and risks in order to prioritize response tactics and investment strategies.

While the fundamental problem is the same the type of capabilities under development tends to vary depending on the need and priority. This proposed session will bring international players together to share how they approach resilience in complex systems, new risk methodologies, and mitigation strategies in infrastructure sectors such as energy, water, and communications.

This session will feature presentations from leaders in infrastructure resilience, risk, and security research, development and operations.
Yacov Haimes, U.S.

University of Virginia, Charlottesville, VA (USA)

Risk Modeling and Analysis of Cyber-Physical Complex and Resilient Interdependent Systems of Systems

This presentation addresses the strategic importance of understanding, modeling, assessing, managing, and communicating the multiple sources of risk to cyber-physical complex systems of systems. Years of studying risk modeling reveals that the genesis of this complexity, and the key to evaluating the inherent risk therefrom, stem from the lack of our understanding of, and especially accounting for, the essence of what constitute systems of systems. Namely, the shared (common within and among the subsystems): states, technology, decisions, resources, functionalities, policies, decision makers, stakeholders, organizational setups, etc. termed for brevity: common states and essential entities. This fundamental undertaking of the nature of systems of systems has been accomplished by building on states-space theory, which is fundamental to systems engineering and process control. We have developed and tested the theoretical framework for modeling the risk to complex cyber-physical systems of systems, and are extending it to related concepts, such as community resilience and vulnerability. A sample case study is introduced to demonstrate the efficacious contributions of shared states and essential entities to the modeling and analysis of risk to cyber-physical systems of systems.
J. Michael Barrett, U.S.
Director, Center for Homeland Security & Resilience

Ensuring resilience by applying Total Security Management (TSM) principles to complex systems

Applying disparate and uncoordinated command-and-control security measures to today’s hyper-complex, diverse and multinational communications, power, and transportation systems inevitably results in systemic weaknesses stemming from the lack of easily comparable performance in meeting evolving cyber and physical threats. Indeed, the non-directed, self-forming nature of the network complexities exceeds the resources available for even the largest corporate and public institutions, much less the myriad smaller partners and subsidiaries upon which the entire system relies. And yet we cannot simply allow chaos to rule unchecked. Fortunately, focusing on overall systemic resilience by applying the key tenets of the Total Security Management framework – namely that each party in the system must establish and share situational awareness, actively engage with all relevant supply chain partners, ensure implementation of industry best practices, and make use of training and exercises – makes it possible to ensure systemic resilience and common assessments of each other’s relative readiness for disruptive events. In addition, the focus on collaborative, shared security and resilience enables firms and public entities to remain viable over time by supporting long-term value creation, in turn being recognized as a net positive, not a cost center.
Tim McPherson, *U.S.*

*Engineer and Critical Infrastructure Program Manager, Pacific Northwest National Lab, Richland, WA (USA)*

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**Infrastructure System Analysis for Community Resilience Assessment**

Infrastructure systems are becoming more complex while being required to operate under an increasing number of threats, demands, and environmental challenges. Sophisticated control systems are being increasingly used to monitor and optimize infrastructure performance and the occurrence of extreme events is shifting in both frequency and magnitude. Understanding how to model, design, secure, and safeguard the intertwining of cyber-based control systems with physical infrastructure systems will be critical to enhancing the resilience of our existing infrastructure systems in the future. Robust, high fidelity modeling environments to analyze the interdependent relationships between cyber systems and infrastructure systems such that consequences and resilience can be quantified are not currently available. Initial work to address this gap will be presented and discussed.
Rachael Piltch-Loeb, U.S.

*Junior Research Scientist, College of Global Public Health, New York University*

David Abramson, New York University; Alexis Merdjanoff, New York University

**A Balancing Act: Recovery from Hurricane Sandy and Compensating Capitals**

**Introduction:** The ability to acquire, exchange, or restore key “capitals” is critical to individuals and households exposed to disasters. Catastrophic events can place extreme demands on affected populations, and the depth of their social, political, economic, or human capital may determine the pace and completeness of their recovery.

**Methods:** Data are drawn from the Sandy Child and Family Health (S–CAFH) study, a longitudinal population study of 1,000 individuals representing 1 million New Jersey (US) residents exposed to the storm. Survey items are used to construct measures of the four capitals: human capital is assessed as health capacity, measured by the Medical Outcome Study SF–12 and the general self-efficacy scale; social capital is represented by perception of social support; political capital is captured through questions on government effectiveness and equity in part adapted from the CCRAM measures on political responsiveness; and economic capital is constructed based on household income and percent of savings and credit spent on recovery. The study hypothesis is that self-reported disaster recovery is improved by balancing these resources, or compensating for deficiencies in any one type of resource.

**Results:** Approximately two-thirds of respondent believe they have recovered from the storm. Regression analyses suggest there’s a relationship between an individual’s state of recovery and each type of capital. The presence of capitals in one’s life make an individual more likely to perceive they are recovered from the storm; while having multiple types of capital increases the odds of recovery to a threshold. Political and social capitals can buffer against lower economic and human capitals.

**Conclusions:** Following a disaster, individuals draw upon various resources to recover from the storm. This analysis suggests that because there are multiple capitals that contribute to recovery, individuals can achieve recovery through a variety of pathways and compensate for a lack of economic or individual capital.
Josh Wander, *Israel*
*Security Expert, Jerusalem*

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**Bottom-up Preparedness**

**Introduction:** There are two distinct methods of looking at emergency preparedness. One is the top down methodology, which starts from an organised government agency, NGO or non-profit. The other is what I call the, “bottom up” methodology. It is initiated as a grass roots movement. The former assumes to have access to greater resources and knowledge and therefore is best suited to deal with any given crisis situation. The latter presumes, that no organised agency is vast enough to immediately and efficiently address a major catastrophe and that it is necessary to equip and train ordinary citizens with the skills and knowledge to deal with any eventuality that comes their way.

The irony is that the larger the scale of the disaster, the less effective an organised government is to deal with the problem. Often this is due to logistics of not being able to get to the scene with the required equipment and manpower to immediately react to any given situation.

Of course, these two methodologies are not black and white and they do often overlap with each other. Most experts accept that government needs the assistance of ordinary citizens and that the public needs some organised government to step in, at some point, to reestablish order after a chaotic event. The question is where is the emphasis put? Where are the resources primarily allocated?

**Methods:** This is an untested theory that has been thought out and discussed with the preparedness community for many years.

**Conclusions:** Everyone that has heard the theory has seen the great benefit with it. I would like the opportunity to discuss it with the ipred community and hopefully create a concrete plan which could be built upon and implemented in emergencies.
Merging Disasters: A cross-cohort comparison of mental health after large-scale natural and technological disasters

**Introduction:** Large-scale disasters often disrupt both formal health and social service systems as well as informal social support systems, with impacts that extend across the socio-economic spectrum. This cross-cohort comparison will assess the mental health status of three distinct disaster-exposed populations during a mid-term recovery phase, assessed at two to three years after the acute collective stressor. The model controls for a range of disaster exposures and explores those factors associated with population mental health that are generalizable across disasters.

**Methods:** Data are drawn from three disaster cohorts, including the Gulf Coast Child and Family Health Study, a longitudinal cohort (n=1,079) of displaced and heavily-affected Louisiana and Mississippi adults, post Katrina; the Sandy Child and Family Health Study (n=1,000) a random population sample of an exposed population in nine New Jersey counties, representing a population universe of 1 million residents exposed to the storm; and the Gulf Coast Population Impact Project, a cross-sectional household survey (n=1,437) of residents in four Gulf Coast states exposed to the Deepwater Horizon oil spill. In each cohort, face-to-face surveys were conducted 2–3 years after the event. A structural equation model tests the association between levels of disaster exposure and adult mental health (measured as mental health distress, using the Medical Outcomes Study SF-12 mental component summary score). The model controls for prior mental health distress, and income differences.

**Results:** The prevalence of mental health distress varied by cohort, although each independent cohort produced results suggesting enduring mental health effects among exposed populations. There was a strong association between the magnitude of disaster exposure and mental health effects, independent of lower socio-economic status.

**Conclusions:** The novel study design of a cross-disaster analysis begins to provide evidence that offers generalizability beyond a single disaster, often one of the
greatest limitations in disaster research. This analysis sets the stage for more complex cross-cohort analyses as a means of exploring the relationship between organizational and social systems and population health.
Zhang Guiqing, China

Psychologist, Clinic psychology Department, the 1st Affiliated Hospital of School of Medicine, Shihezi University, China

YAO Yongkun, the 1st Affiliated Hospital of School of Medicine, Shihezi University, China; HU Ming, the 1st Affiliated Hospital of School of Medicine, Shihezi University, China

Research traumatic event memory content changes after a trauma

Introduction: To acquaintance the change of the wounded about memory content of a trauma event, and the correlation between changes of the occurrence of PTSD after trauma.

Methods: We collected 100 individuals trauma with and 100 individuals normal control group. Trauma group filled in the general data questionnaire and evaluated the individuals’ memory content in within three days, 14 days, 30 days, 60 days and 90 days, after experienced trauma. And follow up PCL-C questionnaire in 30 days, again evaluated the participants’ memory function with CWM-RC in 90 days.

Results: There were significant pre-post reductions for EMDR group (P<0.001) but no change for the control group. After excluding the pharmacotherapy’s interference, EMDR group showed greater reduction in CAPS irritability (P=0.005) and CAPS total score (P=0.021) comparison to control group.

Conclusions:
1. After a trauma, a wounded memory function obvious drop in short time, but after 90 days, the memory function almost recovered to the normal level.
2. PTSD patients mainly comes from increasing and reduced groups of memory content trauma
3. People with PTSD mainly comes from the memory of image and emotion.
4. The individuals who experienced trauma and turned up to have memory bias have a certain relationship with PTSD.
Joan Hunter, *U.S.*  
Assistant Joint Surgeon, Joint Surgeon General, National Guard

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**The National Guard Bureau Psychological Health Program: Traumatic Event Management**

**Introduction:** National Guardsmen deploy to incidents dealing with natural, human-caused, and technological emergencies and disasters, which often result in traumatic events, placing significant psychological stress on responders.

**Methods:** Applying best practices for acute stress management gained through experience in other high stress environments, National Guard Psychological Health Program seeks to provide access to support and counsel to affected members.

**Results:** Employment of 235 Psychological Health Coordinators throughout the United States, serving over 450,000 Air and Army National Guard members.

**Conclusions:** The National Guard Psychological Health program advocates, promotes, and guides National Guard members and their families by supporting psychological fitness and operational readiness.
Worries about the future of families associated with the presence of posttraumatic stress disorder in Chinese trauma population

Introduction: Recovering both somatologically and mentally is becoming more prevailing than ever before. The high prevalence in the aftermath of military deployment and massive casualty events has been proved to be related to the unsatisfying outcome of trauma. Little was known in Chinese civilian settings, the authors aimed to identify the risk and protective factors in civilian trauma patients to discuss the potential management of posttraumatic stress disorder in Chinese population.

Methods: Total 1026 patients were included, 736 males and 292 females, between 1st January, 2013 and 31st December, 2014, 927 males and 411 females. PTSD and PTSD-like symptoms were screened by the Stressful Life Events Screening Questionnaire (SLESQ) and PTSD checklist civilian(PCL-C) for DSM-IV at the time point of 2 weeks, 1 month and 6 month after injury. The five-question of self-reported family and medical support were developed. Logistical regression analysis and Spearman correlation test were applied by SPSS 13.0.

Results: The average PCL-C score post trauma were 23.9±4.3 two weeks later, 25.5±4.3 one month later, 27.9±2.3 six months later, P>0.05. Asymptomatically emotional numbness and hyperarousal and re-experience were identified, compared with avoidance, p<0.01. Family support related to the score positively and the worries about the future of the families being cut off short strongly correlated to the severity of the symptoms. Neither the severity nor the perceived severity of the injury related to the PTSD or PTSD-like symptoms. The education level and the non-farm identity negative associated with the presence of avoidance symptoms.

Conclusions: In China’s civilian settings, the presence of PTSD or PTSD-like symptoms would be more optimistic than expectation. The features of the symptom clusters and the strong protective family bonding might indicate the management of posttrauma mental health requires comprehensive intervene, which should including aggressive family support.
Moshe Farchi, *Israel*
Head of Stress Trauma & Resilience Studies, Department of Social Work, Tel-Hai College

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**Preliminarily test and validate a brief Acute Stress Reaction (ASR) scale**

**Introduction:** The Acute stress reaction (ASR) is a possible reaction to threatening and traumatic events, and predicts post-traumatic stress disorder (PTSD). This study developed and preliminarily validated a very brief ASR scale.

**Methods:** Sample 1 included 118 patients while Sample 2 included 72 patients, attending emergency departments, following medical problems. The brief 3-item ASR scale assesses perceived fear, threat and helplessness. Patients’ anxiety was measured at baseline, 2 hours and 48 hours later. Levels of heart-rate (HR), blood pressure (BP) and PTSD symptoms were assessed in Sample 2.

**Results:** The brief scale had adequate to very high internal reliability. In Sample 1, ASR scores significantly correlated with anxiety at baseline and 2 hours later. In Sample 2, ASR scores significantly correlated with anxiety levels at baseline, at 2 hours and 48 hours later. Baseline ASR correlated with baseline HR and diastolic BP and predicted PTSD symptoms. Finally, a cut-off of the ASR scale significantly predicted a cut-off of anxiety levels 48 hours later.

**Conclusions:**
These results support the reliability, construct and predictive validity of this short ASR scale. Such a scale may aid to screen people in need for immediate help to possibly prevent PTSD.
Menachem Ben-Ezra, *Israel*
*Head, Social Work, Ariel University*
Elazar Leshem, Ariel University; Robin Goodwin, University of Warwick

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**Psychological Reactions Following the Charlie Hebdo Terror Attack**

**Introduction:** On Jan. 7, 2015, a terror attack targeted the satirical magazine Charlie Hebdo, leading to the death of 12 people. This attack was considered a national trauma that shook core beliefs and the French way of life. The association between mortality salience, reported shifts in political views, and sense of safety with psychological distress and post-traumatic stress disorder (PTSD) symptoms following national trauma is understudied.

**Methods:** We conducted a nationally representative online panel survey (N=1,982) in France 4 weeks after the Charlie Hebdo attack. Of 2,421 who clicked through to the survey, 1982 (82%) responded fully. Death salience, sense of safety, change in political view along with mental health indices were measured.

**Results:** Two-step logistic regression (adjusted for demographic variables) showed that elevated psychological distress and endorsement of PTSD symptom criteria were significantly associated with higher mortality salience and shift in political views (odds ratios, $\geq 2.27$, p values, $\leq 0.001$). The same results were replicated for each PTSD cluster (odds ratios, $\geq 2.07$, p values, $\leq 0.001$).

**Conclusions:** In the wake of the Charlie Hebdo terror attacks, we found evidence of elevated PTSD symptoms compared with historical norms in France (7.6% compared with 4.9%). Substantial proportions of French people felt shifts in their perceptions of personal safety, thought more about their own mortality, and said they would change their voting patterns as a consequence. These results expand on previous study of 9/11 terrorist attacks.
Nir Klein, *Israel*

*Emergency and security manager, Security, Intel Israel*

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**Stress Reaction of first responders**

**Introduction:** Crises occur with no early warning, and involves physical injuries and mental impacts that are called Acute stress reaction (ASR) injuries. As part of crisis management process, we have teams that are targeted to provide first aid in cases physical injuries and respond to basic stress issues. In cases of acute stress reaction a psychological response can be triggered, and a one can experience deep fear, helplessness or horror, and we needed to set a specialized team to provide support.

**Methods:** The stress reaction team was created to provide the immediate psychological response during emergencies as part of integral emergency preparedness on Intel Israel. The team is assembled from volunteers that are trained to support ASR injuries, assess their condition and recommend on future tracking, professional medical support and more.

**Results:** Over 30 volunteers in different campuses passed a 3 days special training successfully and ready to provide immediate stress reaction respond.

**Conclusions:** This create complementary solution for the first responders increasing the tool box event manager have in order to solve the event smoothly.
Kathrin Pientka, Germany

Project coordination, Project office, Health Protection Authority

René Gottschalk, Health Protection Authority

Results from the evaluation: The web-based tool “BEPE” in daily work routine

Introduction: Promoting preparedness for biological threats requires a reliable and valid evaluation of the levels of preparedness of medical institutions. The project “Biological Event Preparedness Evaluation (BEPE)” 2010 – 2013 was initiated under the framework of the “Research of Civil Security” and is within the German–Israeli cooperation supported by the Federal Ministry of Education and Research (D), Ministry of Health (IL) and Ministry of Science and Technology (IL). The overall objective was to save as many lives as possible in an occurrence of a biological event supported by a web-based-tool.

Methods: The main challenge was to aggregate findings/conclusions and also to specify them in a usable way for a web-based tool. After literature research to identify necessary parameters significant for managing biological events two Delphi-cycle with 220 Experts with different expertise were conducted to evaluate and prioritise the parameters. The consensus was defined as 75% or more of the raters, meaning that a parameter has to be included in the tool. The findings were complemented by practical hospital drills, utilizing simulated patients.

Results: The BEPE project enables to identify benchmarks for the preparedness of hospitals for biological events. Findings of the project, literature review and Delphi-studies were converted into valid, reliable and measurable parameters which form the basis for a web-based tool. Hospitals were encouraged to identify their strengths and weaknesses in the organizational planning. The tool will also contribute to improve the knowledge concerning biological events and skills of health professionals. Although all participants were convinced of the result only three hospitals working with the BEPE Tool in Germany.

Conclusions: A lot of hospitals analyzed a gap of knowledge regarding treatment of highly infected patients during the Ebola Epidemic. Actually two hospitals in Frankfurt are working with the tool. Evaluating the implementation of the daily work routine is the next task.
Stephen Sussman, U.S.

Associate Professor of Public Administration, School of Professional and Career Education, Barry University

Kirsten K. Loutzenhiser, Troy University; Eric L. Smith, Barry University

Firefighter Readiness and the Disaster Cycle: A Holistic Approach

Introduction: This research continues our effort to evaluate first-responder disaster preparedness, and will focus on firefighter readiness. Previous disasters (i.e., Katrina) demonstrated the need to know more about the personal and community connections of first-responders. Knowing their families are secure during a disaster, gives them the ability to be completely committed to serving the community. After Hurricane Andrew (1992), the Florida Fire Chief’s Plan was created to cover the contingencies that may arise in a disaster situation. In Florida, each fire/rescue department has a disaster/hurricane activation plan. Hurricane Frances (2004) tested the Palm Beach County plan. A supervisor monitored the mental health of the dispatchers, and a team was assigned to assist the families of the on-duty personnel. This holistic approach can mitigate the stress imposed upon firefighters preparing and responding to a disaster. The research effort is based upon the following logic model: Firefighters are able to respond to community needs, if they know their housing and family needs are met.

Methods: A closed-ended survey of firefighters, covering the State of Florida is the data-gathering instrument. The survey will be completed in 2015, and will provide descriptive data about the personal and professional lives of firefighters as they prepare for a disaster. The research is based upon a belief that the more a fire/rescue department understands family-based needs, the more likely firefighters will be able to address the community’s needs.

Results: Research already identifies firefighters as subject to high levels of stress. The more connected to family, community, and work networks, the greater the likelihood the firefighters will be resilient to sustained stress.

Conclusions: Preliminary research provides support for firefighters and public managers to address and develop programs to better prepare firefighters to serve the community when a disaster strikes.

Keywords: Disaster response, Firefighters, Hurricane, Social Support, Public Management
Veith Bosenbecker, Germany
Brandoberrat (Lieutenant Colonel) / Senior Fire Officer, Disaster Prevention & Planning Section, Frankfurt Fire & Rescue Service
Reinhard Ries, Frankfurt Fire & Rescue Service; Karl-Heinz Frank, Frankfurt Fire & Rescue Service; Andreas Ruhs, Frankfurt Fire & Rescue Service

Needs analysis and development planning for fire services. How much fire service does a city need?

Introduction: Whenever it comes to the specific implementation of structures and resources for disaster response, the question of how much fire service is appropriate for a municipality will arise. A practical approach to this question is illustrated by the example of the City of Frankfurt am Main / Germany.

Methods: The organization and operation of fire and rescue services is generally subject to legal regulation. To specify the requirements planning, a risk analysis for the considered area is to be conducted. On this basis, protection targets need to be defined. A protection target is defined by the dimensions of total response time, level of achievement, and number of human and material resources. For the area-wide safety protection of the population, a generic protection target has been defined in Frankfurt, covering the most common incidents. In addition, other protection targets for special, rare, or area-related incidents are specified, too.

Results: Following the definition of protection targets, the organization and resources of the fire service are being reconciled with them by analyzing the inventory of fire stations, vehicles and personnel. Main tool of this target/actual comparison is a multi-routing analysis to determine the areas of the city that can be covered by the fire stations within the given total response time. In case of uncovered areas, on-going development planning decides what to do to comply with the given total response time.

Conclusions: With the help of a structured needs analysis and development planning for fire services, the fire safety legislation can be better specified and adapted to the actual needs of a municipality. Through political agreement on the needs analysis and development planning prepared by the experts of the fire service, they gain legal certainty in their actions. A publication of the planning result illustrates what the public can expect from their fire service.
Asaf Harris, U.S.

Medical Student, Medical School for International Health, Ben Gurion University
Jonah Kreniske, Medical School for International Health / Ben Gurion University; Carmi Bartal, Soroka Hospital

Civilian ED usage during conflict: analysis of a major Israeli emergency department

Introduction: As the major hospital of Israel's southern region, Soroka Medical Center serves the Israeli populations most directly and consistently affected by periodic rocket attacks during clashes with Gaza. This analysis compares admissions to Soroka’s Emergency Department during the 2012 Operation Pillar of Defense, a period of intense rocket fire, with the same dates in the years previous and subsequent, in order to examine the effect of rocket fire on ED usage.

Methods: Admissions data was obtained for Soroka Medical Center’s ED in the years 2011, 2012 and 2013. The proportion of monthly admissions accounted for by the week of November 14–21 during the 2012 conflict was compared to the proportions in 2011 and 2013 respectively, using a two proportions z-test at the 95% confidence interval. The proportion of monthly admissions accounted for by the week of November 14–21 in 2011 and 2013 were also compared to one another.

Results: The proportion of monthly admissions accounted for by the week of November 14–21, during the Operation Pillar of Defense 2012, were significantly lower (p<.05) than for the same week in the year previous or subsequent. There was no significant difference in the proportion of monthly admissions accounted for by the two peacetime intervals.

Conclusions: ED usage during the week of the 2012 operation constituted a significantly lower percentage of total monthly ED usage for its respective month than did ED usage for the equivalent week in 2011 or 2013. Our findings suggest patients may avoid the ED during periods of rocket threat. The implications of this finding may suggest a reduction in the accessibility or perceived accessibility of healthcare services during the Gaza conflicts. Our findings suggest escalations of the Gaza conflict may demand increased healthcare outreach services for civilians in impacted zones of the Israeli south, to ensure quality of care remains consistent.
Reducing Risk of Improper Deployment During Ebola Response in West Africa

Introduction: The Ebola outbreak in Guinea, Sierra Leone and Liberia has sickened over 27,000 people and resulted in over 11,000 confirmed deaths. The US Centers for Disease Prevention and Control (CDC) has deployed over 3,000 people in lab, communications, educational, advisory and other public health roles. After a few anecdotal reports that some returning responders might be showing signs of possible traumatic stress, CDC leadership asked resilience experts to implement a pre-deployment screening process to reduce the likelihood of deploying someone who should not participate at that time.

Methods: An internal, 20-person panel composed of psychometricians, ethicists, mental health practitioners, attorneys and seasoned deployers convened multiple times to consider ways create such a process. The result was a proposal to adopt three specific assessment instruments, develop Standard Operating Procedures (SOP) to ensure professional, confidential collection of pre-deployment assessments and collaboration with the CDC clinic’s Medical professionals to make a team-based recommendation to inform deployment decisions.

Results: To date, over 4,200 assessments have been completed by potential deployers and reviewed by qualified professionals. Over 120 conversations have been held with individuals whose assessment scores warranted additional follow up. In a parallel process, over 1600 individuals who’ve returned from CDC’s Ebola response were invited to participate in a voluntary post-deployment conversation (in addition to mandatory debriefings). So far, 37% of individuals have chosen to participate in that conversation, share insights about what they experienced and suggest ways to continue to improve the deployment process.

Conclusions: Introducing pre-deployment assessment has increased the amount of relevant information available to make deployment decisions and given potential deployers the opportunity to consider factors that can affect their success in the field. The post-deployment outreach provides process-improvement data while enhancing deployers’ sense of meaning for their personal and professional sacrifices during the challenging Ebola response.
Ebola Response: Emergency Room Staff Perceptions of Ebola training

Introduction: Within the last year, Ebola virus has reemerged as a devastating epidemic. In response, Ebola preparations were initiated to train hospital staff to identify, isolate, and treat suspected Ebola patients. However, emergency department (ED) staff opinions about Ebola training are mixed and there is limited data on ED staff perceptions of Ebola protocols. Therefore, a formal assessment of Ebola training in the ED setting is fundamental to future disaster preparation.

Methods: Patient Care Assistants, Registered Nurses, Physician Assistants, and Attending Physicians were surveyed in an urban academic ED. A 17 question survey was administered containing questions that assessed ED staff’s perception of Ebola training and preparation.

Results: A total of 64 out of 195 participants completed the survey. The majority of respondents, 70%, indicated that they understood the current institutional policies regarding Ebola patients and 81% of ED staff felt competent with the donning and doffing procedures. The survey found that 60% of staff felt that Ebola training has prepared them to care for suspected Ebola patients. This study showed that 47% of ED staff agreed that disaster training and drills were important to patient safety and 50% felt that current procedures were too complicated. Lastly, 20% of the respondents noted that they would not return to work if there was a case of Ebola in the ED.

Conclusions: The majority of ED staff understood the current institutional polices and feel prepared to care for possible Ebola patients. However, 30% of providers do not understand Ebola policies and 40% are unprepared to care for such patients. Additionally, 20% of providers would not return to work if an Ebola patient was being treated in their hospital. Opinions were split about the importance of Ebola training and whether the current Ebola procedure was too complicated.
**Huijuan Duan, China**  
Senior Colonel, Hospital administration, The 302 military hospital of China

Yinying Lu, The 302 military hospital of China; Haoyang Chen, The 302 military hospital of China; Shuiwen Liu, The 302 military hospital of China; Junsheng Ji, The 302 military hospital of China

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**Medical Emergency Response to the Ebola Outbreak in West Africa by Chinese PLA medical teams**

**Introduction:** On August 8, 2014, WHO announced that the current EVD outbreak had become the public health emergency of international concerns and urgently called for emergent medical assistance worldwide.

**Methods:** The People’s Liberation Army (PLA) of China, acted rapidly in response to the calls of WHO and affected countries by deploying medical teams as well as medical equipment and aid materials to the affected countries, and launched the clinical operation for the local EVD outbreak control.

**Results:** A total of six Chinese PLA medical teams consisting of over 500 professionals were deployed successively to Sierra Leone and Liberia. From Sep 15, 2014 to Mar 20, 2015, the teams have provided comprehensive services including clinical treatment and care, infection prevention and control, health promotion and training to EVD patients and local healthcare workers. Within the first week of arrival, the first PLA medical team in Sierra Leone converted a general hospital into a specialized Ebola Holding and Treatment Center (EHTC) with 78 bed capacity in Freetown, the capital of Sierra Leone. In Monrovia, Liberia, the PLA team built a high-quality Ebola Treatment Unit (ETU) with 100 inpatient beds just in one month. Chinese EHTC & ETU were fully capable of patient screening, treatment and care providing, hospital infection prevention and control. A total of 883 suspected patients (295 confirmed EVD cases) were consulted and treated in the Chinese Ebola care facilities. Meanwhile, the Chinese PLA teams achieved the zero infection among its medical professionals and zero cross infection among all inpatients.

**Conclusions:** Chinese PLA medical aid operation in EVD outbreak control in West Africa was highly efficient. Experiences they gained in the areas of pre-deployment preparedness, EVD case management, infection prevention and control, multi-lateral coordination, and long distance logistics support will be of great value for other related infectious disease epidemic control in the future.
Raymond E. Swienton, *U.S.*

*Professor of Emergency Medicine, Chief of Division of Emergency and Global Health, Emergency Medicine, University of Texas Southwestern Medical Center at Dallas*

Kelly R. Klein, MD, FACEP, Department of Emergency Medicine, University of Texas Southwestern Medical Center at Dallas

### Ebola in the U.S, Epicenter: Dallas, Texas

**Introduction:** September 30th 2014, the first case of Ebola Viral Disease (EVD) was diagnosed in the United States (U.S.). Prior, we had seen three EVD patients diagnosed in Africa and transported to the U.S., with two successfully treated. However, it only took one person, presenting with a fever to a community hospital’s emergency department in Dallas, Texas, to expose the vulnerability of one of the world’s leading healthcare systems.

This is a brief report and subsequent recommendations from the first few weeks of our experience in Dallas, Texas, from the perspective of involved local academic physicians.

**Methods:** Just-in-time utilization of local preparedness initiatives and trusted expert consensus was employed to develop and operationalize methods and procedures to mitigate and manage the ongoing EVD outbreak.

**Results:** A screening tool and guidance was created and currently being utilized for special pathogen screening for both the pre-hospital environment and the county hospital system that was very sensitive. The implementation of sensitive screening methodologies in Dallas are likely responsible for the early identification of the two subsequent EVD cases in the U.S. following direct contact with the index case.

Numerous serious health system vulnerabilities were identified including critical knowledge gaps, ineffective screening methods, breeches in personal protective equipment use, unorthodox public health EVD containment efforts, severely reduced hospital capabilities all resulting from a single EVD case.

**Conclusions:** The screening tool is still being practiced and continued validation. We are even now, daily screening large numbers of patients for a low incident occurrence that is deemed a “never” miss. We are confident that a highly sensitive multilayered questioning approach will minimize the chance of a patient being miss-diagnosed in our emergency department. The observed near-collapse of a leading community hospital resulting from a single uninvited EVD case are evidence of a global health system threat.
EFFO Ebola - Efficiency by Edification: A train-the-trainer program to promote hospital preparedness for Ebola

Introduction: Health care workers (HCW) are key persons in the fight against highly contagious diseases since they constitute a particularly vulnerable group and can effectively prevent the spread of diseases when properly trained. The “EFFO Ebola” project promotes hospital preparedness by training HCW in countries with high risk for Ebola in West Africa. It was initiated by the Robert Koch Institute and the German permanent working group for highly contagious and life-threatening diseases (STAKOB) and is financed by the German Federal Ministry of Health. In this context, a novel train-the-trainer program was established.

Methods: The training course for HCW was jointly developed by experts from West Africa and Germany. Local trainers were recruited among HCW showing prior knowledge on infectious disease control and disposition to work with personal protective equipment (PPE). Trainings were conducted and evaluated applying quantitative and qualitative measures (pre-/posttest, survey, structured monitoring and informal interviews), followed by readjustment of the train-the-trainer program and teaching materials.

Results: The evaluation showed a need for standardization and improved quality of trainers, especially in the use of PPE. In Burkina Faso, a four-step train-the-trainer concept was implemented including (1) an optional Ebola online course, (2) intensified PPE and isolation unit exercises monitored by experts with field experience, (3) a didactics workshop and (4) performance of a training under supervision. Additionally, trainers had to complete a written test. The training and supervision proved to be well accepted and improved PPE and teaching competency among trainers.

Conclusions: Efficient training of HCW is essential in the context of Ebola, as
minimal mistakes can have fatal consequences. The EFFO Ebola project offers a sustainable and integrated train-the-trainer concept to promote hospital preparedness and response to highly contagious diseases. The long-term effectiveness is evaluated by on-going supervision and final on-site evaluation.
Self-Perceived Efficacy of Using Personal Protective Equipment Does Not Predict Objective Performance

**Introduction:** The recent Ebola outbreak that affected apparently protected healthcare workers (HCWs) emphasized the misuse of personal protective equipment (PPE) during an unusual biological event (UBE). The aims of this study were: (1) To compare between self-perceived efficacy of PPE use in the setting of UBE and objective performance. (2) To identify predictors of low compliance and PPE misuse.

**Methods:** An observational study combined with subjective questionnaires were executed during a bio-terror drill. Forty-two observers evaluated donning, doffing and continues work under PPE. Mistakes were recorded and graded, using a structured observational format. The observations were correlated with the subjective questionnaires of perceptions and with demographic parameters.

**Results:** The study included 178 community clinics’ and hospitals’ HCWs. The mean self-perceived efficacy of protection was high (6.1/7) while mean level of comfort was moderate (4.0/7). The mean objective performance score was intermediate (9.5/13). There was no correlation between self-perceived efficacy of protection, comfort and objective performance scores. Performance scores were better at clinics in comparison to hospitals (40.3% vs. 67.8% with three or more mistakes respectively, p=0.001). Other demographic parameters did not affect neither objective nor self-percieved performance.

**Conclusions:** Self-perceived efficacy of protection is a poor predictor of appropriate PPE use. PPE use is not influenced by subjective discomfort, age, gender, profession or number of prior lectures. The results suggest poor awareness to the possibility of PPE misuse, emphasizing the importance of a trained observer while working under PPE in the setting of UBE.
Lessons Learned from Operation United Assistance

Introduction: US Department of Defense conducted a study on Operation United Assistance. The presentation will review the findings and recommendations of the study.

Methods: Study included interviews, literature research, and analysis of recent response efforts.

Results: The study provides recommendations applicable to the international community in preparing for future biological outbreaks.

Conclusions: The international community must work to develop a framework capable of efficient and effective response.
Pinchas Halpern, *Israel*

Chair, *Department of Emergency Medicine, Tel Aviv Medical Center*

**Provision of Emergency Medical Services to secure medical treatment for Refugees**
Michael Dor, Israel

Operating a designated clinic for medical treatment of refugees

The ‘Public Clinic’, an organization funded by the Israeli Ministry of Health, provides affordable health services to status-less migrants. The clinic is located at the heart of the migrants’ community in Israel, Tel-Aviv’s central bus station, and plays a pivotal role in sustaining the health and well-being of those who are outside the public health system. From a population of over 100,000 status-less migrants, the clinic predominantly serves the community of approximately 47,000 asylum seekers from Sudan and Eritrea.

Founded in 2008 by Dr. Michael Dor, a Ministry of Health Advisor, the clinic offers access to health services to every individual who is not covered under the National Health Insurance Law (1994). As of 2013, the clinic operates in collaboration with ‘Terem’, a network of urgent care clinics, and provides over 32,000 treatments and examinations per year to status-less migrants.

The clinic operates for 12 hours a day and offers a wide range of services, including emergency care, specialist clinic, imaging center and blood labs. The specialist clinic is based on the work of voluntary doctors, who specialize in internal medicine, dermatology, infectious diseases, surgery, ENT, diabetes and more. Blood tests and other medical examinations that are performed at the clinic support health-providers in making prompt and informed decisions, and save time and money for patients.

While the majority of patients are men aged 20–40, the clinic also treats women and children. In February 2014 the women’s clinic was launched, offering examinations for pregnant women, contraception consultations, and pregnancy ultrasounds. The Children’s clinic has recently expanded its activity, following an increasing demand within the community for child care. The dental clinic, which will be opened in January 2016, will be the first clinic of its kind in Israel to provide dental care to status-less migrants.

In terms of the patients’ well-being, the clinic actively integrates health promotion and disease prevention activities that are tailored to the patients’ health needs and life-style. The activities cover various topics such as nutrition, infant safety, hygiene practices and more, and aim to increase health literacy.
The clinic’s approach to health is holistic, taking into consideration the diverse factors impacting the lives of status-less migrants in Israel. The combination of language and cultural barriers, together with first experiences with Western medicine, might cause frustration and distress among patients. In this context, the clinic employs Eritrean interpreters who improve patient-provider communication and facilitate a culturally adapted treatment in the patient’s native language.

The activities of the clinic enable over 250 patients a day to receive the medical treatment they need. At the same time, it assists in decreasing the number of status-less migrants seeking medical care in hospital emergency rooms, which reduces their workload. The demand for the clinic’s services is steadily increasing; the number of treatments provided increases each year at an average rate of 15%. The clinic operates on various channels to recruit volunteers and raise funds, in order to continue delivering quality health care to status-less migrants in Israel.
Alexander Lerner, *Israel*

*Director, Department of Orthopedic Surgery, Ziv Medical Center & Faculty of Medicine in Galilee, Bar-Ilan University*

**Humanitarian treatment victims of Syrian civil war in Ziv Medical Center, Zefat, Israel**

The severity of bone and soft tissue trauma caused by modern high-energy weapons is the main concern of the orthopedic trauma surgeon. This issue is even more challenging in wounded refugees when treated across the border and wish to go back to their country as soon as possible regardless the war and the vanishing local medical system and care. Such injuries pose several unique and complex treatment challenges. Since February 2013 more than 520 victims of the civilian war in Syria were treated in Ziv Medical Center, Zefat, Israel using staged treatment protocol, based on damage control concept. Eighty percent of them suffered from orthopedic trauma with extensive bone and soft tissue damage or even tissue loss. Immediate thorough irrigation, massive tissue debridement, followed by fracture stabilization using spanning external fixators were performed on admission. All that in order to minimize additional surgical trauma (“second hit”), blood loss, hypothermia and primary surgical time. Conversion of primary external fixation frames to definitive internal fixation (intramedullary nailing or plating) or circular external fixators was done depending on the general patient’s condition and local soft tissue status. After debridement, post-surgical soft tissue wounds were left open, treated with negative-pressure wound therapy and, eventually closed by skin grafting. Based on our experience we suggest that the staged protocol of external fixation provides successful fracture healing and good functional results in extensive compound blast injuries of the extremities, even in limbs categorized as high risk. This approach proved to be valuable in decreasing unnecessary complications in highly complex war victims. Furthermore, stabilized limb that allow early full weight bearing and an early prosthetic fitting made an early independent ambulation possible and made their way back home easier and safer.
The combined Israeli military-civilian medical humanitarian response aiding victims of the Syrian civil war dilemmas and lessons learned

**Introduction:** The Syrian civil war has been raging for the last four years, claiming the lives of hundreds of thousands and resulting in millions displaced in what was declared by the United Nations as the worst humanitarian crisis of the decade. This vicious war has also resulted in destruction of the medical infrastructure and medical personnel escaping the country.

**Methods:** Since February 2012, Syrian casualties of the civil war receive medical, life saving and humanitarian care within Israel, while the state of Israel is not involved in the war itself. These casualties, arriving to the border seeking help from their historical most vicious enemy, include women, children and men of all age groups. Incapable of providing advanced medical care to those in need, some are sent to our borders by their next of keens after been provided basic, often improvised basic medical care.

**Results:** This humanitarian effort has gone several stages of “evolution”, involving both military and civilian medical systems. The chain begins with Israeli Defense Forces medical teams on routine security missions providing life saving care, joined by designated military mobile Advanced Life Saving teams that then evacuate the casualties to the civilian trauma centers in northern Israel. Saving lives together, this stands as a unique example to the collaboration between the two systems, providing humanitarian care to war victims, citizens of an enemy country– from within our own borders.

**Conclusions:** An overview of the challenges and lessons learned will be discussed.
Screening practices for infectious diseases among newly arrived migrants - the Israeli experience

Introduction: The recent changes in migration dynamics have raised concern on the potential effect of migration on the transmission of infectious diseases in Mediterranean countries as well as in the European Union, and hence on public health in both regions. Health care systems in most countries in the Mediterranean region and in European Union are generally not designed to collect migrant specific health information and they often cannot reach people who are not seeking healthcare, because of language barriers or different societal and cultural factors and the information on ID among migrants remains patchy, lacking comprehensive and continuous data. Screening newly arrived migrants for infectious disease could be a useful tool to further monitor their health, for identifying new or asymptomatic cases and can offer opportunities for prevention and early detection of a disease. Data and analyses based on the Israeli experience with migrant screening will be presented.

Methods: Data will be analyzed according to the following parameters: patterns of immigration to Israel, infectious diseases that can be identified by screening, vaccination schedules and results of different screening programs.

Results: Three patterns of immigration were identified: legal Jewish migrants, legal labor migrants and undocumented (illegal) migrants. Different screening approaches and vaccination programs were tailored for each group. Evaluation of screening programs for tuberculosis and HIV will be presented, as well as response to infectious diseases outbreaks among migrants.

Conclusions: Migrants screening for infectious disease is a public health challenge. We offer some tools to effectively deal with some of the challenges, and identify the main areas which require further intervention and evaluation.
Katarzyna Długosz, *Poland*

Assistant, Department of Disaster Medicine and Emergency Care, Jagiellonian University Medical College

Trzos Arkadiusz, Department of Disaster Medicine and Emergency Care Jagiellonian University Medical College, Atmed Medicine and Education; Łyziński Karol, Department of Disaster Medicine and Emergency Care Jagiellonian University Medical College, Krakow Emergency Medical Services; Nitecki Jacek, Department of Disaster Medicine and Emergency Care Jagiellonian University Medical College, The Provincial Headquarters of the State Fire Service in Krakow

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**Organization of Emergency Rescue Operations in CBRN incidents. Training program for representatives of government services and medical students**

**Introduction:** The issues of environmental hazards and the possibility of the use of weapons of mass destruction have recently raised reflections, concerns and disputes both in the academic and emergency service communities. The situation, in which we are still being faced with the threat of the epidemics caused by the Ebola virus, poses numerous questions related to emergency preparedness for such incidents, the assessment of training of emergency services in Poland as well as the medical students’ abilities to respond appropriately in their future working environments.

**Methods:** The in-depth analysis of CBRN-related incidents, the evaluation of knowledge and skills acquired by the medical students and the representatives of government services allowed the Department of Disaster Medicine and Emergency Care to identify certain areas where the implementation of particular educational patterns within this field and the review and update of training programs are necessary. Consequently, the further analysis of the guidelines of the Ministry of Science and Higher Education in the context of constructing new educational programs at universities was performed to formulate a program in compliance with the Act on Higher Education.

**Results:** The educational program combining risk prevention with responses to CBRN-related incidents was formulated in conjunction with the Polish Army, the Emergency Medical Services and specialists from the Fire Department. Educational program includes theoretical and practical classes. It is designed for medical students during mandatory and optional classes. The representatives of government services are educated during special CBRN courses. The
implementation of this program enables the improvement of the health security, which is the main objective of this project’s target group.

**Conclusions:** The implementation of the educational program designed by the Department of Disaster Medicine and Emergency Care, Jagiellonian University Medical College is an example of an effective solution how to combine risk prevention with responses to the consequences of CBRN-related incidents.
Code Blue Response to a BSL3 Incident

**Introduction:** Code Blue is the Emergency Procedure code for cardio and/or respiratory arrests in the Singapore General Hospital. Code Blue Teams (CBT) formed by various disciplines respond to all Code Blue calls and collapse incidents on different parts of the hospital campus, to provide advanced resuscitation support to the initial responders. The Biosafety Level 3 Laboratory on campus works with agents that may potentially cause serious disease and hence, has various levels of security access.

**Methods:** The Emergency Department CBT conducted an exercise with the Biosafety Level 3 laboratory on campus to evaluate the response to a Code Blue scenario with contamination of staff, in view of possible access difficulties, on a normal working day, when the lab was “cold”.

**Results:** This report showcases the various steps of the Code Blue response, from activation of the Code Blue procedure by the lab staff through the security department and hospital telephone operator, to preparation by the Emergency Department CBT, arrival and escort in the secured area, Personal Protective Equipment (PPE) donning, to evacuation and resuscitation of the collapsed lab worker, and final disposition.

**Conclusions:** The exercise was conducted according to expected timing plans and there were areas identified for refinement, to prepare for the next exercise.
Leonard Cole, U.S.

Director, Program on Terror Medicine and Security, Emergency Medicine, Rutgers New Jersey Medical School

Gregory Sugalski, Rutgers New Jersey Medical School; Brenda Natal, Rutgers New Jersey Medical School; Cheryl A. Kennedy, Rutgers New Jersey Medical School; Adam Fox, Rutgers New Jersey Medical School; Arthur Cooper, Harlem Hospital Center, Columbia University; Sangeeta Lamba

The Value of a Course on Terror Medicine

Introduction: The development of medical school courses on medical responses for disaster victims has been largely deemed inadequate. To address this gap a 2-week elective course on terror medicine (a field related to disaster and emergency medicine) for 4th year students is offered at Rutgers New Jersey Medical School in Newark, NJ, USA. This elective is part of an overall plan to broaden exposure to topics related to terror medicine throughout the undergraduate medical education.

Rationale: Teaching terror medicine necessarily includes key aspects of disaster and emergency medicine, though the converse is not the case. Courses on disaster medicine may not address features distinctively associated with a terror attack. Thus a terror-related focus not only assures attention to this important subject but to accidental or naturally occurring incidents as well.

Methods: The course, implemented in 2014, uses a variety of teaching modalities including lectures, videos, and tabletop and active simulation exercises. The subject matter includes biological and chemical terrorism, disaster management, mechanisms of injury, and psychiatry. This report outlines the elective’s goals and objectives, describes the course content, and presents outcomes based on student evaluations of the initial iterations of the elective offering.

Results: All students rated the course as “excellent” or “very good.” Evaluations included enthusiastic comments about the content, methods of instruction, and especially the value of the simulation exercises. Students also reported finding the course novel and engaging.

Conclusions: An elective course on terror medicine as described is shown to be feasible and successful. The student participants found the content relevant to their education and the manner of instruction effective. This course may serve as a model for other medical schools contemplating the expansion or inclusion of terror medicine related topics in their curriculum.
Operation Bushmaster: A Unique Educational Exercise

Introduction: Operation Bushmaster is a unique large scale training exercise conducted annually by the Uniformed Services University of the Health Sciences (USUHS) for its medical students and graduate nurses. The exercise has the students simulate the operation of U.S. military field hospitals in a hypothetical country with an ongoing insurgency.

Methods: The fourth year medical students and graduate nurses for the exercise are divided into platoons and faculty are assigned to each platoon to evaluate the students’ performance and to provide clinical and operational instruction. A few military medical students from other countries also participate. The students receive extensive preparatory instruction on the hypothetical country situation and on practical skills. The students then relocate to Fort Indiantown Gap (a National Guard training facility) where Operation Bushmaster is carried out. The faculty come from USUHS and other U.S. military medical facilities, and from Canada and the United Kingdom. The students then provide care for simulated medical and combat injury cases (acted by first year medical students from USUHS). The faculty also present the students with multiple operational problems which they must analyze and solve.

Results: The students learn to provide advanced medical care despite the difficulties associated with the combat environment. The capstone event of the exercise is a mass casualty simulation where two of the platoons come together to treat and extricate a large number of simulated casualties.

Conclusions: Operation Bushmaster is USUHS’s capstone exercise, and has been rated by the students as a major highlight in their medical education. It integrates USUHS’s four year military medicine curriculum where the students are called upon to demonstrate proficiency in the three curricular pillars: military medicine, tactical combat casualty care, and leadership. Replication of the Operation at a smaller scale should be useful for other countries’ militaries.
André Baumann, *Germany*
*Brandoberrat, Head Paramedic School, Paramedic School, Berlin FD*

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**From “Rettungsassistent“ (EMT-Intermediate) to “Notfallsanitäter“(EMT-Paramedic)**

**Introduction:** In Germany it took more than 10 years to establish a profession (Rettungsassistent) from what once started as a 3 monthly course for volunteers and professionals.

**Methods:** presentation of the new curriculum

**Results:** Description of the changes that will be caused by the new paramedic law

**Conclusions:** Despite all the challenges we are facing we believe that the new training is a big step forward for a new and better EMS system.
Ben Godder, U.S.

NYU, College of Dentistry

David Glotzer, New York University; Victoria Raveis, NYU, College of Dentistry

All Hazards Training: Incorporating a “Certificate of Disaster Preparedness” into the Dental School Curriculum

Introduction: September 11, 2001 and the subsequent anthrax scare triggered an unprecedented concern for public health preparedness, and uneasiness about the nation’s capacity to defend itself against terrorist attacks. The leadership of the New York University College of Dentistry (NYUCD) sought to define a role for the dental profession to respond to terrorism threats facing the country.

Methods: The dental school curriculum expanded to infuse bioterrorism studies and preparedness training across the 4 years of dental education, concluding with a capstone course in the senior year. The overall goal, in keeping with the US Department of Homeland Security concept of an “all hazards” approach, is to prepare dentists to plan, prepare for, respond to and recover from disasters. Upon satisfactory course completion, students receive a “Certificate of Disaster Preparedness”.

Results: Students in the program acquire basic foundation skills in the biomedical sciences, an overview of chemical and biologic weapons, CPR training, and wound management; and are well-trained in infection control procedures, preparedness planning and public health emergency response. The capstone course reinforces why dentists should be concerned, and the need to be part of, and play a role in their community’s established and organized disaster response system. Students work in groups, and develop a reaction or a shelter-in-place plan, for their private dental office. Their plan can be tailored to a specific bioterrorist agent, or generic for a natural or man-made disaster.

Conclusions: Including catastrophic preparedness and response training in the dental school curriculum is developing a cadre of knowledgeable dental practitioners who are an asset to their communities. Since program onset, training in emergency preparedness and resilience planning has proven invaluable for those practicing in locales that have experienced natural or man-made disasters. It has also led other dentists to greater involvement, and additional training with disaster response programs.
Eyal Furman, Israel

Colonel Eyal Furman, MD, MOH, Chief surgeon Home Front Command, Israel Defense Forces

Characteristics of Hospitals’ drills

One of the major challenges of assuring readiness for various emergency scenarios is the creation and sustenance of knowledge and competencies of medical teams. How can we train the extensive scope of medical and paramedical personnel, prepare them for the different and dynamic emergency threats and most importantly, preserve the knowledge despite the frequent turnover that characterizes routine operation of human resources? Since 1976 the Israeli Defense Force (IDF) Home Front Command (HFC) partners with the Israeli Ministry of Health (MOH) in order to train and exercise the hospitals and community medical facilities, and thus assure their readiness for emergency scenarios, both conventional or CBRN events that may occur in routine or during crises. We would like to share our experience with you and welcome the dialogue that will follow.

The main questions will be:

What motivates a medical facility to conduct training and exercises for emergency events?

Medical facilities are usually much focused on the demanding routine activities and are thus less inclined to integrate actions designed to build their emergency readiness, such as drills. We identified some factors that may raise the motivation and facilitate to overcome this challenge.

Is there any preference to utilize the IDF or HFC as trainers of the medical facilities?

What is the recommended frequency of drills?

Who should bear the financial implications of the drills?

How do we define the content of the training program and topics for evaluation?

How do we plan the drill?

What is preferable – A notified or un-notified drill?

Who should participate in a drill?

Who should evaluate and assess the performance in the drills?
How can we make the mock casualties as realistic as possible?

The medical facilities’ training have developed from single organizational drills to multi organization drills that include the participation of municipalities, emergency responders, communities, the electric company, water organization and any additional relevant organization. We’ve developed from a tactic to a strategic model – Multiple Organization Training for Healthcare personnel – MOTH.
Dov Smaletz, Brazil

Security Manager, Hospital Israelita Albert Elnstein

Fabio de Castro Jorge Racy, Hospital Israelita Albert Einstein; Gladys Cristina Borges, Hospital Israelita Albert Einstein; Glaucia da Silva Duarte, Hospital Israelita Albert Einstein; Jefferson Kiyoshi Segalla Mizutani, Hospital Israelita Albert Einstein; Magda Roberta Ferreira, Hospital Israelita Albert Einstein; Tatiana Cristina Gomes dos Santos, Hospital Israelita Albert Einstein

First integrated exercise on disasters management in Sao Paulo - Brasil (Public and Private forces)

Introduction: Being concerned on the importance of a fully integration between private and public forces during a disaster, Albert Elnstein Hospital promoted the First International Symposium for Crisis and MCE Management on May 2015. All the public forces and some private institutions were invited to share and show how they will react and interact on a catastrophic event and what are their operational limits. Having the IPRED as model, on the last day we organized an exercise to check what will happen on a real situation.

Methods: Planned together during nine months, were involved on this exercise: Sao Paulo´s Militar, Civil and Metropolitan Police; Military Firefighters, Regional Civil Defense Department, Brazilian Red Cross (São Paulo), Brazil´s Scout Group (São Paulo), Hospital das Clínicas (Public Hospital), Hospital Albert Einstein (Private Hospital) and others entities. On the end of a Rave Party, a bomb exploded at the scene and the forces had to react and conduct as they were trained. About 418 volunteers actors, 8 red victims and 8 yellow victims (splitted between the two hospitals), 1 dead victim and about 30 green victims that arrived to Albert Einstein Hospital.

Results: Most of the goals achieved. Many lessons learned, an 8 minute film was made to register and make consulting possible for learning. About 418 people participated directly on the cenario. Some process must be reviewed.

Conclusions: Interaction between private and public forces is a must in case of a disaster/catastrophyc scenario and can be done. The need and the wish for more shared drills become very clear
Zahi Dagan, *Israel*

*Head of Chemical Division, CBRN Branch Medical Corps, IDF*

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**MTE Drills and Reality - What we had Learned**

**Introduction:** Introduction: Multiple Casualty Event drills are being conducted at hospitals since 1996 by Medical Department of the Home Front Command. The scenarios are both conventional and non-conventional (e.g. bioterror, radiological events, chemical warfare agents event, toxicological event) and the planning is carried out by the Emergency and Disaster Management Division of the Ministry of Health.

Mass Toxicological Event (MTE) potential scenarios include industrial accidents, transportation accidents and chemical terror events.

**Methods:** Methods: In the last two years, because of the changing threat, the focus in training hospitals is to have MTE exercises - some as a large scale drills and some as a surprise, small scale drills.

**Results:** In the session, we will describe the drills and the results of investigations of real events. Also, we will raise some main conclusions, and discuss some lessons we learned from these drills:

1. The importance of early declaration of a MTE.
2. Communication and data sharing between first responders.
3. The importance of PPE – how to don and undress.
4. The lack of toxicological knowledge among medical staff including urgent implications (protection and decontamination based on the specific HAZMAT).

**Conclusions:** We will offer some operational solutions to the problems raised, e.g. toxicological course for first responders.
Lion Poles, *Israel*

*Consultant to MOH on CBRN preparedness, Kaplan Medical Center*

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**Training systems and the individuals for emergencies - “Orange Flame” Concept and changing methods of emergency training in Israel**

**Introduction:** The Israeli medical community has prepared itself for diverse emergencies mainly since the 1970s, as a joint effort of the Ministry of Health and the Medical Corps (and later the Home Front Command medical department). The year 2005 was a turning point in the training approach of the medical community. Until that time, the training was limited either to a single hospital (focusing on varied scenarios such as chemical emergencies, mass trauma, radiological emergency) or to a single component of the response (e.g. training the emergency department for SARS, 2003). The decision/policy-makers and managers were sporadically trained through table-top exercises, mainly for biological emergencies.

**Methods:** Facing the goal of adequately preparing for an unusual biological event, a novel model was developed by the author and implemented since 2005, named “Orange Flame”, designated to train the system which comprises of all medical (and non-medical) organizations located in a district as well as the national managerial level concomitantly. Furthermore, in each institute, whether a clinic, EMS, a hospital or a public health office – all staff members were included in the training – from the janitor to the CEO. This modified concept incurred a revolution in the training process as well – 6 months of collaborative work conducted by a pivot group, with all stakeholders, including a series of local response planning, lectures, skills training, and table-top exercises, culminating in a 36 hours, full scale real-time system exercise.

**Results:** The success of this training model was later adopted for other types of emergency scenarios – Earthquake, Trauma disaster and Mass radiological incidence.

**Conclusions:** The pros and cons of this model will be discussed.
Liora Utitz, *Israel*

*Mass Casualty Coordinator, Nursing Administration, Rambam Health Care Campus*

Mira Wilhelm Kafil, RN, MA, *Nursing Supervisor, Bnai Zion Medical Center; Miti Ashkenasi, RN, MPH, Nursing Supervisor, Carmel Medical Center*

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**Collaboration between Medical Centers - a model for success in mass disaster training**

**Introduction:** Emergencies frequently necessitate extensive regional collaboration between medical institutions, as the type and scope of casualties may surpass the surge capacity of each individual hospital. Nonetheless, hospitals often compete with each other, each wanting to attract the population and as a result, each builds its emergency response plan separately. The study aimed to build a model for collaboration concerning emergency management between three hospitals located in one urban area.

**Methods:** Following the realization of the necessity to join forces in order to raise regional capacity, a joint steering committee was formulated, supported by the administrations of all three medical centers; one level 1 and two level 2 trauma centers. This committee produced the framework for cooperation and defined roles and responsibilities concerning emergency management. Several partnerships were created based on professional attributes. For example, infection control practitioners scheduled regular follow-up meetings as well as open ongoing communication and mutual learning. Joint disaster response protocols and standards of practice were designed and modified according to the specific characteristics of each hospital. Common checklists and joint training programs were developed and implemented for trilateral use.

**Results:** Cooperation produced mutual trust, recognition and created communication channels for potential emergency challenges. It also encouraged an atmosphere of excellence. The collaboration promotes sharing of knowledge and serves as a support group. Following the joint operation, the performance of the hospitals in an exercise simulating a radiological and biological scenario presented improved function, better information sharing, and more efficient utilization of resources.

**Conclusions:** Joint regional collaboration increases efficiency and quality of the emergency preparation process for complex emergency scenarios, reduces organizational competition, increases trust between medical centers and contributes to the well-being of the community.
Amir Blumenfeld, *Israel*  
*MOH, MCE Committee, MOH, Israel*

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**MCE drills, the basic and the advanced**

**Introduction:** MCE drills are the best and apparently the only way to maintain a sufficient level of expertise among medical teams that need to cope with such situations, both at the pre-hospital and the in-hospital environment. In such events, there are various challenges that need to be addressed, to include medical, operational, communication and others. Experience proved that continuous training increased the knowledge and expertise of the team members as well as their ability to provide appropriate medical care according to pre written protocols and guidelines. However, there are other forms of MCEs that need special attention, since they have different characteristics that require specific dedicated approach. These are events that involve high numbers of children, or events with more than 500 casualties, known as Mega MCE.

**Methods:** Due to their special characteristics, the usual MCE methodology could not apply and distinct protocols were written by experts’ teams. Soon after completing writing these protocols, several drills in these special topics were conducted. The drills served as training tools to the participating teams as well as means for lessons learned that were used for improving the doctrine.

**Results:** The dedicated committees for both, the pediatric and the mega -MCEs, needed to address multiple topics that were not part of the conventional MCE protocols. Those topics were discussed thoroughly and concluded according to the experts opinions. The drills that were conducted soon after, revealed additional topics that were further discussed and included in the protocols.

**Conclusions:** The Pediatric and Mega MCEs protocols were proved to be correct and applicable in the drills that were specially designed for those scenarios. In addition the drills were found to be a validating tools for the protocols. However, some questions, e.g. the frequency and sequence of these drills remained unsolved and need further discussion.
Eli Yaffe, *Israel*

*Division Director, Training, PR, Volunteer Activities, Marketing and International Relations Division, Magen David Adom*

Itamar Abramovich, Magen David Adom; Shaul Avidov, Musketeer; Roman Sonkin, Magen David Adom

**Emergency Social Application connected to a national EMS Dispatch - Crowdsourcing To Locate Victims In Emergency Situations**

**Introduction:** One of the main challenges EMS organizations face in emergency times is locating victims. For example, after an earthquake entire neighborhoods can look undamaged while several buildings have collapsed inside. Another scenario is missile attacks, when dozens of calls are received to report explosion sounds without an accurate location. An Emergency Social Application connected to the national EMS organization’s emergency dispatch will allow a citizen witnessing victims to report their accurate location and amount. Thus, canceling the need to send medical forces to search for victim locations and will lead to a more effective deployment of resources.

**Methods:** Magen David Adom, The Israeli national rescue organization works in cooperation with a company that developed an emergency social application that allows the tracing of victims, report and dispatch of Ad Hoc volunteers. MDA has requested volunteers to install the application on their smart phones. A drill was conducted among 500 volunteers spread countrywide, they were asked to report their location simulating the location of a missile fall. These locations were displayed on an operational map in the national dispatch.

**Results:** Within not more than 30 seconds of drill activation, hundreds of simulated missile fall sites were displayed on the map. Command & Control Software simulated average ambulance response times to sites (8.3 min) demonstrating an average of 4 minutes decrease in comparison to “Protective Edge.”

**Conclusions:** The technology enables rapid report of an accurate location, as opposed to report by people in state of stress and confusion. The implications of utilizing the system are that ambulances will be dispatched to reported locations in accordance with the amount of victims thus eliminating the need to quest for missile fall locations and victim concentrations. The Number of calls to a dispatch will decrease and call times will shorten, thus cancelling the need to reinforce the dispatch.
Rebecca Florsheim, *U.S.*

*Assistant Professor, Division of Hospital Medicine, Weill Cornell Medical College*

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**Optimizing Global Relief Efforts after Mass Casualty Disasters: Suggestion for a Specialized Social Network after Responding to Haiti and Nepal**

**Introduction:** Communication is key to effective patient care. A disaster situation exaggerates the need for optimal communication and exemplifies dramatically of how lapses in communication can adversely affect outcomes. The problem of suboptimal communication affects all parties involved in disaster response including charitable donors, security forces, search and rescue teams, health care workers, social workers, and those delivering emergency supplies. Social networks have been used increasingly to assist in disaster response over the years, but leave room for improvement for streamlining information for responders.

**Methods:** We have designed a specialized social network to be comprised only of verified responders and affected community representatives to optimize communication and coordination after a natural disaster or act of terrorism. It will provide potential responders with information regarding preparation, transportation, communication, local laws and customs, specific assignments for which to prepare, and where their skills are most needed in real time. Community representatives will have the ability to post a need for aid workers to view and coordinate accordingly, and also post notifications when a need has been met.

**Results:** Using the network to assist with the ongoing response in Nepal, we expect that we can help curb wasted and redundant donations, increase efficiency in communication of needs in all of the above listed categories, elicit appropriate responses, and avoid overlap of support from various aid organizations in some parts of an affected area while other regions might have essential needs ignored.

**Conclusions:** Mass casualty disasters often elicit a response from some of the most accomplished and experienced professionals in the world. However, efforts will never be optimal without effective communication. We believe utilizing a specialized social network geared specifically toward the disaster response community will serve to maximize untapped potential in international relief efforts.
Dmitry Leykin, Israel

PhD Student, Department of Emergency Medicine, Faculty of Health Sciences, and PREPARED Center for Emergency Response Research, Ben-Gurion University of the Negev

Mooli Lahad, Department of Dramatherapy, Tel Hai College; The Community Stress Prevention Center; Limor Aharonson-Daniel, Department of Emergency Medicine, Faculty of Health Sciences, and PREPARED Center for Emergency Response Research Ben-Gurion University of the Negev

Automatic Assessment of Personal Coping Strategies from the social media: An Aid for Crisis Communication with the Public

Introduction: During disasters, social networking websites are “flooded” with information, messages and guidelines to and from affected populations, public and service providers. As the interdisciplinary field of computational social science is advancing, the use of automated text mining techniques during crisis is growing and will enable the discovery and extraction of knowledge from unstructured text found in social media, in the foreseeable future. Although disasters pose immediate threat and uncertainty, the literature emphasizes the human ability to cope with large scale emergencies. The psycholinguistic model BASIC PH underlines the utilization of a unique set of communication modes, interpreted as individual coping repertoire. Individual coping profiles are proposed as an explanation as to why certain communication styles are more receptive by some individuals. The broad aim of the present study is to utilize data posted on social media during disasters, in order to assist decision makers to better manage emergency situations and crisis communication efforts. The specific aim is to develop lexical resources and classifiers for automated characterization and assessment of coping resources based on social media content.

Methods: Methods for lexical resources development included social media content extraction, data pre-processing, dictionary construction, inter-rater reliability analysis, classification modelling and exploratory data analysis.

Results: A comprehensive Hebrew lexical resource for BASIC PH profiling based on social media texts was established. It includes a broad list of combination of words, classified into BASIC PH categories. This lexical resource is integrated in an online tool that analyzes imported text and visualizes individual BASIC PH profile.
Conclusions: The BASIC PH profiling tool would assist first responder organizations as well as local and national officials to gain insights from the massive user-generated content published online, based on psycho-linguistic theory and advanced text analytic tools. It also can enhance the communication process to increase credibility and improve cooperation during emergencies.
Did belonging to a WhatsApp group of women with siblings in active military service during operation “Protective Edge” contribute to their personal or community resilience?

Introduction: Operation “Protective-Edge” was a military conflict during the summer of 2014, where thousands of Israeli reserve soldiers were drafted to join active military service. Many mothers and wives were under severe strain and deep concern for the safety of their dear ones as combat resulted in fatalities and casualties. In stressful situations, individuals often seek support from their social networks. This study aimed to explore whether belonging to a “WhatsApp” group that was formed to support women with siblings in active service, was associated with increased resilience.

Methods: A door-to-door survey was conducted in March 2015 among women living in Ofra, a small community settlement. Inclusion criteria included having at least one immediate family member recruited to active military service during the operation. The questionnaire included questions concerning socio-demographic characteristics, utilization of social media, community and personal resilience. Data were analyzed using SPSS and included t-tests, chi-square tests and analysis of variance.

Results: 106 women completed the questionnaire. Most were married (92%), religious (98%), and had an academic degree (75%), the mean age was 38.5 (s.d 12.45) years. Exposure to stress was high with most women having more than one sibling in military service at the time: 59 women (56%) had a husband drafted, 29 (27%) had at least one son in active service, 32 (30%) had a brother recruited. Thirty nine responders belonged to the WhatsApp group. Mean personal resilience score was significantly higher among women that were members of the WhatsApp group ) 3.03( compared with those who were not (2.59, p<0.001). No significant differences were found in community resilience, demographic or other characteristics between groups.
Conclusions: Designated WhatsApp groups for women with shared concerns can serve as a possible mode for enhancing personal resilience. Further studies may explore applicability to different emergency situations and to families in other conflict zones.
Tomer Simon, *Israel*

*PhD Candidate, Emergency Medicine, Ben Gurion University of the Negev*

Avishay Goldberg; Bruria Adini - Ben Gurion University of the Negev

**Involvement of emergency responders in spread of rumors on social media during terror attacks**

**Introduction:** Throughout emergencies and terror attacks, information with unknown credibility from official or unofficial source may propagate. Social media are used during emergencies to distribute relevant, critical information to the public and the authorities, and may be simultaneously used to distribute rumors, misinformation and unverified data, which propagate rapidly.

On 06.12.2014, three teenagers were kidnapped and found dead after several days. A gag order was issued concerning the abduction and search operations, causing interest in alternative sources of information. Where official information is lacking individuals use rumors to compensate for information gaps. Social media can operate as backchannels for communication and contribute to the dissemination of false and inaccurate information. Following cases where sensitive information was published by IDF personnel on WhatsApp, the Information Security Department banned its use. Nonetheless, it is difficult to enforce such a ban; thus, soldiers continue to use it. This study investigated how information spread through WhatsApp during the search operation by emergency personnel.

**Methods:** The current research and data collection were conducted during the actual event using participatory research approach combined with quantitative methods.

**Results:** We have collected 13 rumors circulating on WhatsApp, nine of which were verified. Five rumors were identified as originating from first responders or military personnel. A web-based survey revealed that 61.1% received updates through WhatsApp and 38.9% through Facebook. Rumors also originated from the family and community of the abductees.

**Conclusions:** During the operation, official representatives did not correct or refute any rumors. One of the reasons for this was the very strict gag order issued on the kidnapping and the military search operation. Detecting the source of a rumor is difficult. It is important to do a real-time investigation to detect their source and propagation. When emergency authorities share unconfirmed information, it is perceived as more credible than information spread by citizens.
Christopher Kramer, U.S
Manager, Media Relations and External Affairs, Communication, Argonne National Laboratory

Effective public communication during crises and emergencies

Introduction: During a time of crisis the ability to communicate with the affected population is critical. Just as critical is the need for that information to be understood, believed, and acted upon by members of the impacted community.

Methods: With a combination of research on recent crises, interviews with communication professionals at the center of events, and over two decades of experience in the field this presentation focuses in on how first responders and leaders can effectively communicate with members of a community impacted by a crisis. Areas of discussion will include how people react and take in information during a crisis, bridging cultural differences in information dissemination, risk perception versus risk reality, how to motivate people to prepare for a risk, what people want to know during a crisis, how to structure crisis messages for ease of understanding, and what channels to use (e.g. social media, news outlets, etc.) to deliver crisis messages. This presentation will also touch on how government leaders can enhance the trust of those impacted by a crisis.

Results: **

Conclusions: A well-crafted, well delivered and easily understood crisis communication message can save many thousands of lives at one time. Effective crisis communication can also be critical to community resilience by helping people to overcome the psychological impact of a disaster and to feel optimistic about the future.
Gilead Shenhar, *Israel*

*Researcher, Center of Trauma, Gertner*

Michael Rosenfeld, Gertner; Irina Radomislensky, Gertner; Kobi Peleg, Gertner

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**Effectiveness comparison of two earthquake awareness campaigns in Israel (2011-2013)**

**Introduction:** One of the most effective ways to reduce casualties from earthquakes is by increasing the preparedness of the population. During the years 2011–2013 the Israeli authorities executed three national-level earthquake awareness campaigns in order to increase the preparedness of the citizens.

**Methods:** To assess the relative level of impact of the campaigns on the populace and their ability to produce a cumulative effect through the whole study period. Two surveys were conducted two weeks after the end of the first campaign (2011) and the third campaign (2013); both assessments were based on a similar randomly selected representative sample of adult Israeli population.

**Results:** The exposure to the campaign proved to be a significant factor in increasing the knowledge of the respondents, giving a 1.5 time higher knowledge advantage to the respondents exposed to the campaign (OR, 1.6; 95% CI, 1.27–2.12). However, the period of the assessment proved to be an even more significant factor, with knowledge in 2013 being 2.3 times higher than in 2011, (OR, 2.3; 95% CI, 1.81–3.02). Additionally, a gap of up to 40% between the levels of trust and the perceived responsibility of respective authorities in the times of earthquake was found in both surveys.

**Conclusions:** This study has found an improvement in public knowledge regarding earthquake preparedness over the three years of the study. This may potentially mean that an awareness campaign doesn’t stand by itself, but should be part of an integrated long-term process in order to have a lasting effect on the population. Furthermore, the timing of the campaign was found to be a very important factor.
Raphael Barishansky, *U.S.*
Director, Office of Emergency Medical Services, Connecticut Department of Public Health

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**Understanding Mobile Integrated Health in the US**

**Introduction:** Various factors including rising hospital readmission rates, reimbursement realities and the need for better EMS integration with healthcare have brought about the advent of Community Paramedicine programs in various areas of the United States. Although there is no standardized definition of the term and no standardized educational program to follow, these initiatives have been somewhat similar.

**Methods:** The various MIH programs will be reviewed with a focus on development, lessons-learned and potential futures for these programs will be reviewed. Additional review will focus on funding mechanisms for these programs.

**Results:** MIH programs that have married with existing Healthcare entities have shown clinical efficiencies, reduced readmission rates and increased EMS interaction with other healthcare stakeholders.

**Conclusions:** Although we have seen successes with these programs in the US, the long-term future is still uncertain. These programs could potentially make EMS a larger force in healthcare overall.
SIMEDIS: a discrete event simulation tool for testing the response to mass casualty events

Introduction: The research presented in this paper is part of the SIMEDIS (Simulation for the assessment and optimization of Medical Disaster management in disaster scenarios) project. The objective of SIMEDIS is the development of a stochastic discrete event simulation tool which will be used to test disaster medical management policies and procedures in different disaster scenarios.

Methods: A stochastic discrete event simulator was constructed using ARENA®, a commercially available SIMAN programming language–based simulation software.

Results: The SIMEDIS simulator consists of 3 interacting components:
- a medical response model (where the victim interacts with the environment and with the resources available in the disaster medical management system),
- a victim creation model (where disaster victims are generated and mapped to victim profiles corresponding to the simulated scenario), and
- a victim pathway model (where the clinical condition of every victim is monitored and the transition of one clinical condition to another is managed).

The simulation model is supported by 3 databases:
- the victim database which includes the victim profiles, the transitions from one clinical condition to another, and the delivery and effect time of the medical interventions;
- the scenario settings database which includes the environment, the number of victims and the severity of their injuries, the available human and material resources, the skill matrix of the health providers, the hospital treatment capacity distances, speed of vehicles, and times;
- Decisions and rules database which includes a set of medical and operational policies, procedures and decisions.

Conclusions: The specificity of our simulation model is the fact that the victim entities will evolve through both the medical response model and the victim
pathway model in parallel, while the interaction between both models is ensured through triggers. The simulator also allows detailed outcome studies on disaster medical response systems.
Simone Wurster, Germany
Researcher and Project Manager, Institut für Technologie und Management, FG Innovationsökonomie, Technische Universität Berlin
Roman Peperhove, Forschungsforum Öffentliche Sicherheit, Freie Universität Berlin

Determining the value of public safety solutions: the benefit of early warning apps to protect lives and critical infrastructure

Introduction: Modern societies are increasingly threatened by natural and man-made hazards. Every year thousands of people die. In addition, the direct financial losses from such incidents reached US$ 113bn in 2014 alone. International research has shown that emergency preparedness and management and resulting activities, such as investments in infrastructure, are not functioning as they should. Given the large number of threats forecasted for the next decade, the need for increased effort in planning for emergencies is highlighted.

Methods: European researchers are developing a public safety and crisis response system including a warning app, which integrates registered volunteers. The solution aims to help reduce casualties in many fields including flood events, fire hazards and industry accidents, but also ad-hoc incidents such as heart attacks or health problems due to heatwaves. It also helps to protect critical infrastructure and additional public and private assets. This paper describes a holistic assessment approach and selected examples to determine the benefit of this advanced solution. The concept consists of factors related to the system, the affected area and, building on four calculation steps, the impact on the population and financial assets. It also comprises action-based factors including aggregated variables regarding emergency management and volunteers’ behaviour.

Results: Based on an emergency field test, benefit calculations of the system are presented. Additional calculations build on interviews and secondary data. They include, in particular, examples of saving lives, protecting energy infrastructure and several hundred endangered cars.

Conclusions: The results demonstrate the substantial contribution of the advanced warning system. Besides providing practical, test-based implications, they illustrate the benefits in large-scale events and also the aggregated impact to save lives in small/medium-sized incidents with higher incidence rates.

Keywords: public safety, early warning systems, natural hazards, warning apps, benefit analysis
Hospital Disaster Plan

**Introduction:** Every health institution needs to be prepared for a mass casualty event. The Hospital Israelita Albert Einstein (São Paulo – Brazil) developed a Hospital Disaster Plan and uses periodic simulations to train its team.

**Methods:** The Prevention and Disaster Response Committee is responsible for creation of the Disaster Plan, which remains available on the Hospital’s intranet. It is disclosed through an e-learning and trained by periodic Simulation (twice a year) with Debriefing at the end. The Disaster Plan is triggered by decision of the Local Command Center (LCC): Medical Coordinator, Nursing Coordinator and Administrative Supervisor, or their substitutes. The Triage area is set up outside the entrance of the Emergency Room. START method is used. Green victims (walking victims) are advised to go to an amphitheater outside of the emergency room. Red victims are placed in the Emergency Room and the yellow ones in a larger place. Red, yellow and green areas have independent communication with the Crisis Management Center (CMC), which is responsible for logistics and referral of victims to different units, where they can never go back. There is a contingency plan in case of impossibility of use of the emergency room.

**Results:** Team organization, logistics and flow of care, as well as the organization of the CMC become better according to the repetition of the Simulation.

**Conclusions:** E-learning is an effective method of disclosure. The isolation of the green victims outside the emergency room, avoid turmoil in the others care areas. The communication of different areas (red, yellow and green) with CMC, works better with independent channels. The flow of care has to be unidirectional. The Debriefing is an important tool to improve the Plan.
Veterinary Medical Schools and Clinics in Mass Casualty Disaster Response: an Additional Source of Medical Personnel, Emergency Equipment and Hospital Surge Capacity

**Introduction:** Mass casualty disaster response overwhelms existing medical capabilities. Damage to hospitals, and casualties that exceed hospital and medical personnel capabilities result in human loss of life and prolonged suffering. In mass casualty responses initial treatment of the injured within 24–48 hrs improves survival and human welfare. Without adequate treatment, humans bleed to death; suffer wound infection, unstable fractures, lack of pain relief, untreated hypovolemic shock, dehydration, etc. A team, including veterinarians, physicians, animal health technicians, paramedics and nurses, could address these issues.

**Methods:** Analysis of resources, which can be found in veterinary schools and some large veterinary clinics, which are needed for mass casualty surge facilities, was performed. Additionally, an analysis of the essential medical capabilities and treatment needs in a mass casualty was performed comparing knowledge, skills and abilities possessed by both physicians and veterinarians.

**Results:** University veterinary schools and some private veterinary clinics have bandages, sterile emergency surgical instruments, intravenous fluid supplies, anesthetic machines, and pharmaceuticals. Additionally some veterinary schools have suitable surgical suites for emergency surgery use by physicians. Skills and knowledge shared by both physicians and veterinarians include, but are not limited to: triage, physical exam, emergency wound management, IV catheter and fluid therapy, fracture stabilization, respiratory therapeutics, oxygen delivery,

**Conclusions:** Many of the limited resources and numbers of skilled medical responders in a mass casualty event may be supplemented by creation in planning of the use of veterinarians, veterinary staff, university veterinary clinics, and veterinary schools; the later of which may be used as a surge facility. Public policy and legal codes should address a means to utilize these resources.
Inhalational therapy of LPS-exposed mice by antioxidant and steroid drugs formulated in hyaluronan liposomes

Introduction: Introduction and objectives: Inhalational therapy applying hyaluronan–liposomes (HA–MLV) encapsulating the antioxidant drug N-Acetyl-Cysteine alone or with the steroid dexamethasone, was developed for the treatment of respiratory damage due to: (i) inhalation of toxic materials – including on-site treatment in mass casualty events and (2) ALI/ARDS due to other underlying causes. Modeling the respiratory damage in mice by LPS inhalation, we aimed at obtaining proof-of-concept for both the animal model and therapeutic efficacy.

Methods: BALB/c mice were exposed, in a specially–designed inhalation chamber, to a LPS aerosol followed by a single inhalational treatment. Weight changes were determined continually for two weeks. Gene expression of pro-inflammatory cytokines was by rtPCR.

Results: (1) Model evaluation. Mice receiving LPS by either inhalation or IP injection, or control mice (exposed to normal air), were sacrificed 2 hours post LPS administration. In the IP-injected mice increased gene expressions of TNF–a and of IL–6 (LPS vs. control) were found in the lungs, spleen and peritoneal macrophages. In the LPS-inhaling mice these increases were in the lungs alone, indicating this is the better model for lung inflammation, hence it was used thereafter. (2) Therapeutic efficacy. Control mice gained weight continuously. Untreated LPS-exposed mice had a significant weight loss at day=2, then reversed to weight gain that at day=9 reached that of control mice, but thereafter significantly exceeded that of the control mice, which we attribute to lung edema. The weight changes of the LPS-exposed mice given the inhalational treatment mitigated the day=2 weight drop, by day 6–8 reached that of the control mice and remained similar to them thereafter, thus reaching the desired therapeutic goal.
Conclusions: Proof-of-concept was obtained for our inhalational therapy, designed to address respiratory damage. Continued studies, optimizing the treatment formulations and conditions, pursuing mechanistic aspects, and searching for biomarkers, are underway.
Introduction: Emergency personnel lack protection from highly penetrating gamma radiation and are therefore at risk of developing Acute Radiation Syndrome (ARS) when responding to a nuclear emergency.

In order to shield as much of the body as possible, existing shielding solutions are made using only thin layers of inherently heavy radiation-attenuating materials. These types of solutions are ineffective in preventing ARS.

Upon exposure to radiation levels of up to 10 Gy (LD50= 4 Gy), the life-limiting factor is irreversible bone marrow (BM) damage. Notably, radiation levels in documented nuclear catastrophes were largely beneath 10 Gy.

It is enough to protect only a fraction of the BM to preserve BM viability. This is due to the extraordinary regenerative potential of hematopoietic stem cells. Here, we present a first-of-its-kind device providing effective shielding of BM.

Additionally, this shielding provides mitigation of stochastic effects including radiation induced cancers; especially in the colon, ovaries, and bone marrow.

Methods: We developed a device which selectively shields a critical volume of BM in a realistic setting and therefore helps prevent ARS and reduce cancer risks among emergency responders.

- Exhaustive anatomical study of BM.
- Simulations of radiation entry into active BM, gastrointestinal, and ovary tissues.
- Anatomically accurate human phantoms.
- Irradiation with Cs-137 sources presented as fallout.

Results: Our device dramatically reduced doses to critical BM concentrations. In a Chernobyl-like scenario, this results in a 92% reduction in mortality. Radiation induced cancers are estimated to be reduced by 35%, 27% and 19% respectively for ovarian, colon and leukemia cancers.

Conclusions: We developed a device which protects a volume of BM which is sufficient for survival even at extreme doses. Being selective, this device protects...
while remaining of a manageable weight. Equipping responders with this novel device provides dramatic improvements to survivability even under the harshest radiological scenarios.
Mohammad Naeem, *U.S.*

Lt Col, *U.S. Army, Radiology, Landstuhl Reg Med Center*

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**The Role of Diagnostic Medical Imaging in 4th and 5th Generation Warfare**

**Introduction:** Today nation-states are engaged in asymmetric warfare with non-state actors such as virtual states, insurgents, super empowered individuals and groups with access to ultra-high technology, as well as hackers, terrorists, and criminals operating above the law. Militaries of the world, trained to fight conventional 3rd generation (maneuver-armored warfare) have to quickly adapt to, fight in, and gain an upper hand in this 4th Gen non-linear and asymmetric battle field, which is rapidly evolving into 5 Gen unrestricted and 6 Gen distant no-contact warfare. The presenter will use own medical specialty—Diagnostic Radiology—to illustrate its frontline role in the management of CBRNE threats in 4th, 5th, and 6th Gen warfare.

**Methods:** This 60-min presentation will fully bring home to the audience the concept of all 7 generations of warfare, their relevance in today’s asymmetric battlefield, and the role of military radiologists in combating these CBRNE threats.

**Results:** The world has rapidly moved on from the days of second generation (massed firepower) and third generation (maneuver-armored) warfare toward 4th, 5th, and 6th Gen asymmetric, non-linear, and distant no-contact warfare. The conventional nation-state civil and military medical responders previously trained in handling the casualties of 3rd Gen warfare must steadfastly and expeditiously adapt themselves to the unconventional CBRNE challenges of the modern day non-linear battlefield.

**Conclusions:** Of the contemporary CBRNE threats, the IED proved to be the signature weapon and the most critical balancing factor in the Iraq and Afghanistan 4 Gen conflicts. With its gradual trickling into the civilian world, the IED has the potential of becoming the 4th weapon of mass destruction. If and when coupled with a radiation dispersal device, radiation emission device, or an improvised nuclear device, this 5th Gen threat spectrum is a clear and present danger to every nation-state in the world.
Li Linfeg, China

Psychologist, Clinic psychology Department, the 1st Affiliated Hospital of School of Medicine, Shihezi University, China

CHEN Lin, the 1st Affiliated Hospital of School of Medicine, Shihezi University, China; ZHANG Guiqing, the 1st Affiliated Hospital of School of Medicine, Shihezi University, China

The Relation Between the Symptoms Characteristics of Post Traumatic Stress Disorder (PTSD) and the Efficacy of Eye Movement Desensitization and Reprocessing (EMDR)

Introduction: Conducting a reference to research the effects of EMDR on PTSD symptoms, anxiety, and depression of PTSD patients.

Methods: A total of 54 PTSD patients were assessed by blind raters randomly allocated to EMDR group and control group with individuals who suffered from trauma disasters or saw their family died in front of them directly. We evaluate their symptoms such as depression, anxiety and PTSD before and after the treatment.

Results: There were significant pre-post reductions for EMDR group (P<0.001) but no change for the control group. After excluding the pharmacotherapies interference, EMDR group showed greater reduction in CAPS irritability (P=0.005) and CAPS total score (P=0.021) comparison to control group.

Conclusions: EMDR can effectively improve the PTSD symptoms (including intrusion, and irritability) of PTSD patients;
A Novel Damage Control Approach for Soft Tissue Injury Applying Tension Relief System, Vacuum Combined with Wound Oxygenation and Irrigation for Early Primary Closure of Large Wounds

Introduction: Extensive surgical experience in treatment of wounds in combat and disaster has led to the adoption of strict management principles in the treatment of soft tissue injury. These include cleansing, debridement, removal of foreign bodies, and most important, leaving the wounds open. Large wounds are first commonly managed by vacuum to enhance granulation tissue growth with subsequent coverage with skin grafts or flaps. Treatment is usually lengthy, often complicated by infection and donor site morbidity.

Objective – To evaluate feasibility and safety of an alternative approach which incorporates cleansing, debridement, immediate skin stretching with TopClosure® tension relief system (TRS), wound oxygenation and irrigation, for early primary wound closure.

Methods: Wound closure sequence and modes includes:
1. Cleansing, removal of foreign bodies and conservative debridement.
2. Immediate staged stretching and mobilization of wound edges by the TRS.
3. Early application of vacuum combined with wound oxygenation and irrigation.
4. Primary wound closure once infection is controlled.
5. Fast ambulation and rehabilitation.

Preliminary clinical cases will be presented.

Results: Early wound decontamination and skin stretching facilitated quick primary closure of even large soft tissue defects. Heavily infected wounds were closed gradually but even in these cases, wounds could be closed primarily by the TRS without the need for formation of granulation tissue. In most cases, skin grafts and flaps were avoided, allowing rapid ambulation and rehabilitation.

Conclusions: This novel approach enables closure of wounds in two stages, skipping the customary, lengthy second phase of granulation tissue growth.
in the wound healing process by direct stretching of wound edges through the TopClosure® system, substituting for skin graft and flaps. This technique downgrades surgical complexity and morbidity, substantially shortens hospitalization, and reduces scaring with improved functionality. Workload is reduced, making it easier for both patients and medical staff managing an austere environment.
Does triage decreases mortality in mass casualty incidents? A simulation study of an aircraft crash at Brussel Airport

Introduction: Operational research in disaster medical management is limited by the fact that the conduct of prospective and randomized controlled studies under real world conditions is impossible or ethically inappropriate. Computer simulation has been used to overcome these methodological problems. The aim of the study is to evaluate the effect of triage on the mortality in a simulated mass casualty event.

Methods: SIMEDIS, a stochastic discrete event simulator, was used to model the airplane crash scenario. An airplane crash on the landing track at Brussel Airport was studied involving 250 crew members and passengers with different injury severities (26 T1, 62 T2, 113 T3, 4 T4, 4 immediate deaths and 40 uninjured victims). There was no fire of the aircraft. The input variables are search and rescue, operational policy (scoop and run or stay and play), triage, prehospital resources, transport supervision, victim distribution and hospital treatment capacity. The outcome indicator is mortality. The study tested the impact of triage on the mortality in both operational policies.

Results: The simulation included 8640 replications for each of the 4 combinations. The mortality is significantly lower ($p < 0.001$) with triage in both operational policies. One-way ANOVA test shows that the 4 group means for the total number of deaths are significantly different ($p < 0.001$). Scoop and run with triage has the lowest mortality ($15.38 \pm 4.54$ SD), followed by stay and play with triage ($18.95 \pm 2.49$), scoop and run without triage ($19.93 \pm 3.09$), and the highest mortality was for stay and play without triage ($25.36 \pm 1.15$).

Conclusions: Pre-hospital triage in a simulated aircraft crash scenario at Brussels Airport significantly decreases the mortality of the injured victims both in a “scoop and run” and “stay and play” policy.
Kelly Klein, *U.S.*  

Associate Professor, *Emergency Medicine, UT Southwestern Medical Center at Dallas*

Raymond E. Swienton, UT Southwestern Medical Center at Dallas; Thomas Lehman, UT Southwestern Medical Center at Dallas; Richard King, UT Southwestern Medical Center at Dallas

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**Triage, the next step**

**Introduction:** Ethics and critical care medicine articles have suggested that current triage classification systems are not accurate enough and recommend that only an experienced medical provider should make the most difficult triage decisions (black tag or expectant). This pilot study was created to begin examining what information if any, experienced triage providers provide as to those attributes that are valued and should be promoted during the triage process.

**Methods:** Based upon SALT and START criteria, when created an electronic survey to help determine which qualities healthcare workers value and utilize, when they are evaluating a patient for treatment and transport priority. The access link to the survey was distributed electronically to emergency medicine and disaster listserves and was on a medical website frequented by pre-hospital emergency medical professionals. The hospital’s institutional review board approved the study prior to data collection.

**Results:** 403/469 completed surveys were analyzed. The mean ranking for five of the six variables differed by experience and were statically significant with the top four attributes recorded as: respiratory, ability to speak, perfusion, and gestalt.

**Conclusions:** Based upon our pilot survey, triage patient categorization is multifactorial and should not only include the physiological components of neurological and cardiovascular status, but needs to incorporate logistical access and the triage provider’s experience level which would include gestalt and the ability to perform simple lifesaving procedures.
Brigitte Serreault, *France*

Shaïsta Ilyas, Airbus Defence and Space; Patrick Sittaramane, Airbus Defence and Space; Karim Soudani, Airbus Defence and Space

**NORIA solution (New Operational Readable Identification Application)**

**Introduction:** In case of large disasters or CBRNe accidents, casualties must be rescued by first responders on the field and in the medical chain using an efficient triage and tagging procedure optimizing diagnosis, time and resources to save as many lives as possible.

**Methods:** To meet these needs, NORIA has been designed under the EU FP7 Eden project and developed jointly with end-users specialized in rescue and medical operation coming from different countries for instance MDA (Israel), UCSC (Italy), SAMU94 (France).

It is adapted to first and second responders, such as fire brigades, polices, paramedics, ambulances, hospital emergency services, Law Enforcement Authorities (LEA) or NGO.

The solution is based on

- a “tag” based on a QR-code and a water and decontamination resistant holder disposal (bracelets…) to uniquely identify victims and findings. Basic barcodes or in a further version, RFID tags can also be used.
- An open secure smartphone-based application, including different access levels, to easily fill in information shared between responders and authorities.

The following information are available:

- Victims and belongings identification, description status and geolocation while respecting privacy and supporting LEA, in a segregated and secure manner, medical status,
- Next action to be conducted with destination place and transport means
- Findings identification, tagging and tracing
- Statistics on injuries, casualties…

For field-triage, the application implements PRIOR CBRN, a medical protocol used for CBRN–contaminated casualties, developed under the direction of DGKM and other partners in Germany, evaluated and published.
**Results:** NORIA has been deployed, evaluated and validated during the EDEN Antwerpen demonstration.

**Conclusions:** NORIA is an application answering users’ needs and building on global technology evolution. It offers a triage and tracing system of casualties from the field to the hospital, covering the whole medical chain, on one single platform. It is simple of usage and the design user-friendly.
NYC Pediatric Disaster Coalition: a Model for Disaster Preparedness

Introduction: Children are frequently victims of disasters; however significant gaps remain in pediatric emergency preparedness planning. A mega mass casualty event (MMCE) in New York City (NYC) involving numerous children could overwhelm existing pediatric resources.

The NYC Department of Health and Mental Hygiene (NYCDOHMH), therefore, directed federal funds for a Pediatric Disaster Coalition (PDC), charged with planning an effective pediatric disaster response. The PDC includes experts in emergency preparedness, critical care, surgery and emergency medicine from hospitals, NYCDOHMH, NYC Office of Emergency Management (NYC EM) and the Fire Department of New York (FDNY). The PDC has identified critical preparedness gaps affecting pediatric disaster response and developed approaches to address these gaps.

Methods: PDC convened participants in-person and by conference call, developed guidelines for pediatric field triage, primary and secondary transport to hospitals, matching patients’ needs to resources, and developed surge and evacuation plans for pediatric critical care (PCC), neonatal critical care and obstetric/newborn services.

Results: The triage and transport algorithms adopted by FDNY provide pediatric-specific triage criteria. Triaged patients are transported to hospitals based on a tiered system that defines hospital pediatric capabilities. To date, 16 of 24 hospitals with PCC capabilities have completed surge plans utilizing PDC PCC Surge Capacity Guidelines and template plans, adding 149 surge beds to total 407 PCC beds. Seven hospitals have conducted discussion based and full scale exercises. Eight hospitals have implemented PDC’s Neonatal Evacuation and Surge Guidelines and Template Plans and two hospitals have conducted full-scale evacuation exercises. Three NYC hospitals have implemented PDC Obstetric /Newborn Services Guidelines and...
Template Plans for surge and evacuation.

**Conclusions:** The PDC has an effective approach to planning for a regional, large-scale pediatric disaster that could be used as a replicable model for other regional centers. It is important for regional lead agencies to emphasize pediatric emergency preparedness.
Life or Limb - Prioritizing priorities

Introduction: CritiCall Ontario supports physicians caring for urgent and emergently ill/injured patients that require care beyond what their hospitals can provide. In 2013, the death of an emergently ill patient who, despite multiple contacts by CritiCall Ontario, was not accepted into a higher level of care in time to save his life, prompted the provincial coroner to recommend the establishment of provincial processes to further identify and prioritize emergently ill patients. In 2014, Critical Care Services Ontario responded with the release of a provincial Life or Limb Policy that placed CritiCall Ontario at the centre of coordinating care for patients that would be “Life or Limb” threatened if untreated within 4 hours.

Methods: The Life or Limb Policy defined roles and responsibilities for hospitals and physicians contacted by CritiCall Ontario to assist with “Life or Limb” patients. The policy included clearly defined processes for CritiCall Ontario and physicians contacting CritiCall Ontario with “Life or Limb” patients; clearly defined expectations of physicians and hospitals contacted to assist; and ongoing monitoring and reporting through CritiCall Ontario including feedback within 48 hours to hospitals not meeting their obligations.

Results: Comparative data for key indicators measured before and after policy implementation indicate improved responsiveness of hospitals contacted to provide consultation for “Life or Limb” cases (measured in decreasing median physician response time) and decreases in time from first call to CritiCall Ontario to time to acceptance for cases that require transfer (measured in reduction in median patient accept time).

Conclusions: This provincial approach established a triage process that supports physicians referring and providing consultations for patients through CritiCall Ontario. The policy and associated protocols clarified expectations, provided measurable access to care thresholds for “Life or Limb” patients and assisted with the de-escalation of urgent cases that do not require immediate prioritization.
Monitoring mental well-being of students during a training course in disaster medicine

Introduction: The European Master in Disaster Medicine (EMDM) is a master program consisting of self-directed e-learning and a 2 week interactive residential session (RS) including a thesis proposal presentation. The RS-concept is “getting prepared for mission deployment”, the mission: “managing a full size live exercise”. Well-being evolutions, emotional dip and arousal in health care providers, during disaster response have been described earlier. The hypothesis of this study is ‘students might experience the same mental well-being evolutions during the RS as health-care professionals responding to a disaster’.

Methods: The 33 students enrolled in the EMDM 2014 edition were monitored using a self-administered multi-lingual monitoring tool adapted from the ProQol version 5. Each student was categorized in groups: ‘positively reinforced’, ‘median’, ‘happy stressed’, ‘pre-occupied’, ‘happy at risk’, ‘at risk’ and ‘unhappy’. Two major stressful events were identified: thesis proposal in the beginning and real-size exercise at the end.

Results: After thesis presentation 10 students changed category, 5 to a more positive category, 5 to a more negative. At the end of the RS the number of students changing categories increased to 20. Categories changed in a positive direction in 14 cases and 6 negative. Individual analysis shows 3 experienced an emotional arousal and 3 experienced an emotional dip.

Conclusions: EMDM-participants experience the same mental well-being evolutions during the RS as health-care providers do during mission. This delivers not only theoretical knowledge, but as in real deployment these measurements offer faculty-members tools to intervene and prevent distress and drop-out of the course.
Chinese regular and military college students need more training to enhance the consciousness of disaster prevention and the disaster rescue skills

Introduction: In many disasters, like earthquake, most of the survivors were pulled from the rubble by the local population in the first day. And the first day is critical for the searching team and medical team in saving lives. As a result, the consciousness of disasters and the disaster rescue skills of the public and the military play an important role in improving the disaster rescue results. So we surveyed groups of students in Beijing, Chongqing and Xinjiang on the consciousness of disasters and the disaster rescue skills.

Methods: 1600 students in 3 military medical colleges and 1000 students in 2 regular universities were surveyed by professional questionnaire. All these schools have no subject of “Disaster Medicine”. Data were sorted by Epidata and analyzed by SPSS17.0.

Results: In regular universities and in military medical colleges, respectively, 72.7% and 65.2% had ever attended the disaster rescue drills; 69.4% and 86% knew the common type of disasters; 43.5% and 43.6% knew how to escape from an earthquake; hardly no one knew how to rescue people from the explosion; 22.1% and 27.5% had emergency articles at home; 30.4% and 50.8% knew some basic fist aid skills, but hardly no one was used in real; 81.2% and 92.5% would like to help the people in a disaster; 82.1% and 92.4% wanted to receive disaster rescue training.

Conclusions: It can be inferred that students in both military colleges and regular
universities have low consciousness of disaster prevention and little practice, even though, most of them want to help those who would be in disasters. So China need more trainings or courses to enhance the consciousness of disaster prevention and rescue skills for both the civilian and the military.
Dabney Evans, *U.S.*

Assistant Professor, *Hubert Department of Global Health, Rollins School of Public Health; Emory University*

Kimberly M. Hanson, US Centers for Disease Control and Prevention; Daniel J. Bencic, US Centers for Disease Control and Prevention; James A. Banaski, US Centers for Disease Control and Prevention

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**Practical training for public health emergency preparedness among graduate students**

**Introduction:** The objective is to show how the Emory University Center for Humanitarian Emergencies has trained public health graduate students for international emergency preparedness through its innovative field practicum program. As globalization increases, so does the need for adopting a global and collaborative approach in health security and emergency management. This approach requires the training and development of a workforce with expertise in both global health and emergency management.

**Methods:** Since 2011 the Center, in collaboration with the U.S. Centers for Disease Control and Prevention (CDC) International Emergency Preparedness Team, has funded field practicum for public health graduate students. Students selected for field practicum enroll in an intensive academic course on public health emergency preparedness; they also participate in weekly training on emergency management in the five months prior to departure. Field practicum take place in CDC Country Offices at US Embassies and Ministries of Health around the world.

**Results:** From 2011 to 2015, 27 students completed their practicum in 11 countries in support of the public health emergency management activities of CDC Country Offices and their partners. Students have supported a wide variety of projects including: emergency operation plans, emergency preparedness assessments, Rapid Response Teams manuals, tabletop exercises, risk communications trainings, personnel evacuation plans, a National Outbreak Response Plan, and the development of a national Emergency Medical Services (EMS) system.

**Conclusions:** The field practicum program is a win-win model for all parties involved. By providing extensive pre-deployment training at CDC headquarters, the program develops students with basic competence in emergency management. These students provide valuable support to CDC country offices and Ministries of Health.
of Health engaged in preparedness activities and they develop useful skills in an emerging public health field in need of international experience and technical competence.
Deanna Sykes, Canada  
RN/NP, Emergency Medicine/Family Medicine, Alberta Health Services  
Bruria Adini, Ben Gurion University/Israeli Health Ministry; Limor Aharonson-Daniel, Ben Gurion University; Stav Shapiro, Doctorate Student at Ben Gurion University

Does earthquake training influence willingness to report to work (WRT) among hospital employees (HEs) in an earthquake?

Introduction: Adequate hospital staffing that is prepared to respond to an earthquake is essential to cope with the expected surge-capacity. Comparing test-scores, perceived preparedness, training, and WTR of HEs can provide clues to gaps in hospital preparedness for a major earthquake.

Methods: A validated survey questionnaire used in previous studies was administered at both hospitals testing hospital employee knowledge of protocols and response; exposure to earthquake training and drills; and self-declared perceived preparedness and WTR after an earthquake.

Results:

• HEs from both hospitals report high-levels of concern about being prepared for an earthquake: Canadians (84.9%) and Israeli’s (78.8%).

• More Israeli HEs scored higher in test-scores and reported higher perceived role importance, familiarity with their roles and hospital protocols, exposure to earthquake information, and belief that their hospital is prepared for an earthquake.

• Canadian HEs reported more participation in simulation exercises.

• An equal percentage of HEs from both hospitals perceived they were competent to cope in their hospital role in the next earthquake.

• Less than 60% of HEs from each hospital are WTR (with Israeli having higher WTR than Canadians) after an earthquake. HEs from each hospital had even less confidence that their colleagues would be WTR.

Conclusions: Findings validate serious concerns about hospitals having adequate staffing that is prepared to respond after an earthquake. Likely, Israeli HEs had higher test-scores, familiarity with their role, and organizational confidence related to having more experience with man-made disasters (terrorism) and
government-focused training. Nonetheless, HEs from both hospitals scored low on test-scores and do not feel prepared for the next earthquake. This study highlights the need for more training to reinforce roles, protocols, and teamwork among HEs in an earthquake.
Amelia Breyre, U.S.

Dr Christopher Tems (Chief resident); Crawford Mechem (Medical Director, Emergency Medical Services); Peter Sananman (Director, Disaster Preparedness Program); Dr Hallam Gugelmann (Medical Toxicologist) & Amos Shemesh (Attending Physician, Emergency Medicine

Emergency Medicine Resident Physician Disaster Preparedness in Anticipation of an Urban Papal Visit

Introduction: Disaster planning for surge capacity is an essential component of emergency medicine (EM) resident education, and benefits from the utilization of EM resident physicians. Senior supervising residents (SSRs) credentialed in ACLS, ATLS and PALS have advanced medical and administrative EM skills, and are experienced coordinating care with attendings and charge nurses. Despite the integral role residents play in major academic emergency departments (EDs), very little literature describes how to effectively integrate residents in disaster planning. We describe resident preparedness at a tertiary care academic urban hospital for an unprecedented mass-gathering in a major city within the context of a Papal visit.

Methods: Surge modeling for the Papal visit projects an influx of approximately 2 million people. We conducted the resident component of a mock disaster activation drill, initiated by a SSR, staged during a period of historically light staffing to estimate availability and responsiveness for surge needs. Our model involved contacting all EM residents in training simultaneously through SMS, assessing availability, and deploying residents to 3 affiliated EDs, including a major trauma center.

Results: All 43 EM residents were notified via SMS; 14 (32.6%) were able to report to hospital within 1 hour, and an additional 7 (16.3%) were available after 1 hour. Overall, 67.4% (29/43) of the resident pool responded to notification; of the 14 who did not respond, 4 were working clinically.

Conclusions: In an academic setting, EM disaster planning must take advantage of the resident work force as trained and responsive members of the ED team. Off-duty residents represent a rapidly available, highly trained resource for surge volume. This study reveals that EM resident deployment represents a significant addition to disaster planning. Challenges of utilizing residents in disaster response include negotiating work duty-hours rules, notification systems dependent on cellular service, and ensuring ED oversight.
Barbara Lopes Cardozo, U.S.

Medical Officer/Psychiatrist, Emergency Response and Recovery Branch, Centers for Disease Control and Prevention (CDC)

Albertien van der Veen, Antares Foundation; Tineke van Pietersom, Antares Foundation; Feride Rushiti, Kosova Rehabilitation Centre for Torture Victims; Genc Ymerhalili, Centre for Development of the Family Medicine of Kosovo; Ferid Agani, Ministry of Health of the Republic of Kosovo

Promoting resilience among primary health care workers in post-conflict Kosovo

Introduction: The need to support staff resilience, including stress awareness and management skills, was recognized by public health professionals in post-conflict Kosovo. In response, the Antares Foundation and the Kosovo Rehabilitation Centre for Torture Victims in collaboration with the U.S. Centers for Disease Control and Prevention implemented an integrated psycho-social resilience building program for primary health care (PHC) professionals.

Methods: We conducted a psycho-social needs assessment among 361 physicians and 486 nurses in Kosovo in 2010, implemented a resilience building program, that included stress management training curricula and an e-learning platform, and performed post-implementation evaluation among 100 randomly selected PHC professionals from a list of all people who participated in the stress management workshops.

Results: Of the 361 physicians and 486 nurses responding, 51% reported moderate or serious problems with post-traumatic stress symptoms, with 20% reporting depression and 30% anxiety symptoms. A steering committee consisting of key stakeholders oversaw the program implementation, and successfully integrated staff well-being and stress management into the Kosovo mental health strategy 2014–2020. Eighteen national PHC staff were trained and more than a 1,000 family doctors and nurses attended stress management workshops. Of the 100 randomly selected PHC professionals, 80% thought the program had been effective in raising awareness on stress management, staff resilience, and strengthening coping mechanisms.

Conclusions: Evaluation findings showed that offering structured support helps staff to continue their professional tasks under challenging conditions. Promoting staff resilience could be a key ingredient in improving the motivation of staff and the quality of health systems in post-emergency contexts.
Daniel Hahn, *U.S.*

*Emergency Management Plans Chief, Emergency Management, Santa Rosa County Florida*

Tierra L. Willis, University of West Florida; A. Ruth Christie, University of West Florida; Samuel Mathews, University of West Florida

The effect of social capital on an individual’s potential resilience

**Introduction:** There is a significant body of literature on community resilience. There is also a large amount of research on social capital. There is a much smaller literature pool combining social capital and resilience. The National Research Council (2010) stated, “most resilience-focused collaborative efforts are largely in nascent stages throughout the nation” (National Research Council, 2010, p. 8). The Department of Homeland Security has funded several studies on social networks and community resilience through the National Academies of Science (National Research Council, 2009; 2010). FEMA is currently working on a community resilience paper (Bach, Doran, Gibb, Kaufman, & Settle, 2010) in order to enhance community resilience. Additionally the National Security Strategy (2010) of the United States indicates that “National security draws on the strength and resilience of our citizens, communities, and economy” (p. 10). Community resilience is tied to homeland security. Community resilience has been studied in depth, individual resilience is a factor of the community that has not been studied in detail.

**Methods:** Participants responded to an online survey distributed through an online survey tool known as Survey Monkey. Participants read and agreed to an informed consent form prior to beginning the study. The survey consisted of items related to demographic information, potential resilience and social capital.

**Results:** With over 230 surveys completed, the data looks promising, it is spread well across the county, and most people answered all the questions. Data is currently being analyzed so results are not complete.

**Conclusions:** Conclusion is yet to be determined as statistical analysis of survey data in ongoing at this time. Either there will be a correlation between potential resilience (using proxies of preparedness and mitigation steps taken) and social capital. Some demographic data will be used as independent variables.
Shiri Daniels, *Israel*

*Pass it on - National Director of Counseling, ERAN, ITC*

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**Psychosocial training in the aftermath of typhoon Yolanda in the Philippines**

**Introduction:** In the aftermath of the Yolanda Typhoon in the Philippines (2013), delegations of ITC experts provided local professionals, NGOs and first responders, with psychosocial training on aspects of disaster preparedness, disaster response and community resilience. ITC experts together with local professionals created a coordinated coping and recovery process for the community. The ITC training model is designed to support as many people as possible, using existing local resources, developing the community’s resilience and setting up a lasting support system. ITC International relief efforts and interventions are adapted to local language and culture.

**Methods:** The training provided the participants with basic psychosocial tools to help them cope on the emotional and cognitive level with disasters, alongside tools for to be disseminated to other team members. The training methodology was based on integrative and experimental learning and included exercises, simulations and case studies, taking into account language and cultural adaptability and implementation feasibility. Comprehensive evaluation of the training was based on in-depth interviews.

**Results:** All interviews manifested a high degree of implementation of the key concepts and techniques taught throughout the training: Debriefing, principle of continuity, channels of coping – Basic P.H and emotional first aid.

**Conclusions:** The need for early preparation and training in order to face effectively real time emergencies. The importance of strengthening local professionals’ sense of capability, as well as understanding their added value as psychosocial caregivers, in times of emergency and disaster. The necessity of allowing participants to share their personal experience and process their emotions, in a supportive and non-judgmental environment.
The efficacy of a structured program using puppetry in kindergarten children living under threat

Introduction: Chronic and recurrent exposure to stress and military conflict might have adverse psychosocial effects on infants and pre-school children. The major aim of the study is to examine the efficacy of “What helps me to cope with difficulties”, an individual and group capacity building structured program, using puppetry in enhancing resilience.

Methods: Pre-school children (n = 91) living in a southern Israeli city, exposed to missiles attacks from Gaza strip, participated in the program were compared to a waiting list group (n = 98) on several indicators of child resiliency over two time periods. The participants were randomly selected from a total of 17 kindergartens, and were assessed using a modified scale of resiliency, consisted of items from the Devereux Early Childhood Assessment and additional items of interest. Scales were filled by kindergarten teachers.

Results: Both groups were not significantly different in terms of age or gender. Over time, compared to waiting list group, children who participated in the program significantly were rated as being able to express their emotions, better cope with frustrations, being flexible in problem solving and having more knowledge about the ways that help them to cope with difficulties. In addition, compared to waiting list group, participants of the program improved in the following domains: 1) self-calms and self-control; 2) seeking support and help from adults and friends; 3) less frequent use of abusive and assaulting language; and 4) openness to experience.

Conclusions: Results of the study support the implementation of the program in dozens of kindergartens during major crises over the last decade, assisting children, parents and teachers living in chronic threat. Future studies should replicate the current findings, assess additional behavioral indicators in the evaluation of program’s efficacy.
Resource loss, gain and mental distress in individuals exposed to ongoing security related stress

Introduction: Posttraumatic stress disorder (PTSD) is one of the most common psychiatric disorders associated with exposure to trauma. Resource loss and resource gain are two aspects of the Conservation of Resources theory used to assess psychological distress following trauma. Studies show that resource loss is one of the factors associated with PTSD following a stressful event. Increased personal resilience, on the other hand, may buffer the effects of trauma. We aimed to assess the prevalence of probable PTSD and probable major depression among individuals exposed to ongoing security related stress, and to assess the association between resource loss, resource gain and personal resilience with psychological distress (probable PTSD, probable major depression).

Methods: The study sample consisted of residents from rural communities near the Gaza border in southern Israel subject to continuous security threat. Data were collected between April–July, 2015, about eight months after operation ‘Protective Edge’ using Qualtrics, a web-based research suite (www.qualtrics.com). Logistic regression models were performed to explore the effect of resource loss, resource gain and personal resilience on the likelihood of having probable PTSD and probable major depression.

Results: 515 surveys were collected. Probable PTSD was observed in 5.2% of the sample (N=27), probable major depression was seen in 7% of the sample (N=36). Increased resource loss was associated with an increased likelihood of having both probable PTSD (p<0.001) and probable major depression (p<0.001); increased personal resilience was significantly associated with a decreased likelihood of having probable PTSD (p=0.001) but was not associated with probable major depression. Resource gain was not associated with neither probable PTSD or with probable major depression.

Conclusions: Resource loss was significantly associated with both psychological distress.
distress measures (probable PTSD and probable major depression); perceived personal resilience was significantly associated with probable PTSD when controlling for other known predictors.
Kelly Klein, U.S.

Associate Professor, Emergency Medicine, UT Southwestern Medical Center at Dallas

Raymond E. Swienton, UT Southwestern Medical Center at Dallas; Thomas Lehman, UT Southwestern Medical Center at Dallas; Takamitu Kodama, UT Southwestern Medical Center at Dallas; Cham Dallas, University of Georgia; Curtis Harris, University of Georgia

Will they come if there was a radiological or nuclear event

Introduction: In the past 60 years, both nuclear detonations (World War 2) and radiological accidents (Chernobyl and 3 Mile Island) have happened, with the most recent being at the Fukushima Daiichi nuclear power plant in Japan. From case reports of medical personnel reactions, both past and present, there appears to be a lack of comfort and paucity of knowledge in the medical community regarding nuclear/radiological events. This in turn, may negatively influence the response of both prehospital and hospital personnel during the next nuclear or radiological event.

Methods: An IRB approved anonymous paper survey written in both English and Japanese was created to collect information in four categories: willingness to manage a patient during a radiological/nuclear event, knowledge of disaster systems in their area, contamination risks to the medical provider, and generalized demographics of the survey taker. The survey was distributed at various disaster conferences and disaster courses both in the United States and in Japan.

Results: Over 400 surveys were collected with 379 found to be complete and thusly analyzed. Physicians and prehospital personnel were the prevalent responders. The majority of results indicted that medical personnel were very uncomfortable with radiological issues and would be very concerned if asked to respond.

Conclusions: Despite exposure to radiation topics through course work and actual events, there is still a paucity of comfort and knowledge regarding nuclear and radiological events by medical personnel. It is clear that further education and training needs to occur in multiple languages and in multiple venue, to better familiarize and prepare the medical community for up coming radiological and nuclear events.
Exercise Based Management of Blast Injuries vs. General Trauma Injuries by US Emergency Medicine Physicians in Training

Introduction: Collecting data on clinician management during mass casualty events offers operational and ethical challenges. This study was designed to analyze the clinical care provided by Emergency Medicine (EM) physicians in training to blast victims via an exercise.

Methods: A full scale exercise was used to simulate a surge of blast victims. Care was provided by EM Residents at a US urban academic center. Victims were simulated by medical professionals who were trained on accurate management of injuries specific to blast events. 33 victims self-evaluated their clinical care using an evaluation tool during the drill. Through the evaluation tool, treatment related to blast injuries was compared to general trauma treatment.

Results: The clinical care of general trauma injuries was 90% accurate. The management of blast-specific injuries was 79%. Deficiencies of general trauma care were related to incomplete physical exams, analgesia and failure to address abnormal vital signs. Deficiencies of blast-specific injuries included improper treatment of burn and tympanic membrane injuries. As time progressed, the overall clinical care declined from 91% during the first third of the drill to 80% during the last third.

Conclusions: Appropriate medical management during mass casualty blast events is a necessary skill for emergency medical personnel. During this study, care of blast injuries was 11% less accurate than general trauma care. Management of blast injuries is a separate skill from management of general trauma and EM training needs to address this unique injury pattern. Furthermore, over time the accuracy of care declined by 11%. This raises concern for the degradation in care during blast events over time and the need to mitigate increased errors in clinical management.
Developing and Implementing Neonatal Disaster Plans through Full Scale Exercises

Introduction: The New York City (NYC) Pediatric Disaster Coalition (PDC) was created to implement system wide improvements in pediatric disaster preparedness. In 2012, responding to recent coastal storms, the PDC formed a Neonatal Committee charged with evaluating the state of preparedness and creating new resources for disaster planning. Based on survey results and a literature review, the committee developed NICU Evacuation and Surge Guidelines and Templates Plans.

Methods: The committee designed a resource/needs assessment survey and distributed it to all NYC Neonatal Intensive Care Units (NICUs). To test the disaster plans, two table top (TTX) followed by full scale exercises (FSEs) were conducted in spring 2014 and 2015, respectively. Exercises included primary and secondary evacuation, injects from the Fire Department (FDNY), actors portraying concerned parents, and other challenges. The FSEs involved the simulated evacuation of 40 NICU patients utilizing mannequins and simulators.

Results: To date, nine hospitals in NYC have used PDC guidelines and templates to create NICU Evacuation and Surge Plans. The PDC has worked with two hospitals, with level 3 NICUs, to operationalize their evacuation plans via seminar, tabletops (TTX), Full Scale Exercise (FSE) and after action conferences. Lessons learned included: the importance of communication with the command center and within the unit, establishment of secure staging areas, notification and dealing with concerned parents. The exercises highlighted the need for appropriate neonatal specific evacuation equipment, appropriate number of staff and resources for patient transfer.

Conclusions: Operationalizing NICU evacuation plans proved to be an invaluable method for testing hospital plans. Conducting seminars and TTX’s prior to FSEs
proved to be an efficient method for identifying and correcting obstacles in existing hospital plans. This enabled the FSE to identify further obstacles present in real life settings. These exercises identified important, complex, shortcomings in neonatal evacuation plans that could surface during real events.
The Role Of Effective, Fast & Specific Enzymatic Debriding Agent (NexoBrid)

Introduction: Reducing dependency on scarce, highly trained surgical teams and surgical facilities is a major goal of preparedness for burn mass casualties. We describe how an effective, fast acting enzymatic debriding agent can be used in a mass casualty scenario to help the care of a large number of casualties with limited resources.

Methods: NexoBrid-NXB (Debrase) is a bromelain based topical enzymatic debriding preparation evaluated in numerous preclinical and 7 clinical studies (5 controlled). It rapidly removes the burn eschar and has characteristics that make it an attractive alternative to standard surgical therapy in the mass casualty scenario. NXB can be immediately applied on fresh burns indiscriminately of the burn depth without special surgical facilities or blood transfusions. In most cases complete eschar removal without harming viable tissues is achieved after a single 4-hour application that also relieves any burn induced interstitial/compartment syndrome. The clean wound bed can then be autografted or covered by biological dressings, protecting and allowing the exposed dermis to epithelialize spontaneously.

Results: NXB proved to be an effective, fast and specific debriding agent. Early NXB debridement significantly reduces the surgical burden (excisional debridement, autografting and escharotomy) and the dependency on specialized personnel and facilities. The long term scar quality and function are at least as good as the standard of care and a porcine study has even demonstrated the ability of NXB to remove Sulfur Mustard contaminated tissues reducing the need for surgery.

Conclusions: NexoBrid significantly reduces the surgical burden and dependency on trained personnel and limited facilities while achieving outcomes similar to the standard of care offering a potential solution to first line debridement/escharotomy in the care of burn mass casualties.
Lianyang Zhang, China
Director, Trauma Department, Daping Hospital, Third Military Medical University
Xiuzhu Zhang, Trauma Department, Daping Hospital, Third Military Medical University;
Yang Li, Trauma Department, Daping Hospital, Third Military Medical University

Motor Vehicle Crashes influenced the self-development of “Trauma-center” facilities in Mainland China

Introduction: Almost none of modern armed conflicts or domestic armed violence, we hypothesized the development of trauma capacity in China would have different influential factors. The authors aimed to explore the influential factors through mapping the trauma care to facilities the construction of the well-structured “trauma center (TC)”system to provide the high-quality trauma care as well as the consolidation of emergent responding preparedness to massive casualty events.

Methods: The information of “TC” facilities in 989 certificated Grade A Tertiary (3/A) hospitals by 2012, provincial socioeconomic status, the characteristics of motor vehicle crashes (MVCs) were retrieved and analyzed. Spearman correlation tests and multivariate regression analysis was employed to identify the impact factors of the “TC” model in Mainland China.

Results: GDP per capita, the active Physician rate and the ratio of total M.D. to hospitals of China in 2012 by province was equivalent to those of the United States between 1960s and 1980s. About 5.0% (49/989) hospitals have the specialized “TC” facilities. About 15.0% have specialized departments for orthopedic injuries. The toll of injuries caused by motor vehicle crashes (MVCs) was the independent impact factor of geographic distribution of “TC” facilities, p<0.05, and positively correlated to the number of “TCs” facilities by province, p<0.05. The incidence of MVCs was marginally correlated to the provincial number of “TCs” facilities, p=0.051. The reverted “U”-shape relationship was found between GDP per capita and the mortality and injury of MVCs.

Conclusions: The MVCs has driven the self-evolvement of “TC” facilities in Mainland China, which substantially enhanced the construction emergency responding capacity. Given the socioeconomic status of current China, the reinforcement potentially benefit the cross-country trauma care capabilities and capacities as well as the preparedness of massive casualty events. However, policy-making at the governmental level is more than ever before facilitate the nationwide and integrated trauma system.
Experiences of fire and rescue team

**Introduction:** Special Events in the cities generate a lot of tasks for the fire and rescue Services.

**Methods:** There are two big Task for the Responsibilities:
At first there have to construct a System to make sure the event. That means for example to have enough Medicals, enough capacity in the hospital and to have enough fire brigade.
The second part is to control and to ensure the normal standard level of fire and rescue for the rest of the city outside the event area. It its to control the ways for Medical’s and fire trucks from there station to the alarm areas and to the hospitals. When the event reduce the ways there are to develop alternatives’

**Results:** The Result is specially concept for the event to ensure the Parts from the Fire and Rescue Services.

**Conclusions:** Too have a system to realise timely the problems for the fire and rescue and develop specially alternatives to make a event save but not reduce the specially character of the event.
The role of NexoBrid rapid enzymatic debridement in the treatment of fire disasters in view of the recent Romanian mass casualty incident

Introduction: Burn Mass Casualty Incidents (MCI) represent a huge challenge. Main established bottlenecks are availability of surgical personnel trained in performing escharotomies and eschar removal, and surgical facilities. NexoBrid® (NXB) an enzymatic product approved in EU, Israel and Argentina for debridement of deep burns has been previously described as a possible solution for burn MCI, as it non surgically releases or even prevents burn induced compartment syndrome without need for escharotomy, and removes eschar without dependency on surgical facilities. We present the first burn MCI where NXB was used to treat dozens of burn patients.

Methods: On 30/10/15 a fire blazed through a Bucharest nightclub. The initial victim count was 27 dead and ~150 injured. Victims were evacuated to several hospitals, a few of which were previously trained in use of NXB, but had only limited stock and limited experience in its use. They requested assistance and an urgent large quantity of NexoBrid. Following contacts with government officials, a large quantity of NXB was sent together with 2 plastic surgeons experienced in its use.

Results: Forty patients were treated with NXB after the disaster. The NXB experienced plastic surgeons assisted in the enzymatic debridements of the first patients in 3 hospitals, followed by hospital teams treating further patients by themselves. Treatments were performed in ORs, ICUs, and in regular hospital rooms. Pain was managed most commonly with IV analgesia to light sedation. NXB debridement achieved a vital bleeding wound bed in all cases known to us. Follow-up was possible by telemedicine. Treating physicians initially report NXB greatly assisted in dealing with the magnitude of victims, we hope further data will become available in the upcoming weeks.

Conclusions: NXB helps solve surgical bottlenecks in burn MCI. Enzymatic
Debridement is a simple procedure that can be performed after a short training period even by non-surgical personnel.
Poster Presentations
Bruria Adini, Israel

Faculty Member, Department of Emergency Medicine, Ben-Gurion University of the Negev

Aharonson-Daniel Limor, Ben-Gurion University of the Negev; Goldberg Avishay, Ben-Gurion University of the Negev; Rosi Luca, Istituto Superiore di Sanità; Mazzaccara Alfonso, Istituto Superiore di Sanità; Mandarino Giuseppina, Istituto Superiore di Sanità; Giorgi Sabina, Istituto Superiore di Sanità

PENTA - THE Joint Laboratory on Models and Methodology to Predict and Manage Large Scale Threats to Public health

Introduction: PENTA is a Joint Laboratory implemented by Ben-Gurion University of the Negev and Istituto Superiore di Sanità (ISS) in order to foster bilateral cooperation in Science and Technology between Italy and Israel. It has been established under the Governmental financial support by the Italian Ministry of Foreign Affairs.

Methods:

PENTA aims at:

♦ strengthening prevention, mitigation, preparedness, response and recovery policies and intervention programs concerning health threats;
♦ implementing mechanisms for capacity building, including the ability of a community to withstand and recover from large scale disasters;
♦ improving information sharing and knowledge management targeted at improving public awareness and education in complex emergencies;
♦ sustaining effective and interoperable systems of information and ICT tools to facilitate a coordinated response to health threats.

Moreover, PENTA promotes training and research on models to predict, manage and respond to large scale threats to public health. The laboratory organizes scientific events, training programs and workshops with the participation of international researchers and key stakeholders in target communities.

Results: In 2014–2015, PENTA has been involved in the KEP project with Serbia called “Emergency management and community resilience: a goal for Serbia”, holding the role of know-how provider. The KEP project is part of the Central European Initiative programme committed to supporting integration and capacity building for the management of disasters and complex emergencies in eastern
Europe.

From 2015 to 2018, PENTA embraced a consortium of 6 Countries in the European Project called “DARWIN” (H2020-DRS-7-2014) for the development of European resilience guidelines and their operationalization in the health care domain.

**Conclusions:** PENTA aspires to become a Think Tank Network within which Italy and Israel can promote Research & Development and Technology Transfer to address common challenges and opportunities in scientific and industrial sectors.
Coordinating Veterinary Integration into Multi-agency Disaster Response: Lessons Learned and Plans for the Future

Introduction: Research and legislation in the US highlighted the need to consider animals in disaster planning. There is a lag in animal evacuation and sheltering protocol. Emergency rescue of individual animals (loose livestock, trapped horses) requires animal handling and technical skills unknown to first-responders and veterinarians. Knowledge gaps can be filled by training first-responders in animal behavior and care and by integrating veterinarians into first-responder agencies.

Methods: Legislature, literature, training reports, and agency consults were reviewed to assess the effectiveness of first-responders (law-enforcement, firefighters) and veterinarians acting alone or together in animal responses.

Results: The US Pet Evacuation and Transportation Standards Act requires jurisdictions to include animals in emergency plans. Few counties are in compliance and risk loss of federal funding. Non-compliance reasons include uncertainty of requesting help and poor understanding of animals’ needs.

Firefighters have rescue training and equipment: rope systems, jaws-of-life, Incident Command System (ICS). Law-enforcement is skilled in public safety and crowd control. Veterinarians are skilled in animal movement and capture, and understand animal owners’ state of mind. However, these professionals don’t regularly interact and time is lost when face an emergency involving animals.

Experienced veterinarians have educational workshops available for first-responders to learn animal handling and for veterinarians to gain technical skills. Trainings that include both types of professionals resulted in team building and trust.

France and England have successful models for integrating veterinarians into fire departments.

Conclusions: Preexisting understanding of protocol between professionals can
have a positive outcome for people, animals and resources during a disaster. Veterinarians can advise emergency managers and deliver animal care trainings. Veterinarians who learn first-responder skills and ICS are an asset to multi-agency responses. Resources and lives can be saved if first-responders are trained to safely handle animals in emergencies. Practical approaches to foster integration include multi-agency drills, resource acquisition, and community education fairs.
Radiation Exposure in Trauma Imaging

Introduction: Increased diagnostic accuracy of Computed Tomography (CT) coupled have improved trauma evaluation and facilitated non-operative management of many types of injuries. Concern that excessive radiation exposure could result in an increased lifetime cancer risk has prompted evaluation of the potential risks and benefits of our current diagnostic strategies. Radiation from CT scans accounts for the bulk of exposure from medical imaging.

Methods: A detailed literature search and review on the topic of radiation exposure in trauma imaging was performed.

Results: The Biologic Effects of Ionizing Radiation (BEIR) reports describe the relationship between radiation dose and cancer. Estimations are based on epidemiologic evidence from Hiroshima and Nagasaki atomic bomb survivors exposed to a mean dose of 40 mSv. The lowest annual dose at which there is direct evidence of increased cancer risk is 100 mSv. At this dose it is estimated that approximately one in 100 patients will develop leukemia or solid organ cancer.

Patients that undergo trauma scans are exposed to an average dose of 20 mSv (up to 40 mSv). Exposures can increase to 100 mSv with multiphase CT studies, such as CT angiograms. When CT is required, protocols and can be used to reduce radiation during image acquisition such as post-acquisition image processing, and shielding radiosensitive organs like the gonads and thyroid.

Conclusions: There is substantial evidence of negative health effects that result from high dose radiation exposures and there is growing concern for potential adverse long-term effects of radiation exposure in trauma imaging. However, evidence of injury from lower doses of radiation, below 50–100 mSv, is not established. Risk of mortality and morbidity from severe injuries must take precedence over theoretical long-term risks of radiation exposure. Attempts should be made to reduce radiation exposure to minimal levels required for acceptable image quality.
Nadia Baranchuk, U.S. MD, PGY-3, Emergency Medicine, Mount Sinai Beth Israel Medical Center

Calvin Kong, Mount Sinai Beth Israel Medical Center; Michael Menna, Mount Sinai Beth Israel Medical Center; Michael Heller, Mount Sinai Beth Israel Medical Center; Adina Shulman RN, Mount Sinai Beth Israel Medical Center

Ebola Preparedness in a Teaching Hospital: What do Emergency Medicine Residents really think?

Introduction: The recent Ebola epidemic led to extensive training regarding the identification of Ebola patients in the Emergency Department (ED) and the specifics of caring for such patients. Many institutions provided ED Residents with didactic training but excluded them from the more onerous training in the donning and doffing of personal protective equipment. There are no data regarding resident perceptions of the training programs for Ebola preparedness. The purpose of this study was to determine resident opinions regarding aspects of that training.

Methods: This was a one-page anonymous survey distributed in person or online to all 40 members of a 3 year Emergency Medicine Residency. All residents had approximately 7 hours of instruction regarding Ebola.

Results: 39 of 40 surveys were returned; a response rate of 97.5%. A bare majority of residents (54%) had no objection to being excluded from taking care of Ebola patients. 74% did not think that their education was negatively impacted. 44% of residents agreed “that the time and effort given to Ebola is way out of proportion to its clinical significance.” 82% of Residents stated that they had read at least some of the national guidelines; 3/39 confessed to having never looked at any guidelines vs 2/39 who read all the guidelines (p=0.65). 15% of respondents thought the institutional Ebola preparations were “not very good” and 3% stated it was “a terrible waste of time and effort”. 80% noted that they would show up for work if they knew they would encounter an Ebola patient on their next shift; 8% would avoid the shift.

Conclusions: Most residents agreed with the policy which excluded them from caring for Ebola patients. However, a small percent of residents disagreed strongly with the overall institutional approach toward Ebola preparation and a similar proportion would avoid caring for Ebola patients.
Evaluation of emergency preparedness and response in Sao Tome and Principe

Introduction: The small state of Sao Tome and Principe (STP) located about 140 kilometers off the northwestern coast of Gabon. With a population less than 200,000 inhabitant STP is particularly vulnerable to climate-related hazards such as floods and storms. Of particular concern are the coastal communities and sectors such as agriculture and fisheries which are an important component of the economy and forms the basis of rural livelihoods in STP.

In order to improve the management of these climate-related hazards the STP government applied to the Office for Coordination of Humanitarian Affairs (OCHA) in the United Nation (UN), requested their expertise to assess the situation, needs and capabilities to establish an effective Plan of Action (POA) to respond to the country need in terms of Early Warning System in STP, through a realistic Disaster Risk Reduction (DRR).

In February 2015 a United Nation Assessment and Coordination (UNDAC) team, sent by OCHA, with the cooperation and leadership of the Capacity for Disaster Reduction Initiative (CADRI) to support STP government to build and implement a coherent framework for developing national capacities for DRR, including preparedness for response.

Methods: UNDAC team undertakes a DRR Capacity Assessment in order to develop a National POA for Capacity Development in DRR.

Results: UN Supporting and monitoring of the implementation of selected capacity and developed activities of the POA
**Conclusions:** The work will present the assessment tool and the outcome of the process as well as the challenges facing the government of STP, the stakeholders’ and the UN agencies’ representative to overcome the barriers and obstacles related to mentality, lack of resources, mentality, language and more. The work also presents the variety composition of the team that bring a unique collaboration reflecting the international cooperation with local capacity with the establishment of the POA in STP.
Zeev Dveyrin, *Israel*

*Deputy Director, National Public Health Laboratory Tel Aviv, Ministry of Health*

Efrat Rorman, V Public Health Laboratory Tel Aviv/Ministry of Health

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**National Public Health Laboratories in Tel Aviv (NPHLTA)- Risk Assessment of Activity During Missile Attack**

**Introduction:** The Israeli NPHLTA include: food and water laboratories for routine and emergency situations and reference laboratories: tuberculosis, syphilis, gonorrhea, chlamydia and toxoplasmosis.

The laboratory works with biological hazardous materials (bacteria, parasites and DNA), chemicals and gases. The total amount of chemicals does not require special authorization. Safety measures employed are in accord with the law. The laboratories are scattered in a few adjacent buildings with two blast-protected rooms (BPR).

The main safety threats include: local contamination as the result of biological or chemical spill and outside events: earthquakes or security events (terror attack or war). This work focuses on “conventional” missile attack.

**Methods:** Using risk assessment methodology, three scenarios were defined to possess high risk and needed further evaluation.

**Results:** Direct missile hit may cause:

1. Detonation of compressed hydrogen container located outside the building. It may cause casualties among personnel outside of BPR.
2. Dispersion of hazardous chemicals.
   The risk of chemical explosion is minimal, as the amount is small, but personnel may incur injury if they are not in the BPR.
3. Dispersion of biohazard material, containing M. tuberculosis strains from the BSL3 unit.

The staff will be evacuated while using personal protective equipment. When safe, an emergency team equipped with closed breathing apparatus would perform disinfection.

Results for all scenarios:

A. During missile attack alarm all personnel should enter BPR; this minimizes risk and prevents casualties.
B. Explosion and fire may cause injury, mortality and damage infrastructure.  
C. The Home Front Command Office as overseer of civilian targets during war should be continuously updated regarding chemical and biological agents in the lab.  

**Conclusions:** In all scenarios the principle risks exist prior to entry to protected areas. Time to entry should be minimized by performing drills and addition of small concrete shelters as temporary protected areas.
Francesco Foti, Italy

Medical Doctor, Pre-hospital Emergency Medicine, Azienda Regionale Emergenza Urgenza

Enzo Albergoni, Azienda Regionale Emergenza Urgenza; Marco Salmoiraghi, Azienda Regionale Emergenza Urgenza; Pietro Marino, Regione Lombardia; Gianluca Chiodini, Azienda Regionale Emergenza Urgenza

AREU Emergency Response for EXPO 2015 in Milan: Results and Impact on the Event Site and on the City Area

Introduction: The Azienda Regionale Emergenza Urgenza (AREU) of Lombardy Region (Italy) was involved to plan and to manage the emergency rescue response inside the EXPO2015 area in Milan. Existing risk assessment processes were used.

Methods: The risk analysis assessment identified few main risks but other threats and hazard to safety and security needed to be faced (domestic extremism, organized crimes, cyber threats, attacks on transports and crowded places, no conventional attacks)

Not provided scenarios were summer severe weather conditions and arrival of refugees from Africa to Milan.

Objective of the plan was to reduce the impact of the event on Milan hospital network.

Two main areas were identified: a “red area” (site of the event, with few first aid points and rescue teams) and a “yellow area” (town area). Great attention was reserved to the crowded areas, transports, and to the touristic sites of the town.

A Command and Control Dispatch Center (CCDC) was displaced out of the “red area”, in a dedicated and protected area.

The scores adopted (Arbon Predictive Score and Maurer Score) allowed to define needs of human and technical resources. Previous similar event plans (EXPO 2008 in Saragozza, Olympic Games 2012 in London) were analyzed in the planning phase. All of the datas in the red and in the yellow area were daily recorded.

Results: The first datas already showed relevant activities in the first aid points with a reduced impact on the hospitals network.

All of datas concerning time, type and typology of the rescue missions are in progress and will be finally processed at the end of the event (October 31th)
Conclusions: Flexibility, integrations and a strong cooperation between pre-hospital and hospital network were respected in the application of the plan. First datas revealed a reduced impact on the hospitals and on the health sectors.
David Fuchs, *Israel*

*Trauma Co-ordinator, Emergency, Ziv Medical Center*

Mazal Bar, Ziv Medical Center; Alexander Braslavsky, Ziv Medical Center; Alexey Bukin, Ziv Medical Center; Oleg Efremov; Arkady, Rapoport; Evgeny Solomov

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**Mass casualty preparedness in a small district hospital**

**Introduction:** Ziv Medical Center is a level 2 Trauma centre that is the closest hospital to the borders of Israel with Syria and Lebanon. It is no stranger to conflict and received casualties from wars with Lebanon, and more recently, the civil war in Syria. Unlike the level 1 trauma centres in Israel, staffing out-of-hours and at night in peace-time leaves the hospital exposed to a mass casualty scenario if even 3 massively injured patients arrive at once.

**Methods:** Over the last 2 years, staffing levels, training needs, and staff satisfaction has been monitored in order to better prepare the Trauma and Emergency staff for emergencies and improve care since the influx of Syrian patients.

**Results:** During the day and at night, there is no regular staff member in the Trauma room unless a patient is expected or already there. At night there are up to 5 nurses available who are familiar with Trauma, at night up to 3. Experienced nurses from the Coronary Care Unit and the Intensive Care Unit were transferred to the Trauma Room whenever two or more heavily wounded patients were received.

**Conclusions:** Addressing training and staffing issues is important as levels of trauma increase in civilian and conflict environments, affecting smaller hospitals as well as level 1 trauma centres. This is a huge additional work load for already busy nursing staff with no increase in staffing levels or salary.
Jeremy Gowing, Australia

Nursing Manager / Project Manager Emergency Planning, Nursing / Clinical Support. St Vincent’s Private Hospital Sydney, Australia

Kim Walker, University of Tasmania / St Vincent’s Private Hospital, Sydney, Australia; Shandell Elmer, University of Tasmania, Australia; Elizabeth Cummings, University of Tasmania, Australia

Disaster preparedness among health professionals and support staff. What are the most effective methods?

Introduction: It is essential to understand the level of preparedness and effective methods of disaster preparedness, including the willingness and ability to respond to actual disasters given health professionals and support staff are responsible to respond to increasing numbers of disasters.

Methods: An Integrative literature review using major health and social science databases was conducted which identified and analysed primary research. Research related to the disaster preparedness of health professionals or support staff, rated at 50% or higher using the mixed method appraisal Tool (MMAT) was included in the review.

Results: 36 primary research articles, including quantitative and qualitative research, were included.
♦ Despite a heightened focus on disasters, health professionals and support staff are not adequately prepared for disasters.
♦ Preparation methods include disaster exercises, online learning, self-learning, didactic instruction, virtual reality, videos or combination of methods.
♦ Some programs use established disaster competencies as content and some use validated tools to evaluate preparedness.
♦ All preparedness methods and content evaluated within the literature was associated with improved outcomes, although methodological weaknesses make this difficult to validate.
♦ Studies identified that significant numbers of health professionals or support staff may not attend work during disasters.

Conclusions: Whilst there has been heightened disaster preparedness, gaps in research include:
♦ High quality research. Only 5 studies evaluated were rated as 100% using MMAT.
♦ Evaluation of professionals other than doctors, nurses, ambulance and public
health staff

- Identification of the effective methods for different disasters types or different health professionals or support staff, including what is operationally realistic.
- Preparation for internal health care facility disasters including the need to share learnings
- Evaluation of the effectiveness of preparation when working during actual disasters
- The use of standardised competencies to both prepare and measure outcomes
- Understanding of factors which influence willingness to attend disasters

The review will provide a foundation for further doctoral research.
Amran Jaber, Israel
nurse, E.R Nurse, share zedek m.c

“Whoever saves one soul in Israel, Scripture accounts it as if he had saved an entire world”

Introduction: According to inter-ministerial guidance committee Israel state is supposed to be facing a national disaster following a 6.5 degree earth quack on Richter scale with an enormous damage, mainly: 7000 dead, 8600 severe and moderate degree injured, 37000 slightly injured, 9500 trapped and 170000 homeless.

It’s proven that in this situation we would need a big number of first respond team such as medical staff, because of the large destruction, soul loss and injured.

As citizens we are required to be prepared and trained in order to give medical and psychological first aid in order to save as much humans as we can.

As psychiatric nursing staff we need to prepare ourselves as required so we would be able to function in the maximum efficiency.

In my lecture I will be reviewing the development of the saving life theologically and historically and will discuss the connection with the three main religions in the area, (Jewish Christianity and Islam).

Methods: I used a questionnaire based on my humbly knowledge in the emergency field (first AID). The questionnaire will be distributed to the participants before and after the course.

Results: I will share our practice (training psychiatric nurses to life-saving interventions) in the Jerusalem mental health center, kfar shaul, 6 years training and 18 psychiatric nurses fitted courses( theatrical knowledge and psychiatric patients adjusted training) of life-saving actions.

Conclusions: I will be testing the efficiency of those courses, and how it is expressed in real-time.
The Madness of Evacuating a Psychiatric Hospital in a Disaster Scenario

Introduction: Planning and executing evacuation of any hospital in a disaster scenario is challenging, but evacuation of a psychiatric facility requires much forethought and novel strategies. Staff must be prepared to deal with the varying psychological needs of their patients, as well as their physical needs. We describe our experience planning and executing a drill arranged by the Israeli Defense Force Home Command in the Jerusalem Centre for Mental Health, which took place Monday July 20, 2015.

Methods: Two wards were evacuated for drill purposes. The drill scenario was that of a planned evacuation with a 30-minute time limit. Six months of planning went into this exercise, and four mock drills were performed in order to practice and refine the strategies employed. Every staff member was updated on all new procedures so all team members could perform multiple tasks if necessary.

Results: Novel strategies employed in the evacuation process included the “Noah’s Ark” kit, which included individual patient bags into which a printout of each patient’s vital information (updated daily as necessary) could be tucked and attached to every patient during evacuation. The “Ark” also contained a first aid kit including emergency psychiatric medications, and a list of that ward’s residents’ special medications, which were collected from storage into pre-labelled bags upon commencement of the drill. After evacuating the ward, patients were bussed to a central area, which included shelter, food and drinks, and supporting staff such as doctors and social workers in order to mitigate potential stress for the patients.

Conclusions: Planning the evacuation of a psychiatric facility requires much forethought, as the physical and psychological needs of this special population must be acknowledged and addressed. Mock drills helped refine the final master plan. We hope that our experience can be extrapolated to other mental health care facilities.
Simulated transport time and distance from nuclear power plant to nearest university hospital in Korea

**Introduction:** Nuclear accident has a possibility of many injured people and requires urgent transfer to hospital. We investigated simulated transport time and distance from nuclear power plant to nearest university hospital by motor vehicle in Korea.

**Methods:** This study was based on scenario design. Transport time and distance was measured on internet mapping service. We decided less than one hour is optimal on estimated arrival by motor vehicle.

**Results:** Four nuclear power plants and twenty three nuclear reactors are operating in Korea. Each estimated arrival time to nearest university hospital is 37min, 47min, 1h 32min and 2h 37min, respectively (Gori, Wolsung, Yeonggwang and Uljin). Measured distance is 25, 27, 69 and 157 kilometers, respectively.

**Conclusions:** Gori and Wolsung nuclear power plants require other hospital in close location or more rapid transport system.
Seunghwan Kim, South Korea
Assistant Professor, Center for Disaster Relief Training and Research, Yonsei University Severance Hospital
Jiyoung Noh, Yonsei University Severance Hospital; Minhong Choa, Yonsei University Severance Hospital; Hyun Soo Chung, Yonsei University Severance Hospital; Incheol Park, Yonsei University Severance Hospital

Development of DIsaster Medical Skill C0mpetency Training (DISCO) Course - A pilot study

Introduction: Skills competency is an important aspect of a healthcare provider responding to a disaster situation. However, there are no program which focuses on skill competency training. Therefore, we developed a core competency-based, standardized skill training program.

The aim of this study was to develop and implement a competency-based and skill specific training program focusing on prehospital disaster response situation and to evaluate the effectiveness of the program through self-confidence and knowledge of clinical skills.

Methods: The developed the training courses included airway management, wound management, ultrasound application and simulation session. Training for medical procedures in extreme environment were included in each session. To identify the difference in knowledge and self-confidence before and after training, all participants responded to the survey with a Likert scale. A descriptive analysis was performed to determine the general characteristics of subjects and the level of awareness of the importance of clinical skill in disaster response. Wilcoxon signed rank test was used to compare the knowledge and self-confidence level on pre- and post-training.

Results: A total of 62 participants attended 4 courses with each course participants comprising from 13 to 18. The mean score of awareness of importance of skill in disaster response was 3.63 to 4.0 out of 5. The score differences in pre- and post-training scores of confidence for skill was 1.57 to 2.98 and differences in knowledge was 1.74 to 2.7. The simulation course showed the biggest difference.

Conclusions: The level of awareness of importance of medical skill in disaster response was moderate. The trainees assessed the DISCO course as effective and this study showed the feasibility of educating medical skills performed in extreme environment.
Special Pathogens - Looking at reasonable initial PPE in the emergency department

**Introduction:** September 30th, 2014, in the United States (U.S.), the first case of Ebola viral disease (EVD) was diagnosed outside of Africa. In Emergency Departments (ED) all over the U.S., there was a scramble to not only create a triage set of questions, but to create a personal protective equipment (PPE) protocol, that would be low cost, very familiar, and easily accessible, to safeguard our prehospital and hospital personnel from the special pathogen patient who in this case was a patient with suspected EVD.

**Methods:** A group of local experts analyzed the case reports from EVD treatment centers in West Africa and the Centers for Disease Control and Prevention’s (CDC) PPE guidelines and explored options on how to best protect our ED and prehospital personnel from a suspected EVD patient.

**Results:** After reviewing the CDC PPE guidelines and analyzing the presumed causes for health care worker contraction of the disease, we developed an enhanced level D PPE for our ED which included emphasis on a donning and doffing check list.

**Conclusions:** All cases of medical personnel contamination that we reviewed including the two nurses in Dallas, TX, occurred due to either inadequate PPE or during the doffing procedures. In one of our ED, we created and utilized an enhanced level D and in another, used a commercial air powered respirator (A.P.R). Both ED had a donning and doffing check list created which was dependent on “guardian” to ensure compliance and safety. We believe that this continued practice will help safeguard our personnel, not only during this crisis, but for the next Special Pathogen outbreak.
Mauricio Lynn, *U.S.*

*Professor of Surgery, Surgery, University of Miami*

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**The role of bystanders and volunteers in Sudden Mass Casualty Incidents**

**Introduction:** The presence of untrained individuals at the scene of a bombing (secondary devices), in the proximity of unstable buildings in the aftermath of an earthquake or inside contaminated areas after a toxicological spill, may add to the problem rather than help with the solution.

**Methods:** Review of recent mass casualty incidents and disasters.

**Results:**

What to do: The use of volunteers with specific skills by should be encouraged, Medical personnel may provide assistance with the medical care and ex-military may be asked to assist with the evacuation of other spectators by controlling certain areas of the scene and managing other volunteers. Volunteers may help by carrying stretchers to ambulances or may assist walking wounded patients to get to medical attention.

What not to do: The most important guideline is to assure the safety of the bystanders participating in the rescue efforts. If safety cannot be guaranteed, the employment of bystanders should be discouraged. Volunteers should be allowed to manage injured patients only if they possess basic medical knowledge and training. Direct pressure on bleeding lacerations should be the only procedure performed by bystanders to control hemorrhage. Bystanders should not be allowed to place tourniquets or to use belts, cloths, and ropes as improvised tourniquets. Hospital staff going to the scene: Doctors and nurses should be discouraged to leave the hospitals to assist with the search and rescue efforts.

**Conclusions:** Search and rescue is a profession that requires adequate knowledge and training and should not be performed by professionals who are not used to work in a field environment.
Orderliness of chemical rescue service in Poland - example of Małopolska region

Introduction: State Fire Department is responsible for chemical rescue operations in the Republic of Poland. Structure and functioning of chemical rescue has been presented using the example of Małopolska region.

Methods: Analysis of current state of realizing legal requirements by Fire Department. Structure, equipment and procedures concerning chemical rescue in Małopolska. Analysis of interventions undertaken so far.

Results: Level of training, equipment and task assignment leads to the following division of chemical rescue:

a. Basic level – rescue actions undertaken by each Fire Department unit.

b. Specialist level – undertaken by specialist chemical and ecological rescue groups.

Two basic operation areas can be outlined:
- Area of rescue action – ensuring rescuers’ and scene safety, removal of dangerous agent, etc.
- Area of chemical recon – action utilizing specialist analytical techniques

Tasks of chemical rescue services on specialist level are divided into three levels:

Level A – actions such as recognizing and identifying hazard, verifying danger zone, evacuation, etc.

Level B – level A actions along with combined rescue/evacuation of casualties, animals and saving the environment and property, evaluating danger scale and limiting its development.

Level C – level A and B actions along with complex chemical action, including mass decontamination of people and rescue operation during situations of considerable size.
Conclusions: Chemical rescue in Małopolska region is highly developed and does not diverge from current international standards. In the area of operations undertaken, there are fewer interventions considering dangerous goods transportation, while the number of interventions concerning environmental hazards is at constant level.
Oleg Mazurenko, Ukraine

Associated professor, Disaster medicine, National Medical Academy of Postgraduate education

Svitlana Pkhidenko, World Health Organization, country office in Ukraine; Patricia Kormos, World Health Organization, Emergency Health Coordinator; Dorit Nitzan, WHO Representative & Head of Country Office in Ukraine

Mobile Emergency Primary Care Unit’s Nursing

Introduction: W.H.O. has established, in partnership with the Ministry of Health, the Ukraine Red Cross Society and the International Medical Corps, a number of Mobile Emergency Primary Health Care Units (MEPUs) to respond the needs in Eastern Ukraine and to deliver quality health services for internally displaced people (IDPs) and communities in conflict areas.

Methods: The study methodology based on own experience of MEPU staff training.
Also has been used a lessons learned from MEPU mission, the survey through questionnaires and interviews with mobile medical team personnel.

Results: Primary 80 h. training for MEPU’s medical personal was conducted before beginning it activities. This course covered a wide range of medical issues such as Medical management and preparedness, Emergency medical aid, Non-communicative Disease, Infection disease, Trauma care, Reproductive health, etc. Based on previous experience of Public Health response to natural and man-made disasters this program has demonstrated it useful.

The main health reasons of visit to MEPU were: 1.Chronic Non-communicative disease; 2.Psychological disorder; 3. Reproductive Health.
In our presentation we will show the futures of nursing in Ukrainian MEPU.

Conclusions: The Nursing is essential part in MEPU team. Mobile Emergency Primary Health Unit nurse could be able to provide a routine treatment for patients as well an emergency medical assistance. MEPU nurse should be having good knowledge on the General principles of Disaster medicine, ATLS, Non-communicative disease, Psychological disorder and Reproductive Health.
Deborah Persell, U.S.

Professor/Director, Disaster Preparedness & Emergency Management, Arkansas State University

Methodologies for Research Utilization in Student Work in Disaster Preparedness Higher Education

Introduction: In recent years natural disasters have become more frequent and stronger, thereby exacerbating communities located in high-prone disaster areas. Therefore, the needs for educational tools are necessary for disaster preparedness and disaster management. However, information regarding disasters remains varied and at times can be deemed to be false or damaging. Multiple web-based platforms claim to be evidence-based and offer sources of information regarding disaster preparedness, response, and recovery. Yet, there is a lack of awareness and recognition among students as to the credibility of these sites. This creates a gap in information access. Therefore interventions and programs are necessary to facilitate the dissemination of evidence-based information that students to have evidence-based discussions and course work.

Methods: One United States University is utilizing a soft systems methodology utilization of research in course work by students enrolled in disaster preparedness courses. Multiple interventions are proposed for this online environment: 1) University Librarians complete Disaster Information Specialist Programs; 2) Redesign of the Residence Librarian role in online classes; and 3) Deliberate “pushing” of research literature from identified evidence and web-based sites.

Results: This study is newly initiated with the expected results to include: 1) Increased awareness, access, and utilization of evidence and web-based databases; 2) Development of tools and resources to facilitate awareness, access and utilization of scientific databases and journals; and 3) Increased knowledge regarding disaster preparedness and management.

Conclusions: Improvement in student utilization of evidence is critical to ensure a well-prepared disaster preparedness & emergency management workforce. The interventions and programs represented in this study promote evidence-based student work.
Chad Priest, U.S.

Assistant Dean, School of Nursing, Indiana University

Paul Babcock, Indiana University Center for Law, Ethics and Applied Research in Health Information; Bobby Courtney, Indiana University Fairbanks School of Public Health; Jennifer Embree, Indiana University School of Nursing; Emily Fitz, Indiana University School of Medicine; Suzann Weber Lupton, Indiana University School of Public and Environmental Affairs; Eric Meslin, Indiana University School of Medicine

Mapping Academic Support for Community - Wide Healthcare Emergency Management Programs

Introduction: In this poster we identify and describe the impact of partnerships between a large research university in the Midwestern United States and community-wide healthcare emergency management organizations and programs. Universities through their tripartite mission of education, research and service, play an important role in community healthcare emergency management programs. Cataloging the numerous contributions made by one academic institution provides a template and model for other communities to develop partnerships that mutually support academic interests and community needs.

Methods: We developed a novel interdisciplinary certificate program in healthcare emergency management. As part of this process we analyzed the educational, research, and service offerings at a large research university in the U.S. that promote healthcare emergency management efforts in the community. Investigators from multiple institutions within the university collaborated to catalogue major academic contributions to emergency preparedness efforts.

Results: Investigators identified contributions to community preparedness efforts in all three mission-areas of the university. Education: The University offers a large number of formal courses and continuing education programs specifically geared to development of emergency management professionals. Research: The University is engaged in dozens of research programs, many of which are directly grounded in community needs. Faculty members with research interests that involve healthcare emergency management have self-organized to promote collaboration. Service: The University is engaged in significant emergency management service to the community. The university provides lifesaving emergency services, community outreach programs for adults and children as well as medical direction and consultation services for local, state, federal and international governmental organizations.
**Conclusions:** Through explicit cataloging of university contributions the partners gained a better appreciation for the complexity and scope of contributions to the broader community healthcare preparedness agenda and identified areas for further collaboration. Other institutions can replicate this process with community partners to identify opportunities for collaboration.
Alessandra Rossodivita, Italy

Infectious Diseases Department- University Center, Luigi Sacco Medical Center

Alberto Zoli, AREU Regional Emergency Service Company of Lumbardy

NUE 112: An Italian Pilot Model of Public Safety answering Point during Emergency.

Introduction: AREU the Regional Emergency Service Company for Lombardy district, promoted a new pilot Model of Public Safety Answering Point During Emergency (PASP), applying a new emergency Number “112” with new IT technologies format. Now the emergency telephone number for emergency medical services in Italy is 118. The startup of trials on the European Emergency Number “112” was announced on 2010 in Italy, following a European Directive on this matter.

Methods: The trials were carried out at the 118 Command and Control Room in Varese involving AREU – in a coordinating role, with the technical support of Telecom Italia (the Italian Public Company of mobile communications), and Beta 80 group as technological partner specializing in emergency management. The 112 European Emergency Number is a cutting-edge service, meeting the EU standards required for creating a PASP, in order to guarantee fast access to emergencies services, with a simplified model of access in making call, and security in the response. Calls are managed centrally by a single call center which sorts them and sends them towards Police, Firefighting Service or EMS. All citizens can download the app “Where are U” from their smartphone that allows to be localized with satellite technology.

Results: This innovative tool allows to all citizens in Lombardy, to be fastly connected with the local EMS, particularly designed for people with disabilities and useful during disasters and major medical emergencies. The NUE 112 activation approaches the European commitment of a unique emergency number throughout the continent.

Conclusions: AREU designed this project to promote the evolution of the emergency and urgent care territorial system, developing a network of care during emergency, improving the way of patient access to care. The aim is to apply this model in all Italian districts in a close future.
Alessandra Rossodivita, Italy
Infectious Diseases Department- University Center, Luigi Sacco Medical Center
Matteo Guidotti, National Research Council; Massimo Ranghieri, 3 1st Field Unit, EISOMOM Military Corps

CBRN Decontamination. New tools from nanothecnologies for destruction of CBRN Agents

Introduction: In the field of non-conventional CBRNE weapons, the recent rapid development of nanotechnology and catalysis over nanosized solids provides innovative tools for the detection, protection and decontamination against these threats. Absorption and destruction of chemical and biological (CBRN) hazardous agents can be required on the field (decontamination after warfare or terrorist use) as well as in laboratories, pilot plants and chemical agent destruction sites (abatement of CBRN weapons). Inorganic metaloxides, in all forms and formulations, constitute a large class of materials that are suitable for such purposes.

Methods: The authors show the recent advances in the nanosciences, with particular attention to new substances, the nanoparticles, with promising performances in the field of CBRN decontamination, for their synergistic bifunctional properties, focusing the attention on catalytic decontamination procedures, based on heterogeneous catalysts, which are able to convert highly toxic species into nontoxic secondary products. The use of transition metal-based inorganic catalysts and of zeolites with high specific surface area, clays and mesoporous materials plays therefore a key role in this investigation.

Results: Inorganic oxide ceramic nanofibers are suitable for face masks or protective clothing or titania nanoparticles-based reactive sorbet powders; they are studied as possible tools in application in the aerobic oxidation of chemical (C) and biological (B) agents, and should a possible new tool in the field of catalytic chemical decontamination of hazardous compounds.

Conclusions: In this aim nanosciences, nanotechnology and biotechnology are the emerging disciplines that can give rise to unprecedented methods, tools and equipment to counteract efficiently and effectively CBRN threats. The key role of nanotechnology and heterogenous catalysis for a multidisciplinary approach in counteracting CBRN threats will be highlighted.
Frederick Slone, *U.S.*
Assistant Professor of Medicine, Internal Medicine, University of South Florida College of Medicine
Arthur Cooper, M.D., Department of Surgery Harlem Hospital Center

**Creation of a Simulation Examination Using High-Fidelity Human Manikins for Board Certification**

**Introduction:**

**Purpose:** Creation of a simulation examination using high-fidelity manikins in lieu of an oral examination for board certification for the Board of Disaster Medicine.

**Methods:** Methods: Collaboration of experts in the field of disaster medicine and simulation with a Certified Healthcare Simulation Educator and Certified Testing Experts to create a simulation examination using high-fidelity manikins, that could be scored objectively using critical action checklists with a passing score being calculated using Angoff techniques.

**Results:** 23 candidates have taken the examination with 19 of 23 passing the examination and 4 of 23 failing the examination. The average score was 81 among those who passed and 52 among those who failed, with a passing score of 60. Feedback from those taking the examination has been highly positive as to the realism of the examination in testing disaster scenarios likely to be encountered during a disaster response that would be relevant to disaster medicine training.

**Conclusions:** The simulation examination using high-fidelity human manikins can portray a realistic situation to test actual skills and critical thinking in those applying for a Board Certification in Disaster Medicine.
Steven Storbakken, *U.S.*

*Director of Emergency Preparedness, Pomona Valley Hospital*

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**Mobile Hospital Command Center**

**Introduction:** Hospital Disaster can occur at any time and the need for effective and redundant emergency communication systems is critical to any response. Emergency Communication Systems are critical due to the failure of communications always begin cited as one of the top issues and any major disaster response.

**Methods:** I will show how Pomona Valley Hospital Medical Center has created a unique, standalone mobile hospital command center that has critical communications systems that can be used over multiple platforms.

**Results:** PVHMC has a mobile Hospital command center that has been recognized as a best practice by the Joint Commission and California Hospital Association.

**Conclusions:** Having an effective backup communication platform allows PVHMC greater flexibility in our response systems and allows for a broader response and support in emergency communication for disasters.
Neurosurgical Solutions - Coordinating urgent and emergent care when resources are scarce

Introduction: In 2009, the province of Ontario, Canada faced a crisis in access to emergency neurosurgical care. With less than 70 neurosurgeons practicing in the province and most located in the southern region, an increasing number of Ontario residents were being sent to the United States to receive emergency neurosurgical care, calling into question the effectiveness of the province’s own publically funded healthcare system. The Ministry of Health and Long-Term Care (MOHLTC) recognized the crisis and organized a working group to address the issue by identifying, organizing and deploying the scarce resources in a coordinated system facilitated by CritiCall Ontario.

Methods: During a four-year period, multi-faceted approaches were used to reduce the number of patients sent out of country including: mandating the use of CritiCall Ontario for all neurosurgical case referrals; the creation and use of daily neurosurgical case reports by CritiCall Ontario to monitor hospital responsiveness; and linking funding directly to case volumes as reported by CritiCall Ontario.

Results: The number of patients sent out of country for emergency neurosurgical care was reduced from 156 (2008/2009) to zero (2013/2014). A call rotation with escalation and clear accountabilities for the care of Ontario patients was established. The MOHLTC also attached funding to the achievement of deliverables and reduced expenses related to sending patients out of country.

Conclusions: This situation was a crisis of an uncoordinated system without clear accountabilities. The identification and utilization of resources was a fundamental first step to healthcare system preparedness and response, particularly in times of crisis. CritiCall Ontario continues to play a key role in coordinating neurosurgical resources by providing a single point of access to distribute patients in need of neurosurgical care as equally as possible. Most importantly, patients are now able to receive emergency neurosurgical care closer to home, without leaving the country.
Eli Yaffe, *Israel*

*Division Director, Training, PR, Volunteer Activities, Marketing and International Relations Division, Magen David Adom*

Itamar Abramovich, Magen David Adom; Roman Sonkin, Magen David Adom; Ilan Klein, Magen David Adom

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**Overseas Volunteers at times of war - would they leave or stay?**

**Introduction:** During emergency times an EMS organization requires reinforcements in order to fully staff all the rescue vehicles and fulfill the added emergency rescue tasks.

The purpose of this paper is to inspect the willingness of overseas volunteers to volunteer at times of emergency and war after they experienced a prolonged military operation with extensive impact on the home front.

Magen David Adom is running a volunteer program for overseas students. The program has been running for the past 2 decades and one of its goals is reinforcing MDA’s personnel at emergency times. The program trains 500 students yearly in a 10 days first aid course, after which they volunteer for 200 hours in 5 weeks on MDA ambulances.

**Methods:** During operation “Protective Edge” a survey was conducted among the participants of the program who were volunteering at MDA in Israel at the time. They survey was based on Likert scale with 5 grades (5— Completely true, 1— Not true at all) and inspected their views on emergency time volunteering. 199 participants responded in full.

**Results:** The students come from more than 10 states. No significant difference was found in numbers between man and woman. The students strongly identify with the goals of MDA (4.43), Their bond to MDA is very strong (4.11) and support of Israel is high (4.42). Their willingness to help in Israel at time of emergency is strong (4.43) and most would choose to help through Magen David Adom (4.36)

**Conclusions:** Although it’s a time of war, the students do not intend to leave. Their affiliation to MDA activity and to the help they provide are very strong. It is recommended to keep and strengthen the bond with the volunteers after their return to their land of origin in order to reinforce the national emergency medical array.
Eli Yaffe, Israel

Division Director, Training, PR, volunteer activities, marketing and international relations division, Magen David Adom

Haim Knobler, Magen David Adom; Roman Sonkin, Magen David Adom; Yfat Glasman, Magen David Adom

Magen David Adom’s Youth Volunteers - A mental force in addition to a medical force

Introduction: Magen David Adom’s youth volunteers are a “force multiplier“ at times of disaster, their ability to handle severe trauma victims are not only a matter of skills which they acquire on different professional courses that prepare them for volunteering but also a matter of their mental ability to handle such events. The intensity of symptoms, their effect on the youth’s lives and the symptoms disappearance.

Methods: The article examined the coping of youth volunteers who treated trauma victims during their volunteering at MDA. A questionnaire was passed to volunteers during their first year of volunteering. It included demographic information, questions regarding participation in treatment of severe trauma patients and multi casualty incidents. Last part of the questionnaire included questions regarding post traumatic symptoms.

Results: 80% out of 96 responders attested that they participated in treatment of severe trauma patients. 6% testified to have had difficulty falling asleep, 4% testified that they experienced disturbances in sleep sequence, 2% said that they experienced aggression, 10% said that they had repeated dreams from the event, 25% repeated thoughts from the event, 20% flashbacks. 100% of the volunteers attested that symptoms disappeared after a few days, without any external intervention.

Conclusions: Magen David Adom’s youth volunteers during their first year of volunteering are already getting exposed to severe trauma cases which they handle very well. MDA’s youth which is trained to provide first aid in professional courses can handle treatment of severe trauma patients during a disaster. This is the base assumption and it has weight to lean on.
Eli Yaffe, *Israel*

*Division Director, Training, PR, volunteer activities, marketing and international relations division, Magen David Adom*

Roman Sonkin, Magen David Adom; Ilan Klein, Magen David Adom

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**Effectively Sustaining an International Medical Volunteer Unit for Emergency Times**

**Introduction:** Magen David Adom the national rescue organization of Israel, maintains an international medical unit for emergency and disaster times. The unit is comprised of doctors and as other emergency units, isn’t part of MDA’s routine crews. Successful activation of emergency volunteers in emergency times depends on the investment of resources during routine times. The goals are development of a sense of belonging and strengthening the bond with the organization. New members arrive to Israel and go through a five-day dedicated course followed by ambulance shifts with MDA crews. During the shifts unit members get to know the Israeli population, make personal connections, and get familiar with the organization’s practices. A multi-year plan was developed in order to upkeep the unit. After initial training, unit members are offered to join MDA’s EMS crews while visiting Israel, refresher courses, advanced training and drills.

**Methods:** A survey was conducted in order to assess the international unit’s members bonds, 20 members replied. The questionnaire was divided into two parts: before initial training and after. Likert scale was implemented to assess: Bonds with MDA, ability to handle multi casualty incidents and disasters, willingness to arrive and aid at emergency times.

**Results:** Initial training strengthened the bonds with MDA (3 before, 6 after), improved unit members’ ability to handle multi casualty incidents (3 before, 4.5 after). The ambulance shifts were highly appreciated (5.7) and made a significant effect on the bonds with MDA (5.4). Unit members participation level in additional MDA activities is 90% with a high satisfaction level (5.5).

**Conclusions:** Unit members with strong bonds, personal connections and high satisfaction levels are more likely to leave a safe environment and aid the organization emergency times. During “protective edge” 5 members of the unit arrived and joined MDA crews.
Eli Yaffe, *Israel*
Manager, Public Relations, Volunteers, Training and Fundraising division, Magen-David-Adom, *Israel*
Yuval Bitan, Ben-Gurion University of the Negev

Using Dynamic Location of Ambulances, Motorcycles and First Responders Volunteers to Improve the Response to Emergencies and Disasters

**Introduction:** Magen-David-Adom (MDA) use varied response units to provide care for emergencies 365 days a year. MDA is constantly seeking for ways to reduce the response time to emergencies. We are presenting models that will help us predict the probability for calls and change the location of the response units based on this prediction. We hope that these models will also help in improving the response time for disasters, that although are less predicted, might affect the general public in similar locations to other emergencies.

**Methods:** We worked with researchers from the Technion (Ilana Ben-Daviv), Ben-Gurion University (Hillel Bar-Gera) and Bar Ilan University (Amir Elalouf), and their students to evaluate statistical models that set the response units location based on data from previous calls. One model was used to calculate optimal locations for ambulances based on minimal response time. The second model was used to test improvement in response time by adding paramedics on motorcycles that will respond first, to all calls. Both models used statistical simulation to calculate the optimal locations based on historical data about location and severity of calls.

**Results:** The results of both studies show that MDA can improve its response time by optimizing the location of its response units based on data from previous calls. This data can be used not only to improve the location of where the ambulances are stationed, but can also suggest how to combine new units (like motorcycles and First Responders Volunteers) to get even better coverage.

**Conclusions:** Using statistical tools to calculate optimal location of response units can improve the response time to emergencies. Although we cannot predict the location of future disasters we can use the optimization tools we developed to have the response units in locations that will be optimized to the population that might be affected by such disasters.
The effect mechanism study on vagus nerve stimulation to improve the prognosis of brain explosion injury

Introduction: We focus on whether vagus nerve stimulation could ameliorate the prognosis of craniocerebral blast injury patients.

Methods: 32 male New Zealand White rabbits were divided into Sham-operated Group (n=8), explosion group (n=12) and vagus nerve stimulation group (n=12) by random number table, in which explosion-group and vagus nerve stimulation group were based on brain explosive injury models. Vagus nerve stimulation group received continuously right side cervical vagus nerve stimulation (10V, 5Hz, 5ms, 20min) after brain explosive injury. Detect the water content in brain tissues, the TNF-α and IL-10 concentration in serum (8h and 24h after injury) and cerebrospinal fluid (24h after injury). Meanwhile record the 2h long distance ECG (electrocardiograms) before injury, 6h–8h and 22h–24h after injury in each group.

Results: The serum and cerebrospinal fluid pro-inflammatory cytokine TNF-α and water content in explosive injury group were significantly higher than sham-operated Group (P<0.01) while the anti-inflammatory IL-10 concentrations in explosive injury group significantly was lower than the Sham-operated Group (P<0.01). The serum and cerebrospinal fluid anti-inflammatory IL-10 concentrations in vagus nerve stimulation group were higher than sham-operated group, while the pro-inflammatory cytokine TNF-α in vagus nerve stimulation group was among explosion group and Sham-operated group (P<0.05). Compared with the Sham-operated group, the low frequency/high frequency (LF/HF) ratio, which reflects autonomic nervous system balancing indicators in the explosion group and vagus nerve stimulation group was significantly higher (P<0.01) at the acute stage of brain explosive injury. The explosion-group LF/HF ratios decreased significantly (P=0.01) and vagus nerve stimulation group no significant changes (P=0.320) in later stage of explosive injury of brain.

Conclusions: Vagus nerve stimulation play a protective effect of improving functional prognosis of TBI patients by reducing the degrees of brain edema, reducing the concentrations of TNF-α in serum and cerebrospinal fluid, elevating the concentrations of IL-10 and restoring autonomic nervous system balance.