(P1-102) Developing Methodologies to Assess Resource Needs and Ability to Provide Interventions and Care for Children in Disasters, Terrorism and Public Health Emergencies

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Introduction: In emergency preparedness there is the need to prospectively develop an approach to which interventions can be provided with available resources and the maximal amount of clinical effectiveness which can be attained by staff.
Methods: A panel of pediatric emergency preparedness experts employed our previously validated evidence based consensus process with a modified Delphi process for topic selection and approval. Interventions were chosen such that resources and staff efficiency would not exceed previously published data for non-disaster emergency care but allowing for standard emergency preparedness planning alterations in standards of care such as the assumption that usual numbers of staff would care for a disaster surge of four times the usual number of patients.
Results: Using standard emergency preparedness assumptions of limited resources and staff efficiency, the panel agreed upon both methodologies for resource allocation and feasible interventions. A number of standard interventions would not be feasible and included detailed recording of vital signs, administration of vasoactive agents, prolonged resuscitation and central venous access.
Conclusion: By employing this approach to resource utilization described combined with the unique aspects of pediatric care, we can improve our planning and responses. This can be accomplished by understanding the needs of the population being served, learning how to focus on both pediatric needs and the expectations of the community with regard to care of children, adopting what has been learned in prior events in the United States and abroad, and developing prospective recommendations regarding essential interventions which can be performed in a disaster.

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(P1-103) Utilization of a Pediatric Disaster Coalition as a Model for Regional Pediatric Disaster Planning

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Purpose: There remains a lack of comprehensive pediatric emergency preparedness planning worldwide. A disaster or mass-casualty incident (MCI) involving pediatric patients could overwhelm existing pediatric resources within the New York City (NYC) metropolitan region. The NYC Department of Health and Mental Hygiene (DOHMH) recognizing the importance to plan for a MCI with a large number of pediatric victims, implemented a project (the Pediatric Disaster Coalition; PDC), to address gaps in the healthcare system to provide effective and timely pediatric care during a MCI.
Methods: The PDC includes experts in emergency preparedness, critical care, surgery, and emergency medicine from the NYC pediatric/children's hospitals, DOHMH, Office of Emergency Management, and Fire Department (FDNY). Two committees addressed pediatric prehospital triage, transport, and pediatric critical care (PCC) surge capacities. They developed guidelines and recommendations for pediatric field triage and transport, matching patients' needs to resources, and increasing PCC Surge Capacities.
Results: Surge recommendations were formulated. The algorithm developed provides specific pediatric triage criteria that identify severity of illness using the traditional Red, Yellow, and Green categories plus an Orange designation for continual reassessments that has been adopted by FDNY that has trained > 3,000 FDNY EMS personnel in its use. Triaged patients can be transported to appropriate resources based on a tiered system that defines pediatric hospital capabilities. The Surge Committee has created PCC Surge Capacity Guideline that can be used by hospitals to create their individual PCC surge plans. 15 of 25 NYC hospitals with PCC capabilities are participating with PDC planning; 5 have completed surge plans, 3 are nea completion, and 7 are in development. The completed plans add 92 surge beds to 244 regularly available PICU beds. The goal is to increase the PCC surge bed capacity by 200 + beds.
Conclusions: The project is an effective, multidisciplinary group approach to planning for a regional, large-scale pediatric MCI. Regional lead agencies must emphasize pediatric emergency preparedness in their disaster plans.

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(P1-104) The Surgical Care of Children with Gunshot Wounds in a Children's Field Hospital

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Introduction: The treatment of victims with gunshot wounds has gained importance over the past 10–15 years due to continuous military conflicts and the increase in terrorist and criminal acts. Since 1992, a group of pediatric surgeons has been trained to treat gunshot wounds in both children and adults in field hospitals of the Russian Service of Disaster Medicine in Northern Caucasus.

Methods: Two working models of a Children's Field Hospital (ChFH) were reviewed. In the first model, a ChFH was implemented for 14 months (April 2001–July 2002) during a military conflict in the Chechen Republic. There were no other hospitals rendering medical aid to children in the area. In the second model, a field hospital was created for children following a terrorist act in Beslan, Northern Ossetia in 2004.
Results: Over the 14 month period, the Chechen Republic ChFH rendered medical aid to 102 adults and 20 (16.4%) children with gunshot wounds. Self-made explosives and unexpected munitions were blamed for explosive trauma in children. Two children died in the ChFH, and one child with amputated lower limbs was transported to Moscow for prosthetics placement. Three hundred eleven children presented to ChFH, including 55 children not requiring medical aid, and 256 wounded children, who were divided into 3 groups: 5 dying; 52 wounded and requiring emergency treatment; and 199 wounded who were transported to hospitals in Vladikavkaz after receiving initial medical aid at the ChFH. In total, 47 operations were performed, including seven abdominal and chest surgeries. Re-animation aid was provided at the Intensive Care Department of the ChFH for the stabilization of the critically wounded prior to their evacuation.
Conclusion: In the situation of mass admissions of wounded patients, the most important considerations are triage and the arrangement of operations according to urgent indications.
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(P1-105) Osteosynthesis of Children with Femur Fractures from Traffic Accidents

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Introduction: The growing number of children suffering polytrauma from traffic accidents dictates the expansion of the indications for osteosynthesis. Elastic-stable intramedullary osteosynthesis (ESIN) is the optimum treatment of fractures of long bones in children.
Methods: Closed intramedullary osteosynthesis of diaphyseal femur fractures with flexible nails was performed in 74 patients (76 fractures) during 2006–2010. The patients were children ages 1–8 years. Titanium elastic nails (TEN) (Synthesis, Switzerland) were used in the procedures. AO Foundation recommendations were adhered to when selecting the size of the implant (i.e., diameter approximately 1/3 the diameter of the femur medullar canal at its narrowest part).
Results: There was a prevalence ($n = 53$) of simple fractures (Ð3 by AO classification) in this group of patients. Sixteen children had Ð2-type fractures, five with spiral (Ð1), and two with slanting (Ð2) fractures. There were no type Ð1 or Ð3 complex fractures in this group. Good functional results of closed intramedullary osteosynthesis with TEN at diaphyseal fractures of the femur in children with isolated and associated damages were achieved. There were no post-operative complications. This method provided stability of osteosynthesis, which allows activating patients in the short- term, i.e., during the post-operative period.
Conclusion: Treating femur fractures in children with ESIN provides optimum treatment of polytrauma. Osteosynthesis without exposure to the area of damage, and the early activation of children can prevent infectious complications and contractures.
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(P1-106) Scarce Resources Planning Summit for Pediatric Critical Care and Transport Stakeholders

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There are six children's hospitals in Chicago, Illinois and the surrounding region. These hospitals often have bed limitations due to high censuses in daily operations. The Pediatric Committee of the Chicago Healthcare System Coalition for Preparedness and Response had provided two conferences in pediatric emergency preparedness in Spring 2010 that identified a need to examine scarce critical care resources in the region. A "Pediatric Critical Care and Transport Stakeholder's Summit" was convened in April 2010. This meeting brought together the Pediatric Critical Care Medical and Nursing Directors along with Transport Team representatives from major hospitals to identify the key issues related to pediatric emergency preparedness and scarce resources. The four-hour Summit, was held in a Conference Center, away from any hospital or clinical setting, was organized into seven sections: (1) Welcome & Introductions; (2) Issues Identification; (3) Scenario Introduction; (4) Specific Issues Indentification; (5) Prioritization of Specific Issues; (6) Development of Action Steps; and (7) Moving Forward. A Facilitator with specific knowledge of hospital-based preparedness led the Summit process. He utilized a pediatric scenario to engage the participants in discussion, interaction, and planning. Action steps, with statements of need and specific action items were developed, based on the following prioritized issues: (1) lack of pediatric training and experience for front line personnel; (2) alternate care sites/bed capacity/surge planning; (3) ethical issues; (4) transport; (5) credentialing/pediatric specialist availability; (6) incident command/community integration; (7) pediatric supplies and equipment; (8) patient indentification; (9) financial tracking/reimbursement; and (10) Crisis Standards of Care/Crisis Operation Standards Moving forward, the participants of the Summit will reconvene into small workgroups to develop plans and training for the areas specified above. In May, 2011 a statewide exercise utilizing the special population of children will occur to test these plans.
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(P1-107) Paediatric Emergencies

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Paediatric asthma is a frequent presentation to Emergency departments. Early intervention may prevent progression of the acute phase to a severe or life threatening stage. Magnesium is a wonder molecule that has repeatedly undergone vigorous trials. Magnesium is used by intravenous and nebulized route in many guidelines across the world. Heliox keeps coming in