EMS Safety Summit 2012
Safety Systems, Strategies and Solutions

Transport of Vulnerable Populations
Neonates/Peds
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Peds/Neonate Transport Safety Awareness

- Need information that is
  - Relevant
  - Accessible
It is a SYSTEM!

- Child in a vehicle with other occupants and equipment
- Vehicle in a Fleet
- Fleet in a region
And it could be…

- Your dedicated vehicle
- Someone else’s specialized vehicle
- Someone else’s general vehicle
Team size drives vehicle size...

• It is ALL part of one system
Yet.. The infant and child is the same size range globally
Australia
Team size drives vehicle size...
Specialized issues

- Nitric oxide
- ECMO
Peds and Neonate Transport

- Special population
- Unique challenges
- Potential pitfalls
- Innovative approaches
  - USA
  - Internationally
We are part of the problem...

Prehospital Emergency Care

Prehospital Emergency Care

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Equipment for Ambulances A Joint Statement from the National Association of EMS Physicians, the American College of Emergency Physicians, and the American College of Surgeons Committee on Trauma

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Almost four decades ago, the Committee on Trauma (COT) of the American College of Surgeons (ACS) developed a list of standardized equipment for ambulances. Since 1998, the American College of Emergency Physicians (ACEP) has published a similar list. Both of these organizations collaborated on the existing joint document, published in 2006. Similar to this revision, the National Association of EMS Physicians (NAEMSP) has agreed to participate in this collaboration.

All three organizations adhere to the principle that emergency medical technicians (EMTs) at all levels must have the appropriate equipment and supplies to optimize prehospital delivery of care. Since EMTs care for patients of all ages, with a wide variety of medical and traumatic conditions, the ACS/ACEP/NAEMSP project, produce this document to serve as a widely accepted standard in the field of emergency ambulance service both in the United States and Canada. Based on the need for increased domestic preparedness, this current revision addresses the first time those measures needed on ambulances for appropriate terrorism preparedness.

EQUIPMENT AND SUPPLIES

The guidelines in the supplies and equipment that should be stocked on ambulances to provide patient care. Previous documents regarding ambulance equipment have referred to essential or minimal equipment necessary to adequately equip an ambulance. However, very little scientific evidence supports requirements for specific equipment and supplies. Equipment requirements will vary, depending on the emergency medical practice. Basic Level Providers

A. Ventilation and Airway Equipment

1. Portable and fixed suction apparatus

2. Ventilation equipment

3. Oxygen administration equipment

4. Inadequate length tubing: nasal catheter, tubing, and inhalation

5. Bag-valve-mask

6. Ventilation equipment

7. Oxygen administration equipment

8. Inadequate length tubing: nasal catheter, tubing, and inhalation
• What other considerations do we need to look at when building around a “traditional” ambulance box design (understanding that it is not ideal, but necessary)
• How do you approach proper ergonomic design in general, or who do you suggest we contact to do proper ergonomic design
Preemie infant characteristics

• Typical age / size of infant when discharged
  – Ideal: Gestational age of 34 weeks
  – Approximately 1800 grams (~3.96 lbs)
  – Many are bigger: 1800 – 2200 grams (~4.85 lbs)
  – Non-survivors are usually very very small

• Any specially made car seats for preterm infants?
  – No. Inserts are usually used
Bigger is not necessarily better......

OUCH!

My liver!!

OUCH!

My spleen!!
Bigger may not be better....

- Can you reach all the equipment you need to
- Can you create a skill specific team with the necessary skills
- What skills per patient ratio is key
Innovation from Pittsburgh Children’s Hospital

Transport

Description of Services
Transport responds to all emergency calls from referring physicians or institutions, including calls for transport, referral and consultation. Staffed by trained specialists, the Communications Center refers surgical consultation calls to the senior pediatric surgery fellow and medical emergencies and transport calls to pediatric intensive care or newborn medicine.
• **Advisory Board and Technical Expert Panel**
  – EMS Safety Foundation, Director of Human Factors and Ergonomics
  – Chris Fitzgerald, Injury and Risk Management
Australia, NETS Melbourne

Newborn Emergency Transport Service (Victoria)

Launch of Custom-built Ambulance for the Newborn Emergency Transport Service (NETS), Victoria

Special ambulance to transport twin babies

The Minister for Health, the Hon Bronwyn Pilcher, launched the high-tech ambulances to safely transport Victoria’s newborn babies between newborn and specialist hospitals.
Melbourne, Australia Neonatal Ambulance – stationary mode
Melbourne, Australia Neonatal Ambulance – in transit mode
Australia - NSW Peds/Neonatal Vehicle - NETS
NSW Australian Peds/Neonatal Vehicle
Foldable Child seats
more compact and easier to store
Existing Technical Literature

Existing Technical Literature


Avoid approaches that don’t factor in systems hazards
Basic science engineering research

• What are the optimal design features for a premature infant ATD
• How to best build a transport system that provides transport safety and pt access and thermoregulation
• A number of initiatives are now underway
Deceleration Sled tests
(upon impact) 24 G, 30mph

Aprica 2.5 infant dummy
Initiative underway for neonate ATD

- An interdisciplinary, international project to develop a meaningful model to be integral in the design of optimizing the safety of the system
Peds Neonates Summary

- EMS Transport of infants and children
- Interfacility transport of neonates, infants and children
- Team configuration
- Hours of service
- Fleet/vehicle spectrum and technologies
- Vehicle design issues - occupant protection and human factors
- Occupant restraint systems
- Operational Policies