

TRB EMS Subcommittee ANB10(5)

EMS Safety Summit 2012

Safety Systems, Strategies and Solutions

**Transport of Vulnerable Populations
Neonates/Peds**

Nadine Levick MD, MPH

Chair ANB10(5)

CEO, Research Director EMS Safety Foundation

February 29th , 2012



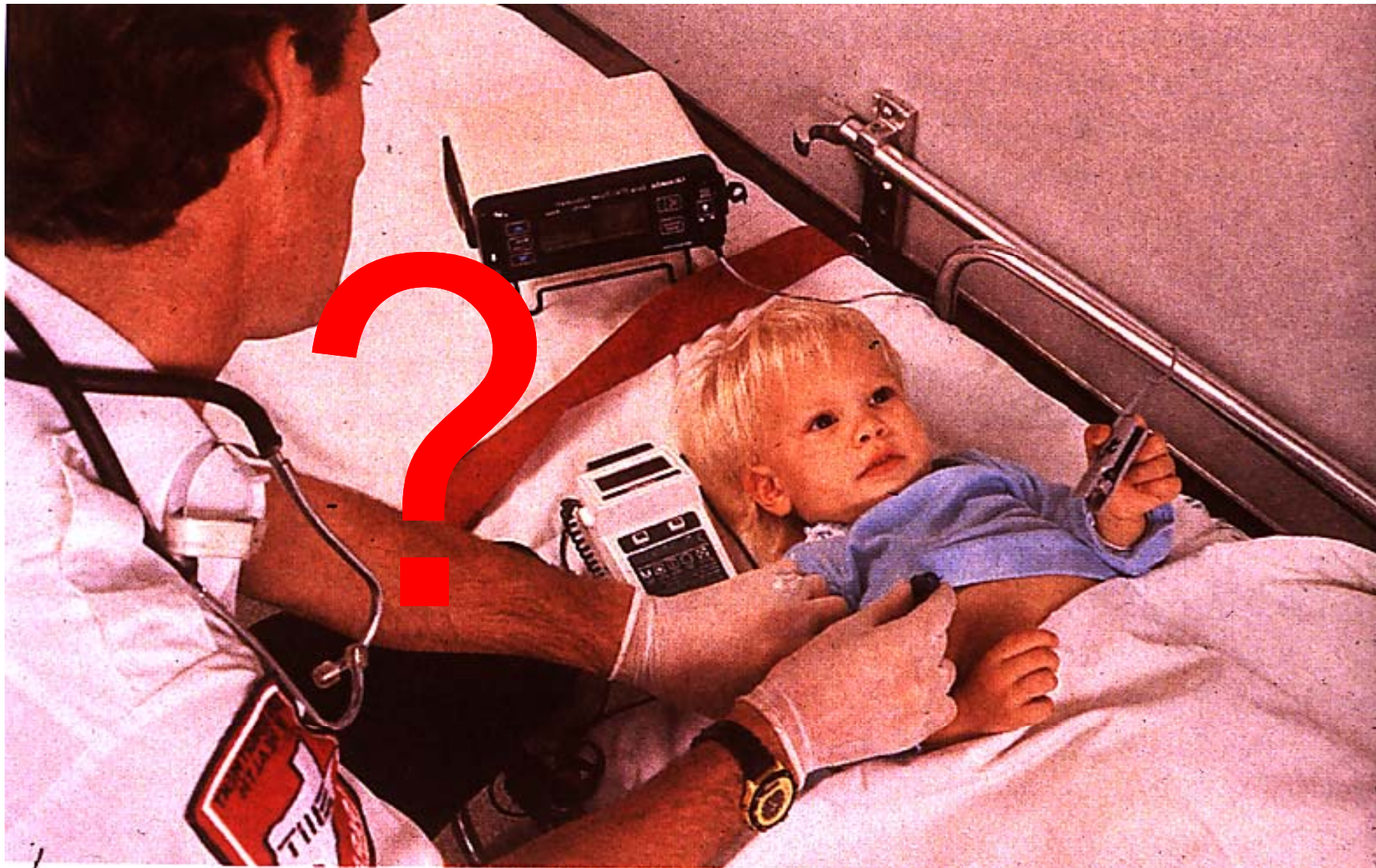
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Peds/Neonate Transport Safety Awareness

- Need information that is
 - Relevant
 - Accessible



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It is a **SYSTEM!**

- Child in a vehicle with other occupants and equipment
- Vehicle in a Fleet
- Fleet in a region

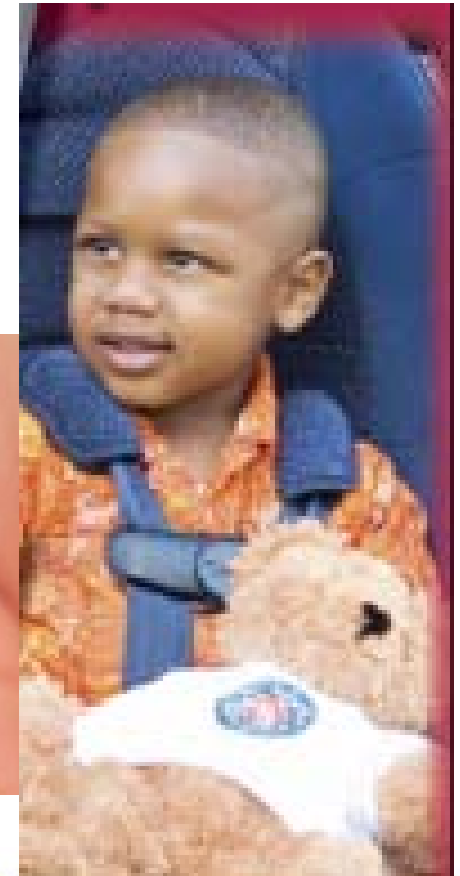
And it could be...

- 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



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USA



Team size drives vehicle size...





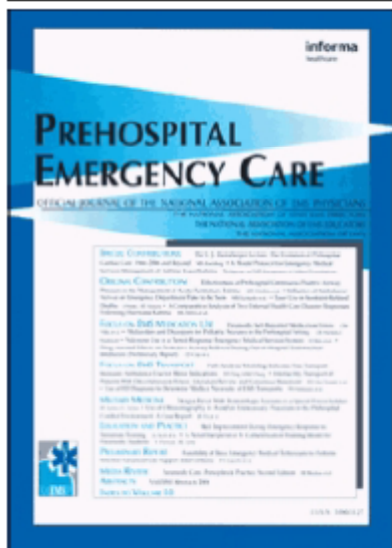
Specialized issues

- 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

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title--content=t713698281>

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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Downloaded By: [JPECC - Prehospital Emergency Care] At: 03:11 27 October 2007

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

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 1988, the American College of Emergency Physicians (ACEP) has published a similar list. Both of these organizations collaborated on the existing joint document, published in 2001. With 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-COT, ACEP, and NAEMSP have joined to 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 for the first time these resources needed on ambulances for appropriate terrorism preparedness.

pendent on effectively monitoring, integrating, and evaluating all components of the patient's care.

The goal of prehospital care is to minimize further systemic insult or injury through a series of well-defined and appropriate interventions.

Integral to this process is medical oversight of prehospital care by providing protocol (indirect medical oversight) or by physician via voice and/or video communication (direct medical oversight). The protocols that guide patient care should be established in concert by medical directors for ambulance services, emergency physicians, trauma surgeons, and appropriately trained basic and advanced emergency medical personnel.

EQUIPMENT AND SUPPLIES

The guidelines list 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,

BASIC LEVEL PROVIDERS

A. VENTILATION AND AIRWAY EQUIPMENT

1. Portable and fixed suction apparatus
*Wide-bore tubing, rigid pharyngeal curved suction tip; tonsillar and flexible suction catheters, SF-14F
2. Portable and fixed oxygen equipment
*Variable flow regulator
3. Oxygen administration equipment
*Adequate length tubing; mask (adult, child, and infant sizes), transparent, non-rebreathing, and valveless; nasal cannulas (adult, child, and infant sizes)
4. Pocket mask with one-way valve
5. Bag-valve mask
*Hand-operated, self-inflating bag (adult and infant sizes), with oxygen reservoir/accumulator; clear mask (adult, child, infant sizes, and neonate sizes); valve (clear, disposable, operable in cold weather)



ARD

- 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 small
- Any specially made car seats for preterm infants?
 - No. Inserts are usually used

Bigger is not necessarily better.....



OUCH!
My spleen!!



OUCH!
My liver!!



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

The screenshot shows the website for Children's Hospital of Pittsburgh | UPMC. The header includes the hospital logo, a search bar, and navigation buttons for 'For Clinicians', 'For Parents', 'For Teens', and 'For Kids'. A secondary navigation bar lists categories like 'ABOUT CHILDREN'S', 'OUR SERVICES', 'CHILD HEALTH A-Z', 'INJURY PREVENTION', 'RESEARCH', and 'EVENTS AND CLASSES'. The main banner features a child blowing a bubble and the word 'Transport' in large yellow text. Below the banner, the page title is 'Support Services' and the breadcrumb trail is 'Home > Our Services > Support Services > Transport'. The main content area is titled 'Transport' and includes a 'Description of Services' section. A sidebar on the right contains utility links: 'Find a Doctor', 'Directions', 'Give to Children's', 'Careers', and 'Contact Us'. The page also includes a 'Text Size +' control and icons for email and printing.

Children's Hospital of Pittsburgh | UPMC

Search for... Go

For Clinicians For Parents For Teens For Kids

ABOUT CHILDREN'S OUR SERVICES CHILD HEALTH A-Z INJURY PREVENTION RESEARCH EVENTS AND CLASSES

Transport

Support Services

Home > Our Services > Support Services > Transport

Text Size + [Email] [Print]

Find a Doctor

Directions

Give to Children's

Careers

Contact Us

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.



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- **Advisory Board and Technical Expert Panel**
 - EMS Safety Foundation, Director of Human Factors and Ergonomics
 - Chris Fitzgerald, Injury and Risk Management



Australia, NETS Melbourne

NETS | NETS Transport

NETS Transport



Newborn Emergency Transport Service (Victoria)

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



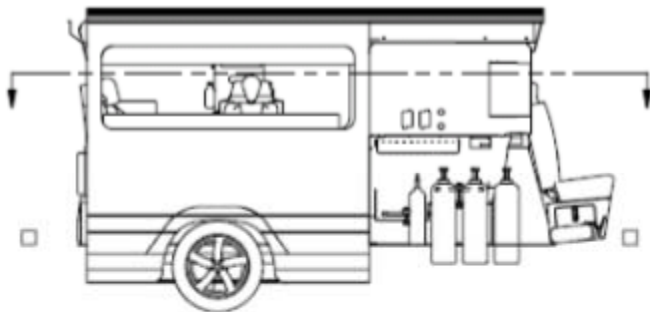
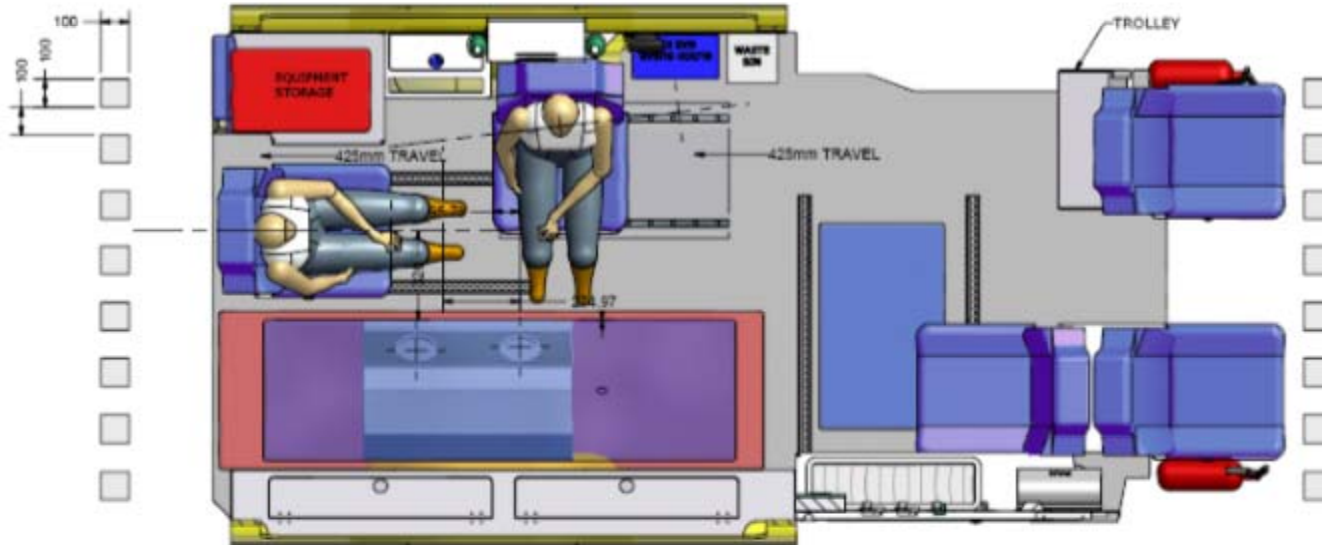
Special ambulance to transport

The Minister for Health, the Hon Bronwyn Pittard, launched the new custom-built ambulances to safely transport Victoria's newborn babies from birth to neonatal intensive care.



RD

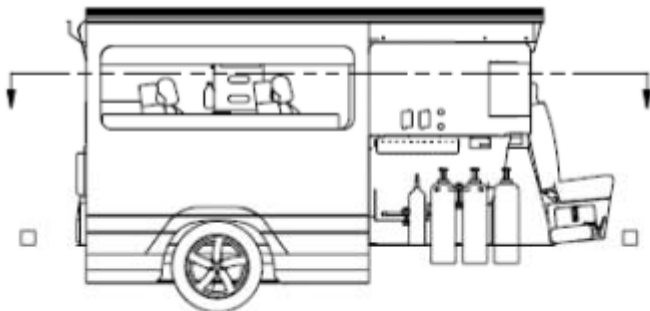
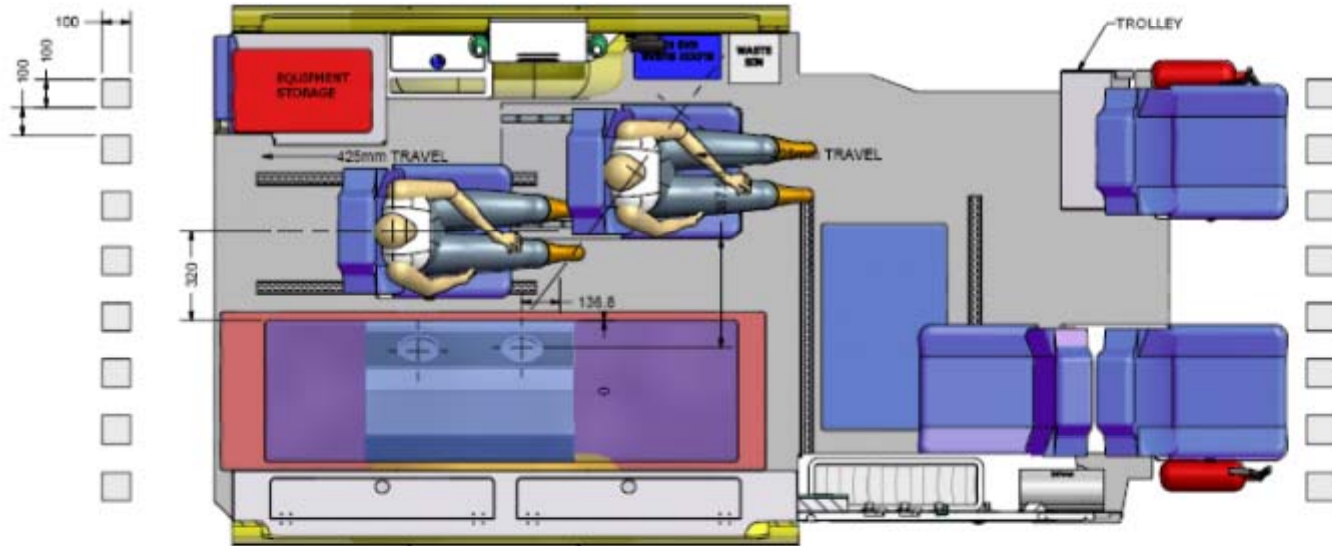
Melbourne, Australia Neonatal Ambulance – stationary mode



DRAWN garethstokes	25-10-04	TITLE MAS Nets Sprinter
CHECKED		
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THIRD ANGLE PROJECTION	GEN TOL A ± 0.2mm JK ± 0.25mm JKK ± 0.125mm	SCALE N.T.S.
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Melbourne, Australia Neonatal Ambulance – in transit mode



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Measurement & Statistics 2008

Australia - NSW Peds/Neonatal Vehicle - NETS



Ambulance



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TRE



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Avoid approaches that don't factor in systems hazards



Basic science engineering research

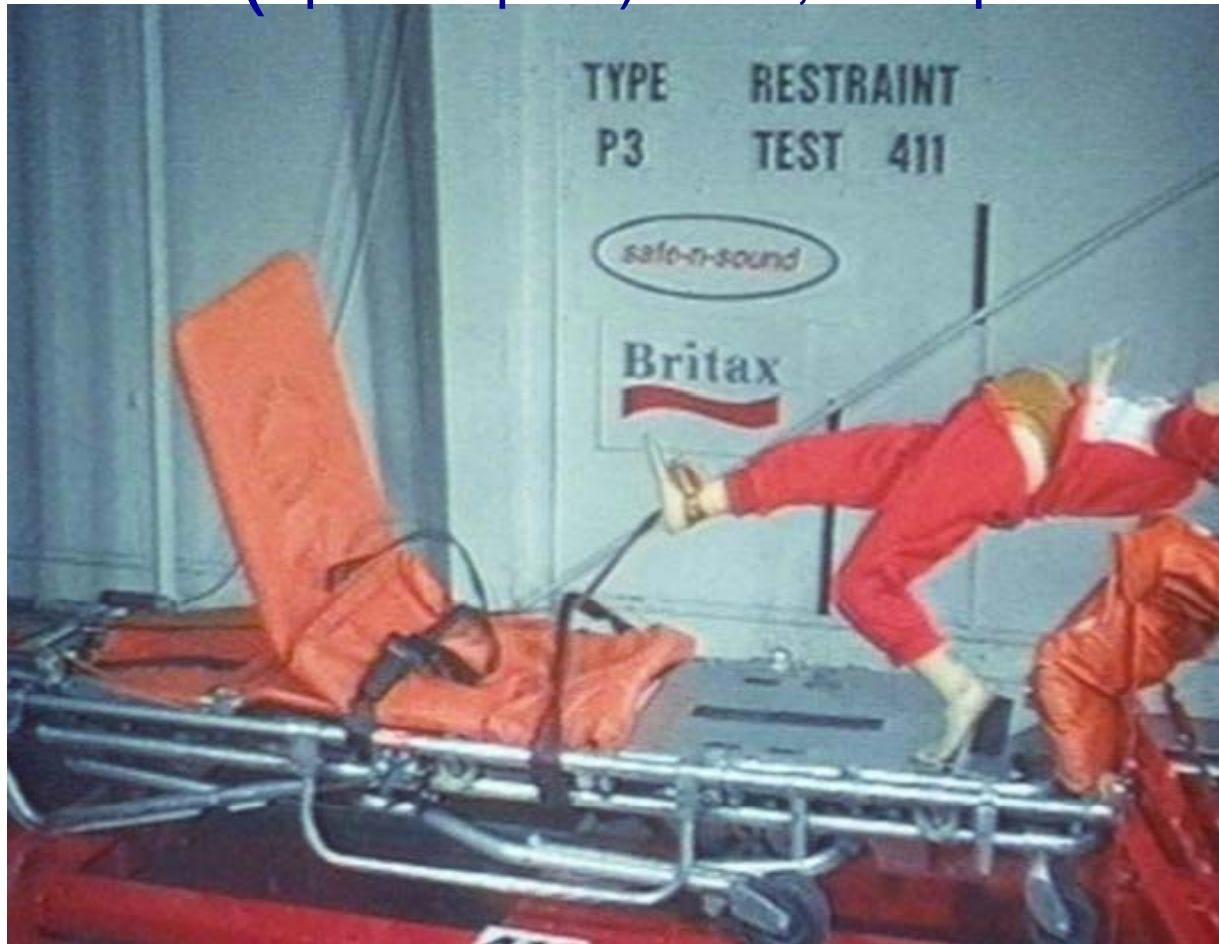
- What are the optimal design features for a premature infant ATD
- How to best build a transport system that provides transport safety and pt access and thermoregulation
- A number of initiatives are now underway



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Deceleration Sled tests

(upon impact) 24 G, 30mph



Levick NR, et al. Development and Application of a Dynamic Testing Procedure for Ambulance Pediatric Restraint Systems, SAE Australasia 1998;58:2:45-51



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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

