

# Trauma System Development: The Delaware Experience

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# Trauma Defined:



- The Greek word for “wound”
- Trauma means “injury”
- Trauma centers treat severe, life-threatening injuries
- Trauma systems offer a continuum of care from prehospital to rehabilitation, returning the trauma patient to society at the highest functional level



# The Way We Were: History of the Delaware Trauma System

- EMS Care -- Paramedic Act of 1990
  - Established Statewide EMS System
  - Defined roles, scope of services and coordination related to EMS
    - BLS providers
    - ALS providers
- 

# The EMS System

- EMS Care
- Roles, scope of services & coordination related to EMS



# Air Transport Then...



# State police copter crashes



State police Lt. Col. Robert D. ...

Pilot suffers minor injuries; medic unhurt

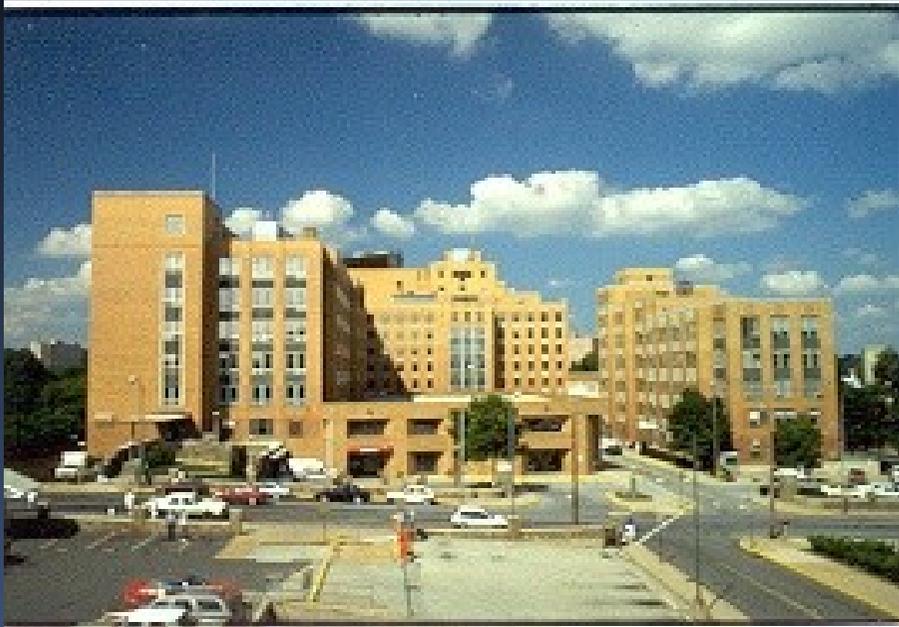




# The Way We Were: History of the Delaware Trauma System

- Hospital Care
    - 8 acute care hospitals in the state
    - Christiana Hospital “designated” Level I Trauma Center based upon ACS Verification in 1984
    - No coordination of services for the injured or differentiation of clinical capabilities
    - Injured routinely taken to “nearest” hospital
- 

# CCHS: Wilmington & Christiana Hospitals



**Then...**



## OUR VIEW

### CALLING 911

# Warning the injured to avoid the nearest hospital isn't wise

**WHERE WE STAND**  
Getting to the "right" hospital is not something you should have to worry about in an emergency.

**WHAT SHOULD BE DONE**  
Don't discourage good Samaritans.

In a recent story in The News Journal, a Medical Center of Delaware physician went to considerable lengths explaining that in certain cases of trauma, people trying to help should call 911 rather than personally take the injured to the nearest hospital. The reason, according to him, is that paramedics, not good Samaritans, should decide which cases go

# Take trauma victims to trauma hospital

You cannot imagine how delighted those of us who deal with trauma were with Jane Harri-man's articles about when to call 911. We were shocked to read the subsequent editorial that contra-vened most modern thinking on the care of trauma victims.

You said we are telling the public to put more and more life-threatening decisions through an already overburdened 911 system. The opposite is true. We are recommending that the public call 911 so that appropriate ambulance service can be dispatched. Ambulance attendants and paramedics know that trauma victims must be taken to a trauma center.

If the 911 center is overburdened it would seem that The News Journal should mount a campaign, similar to its admirable campaign to improve neonatal survival rates, to bring more assistance from the government to the 911 center. It is the prime function of local government to provide police, fire and rescue protection. If the 911 center needs such help, it should move to the top of the list, ahead of parks and recreation and other things on which our money is spent.

Trauma victims should be taken to the nearest appropriate hospital. The nearest hospital

Ben C. Corballis, M.D., is chairman of the Medical Center of Delaware's emergency medicine department.

## REBUTTAL

Ben C. Corballis

may well be the wrong hospital.

You were correct in saying that we implied that the "wrong" hospital can't do much for the seriously injured except to send them to the trauma unit at Christiana. The seriousness of trauma cannot be definitely evaluated at scene where the trauma occurred.

If we are to save the lives of seriously injured trauma victims, they must be taken to a facility where there is more than a "professional medical" staffs. There must be — 24 hours, seven day a week — in-house surgeons, anesthesiologists, CAT-scan service, blood banking and operation room staff. These resources are what makes a trauma center and what saves lives.

In a area as small as New Castle County, to do as you suggest — take patients to the nearest hospital for stabilization and then transfer them to Christiana — would waste precious time unnecessarily and thereby endanger lives.

I would hope that you would re-examine your opinion and rescind it so that no trauma victim has to find out that you were wrong — dead wrong!

# OUR VIEW

.....

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# The Way We Were: History of the Delaware Trauma System

- Rehabilitation
    - General rehabilitation (orthopedic) services available
    - No facilities for head or spinal cord rehab available within the state
    - No coordination or rehab services
    - No feedback or outcome data available
- 





# The Way We Were: History of the Delaware Trauma System

- Injury Prevention
    - No budget
    - No national or regional affiliations
    - No coordination of efforts
    - No evaluation component
- 



THE  
MEDICAL  
CENTER

**Trauma**

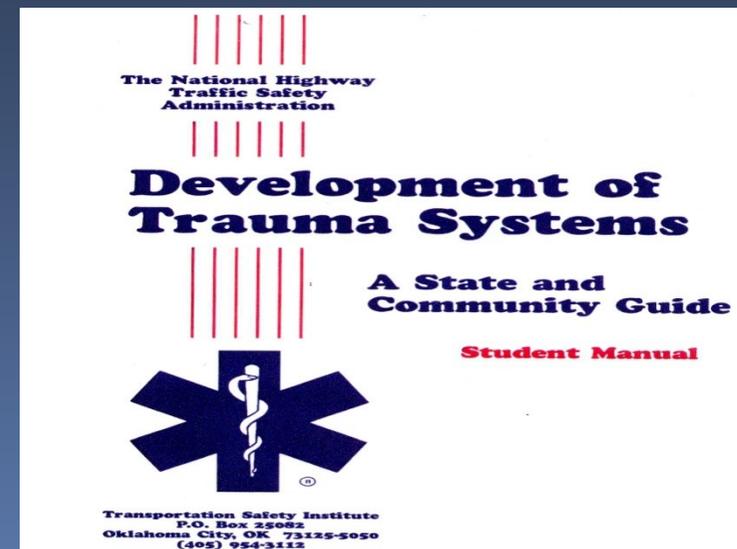


# Build an Inclusive Trauma System or Bust!

- Formation of the Delaware Trauma System Planning Group (1993)
  - Representatives from all hospitals, EMS agencies, Department of Health, rehabilitation facilities, injury prevention groups, state medical society, trauma-related professional organizations & nursing board
- Guiding Ethic: Advocate for what we would want in a system that will care for our own family members and ourselves!

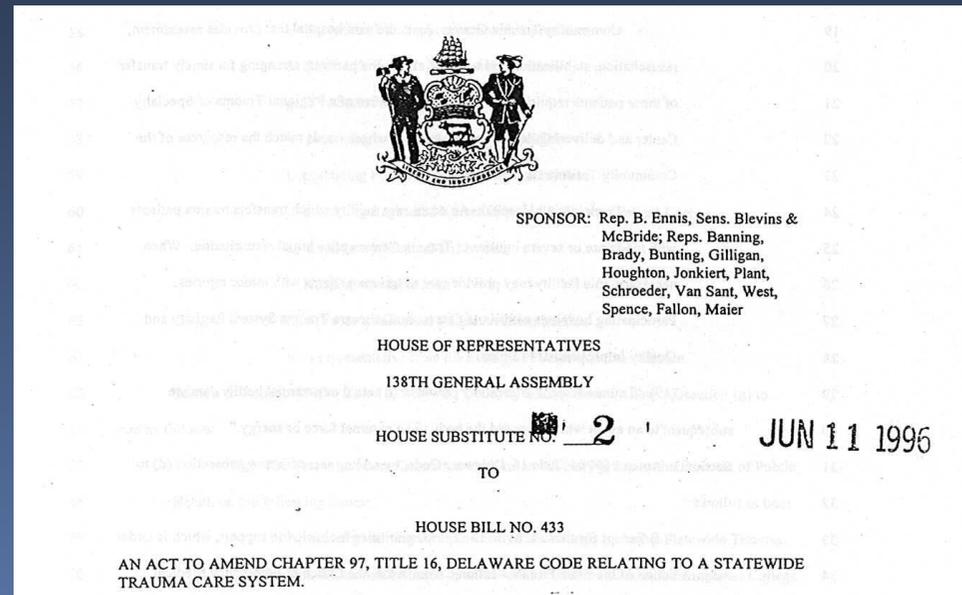
# Build and Inclusive Trauma System or Bust

- Resource & Capabilities Assessment
- What's a Trauma System?
- The NHTSA Course -- December 1993
- “Development of Trauma Systems--A State and Community Guide”
- Model Trauma Care System Plan
- HRSA Trauma Grant application



# Build and Inclusive Trauma System or Bust

- Legislation: Defining the Inclusive Trauma Care System in Statute (Enacted July 1996)
  - Trauma System Leadership / Oversight via the Delaware Office of EMS
  - Appointment of State Trauma System Coordinator



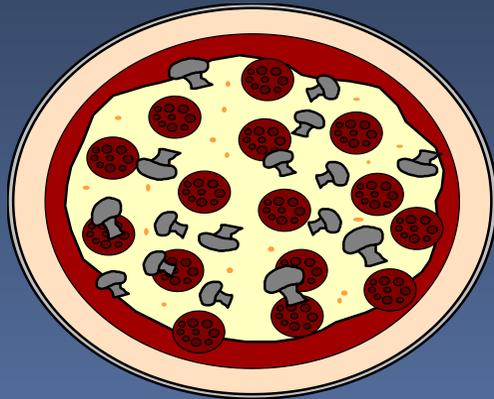
# Build and Inclusive Trauma System or Bust

## ■ Committee Work

- Prehospital (access, medical direction, triage, transport)
- Facilities (standards, designation process)
- Prevention (public education, program planning & evaluation)
- Legislative/Finance (legislative authority, funding sources & priorities, operational policies)
- Evaluation (databases, linkages)

# Build and Inclusive Trauma System or Bust

- Draft trauma system legislation
- Draft trauma center standards
- Consensus--AKA the famous “Pizza Meeting”





# Build and Inclusive Trauma System or Bust

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SPONSOR: Rep. B. Ennis, Sens. Blevins &  
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HOUSE OF REPRESENTATIVES

138TH GENERAL ASSEMBLY

HOUSE SUBSTITUTE NO. **2**

**JUN 11 1996**

TO

HOUSE BILL NO. 433

AN ACT TO AMEND CHAPTER 97, TITLE 16, DELAWARE CODE RELATING TO A STATEWIDE  
TRAUMA CARE SYSTEM.

# Components of the Trauma System

## Legislation

- Access to care
- Prehospital care (EMS System)
- Hospital care
- Rehabilitation
- Trauma prevention
- Trauma education
- Trauma care system evaluation





# Trauma Center Classification: Verification & State Designation Based Upon Resource Availability

- Level I Trauma Center: Capable of providing *total care* for every aspect of injury, high level trauma education, research, & data-driven injury prevention programs
- Level II Trauma Center: Clinical care, provides public & professional education, injury prevention
- Level III Trauma Center: Frontline clinical care & participates in trauma education / injury prevention
- Level IV (Participating Trauma Hospital): Initial care

# Trauma System Regulations

- Enacted September 1997
- Delaware Trauma Center Standards: Adult & Pediatric
- Trauma Center Designation Process
- Triage, Transport & Transfer Protocols
- Quality Management Plan





# Trauma System Implementation

- Reforming the “Delaware Trauma System Planning Group” as the “Delaware Trauma System Committee”
- Trauma Center Accreditation: ACS Consultation & Verification
- State Designation
- Process for correcting any identified weaknesses / deficiencies



# Trauma System Implementation: The Kick-Off

- Official implementation: January 2000
  - ACS Verified / State Designated Level I:  
1 hospital
  - ACS Verified / State Designated Level III:  
4 hospitals
  - State Designated Participating Trauma Hospitals:  
3 hospitals
- 

# Delaware Trauma System Kick-Off Celebration





# Trauma System Implementation

- Coordinating the Elements of the Trauma System
  - Access (911)
  - Prehospital Care / EMS
  - Hospital
  - Rehabilitation
  - Injury Prevention / Education

# Access to Care – 911 Center



# Prehospital Care

DEPARTMENT OF HEALTH & SOCIAL SERVICES, Division of Public Health  
 Statutory Authority: Title 16, Section 122(3)(c) of the Delaware Code.  
 The following chart should be inserted at 1:2 Del.R. 129 at the end of the section "AIR TRANSPORT GUIDELINES"

## PREHOSPITAL TRAUMA TRIAGE SCHEME, ALS & BLS M.O.V.E. - Mechanism, Obvious Injury, Vital Signs, Extenuating Circumstances

### STEP 1 MECHANISM

- Patient ejection from vehicle
  - Death in same vehicle compartment
  - Estimated extrication time >20 min. (heavy equipment)
  - Falls from  $\geq 2 \frac{1}{2}$  times the patient's height
- Appropriate for Air Medical Transport*

If NO for all elements in Step 1, proceed to Step 2

STEPS 1, 2, 3:  
 If any of these conditions are present, transport to Trauma Center

NOTE:  
 Patients with unmanageable airways: transport to the nearest hospital.

### STEP 2 OBVIOUS INJURY

- Pelvic fractures
  - Flail chest or other major chest injury
  - Limb paralysis
  - Amputation above wrist or ankle
  - Penetrating injury to head, neck, torso, axilla, groin, or proximal extremities
  - Major external hemorrhage
  - Major burns\*, trauma with burns, or inhalation injury
  - More than 1 proximal long bone fracture (humerus or femur)
  - AVPU Scale: does not respond to voice
- Appropriate for Air Medical Transport*

If NO for all elements in Step 1 & 2 proceed to STEP 3

NOTE:  
 If transport time between Trauma Centers is relatively equal transport patient to the higher level Center

### STEP 3 VITAL SIGNS

- Adult Glasgow Coma Score.....<13
  - Adult Respiratory Rate.....<10 or >30
  - Adult Systolic B/P.....<90
  - Adult Heart Rate.....<50 or >120
- Appropriate for Air Medical Transport

If NO for all elements in Step 1, 2, & 3 proceed to STEP 4

NOTE:  
 Patients with Glasgow Coma Score < 8 or exhibiting new onset paralysis or paresis: direct transport to a Trauma Center with neurosurgical capabilities.

### STEP 4 EXTENUATING CIRCUMSTANCES

- Moderate risk mechanism of injury
  - High speed auto crash: speed >25 mph, auto deformity >20", or inner intrusion >12"
  - Rollover with vehicle impact
  - Auto-pedestrian/auto-bicycle injury with significant impact
  - Motorcycle crash >20 mph or with separation of rider from bike
- Pre-existing conditions
  - Age <15 or >65
  - Pregnancy
  - Cardiac disease, respiratory disease
  - Other significant medical conditions- discuss with MC
- Required by patient condition in the judgement of the prehospital provider

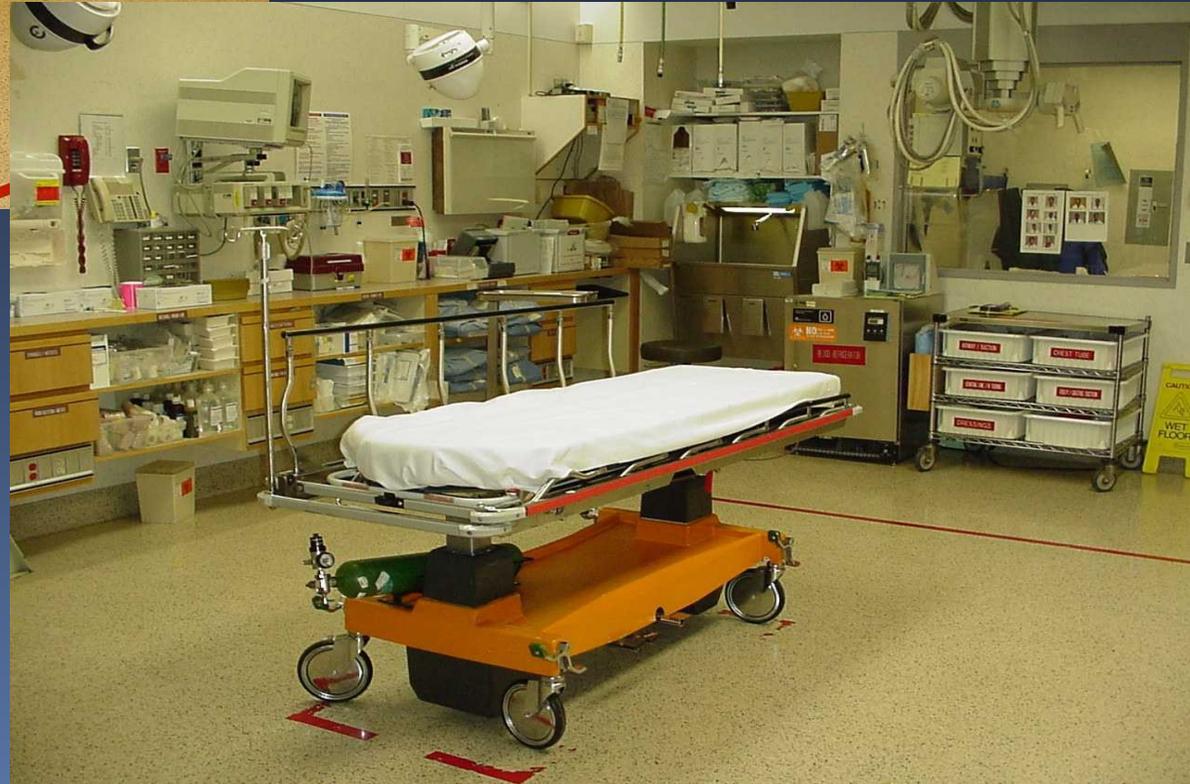
If YES to STEP 4: Contact Medical Control & consider transport to closest Trauma Center.

If NO for all elements in STEPS 1, 2, 3 & 4: Routine Transport

IF IN DOUBT CONSULT MEDICAL CONTROL & CONSIDER TRANSPORT TO TRAUMA CENTER



# Trauma Resuscitation Bays



# Surgical / Trauma Critical Care Unit





DELAWARE HEALTH AND SOCIAL SERVICES  
DIVISION OF PUBLIC HEALTH

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Bill Stevenson

# The Provider

October 2000

Volume 2, Issue 1

Division of Public Health Announces Delaware's  
Statewide Trauma System Implementation

**'TRAUMA SYSTEMS SAVE LIVES'**

# But Trauma Still Takes a Devastating Toll...Prevention is Key!



# Think First Injury Prevention Program



# Trauma System Implementation

- Trauma System Quality Evaluation Committee: State quality forum with representative membership & confidentiality protection by law
- Trauma System Performance Improvement
- Data Utilization and Outcomes Management

Delaware Office of  
**EMS**  
EMERGENCY MEDICAL SERVICES

DELAWARE HEALTH AND SOCIAL SERVICES  
DIVISION OF PUBLIC HEALTH

**The Provider**

October 2000 Volume 2, Issue 1

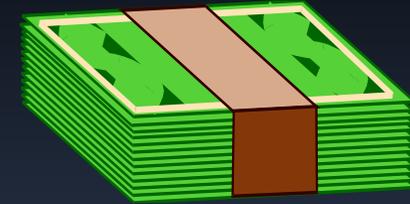
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# Trauma System Implementation

- Economic Considerations
  - HRSA Grant -- only the beginning
  - State budget to maintain trauma system personnel / resources
  - Institutional funding needs
  - Grant / funding opportunities





# Where Do We Go From Here?

- Maintaining the energy
  - Commitment of the key players when times get tough
- 

Dama,  
for a job  
well done





# Maintaining the Energy

- Sustain positive, healthy working relationships among providers and agencies--mutual respect is key!
  - Ethics: Advocate for what we would want in a system that will care for our own family members and ourselves!!
- 



**THAT WHICH WE HAVE IN  
COMMON IS THAT WE ARE  
HEALERS...WE ARE  
TRYING TO MAKE WHOLE  
THAT WHICH HAS COME  
APART...**

Jonas Salk, MD



# Discussion

## QUESTIONS?