



Looking Back on 40 Years of Emergency Medicine and Transport

Remarkable Patient Contacts and Some Lessons Learned

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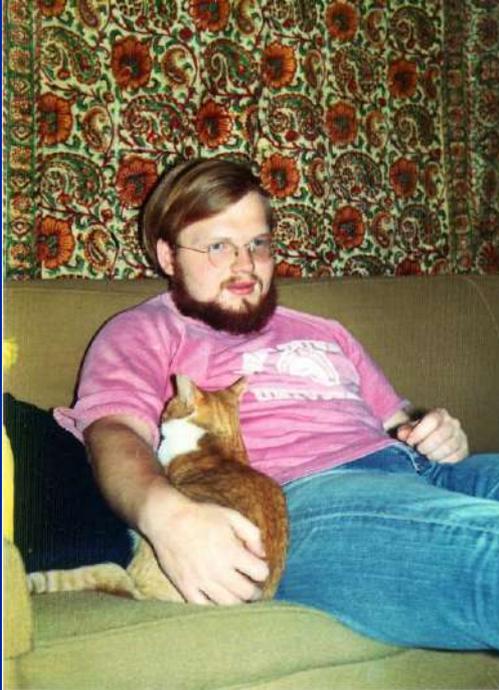


... and so it begins



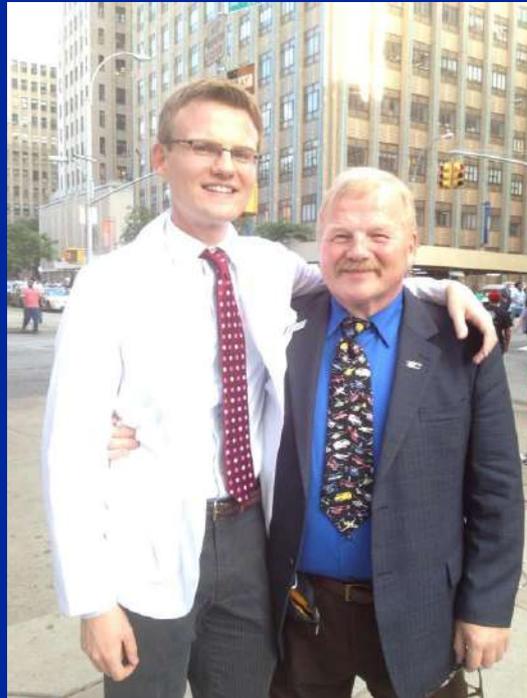


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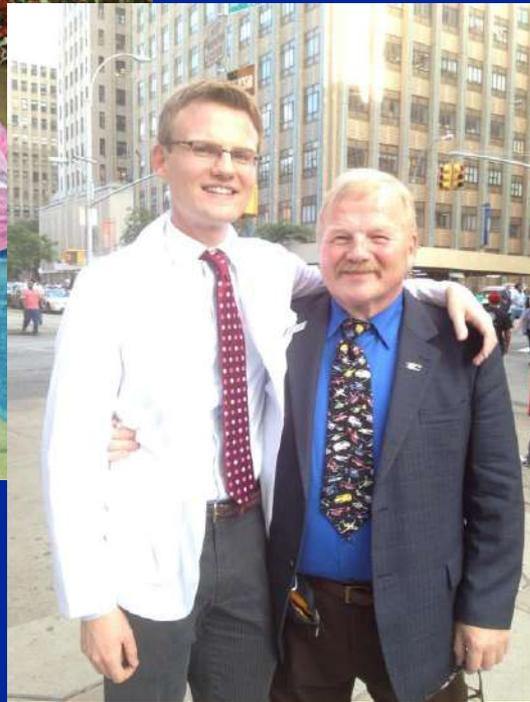


... and so it begins





... and so it begins: 1972









Spring 1972

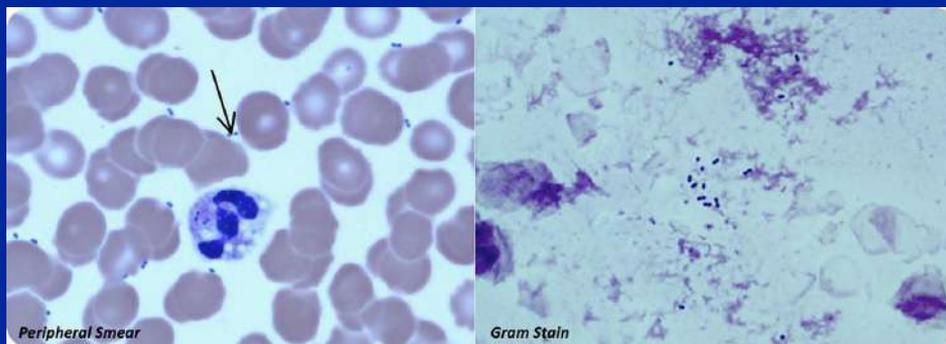
- **35 YO M brought into Mercy Hospital in Pittsburgh unconscious/unresponsive**
- **Hypothermic, hypotensive**
- **Alcoholic, well known at hospital**





Spring 1972

- LP (my first!) yielded split pea soup CSF with gram positive diplococci on stain (“Don’t hit the aorta!”)
- Peripheral smear showed *S. pneumoniae*
- Blood cultures positive in 2 hours





Spring 1972

- **First and dramatic exposure to case of sepsis**
- **The WOW!-Factor in emergency medicine**
- **Lesson: we have still not cracked the hard nut of early sepsis diagnosis and treatment**
- **The emergence of Early Goal Directed Therapy has not proven to be a panacea**



ORIGINAL ARTICLE

Goal-Directed Resuscitation for Patients with Early Septic Shock

The ARISE Investigators and the ANZICS Clinical Trials Group*

ABSTRACT

BACKGROUND

Early goal-directed therapy (EGDT) has been endorsed in the guidelines of the Surviving Sepsis Campaign as a key strategy to decrease mortality among patients presenting to the emergency department with septic shock. However, its effectiveness is uncertain.

METHODS

In this trial conducted at 51 centers (mostly in Australia or New Zealand), we randomly assigned patients presenting to the emergency department with early septic shock to receive either EGDT or usual care. The primary outcome was all-cause mortality within 90 days after randomization.

RESULTS

Of the 1600 enrolled patients, 796 were assigned to the EGDT group and 804 to the

The members of the writing committee (Sandra L. Peake, M.D., Ph.D., Anthony Delaney, M.D., Ph.D., Michael Bailey, Ph.D., Rinaldo Bellomo, M.D., Peter A. Cameron, M.D., D. James Cooper, M.D., Alisa M. Higgins, M.P.H., Anna Holdgate, M.D., Belinda D. Howe, M.P.H., Steven A.R. Webb, M.D., Ph.D., and Patricia Williams, B.N.) assume responsibility for the overall content and integrity of the article. Address reprint requests to Ms. Belinda Howe at the Australian and New Zealand Intensive Care Research Centre, Alfred Centre, Level 6 (Lobby B), 99 Commercial Rd., Melbourne, VIC 3004, Australia, or at anzicrc@monash.edu.

N Engl J Med 2014; 371:1496-506



JAMA Clinical Guidelines Synopsis

Management of Sepsis and Septic Shock

Michael D. Howell, MD, MPH; Andrew M. Davis, MD, MPH

GUIDELINE TITLE Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016

DEVELOPERS Surviving Sepsis Campaign (SSC), Society of Critical Care Medicine (SCCM), and European Society of Intensive Care Medicine (ESICM)

RELEASE DATE January 18, 2017

PRIOR VERSIONS 2012, 2008, 2004

TARGET POPULATION Adults with sepsis or septic shock

SELECTED MAJOR RECOMMENDATIONS

Managing Infection:

- Antibiotics: Administer broad-spectrum intravenous antimicrobials for all likely pathogens within 1 hour after sepsis recognition (strong recommendation; moderate quality of evidence [QOE]).
- Source control: Obtain anatomic source control as rapidly as is practical (best practice statement [BPS]).

- Antibiotic stewardship: Assess patients daily for deescalation of antimicrobials; narrow therapy based on cultures and/or clinical improvement (BPS).

Managing resuscitation:

- Fluids: For patients with sepsis-induced hypoperfusion, provide 30 mL/kg of intravenous crystalloid within 3 hours (strong recommendation; low QOE) with additional fluid based on frequent reassessment (BPS), preferentially using dynamic variables to assess fluid responsiveness (weak recommendation; low QOE).
- Resuscitation targets: For patients with septic shock requiring vasopressors, target a mean arterial pressure (MAP) of 65 mm Hg (strong recommendation; moderate QOE).
- Vasopressors: Use norepinephrine as a first-choice vasopressor (strong recommendation; moderate QOE).

Mechanical ventilation in patients with sepsis-related ARDS:

- Target a tidal volume of 6 mL/kg of predicted body weight (strong recommendation; high QOE) and a plateau pressure of ≤ 30 cm H₂O (strong recommendation; moderate QOE).

Formal improvement programs:

- Hospitals and health systems should implement programs to improve sepsis care that include sepsis screening (BPS).





**A wounded soldier in Viet Nam
has a better chance of survival than
a car crash victim in America.**





EMS 1972

- Attendants with no training
- NREMTs was established in 1970
- Unsafe and inappropriate vehicles
- No civilian HEMS in USA until later that year in CO
- EMS had its work cut-out for it





Ice Fishing







Lessons Learned

- **Great example of “You can’t make this stuff up!”, “Hold my beer, watch this” or “You did what?!?!” syndrome**
- **We can’t fix stupid, but we can sedate, paralyze and treat it otherwise as needed**





WEDNESDAY

AM

JULY 9, 1986



Bring zing to menu with tasty toppings
FOOD/1C



California quake worst in 7 years
NATION/WORLD/3A

25c

ST. PAUL
PIONEER PRESS
DISPATCH

MINNESOTA'S FIRST NEWSPAPER

METRO FINAL

2 killed in pipeline inferno







Residential Street Disaster

- Hot "Quiet" July night, 0400Hrs
- Gasoline (petrol) pipeline running down middle of quiet residential street ruptured and found an ignition source
- Inferno in every sense of the word
- Dad (32YO) and son (8YO) ran out back of house towards pond and were unscathed
- Mom (30YO) and daughter (11YO) ran out front door into the street that was aflame...





Observations on the Moundsview Disaster

- Both victims were awake and alert in spite of 100% third degree burns
- Vascular access was difficult but necessary
- Intubation was difficult but necessary, wife's delayed in order to say goodbye to husband
- Extraordinarily difficult situation for any emergency worker: no training prepares you for the extent of these burns and the overpowering odor of roasted human flesh (even though I had worked at that burn center for 9 years, these were the worst burns that I had ever seen)
- These unfortunate victims are with me to this day
- If we do this long enough, we will all have situations like this that live with us always and can contribute to PTSD...





Lazarus Boy

1998





Lazarus Boy

1998

An Astonishing Survival

- 10 YO male playing with pellet gun at home, shot in left chest by playmate
- When FR's arrived he was clinically dead: no pulse and no respirations
- When ALS arrived CPR was in progress
- Placed on LBB and transported; ET and needle chest decompression enroute





Lazarus Boy

1998

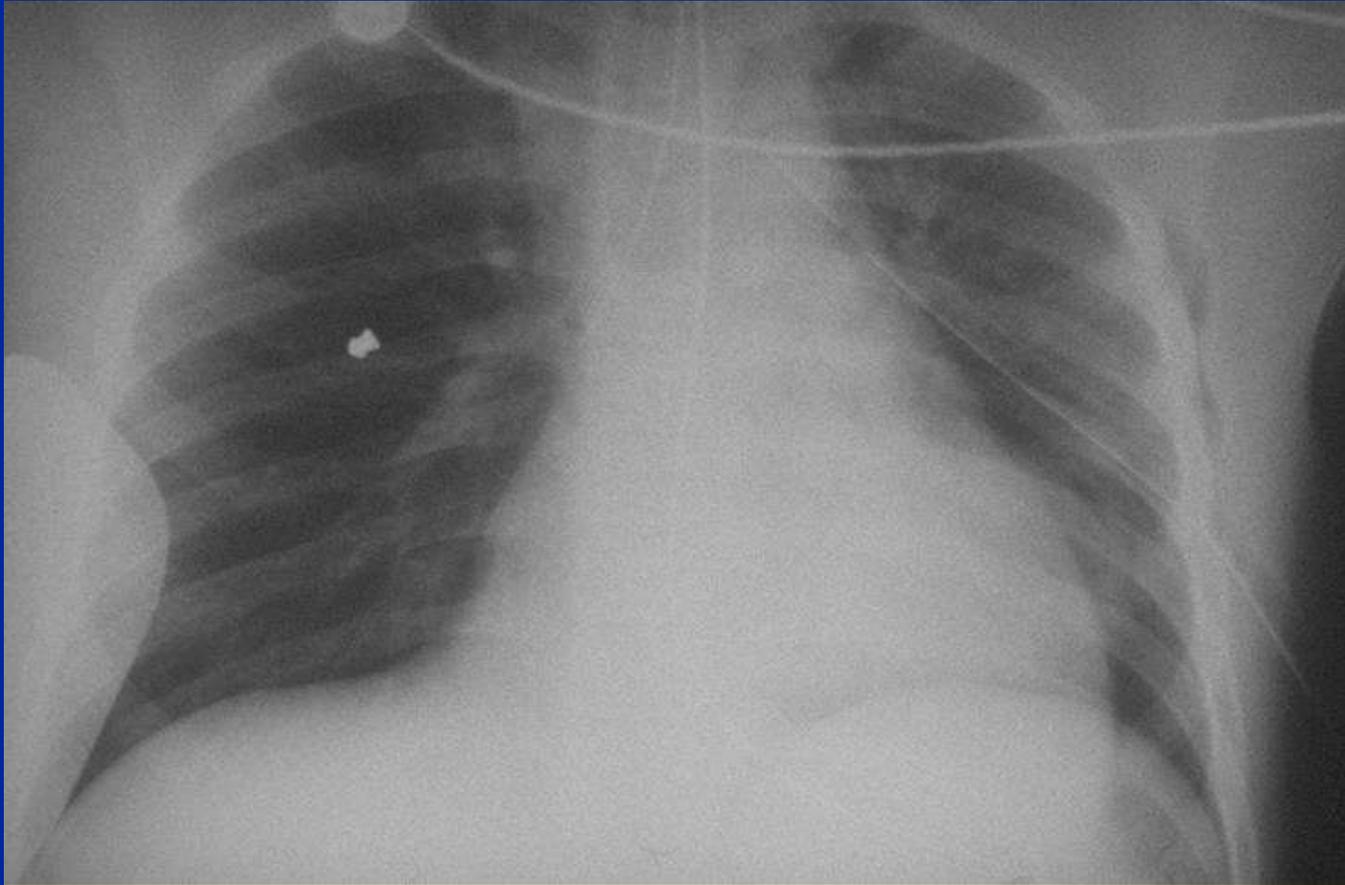
An Astonishing Survival

- Patient described as “pale and pulseless” by medics
- No shock was advised by FR AED
- Total time from first 911 call to arrival at hospital was 17 minutes
- Pulse returned at ER with epi and pericardiocentesis; still agonal respirations
- In the OR by 36 minutes after the initial 911 call











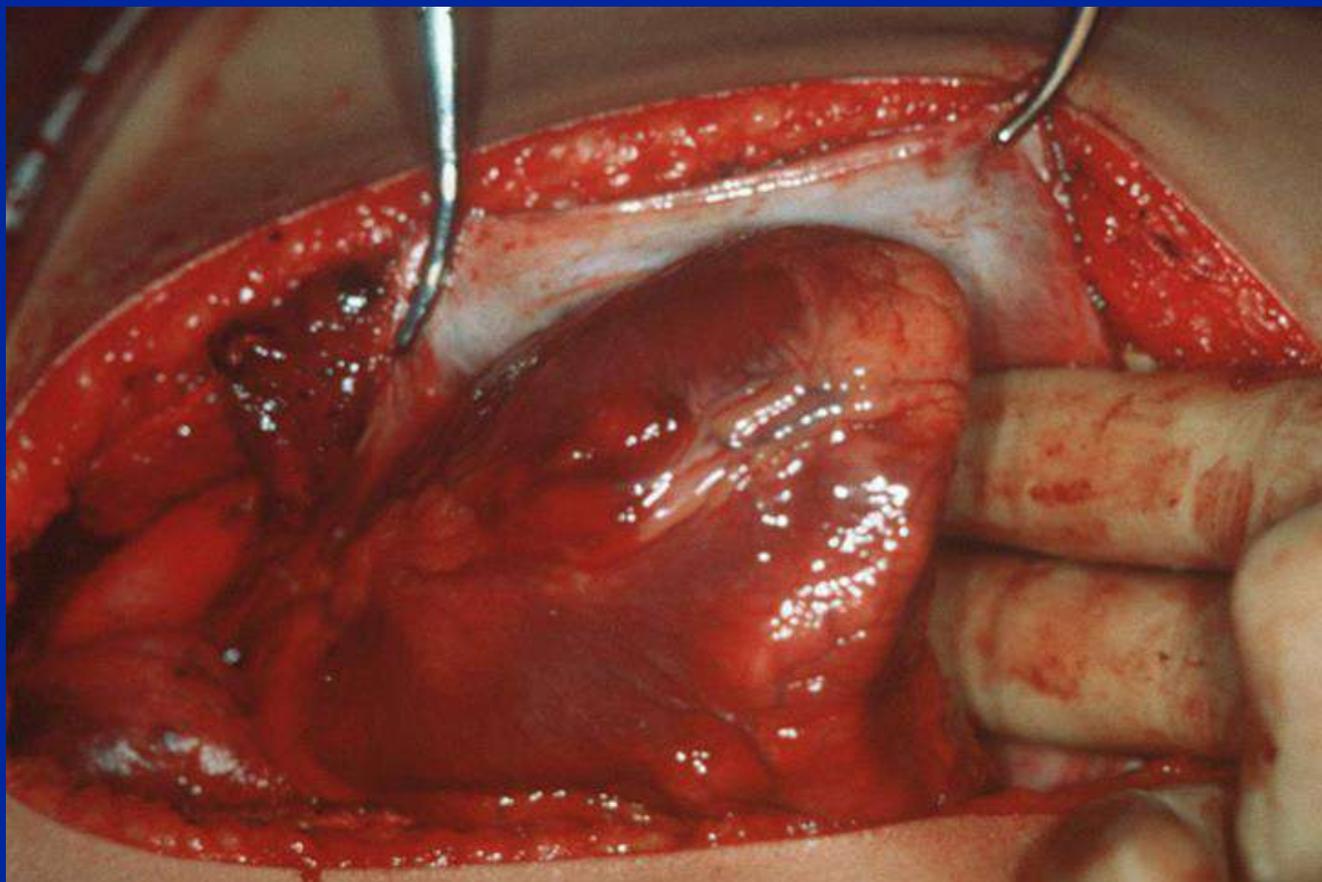
Lazarus Boy

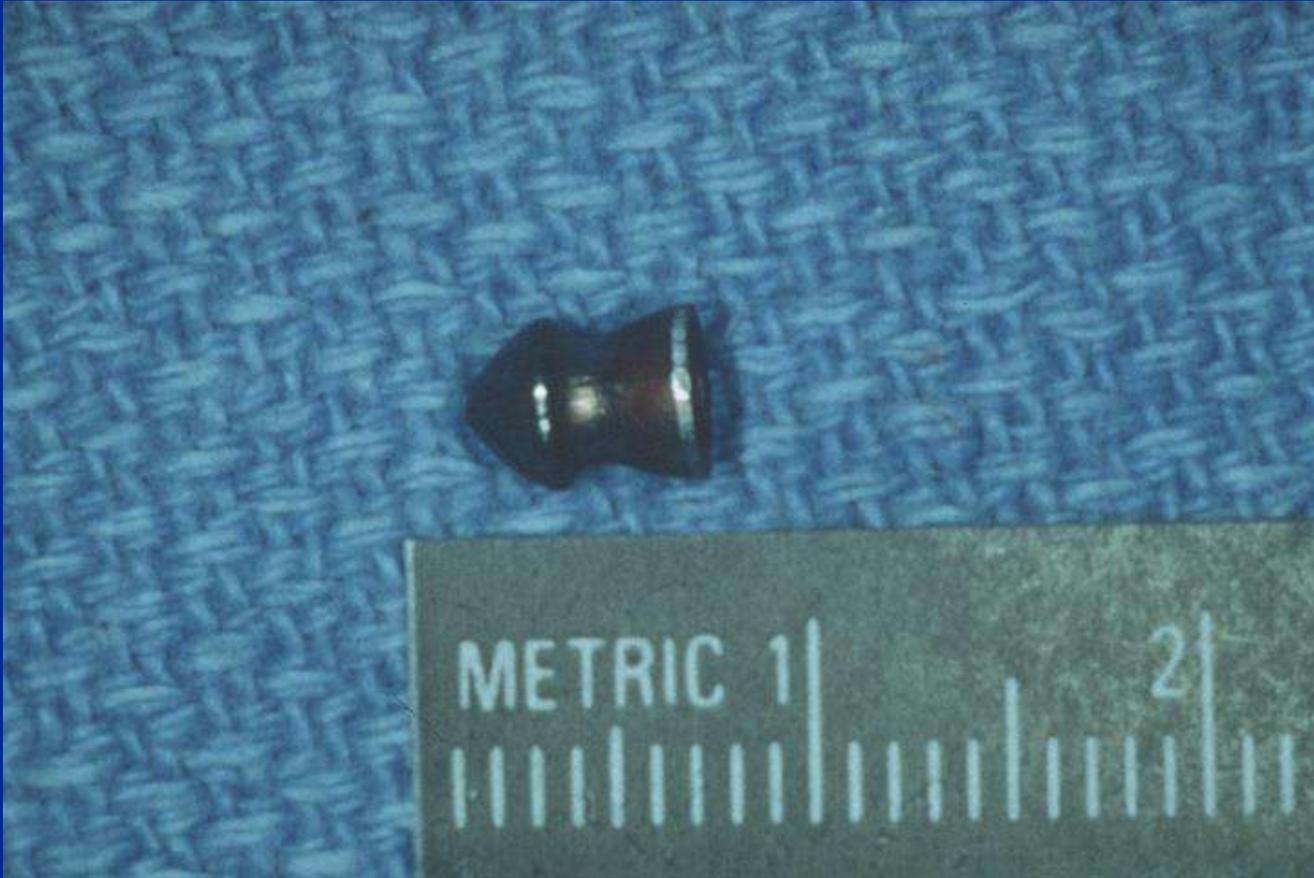
1998

An Astonishing Survival

- In the OR had a midline sternotomy and was noted to have blood in the pericardium and both pleural cavities which was removed
- Perforation in pericardium, but no active heart bleeding. Treated with patch material to enhance clotting and fix clot in place
- Projectile found loose in R chest
- Discharged from hospital in his previous state 2 weeks later









Lazarus Boy

1998

An Astonishing Survival

- Penetrating trauma arrests have a much better prognosis than blunt trauma arrests
- Blunt trauma virtually 0%
- For penetrating trauma, depends on location of arrest (field, ambulance, hospital)
- In one study, CPR for more than 9.4 minutes yielded no survivors in penetrating trauma





Lazarus Boy

1998

An Astonishing Survival

- Patients who arrest on arrival at the hospital have a better prognosis (stab wounds to heart 52-92% survival; GSWs half of this)
- This patient beat the odds only because of his age, closeness to trauma center and the excellent care by FR's and paramedics in the field





4/12/99

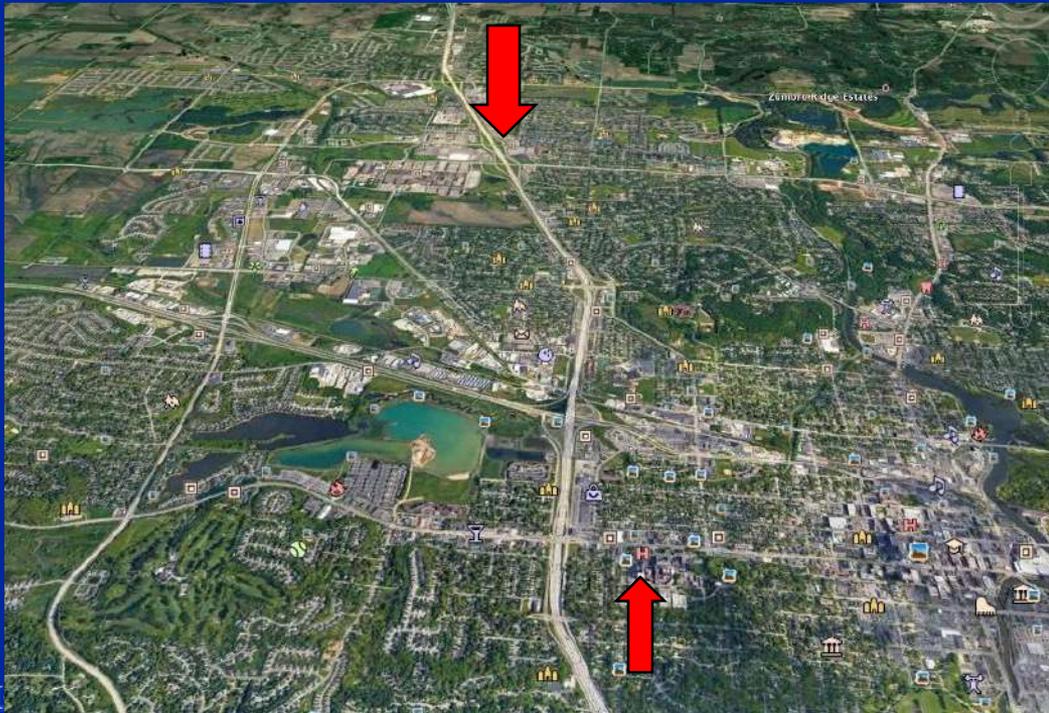
- A 17 YO F left work northbound on Highway 52 through Rochester, Minnesota
- A 35 YO M left a bar north of Rochester and started driving south in the northbound lane of Highway 52, driving approximately 2 1/2 miles with many vehicles swerving to avoid him
- Near the end of his journey, a tractor trailer swerved to avoid him, but BH behind that truck did not see him and collided head on





4/12/99

- Crash occurred about 2 miles north of Saint Marys Hospital
- RPD, RFD, GCA activated at 2120











4-12-99: Times

- Mayo 1 autolaunch call 2123Hrs
- Depart Saint Marys 2127
- Arrive scene 2131
- Depart scene 2154 (long extrication)
- Arrive Saint Marys 2156





4-12-99

- **Initial VS: BP 95/70, P 82, O2 sat unobtainable, respirations assisted**
- **IV and ETI while still trapped**
- **BP at Saint Marys 140/90, P 100; given 1500 cc's LR before arrival**





4-12-99

- Initial HGB 5.2
- Coagulation studies: abnormal
- LFT's elevated
- Lactate 15.0 mmol/L (0.93-1.65)
- ABG's: pH 7.03, pO2 61, pCO2 37, Base -18, HCO3 10
- Pelvis XR: multiple Fxs (open), sacral Fx, L femur Fx





4-12-99

- **At ER: lost pulse, thoracotomy and cross clamp aorta, incision at 2215 Hrs**
- **Peritoneal cavity entered in OR: 500cc free blood, large retroperitoneal hematoma from pelvis FX,**
- **Lacerated right kidney and spleen; spleen removed**
- **Multiple liver lacerations, packed all areas**





4-12-99

- Intracranial pressure monitor (pressure 30 to 40)
- Pelvic c-clamp
- Tried to remove cross clamp → became bradycardic and hypotensive; clamp replaced, open cardiac massage, 9 units of blood additional, intra-cardiac epinephrine, direct cardioversion
- Declared dead at 2255 Hrs (1 hour, 32 minutes post autolaunch, 1 hour post arrival in ER)





Pearls

- Many people worked diligently and quickly as a team to try to save this young woman's life: such teamwork requires good and ongoing joint training (**Failure to plan is planning to fail**)
- Even though only 2 miles from the hospital the helicopter was warranted because of horrendously snarled traffic and prolonged extrication
- The best chance possible was given to her for survival, but she, unfortunately, expired
- A heartbreaking situation



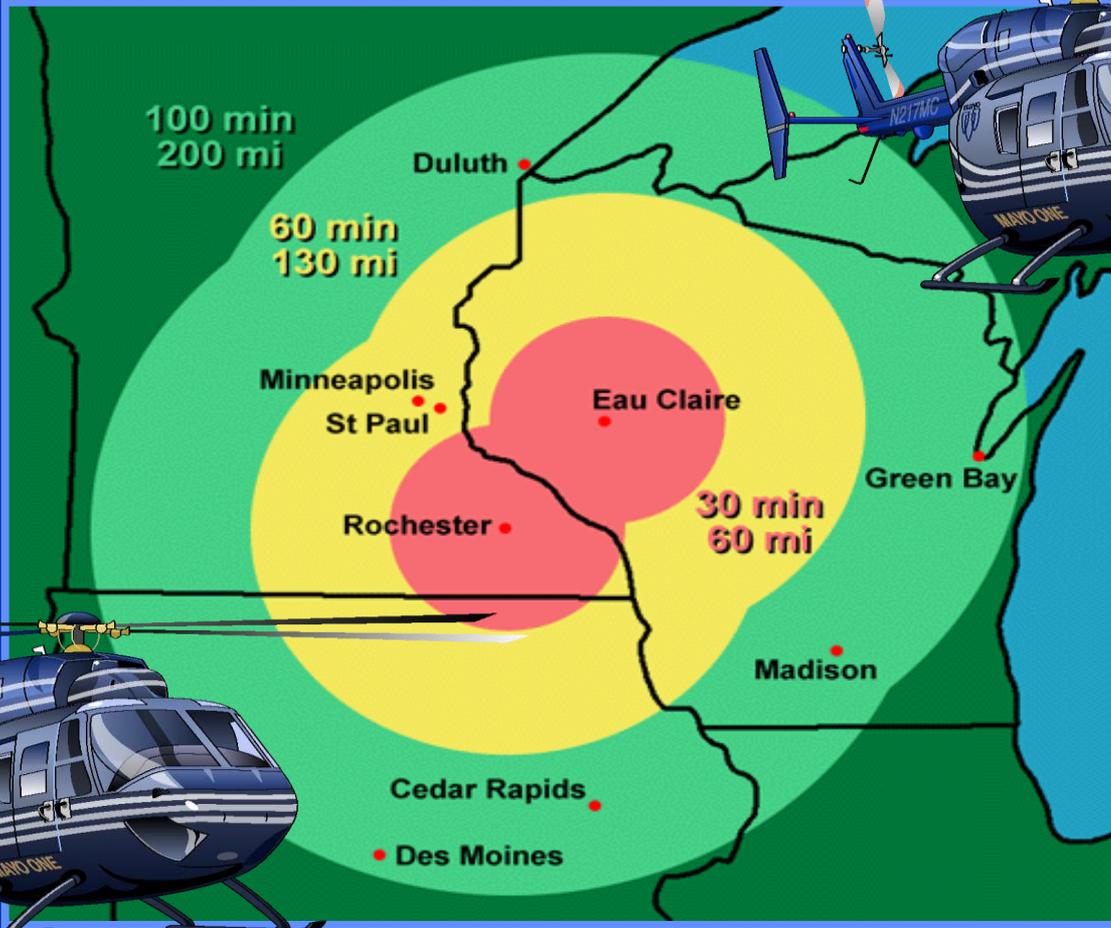




Profound Hypothermia

February 27th, 2001







Outdoor temperature -22°C with wind-chill of -27°C

- **0330-0400** the last time 2 YO Paulie was seen indoors
- **0643** Approximate time dad finds Paulie in snow bank wearing only sweatshirt and pajamas





Paulie

- **0645** Initial call to 911 center
- **0645** Paramedics and helicopter dispatched and en-route
 - ◆ Flight crew notified nearest center with CPB
- **0701** Patient contact
- **0704** Intubation with 5.0 ETT and covered child with blankets





Paulie

- **0711** Depart scene
 - ◆ Re-intubate, no chest rise, tube displaced
 - ◆ Intraosseous line placed L tibia with warm 40°C fluids
 - ◆ Placed warm fluids and blankets around child
 - ◆ Epi 0.15 mg, Atropine 0.3 mg, Epi 0.15 mg





Paulie

- **0719** Arrival at hospital helipad, first rectal temperature registered in at **63.3°F/ 17.4°C**
- **0730** Foley catheter and NG tube placed (initial Foley temp **17.9°C**) Warm saline lavage in Foley and NG initiated





Paulie

- **0731** Epinephrine 0.25mg given IO
- **0753** arrival in operating room, temperature **24.4°C**
- **0823** Placed on right atrial cardiopulmonary bypass





Paulie

- **0824** Fibrillation occurred, internal defibrillation at 5 joules converts rhythm to sinus tachycardia first attempt, spontaneous respirations occur, femoral venous lines placed





Paulie

- **0932** Off bypass
37°C (68 minutes on pump)
- **1043** Pediatric transport team arrives at Luther Hospital (MD, RN, RRT)
- **1045** Patient from OR to CCU with continued fluid boluses for BP





Paulie

- **1148** Paulie stable enough for transport, Pediatric team departs Luther via Mayo One, no complications en-route
- **1218** Arrival at Saint Marys Hospital Rochester, Minnesota





Paulie

- **March 20th:** Discharged from Saint Marys Hospital, follow up necessary for stage 3 and 4 frostbite on both hands, prognosis great, no permanent neurologic sequelae expected





Paulie

- Using both hands with great dexterity and no other deficits, at 4 years old and mom described as a “happy” little boy







Lesson

- **Sometimes a double helicopter transport is warranted**
- **Another example where coordination by multiple agencies was essential**
- **Survived because of age and superb cooperative care**







Final Thoughts

- **The irony of it all: on the one hand, we witness the fragility of human life, but on the other hand, we see how amazingly strong and resilient humans can be**
- **The unrelenting nature of patient contacts can wear one to a frazzle and lead to PTSD**





**First
Responder
Suicide:**

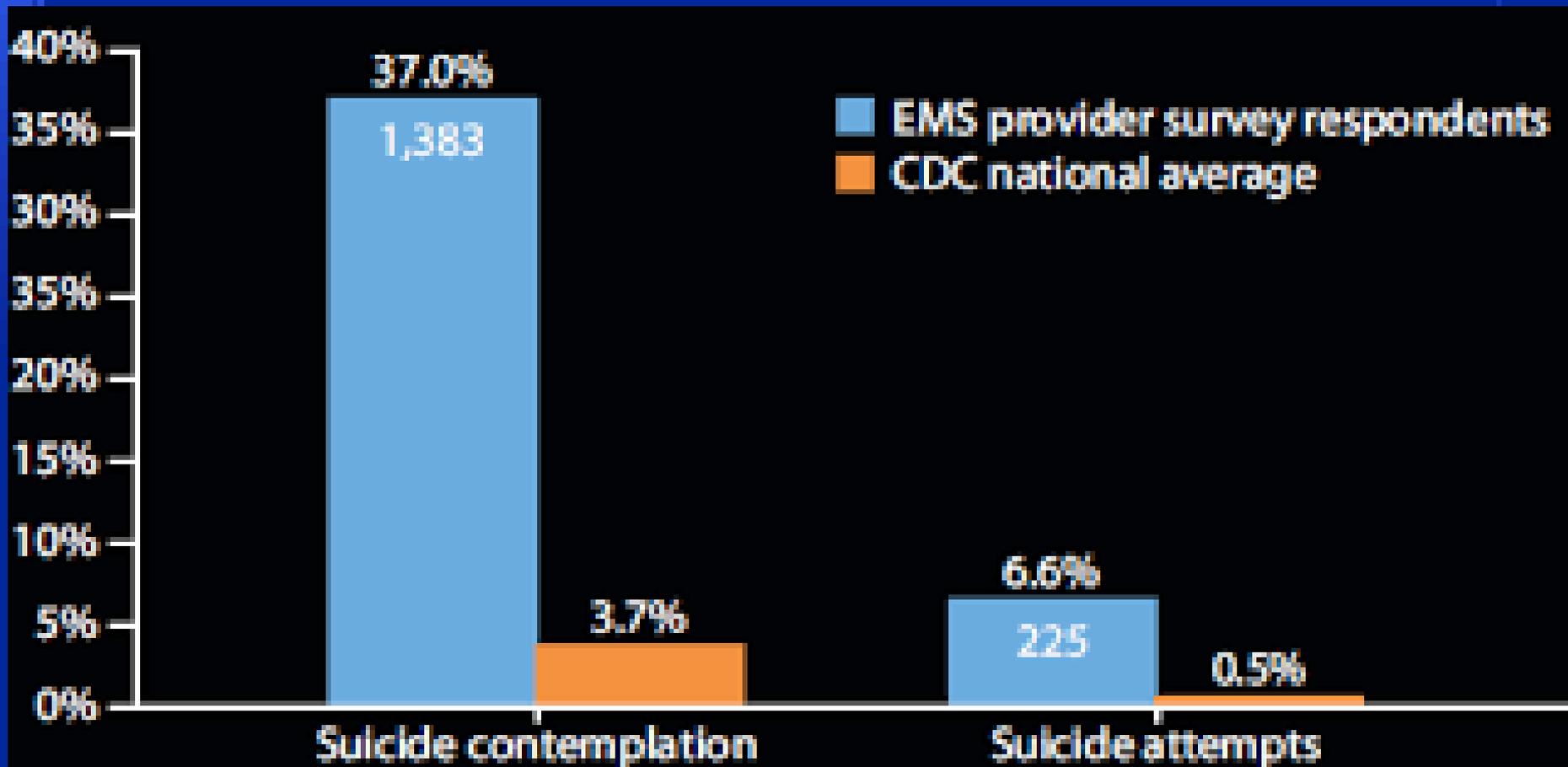
The
Dirty
Little
Secrets



California Casualty

September is Suicide & Prevention Awareness Month







We're counting because they count

2016 Verified Suicides

Police 96

Firefighters 94

EMS 34

Corrections 10

Dispatch 1

We know there are more, we need you to report them.



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