Trauma and Disaster: Myths and Realities

K Don Edwards DO

Disclaimers and Conflicts

• None

Definitions

• Myth
  • Make believe which has no fact or supporting information.

• Reality
  • An actual fact.

The Journey

THINK OUTSIDE THE BOX
• The Players
  • Airways and Oxygenation
  • Hemorrhage
  • Vitals
  • Disasters
  • MCI Triage

• The Scouting Report
  • Who are the impact players?
  • What really makes a difference?
  • What is the best?

Prehospital Oxygen in Trauma
• Textbook
• Protocol
• Examinations/Testing

Not a New Concept
• MILITARY MEDICINE 2004
  • Prehospital Supplemental Oxygen in Trauma Patients: Its Efficacy and Implications for Military Medical Care
  • Contributors: LCDR Zsolt T. Stockinger, MC USNR; CAPT Norman E. McSwain, Jr., MC USNR (Ret)

Review of 5090 trauma patients not requiring assisted ventilation.

Continued
• those receiving PH O2 fared worse than those who did not receive it. This suggests that supplemental oxygen does not improve survival in traumatized patients who are not in respiratory distress.
Results

Fig. 1. Mortality by O2 and injury mechanism (p < 0.0001 vs. penetrating; #p

Conclusions

• “no survival benefit to the use of supplemental oxygen in the prehospital setting in traumatized patients who do not require assisted ventilation or airway protection”

  • They did not advocate “non-use” of Oxygen….
  • (Were Oxygen patients sicker to start?)

Respiratory Care 2013

• Requirement for oxygen use not well described
• US Special Operations Command
  • Oxygen S < 92%
  • Or LOC, Traumatic Brain Injury, hemorrhagic shock, or high altitude
• Increase survival Porcine (Uncontrolled Hemor) Spo2 at 95% vs room air
• Only administer to patients who demonstrate hypoxemia and prevent hyperoxemia

Continued

• How Much Oxygen?????
• 15 l/m often excessive
• 3 l/m in mechanically ventilated patients in majority
• Titrate to a normal Spo2
• Treat Hypoxemia
  • pneumothorax/airway obstruction
Military Medicine 2013 : 10

- Less than half adult trauma patients have indication for Oxygen
- Hypoxemia, TBI, Hemorrhagic Shock

Journal of Neurotrauma : December 23, 2009

- We conclude that both hypoxemia and extreme hyperoxemia are associated with increased mortality and a decrease in good outcomes among TBI patients.

What We Know

- 2005 Cath Lab study  5 minutes oxygen NRB
  - 30% decrease coronary blood flow
  - 40% increase coronary resistance
  - Blunts vasodilator use
- Stroke 100% oxygen for 10-15 minutes decreased cbf 22-33%

Refocus
Trendelenburg for Hypotension

- Evidence Based Practice: Putting More Sacred Cows Out to Pasture. Critical Care Nurse April 2011
  - Does increase Venous return but does not increase BP or CO
  - May decrease oxygen delivery
- Am Nurse Today 2013: 8 (3)
  - No support that it raises BP
  - Little if any increase CO and increases aspiration risk

No Change is Simple

- AJ Critical Care Nov 2012
  - Despite a lack of demonstrated clinical benefit 80% still consider it in a hypotensive patient.

The Old Shock and Vitals

- Carotid Pulse 60-70 SBP
- Femoral 70-80
- Radial 80

The Studies

  - Radial Pulses found in severely hypotensive patients
- Accuracy of ATLS guidelines for predicting SBP (BMJ Deakin and Low 2000)
  - Guidelines are inaccurate and generally overestimate SBP
Results

• The correlation of pulse to SBP was removed from the ATLS Manual after the 8th edition
  Currently 9th edition 2012

Decon Trivia

What is the easiest form of Decon after being contaminated??

• Self Decontamination: can remove 80-90% but decreases with time following exposure
  • chemm.nlm.nih.gov
  • ncbi.nlm.nih.gov

Continued

• Clothing Removal
  • 50% vertical/overhead
  • 70% horizontal
Tiered Response

- Self Decontamination
- Gross Patient Decontamination
- Technical Decontamination

www.phe.gov
www.dhs.gov

Exposure=Contamination

- It Does Not……

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Contamination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noxious gas dissipates</td>
<td>No</td>
</tr>
<tr>
<td>Chemical cloud dissipates</td>
<td>Yes</td>
</tr>
<tr>
<td>(condenses on clothes)</td>
<td></td>
</tr>
</tbody>
</table>

Field Decision Tree

- SME consensus: Mass Decon Decisions
- No Signs / Symptoms of
- No Visible Signs of contamination
- Not likely to be contaminated due to location.

Ideal Decontamination Solutions

- Bleach
- Betadine
- Soap and Water
- Water
  - Decon oily synth Sarin and Sulfur Mustard with WATER on arms of test
  - Results: 30 sec 90% removed
  - 90 sec all
Water Decon Guidance

- Low Pressure
- High Volume
- Tepid
- No longer than 3 minutes

- Soap can help: non abrasive liquid mild soap

Separating Mass Chemical Incidents

- Hundreds people in an arena coughing, wheezing, eye pain, tearing, sweating, some seizing, some lifeless

Nerve Agent vs. Cyanide

- Toxidrome

5 Minute MCI Master
Thank You

- K Don Edwards DO