We extend the healing ministry of Christ by caring for those who are ill and by nurturing the health of the people in our communities.
Centura Health Prehospital Services

• Provide medical direction/oversight for over 1000 paramedics and EMTs.
• 22 Prehospital agencies and fire departments in the service areas of
  • CASTLE ROCK ADVENTIST
  • PARKER ADVENTIST
  • LITTLETON ADVENTIST
  • PORTER ADVENTIST
Agencies and Fire Departments

- SOUTH METRO FIRE RESCUE
- LITTLETON FIRE RESCUE
- CASTLE ROCK FIRE RESCUE
- FRANKTOWN FIRE
- ELIZABETH FIRE
- LARKSPUR FIRE
- KIOWA FIRE RESCUE
- NORTHFORK FIRE DEPARTMENT
- COLUMBINE AMBULANCE
- MetCom 911 Dispatch
Brief overview of EMS cardiac arrest protocols

• **THE BASIC STANDARD of CARE:**
  • Basic and Advanced Cardiac Life Support

• **OPTIONS:**
  • Evidence-based CPR devices
How to measure cardiac arrest outcomes

1. **OVERALL** Survival until discharge: Trauma, Overdose, Poisonings Respiratory NOT included

2. **Utstein subgroup survival criteria**: Witnessed, Vfib-Vtach, CPR
What is Utstein?

• **The Utstein Style** is a set of guidelines for uniform reporting of cardiac arrest. The name derives from a 1990 conference of the European Society of Cardiology, the European Academy of Anesthesiology, the European Society for Intensive Care Medicine, and related national societies, held at the Utstein Abbey on the island of Mosterøy, Norway.

• Allows for comparisons between systems and time periods despite the wide variation of cardiac arrest outcomes and patient characteristics.

Cardiac arrest and cardiopulmonary resuscitation outcome reports. CIRCULATION
https://www.ahajournals.org/doi/full/10.1161/01.CIR.0000147236.85306.15ril, 27 2018
Percent of total: Etiology of Arrest 2017

- **Other/UNK**
  - Brown: 40%
  - Blue: 31%

- **Trauma**
  - Brown: 8%
  - Blue: 16%

- **Cardiac/Resp Etiology**
  - Brown: 52%
  - Blue: 53%

**Etiology of arrest**
OVERALL SURVIVAL
Utstein subgroup: Survival

Witnessed, Vfib-Vtach, CPR or AED

National
36%
SURVIVAL COMPARISON:
OVERALL WITH UTSTEIN
Presenting Rhythm

**BLUE**
- Shockable: 25.5%
- PEA: 29.8%
- Asystole: 38.3%
- IVR: 4.3%

**ORANGE**
- Shockable: 40.0%
- PEA: 36.7%
- Asystole: 13.3%
- IVR: 3.3%
- UNK: 3.3%
- Asystole: 3.3%
TRANSPORT TIMES

Mean Transport times: 2017

Minutes

Transport times

T = 2.60, Df = 35, p = 0.014
TRANSPORT TIME\_SURVIVAL

\[ P(1) = \frac{\exp(1.93 - 0.1453 \text{ALLtimes})}{1 + \exp(1.93 - 0.1453 \text{ALLtimes})} \]

Probability of Survival

Logistic Regression: \( p = .001 \). Every minute increases odds of death by 14%.
ROSC in Field: Survival

ROSC

Overall Survival
RETURN OF SPONTANEOUS CIRCULATION

Probability of Survival increased with ROSC $p = .027$

![Graph showing the probability of survival related to ROSC, with an upward trend.]
“Existing studies do not suggest that mechanical chest compression devices are superior to manual chest compression, when used during resuscitation after out of hospital cardiac arrest. “

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Manual CPR (N = 217)</th>
<th>Mech. CPR (N = 227)</th>
<th>Unadjusted difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survival to discharge, N (%)</td>
<td>30 (13.8)</td>
<td>13 (5.7)</td>
<td>8.1%</td>
</tr>
<tr>
<td>CPC = 1 or 2, of Survivors, n/N (%)</td>
<td>25/30 (83.3)</td>
<td>11/13 (84.6)</td>
<td>-1.3%</td>
</tr>
<tr>
<td>CPC, of survivors, median [IQR]</td>
<td>1 (1-1)</td>
<td>1 (1-1)</td>
<td>n/a‡</td>
</tr>
<tr>
<td>Sustained ROSC, N (%)</td>
<td>85 (39.2)</td>
<td>66 (29.1)</td>
<td>10.1%</td>
</tr>
<tr>
<td>Resus. terminated on Scene, N (%)</td>
<td>111 (51.2)</td>
<td>123 (54.2)</td>
<td>-3.0%</td>
</tr>
<tr>
<td>Transported cases only, N</td>
<td>106</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Pulse upon arrival at ED, N (%)</td>
<td>73 (68.9)</td>
<td>50 (48.1)</td>
<td>20.8%</td>
</tr>
<tr>
<td>Hospital admission, N (%)</td>
<td>69 (65.1)</td>
<td>51 (49.0)</td>
<td>16.1%</td>
</tr>
<tr>
<td>Survival to discharge, N (%)</td>
<td>30 (28.3)</td>
<td>13 (12.5)</td>
<td>15.8%</td>
</tr>
</tbody>
</table>

“Conclusions: In this EMS system with a standardized, “pit crew” approach to OHCA that prioritized initial high quality initial resuscitative efforts and scripted the sequence for initiating mechanical CPR, use of mechanical CPR was associated with decreased ROSC and decreased survival to discharge.”
We need more devices, don’t you think?
We extend the healing ministry of Christ by caring for those who are ill and by nurturing the health of the people in our communities.

Thank you!