





## EMS System for Metropolitan Oklahoma City & Tulsa



1,100 square miles Population

- 1.6 million day
- 1.2 million night

180,791 calls (2011)

134,503 transports (2011)

74% transports





# Cardiac Arrests OKC & Tulsa Typical Year

- 1100 attempted resuscitations
- 650 (approx 60%) primary cardiac etiology
- 550 (approx 85%) NOT witnessed by EMS
- 170 (approx 30%) in VF on EMS arrival
- 120 (approx 70%) admitted to hospital
- 45 (approx 38%) patients discharged alive

Bystander witnessed with CPR & VF on EMS arrival: 38% survival (85%+ CPC 1 or 2)

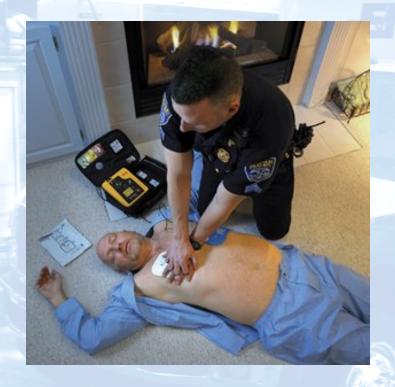




#### Why the Cardiac Arrest "Love Fest"?

We own the outcomes more than in any other

clinical beast.







#### Why Use a "Dashboard"?

- Nearly any road can get you closer to where you don't want to be.....
- A few can get you closer to where you do want to be.....
- But typically 5 (is Corey still here?) roads or less can get you at your desired destination of "success".....
- A dashboard helps guide direction and speed

EMS DIVISION

## How Is a Dashboard Put Together?

Evidenced-based medicine

Operational performance capabilities

Fiscal realities







#### When is a Dashboard Used?

- ALWAYS a piece of a bigger plan
- PLAN
- EDUCATE
- "RUN THE PLAY"
- EVALUATE (using the dashboard)
- KEEP THE PLAYERS INVOLVED & INFORMED





# So What Makes A Difference in Cardiac Arrest (At least, what do we think does in February 2012?)

- Witnessing the arrest
- Prompt 911/EMS activation
- Bystander CPR/AED

 We can directly influence (and should), but we can't directly "control".



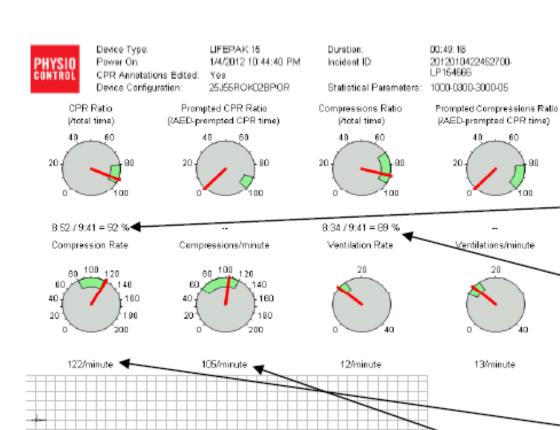


#### Direct Impact & Control (of Ourselves)

- "High quality CPR"
  - high % hands-on ("continuous compressions")
  - compression rates 100-130 (OKC/TUL at 120)
  - complete chest recoil
- Timely defibrillation
  - without long pauses in compressions
- Safe oxygenation/ventilation
- Hypothermia initiation (including destination)







AED-prompted CPR period

AED Analysis

Shock

ROSC (user annotated)

RENDERING EFFECTIVE CHEST COMPRESSIONS INVOLVES THE OPTIMAL PERFORMANCE OF FIVE KEY ASPECTS:

- ENSURING CORRECT COMPRESSION RATE (120CC/MIN)
- 2. ALLOWING FOR COMPLETE CHEST-WALL RECOIL
- 3. PRESSING TO THE CORRECT DEPTH
- 4. MINIMIZING INTERRUPTIONS
- APPROPRIATE DUTY CYCLES (120 CC/MIN, WITH COMPRESSOR CHANGE EVERY 60 SECONDS)

THIS REPRESENTS THE PROPORTION OF TIME FOR THE ENTIRE CASE DURING WHICH UNINTERRUPTED CPR WAS PERFORMED, (EXCLUDING THE PERIODS OF ROSC)

REPRESENTS THE PROPORTION DURING WHICH CPR IS BEING DONE

THE RATE AT WHICH THE CHEST WAS COMPRESSED, IF THE COMPRESSIONS WERE NOT INTERRUPTED

AVERAGE NUMBER OF CHEST COMPRESSIONS PER MINUTE DELIVERED OVER THE COURSE OF RESUSCITATION



x1.0 25mm/sec

Ventilation

Chest compression



#### CPR QUIK-VIEW Interval Statistics CPR 0 min 1 mir nampt. Compr. Prompt Went. Campt. Compt. Ratio, CPR Ratio, Cimps Barts Amin Amin 98 Batio, % Batto, % Power Or -1:0099120 113 Б 6 1:00 100 121 120 100 2:00 123 15 3:00 69 83 9 10 4:00 118 111 11 11 5:00 100 119 12D 14 14 79 79 93 6:00120 14 14 --7:00 98 74 134 88 17 17 8:00 76 76 133 93 15 16 -----9:00 100 13B 12 100 124 12 --10:00 --11:00 12:00 -----13:00 14:00 ----------15:00 16:00 -----17:00 18:00 ---19:00 20:00 ---21:00 ROSC ACHIEVED; IHT INITIATED 22:00 23:00

#### 20 SECONDS PAUSE IN COMPRESSIONS

INTERRUPTED PERIODS OF CPR EXACT REASONS UNCLEAR; RHYTHM CHECKS; PULSE CHECKS, ROLE CHANGES, ETT PLACEMENT, ETC. ARE POSSIBLITIES. CPR SHOULD NOT BE INTERRUPTED FOR 2 MINUTES ONCE INITIATED, RHYTHM CHECKS AT APPROPRIATE TIME INTERVALS; THE ARROWS INDICATE THAT THERE IS NO HINT OF COMPRESSIONS EVIDENT IN THE ECG SIGNAL. NOTE: THE RED DOWNWARD SPIKES INDICATE COMPRESSIONS; THE SPACES IN BETWEEN THE RED SPIKES INDICATE NO CHEST COMPRESSIONS.





#### OKC/TUL Cardiac Arrest Dashboard

- ALWAYS a piece of a bigger plan (The "50/50 Plan")
- PLAN: compressions, metronomes, team roles
- EDUCATE: compressions, team dynamics
- "RUN THE PLAY": video production, protocols
- EVALUATE (using the dashboard): 'nuf said
- KEEP THE PLAYERS INVOLVED & INFORMED





#### "Thanks to the guys in the shop!"

(Professor Five's Visit to OU)







### **Achieving Success**

"There is no 'silver bullet'. There is just hard work"

-Michael K. Copass, MD

