

No Interruptions, Please!

Pit Crew on Steroids

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Approach to Resuscitation

- On Scene:
 - Metronome
 - Pit Crew
 - CCR
 - EtCO₂
 - Stay and play
- Followup
 - Annotation
 - Crew feedback

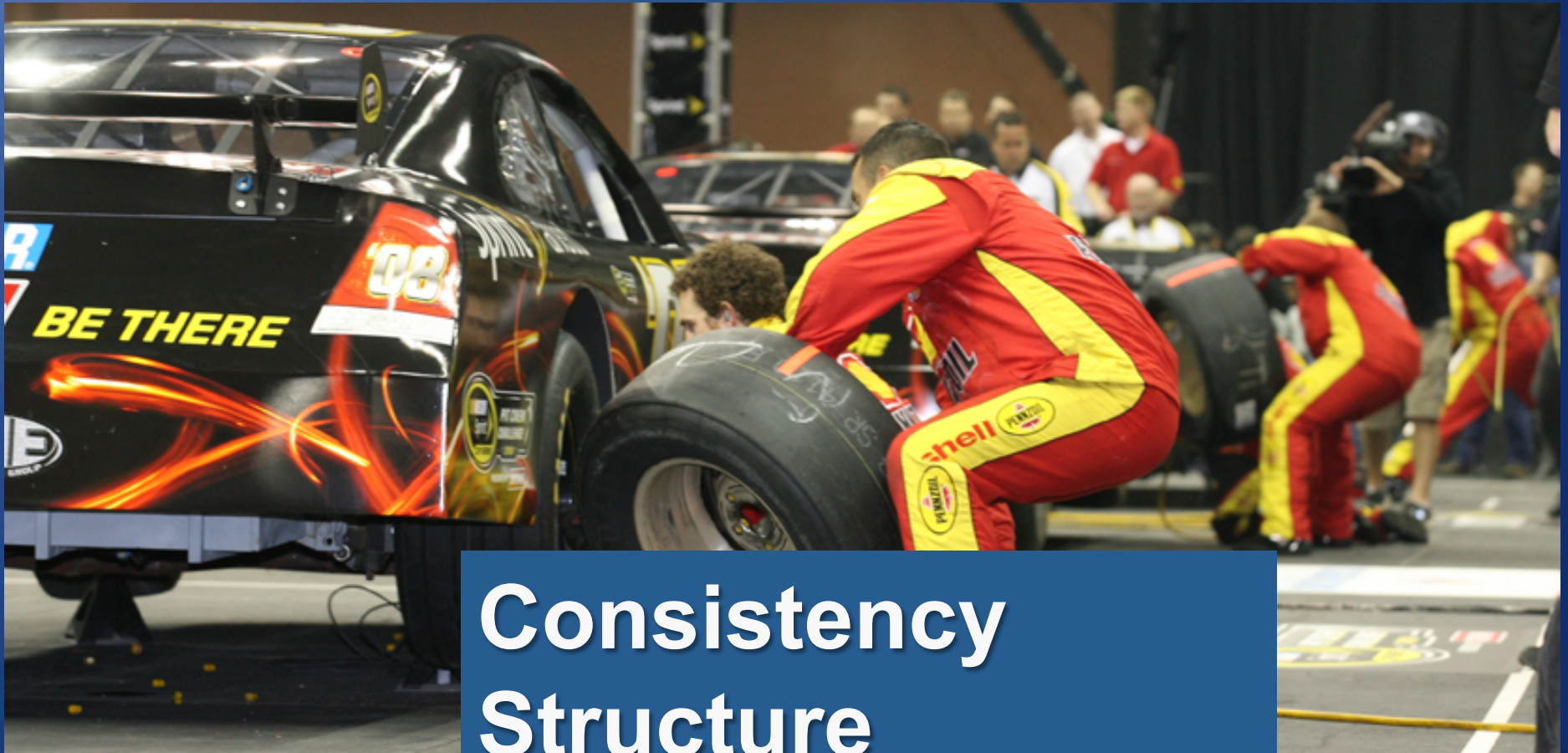


Pit Crew

- Stolen from
- Locally modified
 - Compressions vs. Minutes
- Placement: providers and equipment
 - Limit movement



Pit Crew



Consistency
Structure
Efficiency
Accountability



What matters?

- Compressions
- Pause length
- Right-timed defibrillation



Clear Targets

- CPR Ratio of $>95-100\%$
- Compression Ratio of $\geq 90\%$
- Pauses <10 seconds



Sacred BLS Triangle & Checklist



Defined Roles

Position #1

Role

To facilitate continuous compressions in cardiac arrest and assist with airway/ventilation. Positioned at patient RIGHT

Assigned to fire fighter or paramedic on first in unit.

Responsibilities

- Assess unresponsiveness/pulselessness and initiate compressions
- Alternates compressions every 220 compressions with Position #2
- Counts compressions in 20's and calls out 17, 18, 19, 20 each time
- Ventilates with BVM in off cycle (20:1)
- Assists with airway management as needed

Position #2

Role

To facilitate continuous compressions in cardiac arrest and assist with airway/ventilation. Positioned at patient LEFT.

Assigned to fire fighter or paramedic on first in unit.

Responsibilities

- Brings and operates AED or LP 12
- Initiates metronome
- Applies oxygen via NRM at high flow
- Alternates compressions every 220 compressions with Position #1
- Counts compressions in 20's and calls out 17, 18, 19, 20 each time
- Ventilates with BVM in off cycle (20:1)
- Assists with airway management as needed

Position #3

Role

To facilitate airway patency and ventilations. Positioned at Patient HEAD.

Assigned to fire fighter or paramedic on non-transporting response unit.

Responsibilities

- Monitors and manages airway for duration of arrest to ensure patency. Reacts to problems
- Calls out compressions in increments of 20 (20, 40, 60, 80 . . . 220)
- Assembles and applies all airway equipment except ETT
- Applies BVM/OP at 660 compression mark with two handed seal on mask
- Monitors EtCO₂ values and communicates with team

** Personnel can rotate in and out of Positions 1, 2, and 3 as needed so long as this does NOT interfere with care or interrupt CPR.



Backsliding

Pause
duration

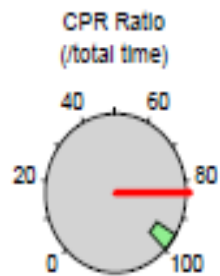
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0:00:31

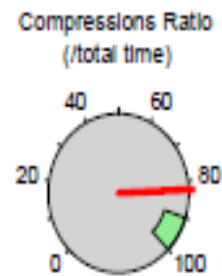
0:00:20

0:00:30

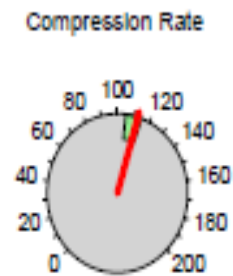
0:00:15



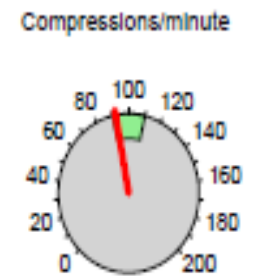
10:44 / 12:54 = 83 %



10:38 / 12:54 = 82 %



112/minute



92/minute



How did NASCAR do it?

- Review
- Question
- Fine tune



Compression Fraction

CCF Across Different Airway Management

Airway Intervention	Mean \pm SD	p=0.88	Airway Device	Mean \pm SD	P=0.92
Basic	90.6% \pm 18.4%		NRB	85.8% \pm 22.9%	
			BVM	91.4% \pm 17.8%	
Advanced	91.2% \pm 14.2%		Combitube	91.7% \pm 18.2%	
			ETT	91.0% \pm 12.9%	

Jensen, J. L., M. Walker, Y. LeRoux and A. Carter (2013). "Chest Compression Fraction in Simulated Cardiac Arrest Management by Primary Care Paramedics: King Laryngeal Tube Airway Versus Basic Airway Management." *Prehospital Emergency Care* 17(2): 285-290.
 Dong F, Braithwaite S, Bryan N, Holland A, Johnston D, Mariscalco M, and Wampler D. Airway management does not reduce chest compression fraction during choreographed resuscitation. *Prehospital Emergency Care* 2014;18:123-162



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this issue

SPORTS & FINAL

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**SPECIAL
REPORT**


11 PAGES
OF COVERAGE
BEGIN ON
PAGES 4-5

A-ROID!



Visual Systems

- **Seiton** (orderliness)
 - motion minimized by proper equipment placement
- **Seisou** (cleanliness)
 - environment effectively places and communicates essential information
- **Seiketsu** (standardization)
- **Shitsuke** (discipline)
 - avoid a return to the behavior of the past

<http://www.ahrq.gov/professionals/quality-patient-safety/patient-safety-resources/resources/mistakeproof/mistake1.html#Approaches>

AHRQ / Patient Safety

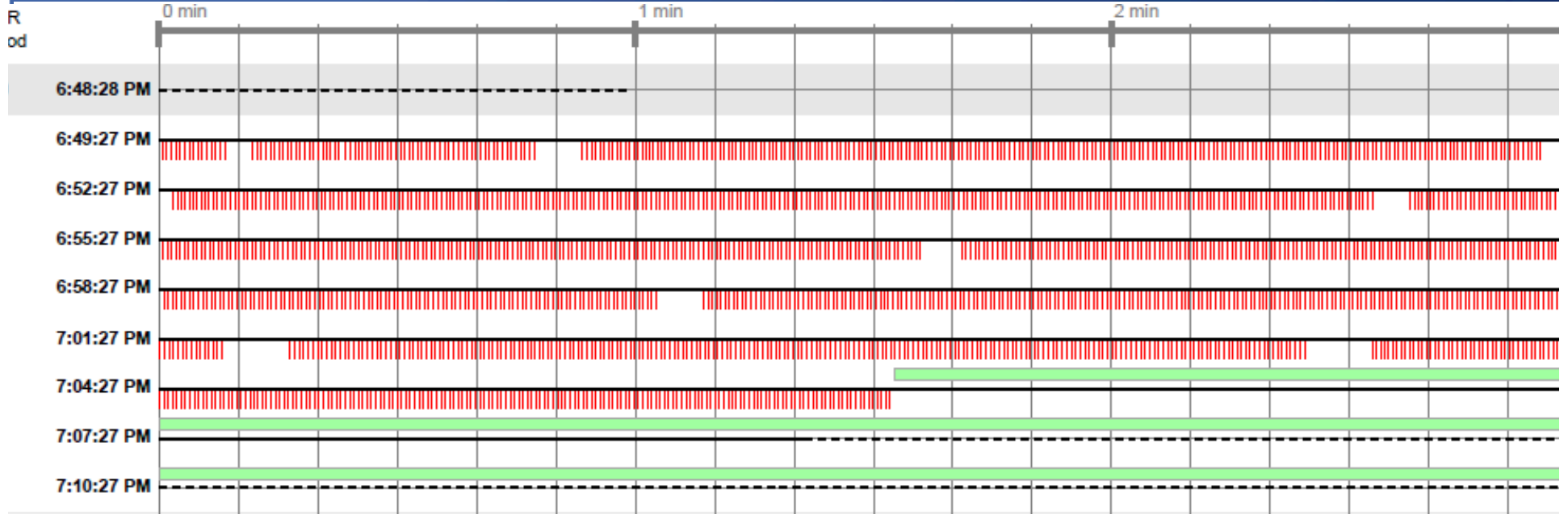


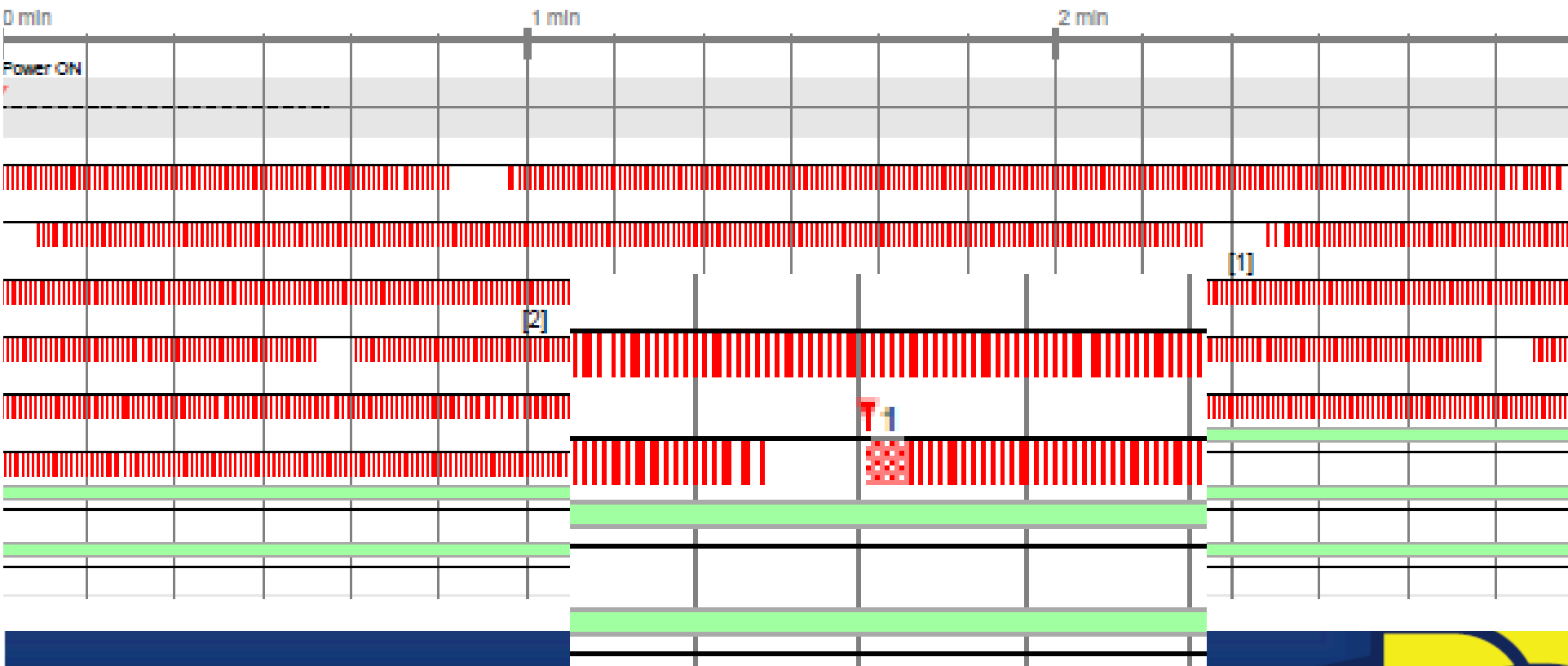
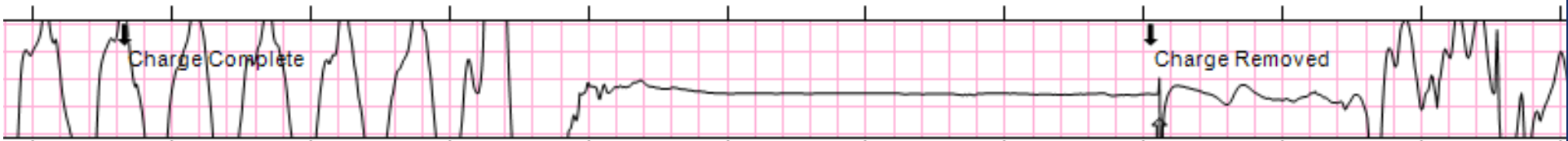
Specifics

- Precharge defibrillator every cycle
- Hand on femoral pulse
- At 220
 - Hands off chest
 - Eyes on monitor
 - Finger on defib button
 - Count
 - No “clear”
- Automatic restart CPR



2/11/14





2013 Sedgwick Outcomes (National)

- Overall survival 11.3% (8.0%)
- Utstein survival 38.6% (24.6%)
 - 94% CPC 1/2 at discharge (88.7%)



Mechanical Trial

	n Value	ROSC	CPR Ratio	Compress Ratio	Compress Rate	Compress/Min
Manual	8	2	97.0	94.6	108	102.4
Mechanical + Manual	8	2	96.5	94.4	108	101.5
Mechanical Alone	?	?	?	?	?	?



Putting It Together

