



KC Masterpiece:
Saving Lives with
Continuous Chest Compressions

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The Not so Secret Recipe

- No improvements in system cardiac arrest outcome
 - 1993-2005
 - No improvement with FR AED added
- 2005 Discussions with Dr. Ewy
 - Dr. Garza developed protocol changes
- 2006
 - Jan-Mar In-services for ALL KCFD and MAST personnel with Hands On

Changes to Cardiac Arrest Protocol 2006

- Chest Compressions before initial defibrillation
- Compress 100 times per minute in two minute cycles
- Emphasis on high quality chest compressions
- Ventilations minimal “puff-puff” at 50:2 without pause
- De-emphasize ventilation including intubation
- Single shock instead of stacked
- IV Access and drugs after CCC and Defibrillation
- Do not stop compressions to check rhythm until chest compressions are complete
- Immediate Chest Compressions after Defibrillation
- Check for pulse after cycle of chest compressions

First Year Data April 2006-March 2007*

VFIB	<i>Pre- Change</i>	Post- Change
ROSC and Hospital Admission	30.4%	51.3%
Hospital Discharge Alive	21.3%	44.2%

* Published *Circulation* April 2009. Garza, Gratton, Salomone et al

Refinement of Protocol 2008

- Passive Oxygenation ONLY with OPA/NPA and NRB-Mask @ 100%
- Continuous compressions, 100 compressions/minute, 200 compression cycle
- Maximal energy for each shock
- Intubation ONLY if airway compromised
 - If intubated, 50:2 “puff-puff” with Pediatric BVM
- Minimum 20 minutes field time

All KCFD and MAST personnel In-serviced as before with Hands On sessions and reviews

Kansas City, Missouri EMS		Cardiac Arrest Outcomes February 2010		
Bystander Witnessed - VFIB				
		BASELINE COHORT (39 months prior)	Modified 50:2* (4/06-3/07)	CCC-CCR with Passive O2 (9/08-8/09)
Total VFIB		345	112	88
Bystander Witnessed		143	57	49
ROSC		54	34	25
Survive to Discharge		32	25	18
		22%	44%	37%
Survivor CPC				
	1		20	11
	2		2	4
	3		1	3
* published Garza et al, Circ 2009				
		Baseline vs 50:2: p=0.0023808	Odds Ratio 2.71 (95% CI:1.41-5.21)	
		Baseline vs CCC: p=0.04811399	Odds Ratio 2.01 (95% CI:1.00-4.06)	
		50:2 vs CCC : p=0.4562818	Odds Ratio 0.74 (95% CI:0.34-1.62)	

CARES* Database for KCMO

CARES	KCMO 2006-2008	KCMO 2008-2010	CARES 2009 National
Utstein	37.2%	35.8%	30.8%
Utstein Bystander	34.1%	35.3%	32.8%
Shockable Bystander	39.5%	41.7%	36.2%
Discharged Alive	36	34	395
CPC 1-2	32 (89%)	30 (88%)	314 (79%)
CPC 3-4	4	4	43

*Cardiac Arrest Registry for Enhanced Survival

Conclusion

- Modified Cardiac Arrest Protocols using Continuous Chest Compression (CCC-CCR) with Minimal Ventilation or Passive Oxygenation only appear no worse than “standard” therapies.
- Caveats
 - Documentation and review by OEMSMD
 - Compression Data now being collected from both AEDs and Monitors

Reinforcements

- BLS and ALS training based on our protocol, not AHA
- CQI monthly reports
 - OEMSMD review of all cardiac arrests with medic
- CQI produces “Paycheck Memo” weekly
- Skills lab and High Fidelity lab reviews
- Monthly reports to city of ROSC
- Cardiac Arrest Reminder Posters



Thank You!

Questions?

