



Safety and efficacy of therapeutic hypothermia after out of hospital cardiac arrest

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BACKGROUND

- ❖ Therapeutic hypothermia is a procedure performed on patients who experience a return of spontaneous circulation (ROSC) after cardiac arrest outside the hospital setting in an effort to improve neurological outcomes and decrease mortality
- ❖ Two landmark trials have established the efficacy of therapeutic hypothermia on neurological outcomes six months after cardiac arrest and survival to hospital discharge^{1,2}
- ❖ Currently, there is a protocol implemented for the use of this procedure at Community Regional Medical Center (CRMC)³

OBJECTIVES

- ❖ The primary objective of this study is to assess safety by examining the effects of this procedure on serum potassium levels
- ❖ Secondary objectives of this study evaluate the efficacy of this procedure by examining clinical outcomes such as:
 - ❖ Improvement in neurological outcome following cardiac arrest
 - ❖ Length of stay in hospital
 - ❖ Mortality of patients within 90 days of cardiac arrest

This study proposal was submitted to and approved by the Institutional Review Board (IRB). All data will be recorded without patient specific identifiers and maintained in a confidential manner to protect patient privacy

METHODOLOGY

- ❖ A retrospective chart analysis
- ❖ Includes patients ≥ 18 years old who experienced a ROSC after primary cardiac arrest and have since sustained persistent coma
- ❖ The following patients will be excluded:
 - ❖ Pregnant
 - ❖ Responsive to verbal commands after ROSC
 - ❖ Systolic blood pressure less than 90 mmHg and not responsive to fluids or inotropes
 - ❖ Known pre-existing coagulopathy or bleeding
 - ❖ More than six hours from ROSC
 - ❖ Cardiac arrest due to trauma or overdose
- ❖ The outcomes of patients who underwent therapeutic hypothermia are compared with the outcomes of those who did not undergo the procedure
- ❖ Data to be collected are as follows:
 - ❖ Demographic characteristics, rhythm on admission, past medical history, and baseline serum potassium level and Glasgow Coma Scale score upon admission
 - ❖ Potassium levels drawn at baseline, eight hours after cooling is initiated, and at the end of re-warming
 - ❖ Glasgow Coma Scale from baseline to time of hospital discharge, length of stay in hospital, and 90 day mortality of cardiac arrest patients

- ❖ Statistical analyses:
 - ❖ Primary outcome will be analyzed using a student's t-test
 - ❖ Secondary outcome will be analyzed using Fisher's exact test or student's t-test, as appropriate for the type of data

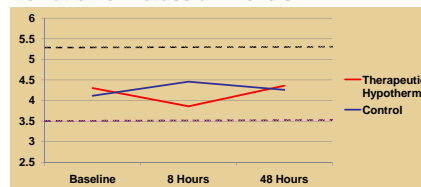
RESULTS

Preliminary Data

Baseline Characteristics

Rhythm on Admission	Treatment N=5	Control N=7
Ventricular Fibrillation	1	3
Pulseless Ventricular Tachycardia	1	0
Pulseless Electrical Activity	3	2
Asystole	0	2
Past Medical History		
Diabetes	2	3
Coronary Artery Disease	1	1
Congestive Heart Failure	1	3
Hypertension	1	5
None	1	1

Deviation of Potassium Levels



Secondary Outcomes

Outcome Measures	Treatment N=5	Control N=7
Glasgow Coma Scale at Baseline (average)	3	3
Glasgow Coma Scale at Discharge or Death (average)	5.4	6.4
Length of Stay in Hospital (average days)	11.8	13.3
90-Day Mortality	80%	71%

CONCLUSION

Based on preliminary data, therapeutic hypothermia does not produce significant changes in serum potassium levels and may be used safely in patients who have experienced out of hospital cardiac arrest

FUTURE DIRECTION

- ❖ Complete data collection and analysis
- ❖ Assess and determine whether therapeutic hypothermia is safely improving clinical outcomes at CRMC

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All authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.



Evaluation of a standardized intensive care unit (ICU) delirium assessment and management tool

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BACKGROUND

- ❖ Delirium is a frequent and under recognized problem among ICU patients¹
- ❖ Increases in duration of mechanical ventilation, hospital lengths of stay, mortality rates and hospital costs have all been associated with ICU delirium²⁻⁵
- ❖ The Society of Critical Care Medicine (SCCM) recommends routine delirium monitoring and supports use of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU)¹
- ❖ CAM-ICU will soon be implemented at Community Regional Medical Center (CRMC) to assist with routine identification of this complication

OBJECTIVES

- ❖ Primary objective of this study is to assess the importance of delirium evaluation to ICU nurses⁶
- ❖ Secondary objectives of this study are to determine:
 - ❖ Incidence of delirium
 - ❖ ICU length of stay for delirious versus non-delirious patients
 - ❖ Types of medications used to treat ICU delirium

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METHODOLOGY

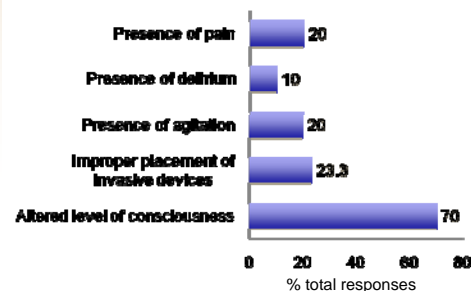
- ❖ **Phase I:** Pre-implementation
 - ❖ Identify current ICU nursing practices and perceptions of ICU delirium by administering a nursing survey (adapted from Devlin *et al.*)
- ❖ **Phase II:** Post-implementation
 - ❖ Evaluate the effects of CAM-ICU on nursing practices and perceptions of ICU delirium
 - ❖ The same survey will be administered to ICU nurses after CAM-ICU implementation
 - ❖ A retrospective chart review of adult ICU patients age ≥ 18 years will be completed after CAM-ICU implementation
 - ❖ Patients with the following conditions will be excluded⁷:
 - ❖ Pre-existing dementia
 - ❖ History of psychiatric disorders
 - ❖ Language barriers or deafness
 - ❖ Severe neurological disorders such as stroke or meningitis
 - ❖ Collected data will include delirium incidence, ICU length of stays, and medications used to treat ICU delirium
- ❖ Statistical analyses:
 - ❖ Survey responses will be analyzed using Student's t-test, Fisher's exact test and Mann-Whitney test, when appropriate
 - ❖ P value < 0.05 will be considered significant

This study proposal was submitted to and approved by the Institutional Review Board (IRB). All data will be recorded without patient specific identifiers and maintained in a confidential manner to protect patient privacy. All nursing survey responses will be anonymous and no incentives will be offered to survey responders.

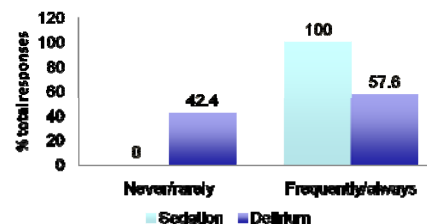
RESULTS

Preliminary Results

- ❖ Pre-implementation survey
 - ❖ 10/07/09 - 10/16/09
 - ❖ N = 34
- ❖ Conditions that nurses rank as the **most important** to routinely evaluate for in ICU patients:



- ❖ Frequency by which nurses evaluate for delirium compared to sedation:



CONCLUSIONS

- ❖ Currently, the majority of ICU nurses do not perceive delirium as an important condition that requires routine evaluation
- ❖ ICU nursing practices and perceptions towards ICU delirium may benefit from CAM-ICU implementation
 - ❖ Nursing education and inservices: Dec. 2009
 - ❖ CAM-ICU implementation: Jan. 2010
 - ❖ Post-implementation data: Feb. – Mar. 2010

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Retrospective cost-savings analysis of monitoring palivizumab (Synagis®) prophylaxis usage in a neonatal intensive care unit (NICU) during respiratory syncytial virus (RSV) season

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BACKGROUND

- ❖ RSV is a leading cause of lower respiratory illness that results in significant morbidity or mortality in infants^{1,2,3,4}
- ❖ Palivizumab is a monoclonal antibody used in the prevention of severe RSV infections in high-risk populations meeting American Academy of Pediatrics (AAP) eligibility criteria^{3,5}
- ❖ Palivizumab is expensive and cost of administration or waste can be significant²
- ❖ Implementation of palivizumab order set based on AAP guidelines will restrict administration to high risk patients and reduce cost

OBJECTIVES

- ❖ To examine the following:
 - Appropriate administration of palivizumab, defined as administration to patients that meet eligibility criteria based on AAP guideline recommendations
 - Total cost of palivizumab administration for 2007-2008 compared to 2008-2009 when order set implemented
- ❖ To perform a cost-analysis to determine the potential cost savings of monitoring palivizumab usage in a neonatal intensive care unit during RSV season

METHODOLOGY

- ❖ A retrospective chart analysis
- ❖ Determine official start and end date for RSV seasons 2007-2008 and 2008-2009
- ❖ Establish which patients received palivizumab during RSV season using information technology generated drug utilization evaluation (DUE) report sorted on the criteria of palivizumab and NICU and special care nursery (SCN) dating back to October 2007
- ❖ Access electronic records of patients that received palivizumab on DUE report to determine date and quantity of doses administered through duration of RSV season
- ❖ Review dictated notes on dates palivizumab was received to determine patient risk factors for RSV and eligibility for palivizumab based on AAP guidelines
- ❖ Evaluate total cost, number of doses and quantity of palivizumab vials dispensed and appropriately administered for both RSV seasons
- ❖ Perform an analysis of the total cost for palivizumab administration in 2007-2008 compared to 2008-2009

This study proposal was submitted to and approved by the Institutional Review Board (IRB). All data will be recorded without patient specific identifiers and maintained in a confidential manner to protect patient privacy.

PRELIMINARY RESULTS

	2007-2008	%	2008-2009	%
Number of patients	2		16	
Order set used				
Yes	0	0	6	37.5
No	2	0	10	62.5
Patient meets AAP criteria				
Yes	2	100	14	87.5
No	0	0	2	12.5
Patient meets ≥ 1 AAP risk factor criteria				
< 29 wks GA & < 12 mo	1	50	5	31.25
29-32 wks GA & < 6 mo	1	50	6	37.5
Chronic lung disease (CLD)	0	0	0	0
≤ 2 yrs w/CLD & O2 w/in 6 mo	0	0	0	0
≤ 2 yrs w/coronary disease	0	0	0	0
Severe immune deficiency	0	0	0	0
Patient meets ≥ 2 AAP risk factor criteria				
School aged siblings	0	0	3	18.7
Exposure to air pollutants	0	0	3	18.7
Congenital abnormalities	0	0	0	0
Immune deficiency	0	0	0	0
Neuromuscular disease	0	0	0	0
Twin/multiple births	0	0	3	18.7
Total actual cost	\$1,697	-	\$13,576	-
Total potential cost savings	0	-	\$1,697	-

CONCLUSION

- ❖ Based on the preliminary results, most patients meet AAP eligibility criteria and are administered palivizumab appropriately
- ❖ Most patients > 32 weeks tend to have school aged siblings, exposure to air pollutants and twin/multiple births as risk factors for AAP eligibility.

FUTURE DIRECTION

- ❖ Complete data collection and analysis
- ❖ Evaluate and determine if palivizumab order set minimizes administration only to patients meeting AAP guideline eligibility criteria and reduce cost

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GA = gestational age