Ready, Set, Go! Implementing a Pediatric A-F Bundle and Early Mobility Program

EBP & Nursing Research Symposium
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Disclosures

- The presenters for this presentation have disclosed no conflict of interest related to this topic.
Objectives

- Illustrate the use of evidence by nurses and inter-professionals to develop a Pediatric A-F Bundle and Early Mobility Program
- Describe the essential steps to successfully implement an EBP project that delivers best practice to pediatric patients
UC Davis Medical Center

- Academic Medical Center
- Level 1 Trauma Center
  - Adult and Pediatric
- Serve the greater Sacramento area
  - Northern California (33 Counties)
  - 65,000 square miles
  - 6 million residents
UC Davis Medical Center

- 619 beds
- 78,800 ED visits*
- 40,684 Admissions*
- 10,302 Staff

* For year ending June 30, 2015
UC Davis Children’s Hospital

- Children’s Hospital within a hospital
- 129 Licensed beds
- 6800 admissions annually
  - 36 bed Pediatric Acute Care Unit
  - 49 bed NICU
  - 24 bed PICU/PCICU
- 15,036 ED visits
Pediatric Intensive Care Unit
Pediatric Cardiac Intensive Care Unit

- 24 bed mixed unit
- Over 1600 admissions/year
- 110 full and part-time ALL RN staff
  - 75% with Bachelors of nursing
  - 20% with Master’s of nursing
  - 18% of nurses with specialty certification
- 13 Pediatric Intensivists on unit 24/7
Background: Adult Literature Review

- Robust evidence
  - Delirium and ICU acquired weakness lead to poor patient outcomes including:
    - Increased ICU and Hospital LOS, time on the ventilator and mortality rates
    - Cognitive decline and post-traumatic stress
    - Poor rehabilitation outcomes

- Pediatric literature emerging
Background: Adult Program at UC Davis

- Implemented in 2012
  - 3 Intervention ICUs
    - MICU, MSICU, SICU
  - 3 Control ICUs
    - BICU, CTICU, NSICU
Ready, Set Go!

Outcomes: Adult Program at UC Davis

**Average Vent Hours Pre-Post Early Mobility**

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
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<tbody>
<tr>
<td>Baseline (Apr 11-Mar 12)</td>
<td>112.86</td>
<td>109.75</td>
</tr>
<tr>
<td>Post Intervention (Apr 12-Feb 14)</td>
<td>90.78</td>
<td>107.15</td>
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</tbody>
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**Hospital LOS - Intervention Units**

<table>
<thead>
<tr>
<th></th>
<th>Baseline Apr 11-Dec 11</th>
<th>Apr 12-May 14</th>
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</thead>
<tbody>
<tr>
<td>ICU LOS</td>
<td>4.23</td>
<td>3.88</td>
</tr>
<tr>
<td>Hospital LOS</td>
<td>14.6</td>
<td>10.84</td>
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</tbody>
</table>
Background: Expansion of Program

- Hospital-Wide in 2014
  - Remaining adult ICUs
  - Adult acute care units
- Tasked to Children’s Hospital in 2014
  - Pediatric ICU in May 2015
  - Pediatric Acute Care unit in June 2016
Initial steps

- Multiple PDSA Cycles completed to:
  - Identify potential stakeholders
  - Conduct Pediatric Literature review
  - Bundle development
  - Tool selection
  - Education
  - Implementation
  - Outcomes

Stakeholders

- Executive Leaders
- Physician Champion
- Frontline Caregivers
- Educators/APRNs
- Child Life
- Ancillary Services
- Family
- EMR
Ready, Set Go!

Pediatric Literature Review

- Minimal pediatric articles identified
  - Presence of Delirium in PICUs
  - Development of validated Delirium Screening Tools
  - Benefits of Early Mobility
- Table of evidence completed
- Bundle approach not published in pediatrics
Bundle Development

- Bundle adapted from the adult program at UC Davis:
  - A: Awakening
  - B: Breathing
  - C: Coordination
  - D: Delirium Assessment
  - E: Early Mobility
  - F: Family
Delirium/Sedation Tool Selection

- **Adult Tools Utilized:**
  - Confusion Assessment Method for ICU (CAM-ICU)
  - Richmond Assessment for Sedation Scale (RASS)

- **Validated Pediatric Tools Available:**
  - Pediatric Confusion Assessment Method for ICU (pCAM-ICU)
    - Validated: 2011 -- Age ≥ 5 years old
  - Cornell Assessment of Pediatric Delirium (CAP-D)
    - Validated: 2014 -- Age > 2 days old
  - State Behavioral Scale (SBS)
Pediatric Specific Tool Selection

- **Patients < 15 years**
  - Cornell Assessment of Pediatric Delirium (CAP-D)
  - State Behavioral Score (SBS)

- **Patients > 15 years**
  - Confusion Assessment Method for the ICU (CAM-ICU)
  - Richmond Agitation Sedation Scale (RASS)
Classes

- Evidence-based
- 5 Didactic
- 7 Safe-Patient Handling
- Learned and Practiced
- Survey disseminated
- Attended by:
  - 103 RN (96%)
  - 31 PT/OT
  - 3 Intensivists
Nurse Driven

- Using the Bundle Approach in the PICU/PCICU
A – **Assess**, Prevent and Manage Pain

- Understanding Pain Scales
  - Self-report
  - Pain-Behavioral Observation Score

- Pain Management Interventions
  - Pharmaceutical
  - Non-pharmaceutical
B - Breathing – Assess and Manage (SBT/ERT)

UC Davis Medical Center
Spontaneous Breathing Trial (SBT) Protocol

**Adult Daily SBT Protocol**

- Perform Daily SBT:
  - **COPD level A and B**
  - **ARDS or severe hypoxia**
  - **ICU stay > 3 days**
- **STOP TRIAL P/O:**
  - SpO2 < 90%
  - RR > 30 bpm or > 3 minutes
  - MAP > 120 or < 50
  - **Pulse oximetry drop**
- **Pass SBT:**
  - Return to prior ventilator settings on next trial
  - **Notify MD**

**Patient needs screening criteria for Spontaneous Breathing Trial (SBT):**
- Has spontaneous respirations
- No ventilator-induced ventilator withdrawal
- No unstable medical conditions for SBT
- SpO2 > 95% on PS or SBT
- Max ventilator settings:
  - PP < 8 cm H2O
  - PEEP < 5 cm H2O

**Passed SBT**

- **Notify MD**
- **MD Assessment:**
  - evolve: General progress
  - Other issues affecting potential extubation
- **Order Exubuation**
- **Exubuation Readiness Test (ERT)**

**Every morning at 0400 assess the patient for:**
- Spontaneous breathing
- O2 at 6 (MAP/FF ratio x 100)

If an ABG is available, then estimate the PacO2 from the "SpO2 - Estimated PacO2 Conversion Table".

**If yes, then test readiness for extubation:**

1. Temporarily stop antiall bedding
2. If FiO2 < 40%, add H2O to 0.5
3. If PEEP < 5 cm H2O, add PEEP to 5 cm H2O
4. Evaluate SpO2 after the above changes:
   - SpO2 < 95%, change to 95% SBT at 3 minutes
   - PacO2 < 70 mmHg/FF > 4.5
   - PacO2 > 80 mmHg/FF > 5.0
   - Monitor SpO2, extubated Vt and RR

If no, then continue with current plan.

**Passed**

- From a pulmonary perspective:
  - SpO2 at least 95%
  - Estimated Vt > 5 ml/kg (Ideal weight)
  - Respiratory rate within respiratory rate goal of age:
    - < 6 months: 30-40
    - 6-12 mos: 15-30
  - Sats > 100

If passed, then keep on the existing settings & notify the core team that the patient is ready for extubation from a pulmonary perspective.

If not passed from a pulmonary perspective, then return to pre-extubation ventilator settings, restart sedation & end extubation.

If not passed because of sedation-related hyperventilation, conduct a modified daily extubation assessment then extubated Vt in the morning. If patient still not passing then return to pre-extubation ventilator settings and reduce the next day.

UC Davis Children’s Hospital
Pediatric A-F Bundle

C – Choice of Analgesia and Sedation

- Scales:
  - State Behavioral Scale (SBS)
  - Richmond Agitation Sedation Scale (RASS)
  - WAT-1

- Daily Multidisciplinary Rounds:
  - Review sedation scores and set sedation goal
  - Review medications and dosing

- Implementing a Sedation/Analgesia Pathway
D – Delirium – Assess, Prevent and Manage

- **Tools:**
  - Patients < 15 years: CAP-D
  - Patients ≥ 15 years: CAM-ICU

- **Built into EMR flowsheets**

- **Intervention Algorithm**
D – Delirium – Assess, Prevent and Manage
E – Early Mobility/Exercise

- Dedicated Physical Therapist (PT)
  - Attends weekly multidisciplinary rounds
  - Early Mobility Team activated by RN in EMR
  - Order directly to PT
- New Equipment purchased
  - Cardiac Chairs
  - Floor mats
  - Steps
  - Pediatric Commodes
E – Early Mobility/Exercise

- Use of PICU Early Mobility Algorithm
### E – Early Mobility/Exercise

<table>
<thead>
<tr>
<th>Patient Initials:</th>
<th>Room/Bed:</th>
<th>Date Updated:</th>
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**PHASE:** 1 2 3 4 5

**Day Shift Activities:**

- [ ]
- [ ]
- [ ]

**Night Shift Activities:**

- [ ]
- [ ]
- [ ]

**Restrictions:**

- [ ]
- [ ]

**GOALS for the week:**

- [ ]
- [ ]

*Therapist Phasing Guide on Back • Please KEEP form in room, DO NOT throw away!
Ready, Set Go!

E – Early Mobility/Exercise

Pediatric Early Mobility – Phase Definitions

- Phases progress cumulatively

**Phase 1:** Mobility within the bed
- Rolling
- Boosting up in bed
- Scooting
- ROM/Bed exercises

**Phase 2:** Transitioning to Upright
- Supine → Sit
- Sitting at edge of bed (including balance activity, core exercises)
- Progressive sitting endurance (could include passive transfer to cardiac chair)

**Phase 3:** Transfers out of bed
- Sit → Stand
- Stand for Squat Pivot Transfer
- Side Board Transfer
- Standing Activities/Preparation for Gait

**Phase 4:** Standing Exercise (incl. balance, coordination, strengthening)
- Gait Training

**Phase 5:** Mobility progression based on developmental age, not chronological age
- Applies to patients with movement patterns that are not expected to progress through Phases 1-4
- Mobility progresses toward individualized therapy goals

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F – Family Engagement and Empowerment

- Ready, Set, Go! Brochure
- Family Participation
  - Developmental baseline
  - Participation in rounds
  - Early mobility – hands-on
  - Normal sleep/wake patterns
  - Familiar objects
  - Completion of “All About Me” sign
F – Family Engagement and Empowerment

Children admitted to the pediatric intensive care unit (PICU) may experience delirium, a state in which a child may be confused, irritable or withdraw. Delirium is common among patients admitted to an intensive care unit and may be caused by illness or infection, pain and certain medications.

**Minimizing delirium in hospitalized children**

The Pediatric A-F Bundle has been developed to minimize delirium and minimize long-term effects. Pain management is the “C” in the A-F Bundle – early mobilization and exercise – the “E” – can help decrease delirium and may lead to an earlier discharge from the PICU.

**Benefits of early mobility**

Early mobilization and exercise have been shown to help patients recover faster and decrease long-term effects of delirium. UC Davis Pediatric Early Mobility Program can help:

- Improve recovery times
- Improve strength
- Reduce pain and irritability, as well as the need for medications to address these issues
- Reduce the need to be on a breathing machine
- Reduce the amount of time your child needs to stay in the PICU

**How you can help**

Family involvement is an important part in your child’s recovery. If your child is anxious or confused we encourage you to remain at the bedside with them. There are many ways you can help while your child is in the PICU and after they return home. These include:

- Maintain a daily schedule of normal sleep and wake patterns
- Talk about things going on at home with family and friends
- Bring items to the hospital that remind your child of home, like photos, a favorite blanket, etc.
- Play familiar music or read a favorite book to your child

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**Pediatric A-F Bundle**

- **Assess:** Prevent and manage pain to allow your child to be as comfortable and awake as possible
- **Breathing:** Daily screening to monitor if your child can breathe without additional support
- **Choice:** Collaboration between the pediatric health care team for pain and sedation management
- **Delirium:** Screening and monitoring all children who meet the criteria of delirium
- **Early mobility and Exercise:** Getting your child moving to decrease symptoms of delirium
- **Family:** Your involvement and support is an important part of your child’s success

For more information on delirium and getting your child moving sooner visit kidwellhman.org

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**Our team**

UC Davis Pediatric Early Mobility Program members are a collaborative team of physicians, nurses, physical therapists, occupational therapists, respiratory therapists, diet team members, pharmacists and child life specialists. We work together with the common goal of getting your child up and moving as soon as possible to help speed their recovery and return home.
Survey: Staff Perceptions

- Pre/Post Implementation Survey
  - Multidisciplinary
  - Pre implementation survey: April – June 2015
    - 107 completed
  - Post implementation survey: January – March 2016
    - 64 completed
  - Goal: To identify barriers to a sustainable culture change
Survey: Staff Perceptions

- “I believe delirium is frequently experienced by patients”
  - Pre: 82% agreed
  - Post: 64% agreed

- “I am confident in my ability to implement the A-F bundle”
  - Pre: 64% agreed
  - Post: 81% agreed

- “I believe documenting the A-F bundle will be time consuming”
  - Pre: 29% disagreed
  - Post: 47% disagreed
Implementation

- **Go Live: May 20, 2015**
  - EMR charting
  - Laminated tools and algorithms
  - Physical Therapy presence
  - Champion availability

- **Bedside A-F Bundle Audits: September 2015**
  - Monitor compliance
  - 1:1 Education
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Role of Champions

- Promote the Pediatric A-F Bundle
  - Answer questions/education
  - Increase staff “buy-in” and compliance

- A-F Bundle Audits
  - 30 per month
  - Education on Bundle Components

- Committee Work
  - Meetings
  - Yearly classes
  - Update Bundle based on EBP
Barriers

- Medical team comfort with Early Mobility
  - Variation in PICU attending practices
  - Residents
- Staffing
  - Nursing
  - Physical Therapy
- Pharmaceutical
  - Formulary
Lessons Learned

- Awareness of time zone differences
- Resident MD training
- Time-line
  - Extend planning phase
  - Implement one bundle component at a time
- Variability of rounding practices
Sustainability

- Unit-based Physical Therapist M-F
- Administrative support
- Availability of equipment
- Spread to entire Children’s Hospital
- Culture change
- Participation in SCCM ICU Collaborative
ABCDEF Bundle Improvement Collaborative

- Society of Critical Care Medicine’s ICU Liberation Campaign
  - Quality improvement initiative
  - Includes 78 hospital ICUs
    - 69 adult
    - 9 pediatric
- Data collection
  - Pre Implementation: June-August
  - Post Interventions: September-Present

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Process Outcomes

Pain Scale Documentation

- 86% Correct Documentation
- 14% Incorrect Documentation

Sedation Scale Documentation

- 90% Correct Documentation
- 10% Incorrect Documentation
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Process Outcomes

**Completed 1:1 Education**

- September-October 2015: 63%
- November-December 2015: 95%

**Nurse Initiated Early Mobility**

- Nurse Initiated Early Mobility Occuring: 27%
- Nurse Initiated Early Mobility Not Occuring: 73%

**Delirium Assessments**

- Assessments Occuring: 45%
- Assessments Not Occuring: 55%
Measurable Outcomes

Percentage of Patients Seen by Skilled Physical Therapy

- June 2014-May 2015 (Baseline) 7%
- May 2015-April 2016 25%

PICU/PCICU Length of Stay

- June 2014-May 2015 (Baseline) 3.37 days
- May 2015-April 2016 2.65 days
Magnet Model
Ready, Set Go!

Questions??
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References