ICU Early Mobilization at UCSF

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Can We Do Better?


- “There appears to be significant potential for harm arising from the current ICU culture of patient immobility and an often excessive or unnecessary use of sedation. This is a culture that began for all the right reasons: to promote patient comfort, safety and respiratory synchrony while allowing intubation and mechanical ventilatory support for severe respiratory failure. But this culture has persisted despite emerging evidence that these practices may, alone or in combination with acute illness that precipitated the ICU admission, have important adverse consequences that may not be remediable over time.”
Presentation Objectives

- Define early ICU mobilization
- Review of patient functional decline related to an ICU stay
- Outline steps necessary to increase mobility of ICU patients
- Site evidence of benefits to patients, family members, and the medical center of early ICU mobilization.

Definition of Early ICU Mobilization

- Early defined as initial physiologic stabilization, continuing throughout ICU stay
- Initiating patient mobilization within 48 hours of patient admission to the ICU through:
  - ICU cultural shift toward mobility as necessity, not optional
  - Practice patterns of all ICU personnel emphasizing teamwork with mobilization
  - Optimizing the ICU environment to allow for patient mobility
    - Equipment
    - Sleep
    - Sedation

Functional Decline Related to ICU Stay

- Joint contractures - 39% of patients at ICU d/c after 2 week stay
- Delirium - 1 in 3 survivors experience long term cognitive decline
- Global profound weakness due to
  - Immobility, bed rest
  - Metabolic changes, catabolic effects of illness
  - Systemic inflammation
  - Medication side effects
  - Nutrition
  - Neuropathic changes

Intensive care unit-acquired weakness (ICUAW) can occur early in an ICU stay and persist for years after.
- An independent predictor of mortality
- A common problem (25-100% of patients on MV > 7 days)
- Patients from the ICU fall 3 times as often as those who had not been in the ICU
- 1 year after discharge, walking capacity 66% of predicted norm on 6 minute walk test, 49% return to work
Evidence of ICU Acquired Weakness


Evidence of ICU Acquired Weakness

- **Short term complications**

- **Long term complications**
Mobility is Medicine

- Health Benefits of Physical Activity:
  - Improves blood sugar homeostasis
  - Enhances cardiovascular function
  - Enhances endothelial function
  - Decreases chronic inflammation
  - Regulates hormone levels
  - Preserves musculoskeletal and neuromuscular integrity
  - Decreases depression and improves cognition


ICU Early Mobilization Requires

- Patients admit to ICU with activity as tolerated orders
- Easy prompts for initiating PT referrals are included in MD orders
- Majority of ICU patients receive consistent PT daily
  - 80% currently at Johns Hopkins Hospital and LDS Medical Center
Steps Taken at UCSF: Gathering Information- One Year

- Research articles
- Conferences
- Presenting the proposal in written and power point forms to both research and clinical groups of: RT, MD, PT, NP, Administration, and RN
- Staff meetings, informal meetings, scheduled meetings, CEO and COO office hours
- E-mail support from JHH and LDS
- Attending monthly critical care meetings with updates
- LDS site visit

Steps Taken at UCSF: Creating the Multi-discipline Team

- Clinical group and QI program chosen rather than research
- Director of Critical Care identified and proposed champions
- Executive Director of Service Lines Administration- fiscal project goal, our executive sponsor
- RT, PT, RN, NP Department Managers and Clinical Specialists
Steps Taken at UCSF: Location Choice

- 9 ICU chosen for presence of NPs, physical space
  - medicine, liver transplant, hematologic oncology, orthopedic, cardiac, general surgery patients
- 10 ICC unit serves as role model

Administrative Message: Established Early ICU Mobilization Program Financial Savings

- The preliminary projected business case for this was modeled after the success at Johns Hopkins
- IF UCSF experiences moderate success against the JHH QI results, we can expect:
  - >$500,000 direct cost savings
  - a reduction in ICU days across 57 cases of 264 days
  - a total hospital day reduction of 274 days
  - An average Hospital LOS reduction from 53.4 to 48.6
Clinical Message: Established Early ICU Mobilization Programs


- Randomised controlled trial of 104 patients on mechanical ventilation, intervention group received PT median of 1.5 days after intubation vs 7.4 days for controls.
  - Intervention group had:
    - less days of delirium
    - less days of MV
    - 59% of intervention group return to independent function at hospital d/c vs 35% in control group

Present a Compelling Case for the RN Groups
Barriers At this First Stage

- Sounds like a good idea, but:
  - I cannot add staff at this time
  - It’s too much work
  - The evidence is not conclusive enough
  - Verbal support without concrete follow up
  - Skeptical managers and Medicine clinicians
  - Practice patterns, protocols, communication, and documentation systems must be changed
  - Endless meetings, no start date

ICU Early Mobilization Started
March 1st, 2010 UCSF 9 ICU

- Full time Physical Therapy coverage 8 hours/day 5 days/week in 9 ICU
- Objective: referrals for physical therapy to start within 48 hours of patient admission to the ICU
- Objective: most ICU patients ambulating during their ICU stay
- Goal: patients wean ventilators faster, sleep better, experience less delirium, and leave the ICU sooner.
Motivational Stage- Before and After Start Date

- Announcing change to all the disciplines and medical/surgical services
- Approval for NPs to write all referrals for PT regardless of patient service
- A prompt in the MD order set
- Articles in RN news letters
- Change barrier policies
  - RN must accompany PT at all times
- Purchase new equipment
- E-mail updates weekly
- Monthly critical care meeting updates

Post-start Date Barriers- “It’s Not a Strength Issue.”

- Nervous or skeptical clinicians
- Minimal resources allocated
- Awkward equipment
- PT referrals still too late
- Unclear protocol
- PT in the ICU now a moderate priority rather than a last priority, but not a top priority
- Mobility prior to extubation is difficult concept for all
- Constantly rotating and changing personnel
- Variations in sedation practices
- New hospital and discharge course predictions required for ICU and floor personnel
Early Success Stories

- Two planned tracheotomies avoided
- Patients able to go to acute rehab and home rather than long term acute care facility
- Patients able to go home instead of to SNF

Early Success Stories

- Tremendous positive feedback from family members
- Reduced patient and family stress as a result
Future for ICU Early Mobilization

- Looking at our ability to prevent deconditioning as important as our ability to prevent skin breakdown, VAP, line infections
- Considering functional mobility and activity history as vital signs

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