Mobility in the Acute Care Setting: A Review of the Evidence  
September 26, 2013

Clinical Question: “What is the effectiveness of mobility best practices/strategies, including ambulation, for adult hospitalized patients on Medical/Surgical and Critical Care Units?”

Conclusions: Evidence exists supporting the use of targeted nurse-driven mobilization programs, strategies, and interventions and their positive impact on functional independence for hospitalized adults, particularly the elderly. However, conflicting and/or insufficient evidence exists regarding the effectiveness of these programs and their specific interventions on patient outcomes.

Key Summary of the Evidence:
- The hospital environment was designed for the rapid and effective delivery of care, not for enhancing patient function, including ambulation and mobility.
- Mobilization is a complex concept involving a goal-directed therapy to facilitate movement and varies widely in application, components, and timing.
- A universally accepted definition for early mobilization/activity does not exist.
- Mobility is the responsibility of the registered nurse; it is a fundamental and nursing-amenable intervention that requires specific nursing knowledge and skill to apply effectively.
- An interprofessional collaborative team approach is essential for the success of evidence-based mobility programs and the complex multidisciplinary care required by the adult hospitalized patient.
- Early mobilization models and programs can assist nurses and assistive staff in progressively mobilizing patients, assessing and identifying at risk patients, prevent complications associated with immobility, and positively impact patient outcomes, including improved functional status and overall quality of life (See Bassett et al., 2012 and Perme & Chandrashekar, 2009, for Mobility Program models; See Basset et al., 2012 for staff learning model).
- Barriers to progressive mobilization include time/labor constraints, patient/nurse safety issues, and a lack of education, staffing, and assistive equipment.
- Computerized mobility orders and establishment of a mobility nursing protocol was associated with an increase in number of mobility orders entered, as well as an increase in patient activity.
- There was conflicting and/or insufficient evidence regarding the effectiveness of mobility/exercise programs and their specific interventions on patient outcomes, including delirium, muscle strength/function, deep vein thrombosis rates, ventilator-associated pneumonia rates, stroke rehabilitation, functional status at ICU or hospital discharge, and hospital or ICU length of stay.
- Culture change from the unit level to the hospital level may be required before early mobilization and ambulation activities can be fully implemented within a safe patient environment.

Key Elements/Features of Successful Mobilization Intervention Programs:
- Baseline and ongoing assessment of risk factors
- Protocols aimed at improving self-care, continence, nutrition, glycemic control, mobility, ambulation, sleep, skin care, and cognition
- Daily rounds with a multidisciplinary team
- Protocols to minimize adverse effects of selected procedures (e.g., urinary catherization; spontaneous breathing trial) and medications (e.g., sedative, analgesia, hypnotic agents; sedation interruption) and limit the use of mobility restrictors (lines, tubes, and restraints)
- Environmental enhancements, including handrails, uncluttered hallways, large clocks and calendars, elevated toilet seats, and door levers
- Encouraging mobilization during hospitalization

Recommendations: Based on the evidence, the following recommendations are offered for consideration:
- Utilize a continuum model of care in which patient mobilization is a priority, collaborative teamwork is valued, and mobilization outcomes are consistently measured.
- Collaboratively shift organizational culture and overcome barriers by designing innovative evidence-based mobilization models and programs that include computerized mobility order sets and nurse-initiated, nurse-driven mobility strategies, procedures, protocols, and guidelines.
- Incorporate early ambulation as a nurse-driven intervention.
- Maintain an environment free of obstacles that would reduce patient mobility and ambulation.
- Assess risk for functional decline and mobility readiness immediately following hospital admission and on a daily basis to (a) determine functional status and (b) formulate targeted strategies such as advancement within progressive mobility protocols, structured exercise, progressive resistance strength training, and walking programs.
- Common terminology that is understood by all healthcare providers is needed to consistently define key phrases and words associated with mobilization programs.
- Design and conduct quality research studies to provide definitive data on the clinical, cultural, and financial impact of integrated progressive mobility programs, as well as establishing optimal dosing of early mobilization.
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Definitions:

• **Early Mobilization**: Minimally able to participate with therapy, has a stable hemodynamic status, and is receiving acceptable levels of oxygen\textsuperscript{12}. Involves movement out of bed with change from horizontal to upright position for at least 20 minutes during first 24 hours of hospitalization, with progressive mobilization on each subsequent day\textsuperscript{11}

• **Independent Functional Status**: Ability to perform activities of daily living (ADLs) (eating, dressing, bathing, toileting) and walk independently\textsuperscript{10,13}

• **Medical Stability**: Sufficient perfusion to maintain normal organ function, as determined by heart rate, mean arterial pressure, fraction of inspired oxygen, and oxygen saturation\textsuperscript{12}

• **Progressive Mobility**: A series of planned movements in a sequential manner beginning at a patient’s current mobility status with a goal of returning to his/her baseline (©Advancing Nursing LLC)\textsuperscript{14}

**Evidence Search Strategies:** An evidence review on the selected clinical topic was conducted in October 2012 to determine the quantity and consistency of the evidence. This review examined the effectiveness of mobility strategies for adult hospitalized patients on medical/surgical and critical care units. A closed year (2005-2012) and an open year review of the evidence was conducted via PubMed, Ovid, Proquest (including Joanna Briggs Institute), Science Direct, and Cochrane Library electronic databases, as well as Institute for Healthcare Improvement (IHI), Agency for Healthcare Research and Quality (AHRQ), American Association of Critical Care Nurses (AACN), and Academy of Medical/Surgical Nurses websites. Search terms used were “mobility”, “adults”, “hospitalized adults”, “medical/surgical”, “intensive care”, “critical care”, “ambulation”, “early ambulation” (MESH term), “early ambulation”, “mobility,” and “early mobilization”, either alone, mixed, or in combination. The key term “ambulation” could not be separated from the key term of “mobility”, as mobility protocols include ambulation with other types of progressive mobility activities. The key term of “deconditioning” yielded little-to-no results. The October 2012 review yielded 19 relevant hits with 6 duplicates, for a total of 13 articles. A second open year database search was conducted via PubMed alone in August 2013 for additional evidence, using the search terms of “acute care”, “ambulation”, and “best practices.” The August 2013 search yielded 1 relevant hit that was a manuscript of a protocol contained in the 2012 search; the protocol was eliminated from this review. Two additional sources were located via reference links. A total of 15 relevant articles were selected for inclusion (See Electronic Database Search Methodology, Pages 8,9,10).

The articles were ranked using the CCRES Evidence Leveling System (See Page 11) and included a concept analysis, three performance improvement projects, three evidence reviews, two literature reviews, five research studies, and the California Nursing Practice Act Business Professions Code section. Result limitations include a lack of research studies, small sample sizes, lack of statistical power, considerable variations in evidence methodology yielding inconsistent results, possible article selection bias, and lack of a universal definition for early mobilization or activity. However, the information presented in this review provides the best available evidence to date for clinicians designing policies, procedures, protocols, and other strategies related to ambulation and mobility programs for the adult hospitalized patient.
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Reference List


## Mobility in the Acute Care Setting: A Review of the Evidence

**September 26, 2013**

### Electronic Database Search Methodology

**Literature search topic:** Mobility strategies for adult hospitalized patients on Medical/Surgical and Critical Care Units

**Date:** October 29, 2012

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### September 26, 2013

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**Literature search topic:** Mobility/ambulation best practices/strategies for adult hospitalized patients

**Date:** August 30, 2013

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**Reference/Contextual Links #1** (*Additional articles/information found in references lists and/or article review*)


**Reference/Contextual Links #2** (*Additional articles/information found in references lists and/or article review*)


1 article excluded (Protocol example from 2012 search; article found in 2013 search)

Total References Included in Literature Review: Database (14) + Contextual Links (2) = 16

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Inclusion/Exclusion Criteria; Search Notes; Key Terms; Key Term Notes on Next page

**Inclusion Criteria:** Adult hospitalized patients, Medical/Surgical Units, Critical Care Units, mobility programs and/or strategies/interventions

**Exclusion Criteria:** Pediatric patients, adult patients not on Medical/Surgical Units or Critical Care Units, oxygen weaning protocols, non-acute care environment, physical therapy-focused mobilization

**Search Notes:** Exact search strings were unable to be used between databases. Some databases were unable to support the complex nature of search term combinations. Simpler and more open search terms and combinations were used in an effort to capture the requested literature. The website for the Academy of Medical Surgical Nursing did not have a search function.

**Key Terms:** Mobility, functional mobility, ambulation, early mobilization, best practices, deconditioning, adult, acute care, medical/surgical, critical care, intensive care, length of stay

**Key Terms Notes:** The key term of “ambulation” was used, as the search term ambula* retrieved literature pertaining to the ambulatory healthcare setting. The key term “ambulation” could not be separated from the key term of “mobility”, as mobility protocols include ambulation with other types of progressive mobility activities. The key term of “deconditioning” yielded little-to-no results. However, this term was used for determining the relevance of an article, as was length of stay and functional mobility.
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CCIRES® Evidence Leveling System (ELS)
Adapted from AACN Evidence Leveling System (2009) and Canadian Medical Association & Centre for Evidence-Based Medicine, Levels of the Evidence (2001)

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<td>Well-designed controlled studies, both randomized and nonrandomized, prospective or retrospective studies, and integrative reviews with results that consistently support a specific action, intervention, or treatment</td>
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<td>D</td>
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<td>Theory-based evidence from expert opinion or multiple case reports, case studies, consensus of experts, and literature reviews</td>
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* A large sample has adequate power to detect the observed effect with confidence (as seen in significant Confidence Intervals). A small sample may lack confidence in the power of the desired effect (Polit & Beck, 2008)

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Adapted from AACN Evidence Leveling System (2009) and Canadian Medical Association & Centre for Evidence-Based Medicine, Levels of the Evidence (2001)

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