

The association between bathing and weaning trial duration

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ABSTRACT

OBJECTIVE: To describe patterns of bath care for patients who are weaning from prolonged mechanical ventilation (PMV) and to explore the association between bathing and weaning trial duration.

METHODS: Descriptive correlational study. Clinical records from 439 weaning trial days for 30 patients who required PMV were abstracted for bathing occurrences during weaning trials, within 1 hour before a trial, and nocturnally.

RESULTS: Most baths occurred during weaning trials (30.8%) or at night (35.3%), and less frequently (16%) within 1 hour before a trial. No significant effects were found on trial duration for nocturnal bathing or bathing within 1 hour before a trial. By using random coefficient modeling, weaning duration was shown to be longer when bathing occurred during a weaning trial ($P < .05$), even when controlling for age, severity of illness, and days on bedrest.

CONCLUSION: Bathing occurred during approximately one third of PMV weaning trials. Baths during PMV weaning trials were associated with longer weaning trial duration.

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Bathing is a fundamental and socially significant nursing care activity.^{1,2} Nurses are responsible for planning and implementing daily care activities for

patients who are weaning from prolonged mechanical ventilation (PMV); however, there is little research describing best practices for bathing in relation to

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ventilator weaning trials. Oxygen consumption and energy expenditure during bathing may affect the success or duration of a ventilator weaning trial. Bathing may be delayed to conserve energy for weaning trials or, conversely, as a ritualized care practice, may be a relatively fixed activity. This aspect of critical care clinical practice requires systematic investigation to make nursing care of patients who are weaning from PMV more visible and to provide evidence regarding the effect of bathing on PMV weaning trial duration.

Our preceding qualitative investigation of bathing practices during weaning from PMV confirmed the importance of the bath as a fundamental nursing intervention that is highly valued by critical care nurses and family members.³ The qualitative findings showed a general lack of consensus among intensive care unit (ICU) clinicians about the preferred timing or impact of baths during weaning trials. Observations of the weaning process did not show that bathing activity had an obvious positive or negative impact on the duration of PMV weaning trials, nor could we determine how prevalent the practice of bathing patients during PMV weaning trials actually was. Other qualitative reports show that depending on nurses, minimizing breathlessness, and pacing or curtailing body care activities are critical strategies used by nurses and hospitalized patients with severe respiratory disease during bathing and personal body care.^{4,5} Both patients and nurses endorse the importance of reducing or balancing energy demands during weaning from mechanical ventilation.^{6–8} Nurses interviewed in Jenny and Logan's⁶ classic study reported using knowledge of the patient to tailor their interventions to manage each patient's energy resources, including reducing energy demands during weaning and coordinating the patients' activities. Although descriptive studies of mechanical ventilator weaning emphasize balancing work and rest, bathing during ventilator weaning trials or timing of bathing activities for patients who are weaning has not been specifically addressed.

Balancing work and rest may require nurses to control the timing of bathing activities in relation to the ventilator weaning trial. Tamburri and colleagues⁹ observed that a high proportion (62%) of routine daily baths were performed between 9:00 P.M. and 6:00 A.M. in ICUs. Their finding that more than one third (56/147; 38%) of daily baths occurred between 2:00 and 5:00 A.M. suggests that a patient's sleep is frequently disrupted for the performance of hygiene care. There are no studies in the literature that specifically address the outcome of various bathing times (before ventilator weaning trial, during weaning trial, or nighttime bathing) or the impact of bathing on duration of mechanical ventilation weaning trials.

Past research suggests that most critically ill patients recover fairly quickly from the physiologic effects of bathing and that the energy expenditure during bathing is not excessive. Bed baths and turning result in a transient decrease in mixed venous oxygen saturation (SvO₂) and variable effects on blood

pressure in critically ill patients.^{10–14} Studies of activity in critically ill patients demonstrate relatively low levels of energy expenditure during a bed bath.^{15,16} Decreases in SvO₂ of 9% to 13% can be expected after bathing or turning with less of a decrease during the bathing phase.^{10,17} The greatest decrease in SvO₂ was associated with bed baths in mechanically ventilated patients on high inspired oxygen concentrations (F_{IO₂}) and positive end-expiratory pressure settings.¹¹ Physiologic recovery from bathing and turning is usually relatively rapid, ranging from 3 to 16 minutes.^{10–12,14,18} No benefit was gained from the addition of a 10-minute rest period between bathing and turning phases of a bed bath in hemodynamically stable patients following coronary artery bypass grafting.¹⁰ Unfortunately, physiologic studies of bathing have not been conducted during ventilator weaning trials or in patients who have experienced prolonged (>4 days) critical illness and mechanical ventilation.

A previous literature review suggested that age, severity of illness, and prolonged time on bed rest may be important factors influencing patient response to bathing and position changes during acute and critical illness.¹⁹ We were unable to identify any studies that attempted to determine the impact of the bath on duration of weaning trials in patients who required PMV.

There has been increasing attention to mobility interventions to improve outcomes in patients on PMV with evidence that activity and exercise can be feasible, safe, and effective in improving short-term functional outcomes and achieving earlier discharge for patients experiencing PMV.^{20–25} Early activity studies and exercise protocols do include parameters regarding exercise during spontaneous breathing trials (eg, not until patients have achieved 4 hours of spontaneous breathing) or guidelines to increase F_{IO₂} concentrations during these activities.^{20,22} Yet, the research literature provides no such guidance for "activities of daily living," such as bathing.

In summary, qualitative studies identify significant concern about bathing and other energy-expenditure activities in relation to balancing work and rest during weaning from mechanical ventilation. However, prior physiologic studies suggest that critically ill patients recover fairly quickly from the physiologic effects of bathing and that energy expenditure during bathing is not excessive. Daily timing of baths during critical illness is variable, with nighttime bathing a frequent practice pattern. Patient demographic and clinical characteristics (eg, age, duration of critical illness, and severity of illness) may influence whether nurses bathe patients during the weaning trial.

In follow-up to our qualitative study of bathing practices and beliefs during weaning from PMV, available clinical record data were quantitatively examined to determine how often nurses bathed patients during PMV weaning trials and whether bathing patients before, during the weaning trial, or at night influenced the duration of weaning trials.

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