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Major Article

A descriptive study of bathing practices in acute care facilities in the United States

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Background: Patient bathing basins are a potential source of health care–acquired infections. This descriptive study was designed to describe current patient bathing procedures and the cleaning and storage of disposable bath basins after use.

Methods: After instrument validation, a 20-item questionnaire designed by the researchers was delivered electronically to infection prevention professionals working in acute care facilities in the United States. Descriptive statistics including frequencies and percentages were used to analyze the data.

Results: A total of 344 participants completed the survey. Of those responding, most were employed in facilities with ≤300 beds and accredited by the Joint Commission. Many of the facility staff assisting patients with bathing were nursing aides. Participants reported varying bathing procedures in their facilities.

Conclusions: A collaborative approach is needed to ensure standard and efficient procedures that focus on quality, safety, and patient satisfaction. A mechanism to continually evaluate patient bathing practices should also be developed to address evolving changes in the health care system.

BACKGROUND

Basins used for patient bathing have been identified as a potential source of infection. The Centers for Disease Control and Prevention reports that health care–associated infections (HAIs) "are a major, yet often preventable, threat to patient safety."[1] Every year in the United States, approximately 5%-10% of hospitalized patients contract an HAI.[2] Johnson et al[3] conducted a study in 3 acute care hospitals with a total of 897 beds and found that 98% of all basins sampled were contaminated with some type of microorganism. These microorganisms included species such as enterococci, *Staphylococcus aureus*, vancomycin-resistant *Enterococcus*, methicillin-resistant *S aureus, Pseudomonas aeruginosa*, *Escherichia coli*, and *Candida albicans*. In a much larger multicenter trial including 87 hospitals, Marchaim et al[4] noted that 62.2% of patient bathing basins sampled were contaminated with hospital-acquired pathogens, and at least 1 basin at each hospital harbored bacteria. These investigators called for limited use of bathing basins in patient care because they were not routinely replaced and were used for other tasks such as incontinence cleaning, emesis collection, and storage of equipment and supplies. In addition, they suggested that health care providers handle bath basins with the same precautions as caring for patients with known multidrug-resistant organisms. Thus, evidence supports the need for the development and adoption of procedures in the use of bath basins that reduce the exposure of patients and health care providers to infection.

One of the strategies to reduce patient exposure to microorganisms during bathing is the use of single-use prepackaged, premoistened, rinse-free disposable washcloths instead of bath basins.[5] Evidence suggests that the use of chlorhexidine gluconate (CHG) baths prevents HAIs[6] and may be a useful tool when combined with other interventions, such as education related to insertion and removal of devices and checklists.[7] A limited number of randomized controlled trials conducted in critically ill patients with varied methodologies yielded mixed results. Noto et al[8] compared the use of 2% chlorohexidine cloths with nonantimicrobial cloths and found no significant reduction in HAI rates. However, Climo et al[9] noted a 23%

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reduction in multidrug-resistant organisms, and Milstone et al[10] also reported a reduction in bacteremia. In another study where 2% chlorohexidine was evaluated versus soap-and-water baths, Swan et al[11] reported a 44.5% decrease in HAIs in a surgical intensive care unit, and Milstone et al[10] also reported a lower incidence of bacteremia in critically ill children. On the basis of these and other limited randomized trials, findings suggest that 2% chlorohexidine cloths and nonantimicrobial cloths may be better than soap-and-water baths in reducing HAIs.

Bathing cloths and cleansing agents are one piece of a multifaceted procedure of patient bathing. Other bathing-related factors that must be considered include the recommended number of cloths to use per patient body area and the order in which the body parts are bathed. Eigsti[12] identified a lack of standardization with bathing products or a procedure for bathing. This finding is puzzling in light of the fact that fundamentals of nursing textbooks include detailed procedures.[13,14] In terms of the bathing procedure, Massa[15] described a protocol for bathing a patient, including diagrams; however, the cleansing agent was the Oasis bed bath system (Synergy Health, Tampa, FL)—a single-use, non-CHG, disposable wipe.

In health care facilities where disposable bath basins are used, the cleaning, storage, or disposal of the basin must also be considered. Powers et al[16] studied the use of CHG in decontaminating bath basins after use and found that bacterial growth in basins decreased significantly. It is evident that a procedure for bathing patients that reduces the incidence of bacterial infections is an issue in need of additional investigation. More research is necessary to determine the benefit of bathing with single-use nonantimicrobial bathing cloth versus a 2% CHG cloth and the advantages of decontaminating bath basins. Several studies have already been conducted in intensive care units, but more studies are needed to determine the evidence for incorporating changes in bath basin procedures across all hospital populations.[3,8,16]

This nationwide descriptive study in acute care facilities was designed to (1) describe current patient bathing practices, (2) determine procedures and products used in bathing patients, and (3) describe procedures used for cleaning and storage of bath basins after use. These data are necessary in establishing a baseline for current practices to propose a standardized procedure for patient bathing.

METHODS

Sample

The study used a survey questionnaire to collect descriptive data about bath basin procedures in acute care hospitals throughout the United States. The subjects were members of the Association for Professionals in Infection Control and Epidemiology (APIC) working in acute care facilities in the United States. Facility representatives were invited to participate in the study via an email on the APIC listserv list. The request contained a letter explaining the study, an informed consent document, and a link to the study questionnaire using Qualtrics software (Qualtrics, Provo, UT). Two reminder emails were sent via the APIC listserv at 3- and 5-week intervals to increase participation.

Instrument development and testing

A 20-item questionnaire was designed by the researchers for this study. The first step in questionnaire development included a comprehensive literature search to assess bathing procedures and practices in acute care facilities in the United States. Information obtained from the literature review guided the development of the initial questionnaire. The questionnaire was designed to elicit data regarding the demographics of the participating acute care facilities and the bath basin practices used in those facilities.

To establish content validity, the initial questionnaire was sent to a panel (n = 9) of epidemiology and infection control experts to review for clarity, content, and relevance. The review panel was selected based on their work in infection control in acute care facilities. Eight surveys (89%) were returned with suggested comments for improvement. The questionnaire was revised based on suggestions of the expert panel members.

The final step in questionnaire development included a convenience sample of 12 nurses in acute care settings who participated in a 2-phase pilot test to determine reliability. The questionnaire was given to the nurses on 2 occasions, 10 days apart. To determine the stability reliability of the questionnaire, Pearson correlations for the subscales were bathing procedures and practices (r = 0.60) and bath basin storage (r = 0.63), $P < .05$. The final questionnaire was composed of both open- and closed-ended questions, with 2 items allowing participants to select multiple responses. Demographics were also collected to categorize the participating acute care facilities by number of beds; Joint Commission accreditation status; and affiliation as for-profit, nonprofit, religious, or governmental organizations.

Ethical considerations

The institutional review board at Western Kentucky University approved this study. Facility representatives were invited to participate in the study via an email on the APIC listerv list, which enhanced confidentiality and anonymity of the participants. The invitation contained a link to the study questionnaire using Qualtrics software. Informed consent information was sent electronically with the invitation, and completion of the questionnaire was considered implied consent.

Data analyses

Data were entered and analyzed using SPSS statistical software version 24 software (IBM, Armonk, NY). Descriptive statistics including frequencies and percentages were used to analyze the data.

To be able to generalize the findings, 345 (5% margin of error, 95% confidence level) participants were needed.[17] The survey was sent to 3,300 acute care APIC members to increase the response rate.

RESULTS

A total of 344 APIC members responded to the survey. Most participants were infection prevention personnel (96.4%). Participants primarily were employed in facilities with ≤300 beds (62.2%); 201 (78.2%) of these facilities were accredited by the Joint Commission (Table 1).

Table 1
Characteristics of facility and representatives

Item	No. (%)*
Number of beds (n = 148)	
≤300	92 (62.2)
301-600	46 (31.1)
601-1,000	10 (6.8)
Joint Commission Accredited (n = 257)	
Yes	201 (78.2)
No	56 (21.8)
Representative (n = 306)	
Staff nurse	3 (1)
Infection prevention personnel	295 (96.4)
Administrator	4 (1.3)
Other	4 (1.3)

*Valid percentage reported.

Table 2
Bathing procedures

Item	No. (%)*
Who typically assists with bathing? (n = 306)	
SRNA (CNA)	269 (87.9)
LPN	9 (2.9)
RN	28 (9.2)
When is the first bath given? (n = 262)	
On admission	10 (3.8)
Morning after admission	164 (62.6)
Within X hours of admission	25 (9.5)
Other	63 (24)
When is a full bath given? (n = 266)	
Daily	189 (71.1)
As needed	62 (23.3)
Other	15 (5.6)
Is antiseptic used in the bath water? (n = 245)	
Yes	34 (13.9)
No	211 (86.1)
Is a new cloth/wipe used for each body part? (n = 264)	
Yes	213 (80.7)
No	51 (19.3)
Are disposable wipes used for bath basin bathing? (n = 253)	
Yes	92 (36.4)
No	161 (63.6)
Are there differences related to the medical diagnosis? (n = 276)	
Yes	121 (43.8)
No	155 (56.2)
Are there differences related to the type of unit? (n = 272)	
Yes	157 (57.7)
No	115 (42.3)
Do patients with central lines receive CHG baths? (n = 266)	
Yes	154 (57.9)
No	112 (42.1)

CHG, chlorhexidine gluconate; *CNA*, certified nurse aide; *LPN*, licensed practical nurse; *RN*, registered nurse; *SRNA*, state-registered nurse aide.
*Valid percentage reported.

Most facility staff assisting patients with their bathing were state-registered nurse aides (SRNAs) or certified nurse aides (CNAs) (87.9%). More than one-half of the patients received their first bath the morning after admission (62.6%), and subsequently most were given a full bath daily during hospitalization (71.1%).

Participants reported varying bathing procedures in their facilities. Antiseptic solutions were rarely added to the bathing water of patients (13.9%). A greater number of participants reported that new washcloths and wipes were used for each body part bathed (80.7%). In addition, about one-third of the participants reported using disposable wipes in bath basin bathing (36.4%; Table 2).

Slightly less than half of the participants (43.8%) indicated there were differences in bathing procedures by medical diagnosis. Differences were also reported in bathing procedures by unit; however, these differences were not statistically significant ($\chi^2 = 1.96$; $df = 1$; $P > .05$). Patients with central lines were bathed daily (97.8%), and most of these patients received a CHG bath (57.9%). Similarly, 75.4% of the participants reported that some patients were bathed with bath in bags and wipes with no CHG.

About one-half of the participants reported that their facilities used disposable bath basins (50.7%). Most facilities had no standardized procedures for cleaning bath basins (74.8%). Some facilities used paper towels to wipe bath basins to eliminate standing water (18.3%) and others cleaned them with antiseptic spray (19.2%), whereas a few wiped basins with a washcloth to dry (10.8%). Patient personal care items were stored in bath basins in more than half of the facilities (58.3%). Participants were asked about storage procedures for bath basins. About one-half of the participants (48.3%) reported that bath basins were stored in the patients' room or bathroom. Despite short hospital stays, bath basins may be a reservoir for HAIs because 58% of the participating facilities did not discard bath basins within a specific time frame (Table 3).

Table 3
Bath basin usage

Item	No. (%)*
Are disposable basins used? (n = 306)	
Yes	155 (50.7)
No	151 (49.3)
Is there a standard procedure for cleaning? (n = 262)	
Yes	66 (25.2)
No	196 (74.8)
Are basins used for storage of personal items? (n = 254)	
Yes	106 (41.7)
No	148 (58.3)
Are basins discarded after a specific time frame? (n = 241)	
Yes	99 (41.1)
No	142 (58.9)

*Valid percentage reported.

DISCUSSION

This descriptive study was facilitated through APIC. Most participants were infection prevention personnel at Joint Commission–accredited acute care facilities. Researchers focused on Joint Commission–accredited facilities because the Joint Commission is the longest-established accrediting body. The findings of this study indicate that multiple bathing procedures are used in acute care facilities. It was common for patients to receive their first bath the morning after admission and receive baths daily with no antiseptic in the bath water. A new washcloth was used for each body part cleansed, and approximately one-third of the respondents used disposable wipes. This information is consistent with the current body of knowledge on this topic.[12,18]

It was also noted there was no standard procedure for handling of disposable bath basins. About one-half of the participants reported that disposable bath basins were used in their facility, used for personal care storage, and discarded after a specific time. Three-fourths of the participants indicated that there was no standard procedure for cleaning the basin. These findings provide an opportunity for increased HAIs, as noted in several research studies.[3,4,9] Because of the increased occurrence of HAIs and resistant microorganisms, there is indication that standardized procedures for handling disposable bath basins are warranted. In addition, further studies should be conducted on the use of bathing products such as CHG and whether doing so increases the incidence of fungal infections.

No consistent procedure for patient bathing or bath basin use was identified in this study. Since bathing procedures were first introduced, health care has changed dramatically, but it appears that patient bathing has not kept pace. One must question whether the nursing curriculum for patient bathing taught to registered nurses and SRNAs and CNAs is updated to meet the demands of the changing health care system. With the current nursing shortage and the acuity level of patients, time is limited to provide the traditional patient bath. In addition, there is great concern about exposing patients to infection, especially with resistant microorganisms. It is also questionable whether patients should be bathed daily in acute care hospitals, especially for short stays, because daily bathing could potentially increase the spread of infection. It is also very important to keep in mind that patients should be involved in the decision for bathing or not and the type of bath.

Strengths of this study included validation of the instrument used in this study through pilot testing with experts, sample recruiting by APIC, and the anonymity of the results. Geographic area was not included in the demographics; therefore, it is unknown whether the results are widespread geographically. However, not including this information further protected the anonymity of the respondents. In addition, 96% of the respondents were infection control personnel

who would have expertise in microorganisms and hospital procedures leading to HAIs. However, with 88% of SRNAs and CNAs providing hygienic care, there may be a discrepancy between those with infectious disease knowledge and those providing direct patient care. The low response on some of the items is a concern because it is not known whether the respondents were unaware of the bathing procedures in their facility, if the procedures were not being followed, or if some other extraneous variables affected the results. As a result, the tables indicate the number for each item, and a valid percentage was reported. Furthermore, there is a possibility that >1 survey was completed per facility considering that the APIC membership listserv was used to distribute the survey.

CONCLUSIONS

Bath basins are potential reservoirs of microorganisms associated with HAIs. Although there are no current studies that cite evidence to conclusively support that the use of bath basins are a direct cause of HAIs, a multifaceted approach is needed to address patient bathing challenges by developing procedures that focus on quality, safety, and patient satisfaction. Collaborative efforts involving infection preventionists and the staff providing patient bathing are needed to create a standard, feasible, and efficient bathing procedure. A mechanism to continually evaluate bathing procedures should also be established to ensure that procedures are current based on emerging changes in the health care system.

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