





## Concise Communication

# Bad habits that stick: adhesive tape use practices and beliefs

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### Abstract

Tape rolls are often used for multiple patients despite recommendations by manufacturers for single-patient use. We developed a survey to query Health Care Personnel about their tape use practices and beliefs and uncovered behaviors that put patients at risk for hospital-acquired infections due to tape use.

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### Background

Medical tape is ubiquitous in healthcare settings. Although tape is advertised by manufacturers as a single-patient-use item, half-used rolls are common. Pathogens such as Methicillin Resistant Staphylococcus Aureus, Vancomycin Resistant Enterococcus, and Rhizopus have been reported to contaminate tape rolls.<sup>1</sup> The evidence for tape contamination leading to hospital-acquired infection (HAI) is limited to case reports, including cutaneous infections from Rhizopus or mucormycosis associated with tape securing nasogastric tubes,<sup>2–5</sup> as well as reports where culture data were unavailable or inconclusive.<sup>6,7</sup>

Despite infection risks, there is a lack of standardization for proper tape use across institutions<sup>8</sup>. Currently, the only clinical guidelines for tape use are outlined in the Centers for Medicare & Medicaid Services guidance for hemodialysis patients issued in 2008 which states that “tape should be dedicated to a single patient and discarded after use” as hemodialysis patients are at increased risk of infection.<sup>7,9</sup>

At our institution, we have anecdotally observed rolls of tape being used for multiple patients and stored in nonstandard locations such as Health Care Personnel (HCP) pockets, threaded onto stethoscopes. We aimed to document tape use behaviors that were not single-patient use and uncover current HCP beliefs about acceptable tape use practices.

### Methods

This was a single-center observational study at Baystate Medical Center (BMC) in Springfield, Massachusetts. BMC is a 746-bed

urban academic medical center with a catchment area of 800,000 patients. The project was reviewed by the Baystate Institutional Review Board, it was deemed to be not human subjects research.

We designed a survey (available in Supplementary Material) with our team of hospital epidemiologists and infection preventionists (IPs) to understand current tape use practices and beliefs. 20 questions were included utilizing open questions, yes/no questions, frequency scales, and Likert scales. The survey was piloted on multiple units for calibration/accuracy of the questions. Eleven surveyors consisting of IPs, a research assistant, and a medical resident administered the survey in person. We aimed to survey a day shift convenience sample of 3 nurses, 3 nursing assistants, and 3 miscellaneous HCPs in each unit at BMC. All units were surveyed (n=61), and 254 surveys were performed.

### Results

#### Surveys

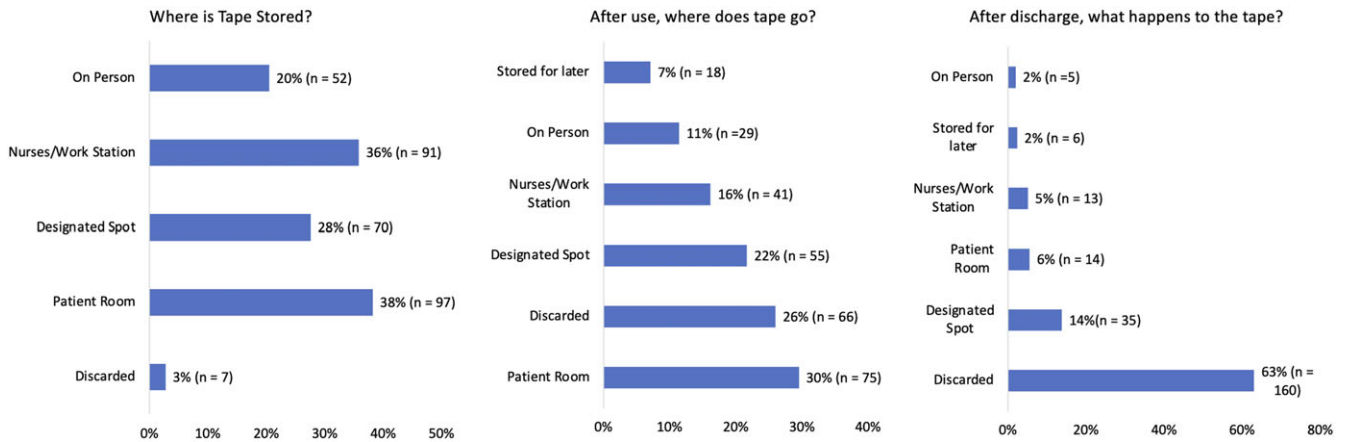
A total of 38% of responses were from HCPs on hospital (med/surg) floors, 19% were from procedural areas (defined as operating rooms (OR) and the emergency department (ED)), and 13% were from critical care settings (medical ICU, surgical ICU, neonatal ICU, etc.). The remaining 30% of responses came from ambulatory areas such as the infusion center and lab area (6%), Obstetrics/Gynecology, Labor and Delivery floors/ORs (3%), and radiology which included interventional radiology (3%), wound care (1%), and dialysis (1%).

Of the HCPs who responded to the survey, a total of 49% of respondents were nurses and 26% were nursing assistants. The remaining 25% of respondents were techs from different departments (ED, radiology, etc.) (8%), physicians of all levels (5%), specialized nurses (IV nurses, rapid response nurses, etc.) (5%), Advanced Practice Providers (2%), and students (1%).

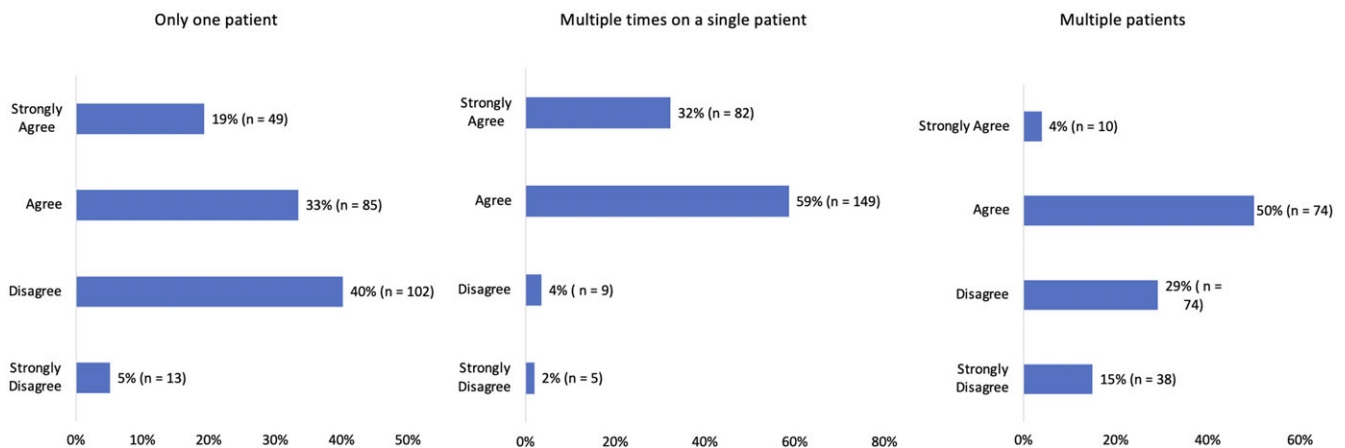
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**Figure 1.** Tape storage by question. Left: “Where do you keep a roll of tape once it leaves the clean supply room?” Middle: “What do you do with the roll of tape after you are finished using it for patient care?” Right: “Once a patient is discharged, what do you do with tape from their room?”.



**Figure 2.** Tape use beliefs. Left: “I believe a roll of tape can be used for only one patient.” Middle: “I believe a roll of tape can be used multiple times on a single patient.” Right: “I believe a roll of tape can be used on multiple patients in a given shift.”

### Tape roll storage

We asked a variety of questions to understand the path of adhesive tape after leaving the clean supply area, represented in Fig. 1. For tape storage, once it left the clean supply area, most HCPs reported storage in patient rooms (38%), nurses’ stations/mobile computers (36%). For tape storage after use on a patient, most HCPs reported storing tape in patient rooms (30%). For storage of tape rolls on discharge, most HCPs reported discarding the roll (63%). Other locations where tape rolls were reportedly stored were on HCP’s person, a designated spot (i.e., tape drawer, tape bin) or stored for later in various locations such as (i.e. in a backpack or in a locker).

### Tape use beliefs

Fig. 2 shows responses for beliefs about acceptable tape use practices. For using tape rolls for only one patient, half agreed with this practice (52%). For whether tape should be used multiple times for a single patient; almost all HCPs agreed with this practice (91%). For the use of a single tape roll for multiple patients (another way of asking if tape should be used for only one patient); more than half agreed with this practice (54%).

### Discussion

We uncovered extensive behaviors and beliefs indicating that tape is not being treated as a single-patient-use item, including frequent reports of tape being consistently stored outside of patient rooms (18%–83% depending on how the question was asked) and 63% of HCP reporting discarding tape rolls on discharge. We also discovered that >50% of HCPs believed tape rolls could be used for multiple patients.

The only previous study to investigate tape use was published McCluskey et al (2015). They surveyed IPs (n=16) in a single state and found that 43% reported their institution discarded unused tape upon discharge and tape was stored in a variety of locations. Our study differs from McCuskey in that we directly surveyed HCPs across the spectrum of care in both inpatient and outpatient settings about their actual use of tape. It was similar in that there were a variety of storage practices across different units within our single institution.

Risk for tape contamination has been described, especially as it relates to tape storage practices,<sup>1,6–9</sup> but the mechanisms by which tape contamination leads to risk of HAIs are less delineated. Previous studies examining tape’s role in HAIs have identified tape used for securing nasogastric tubes as being associated with

HAIs.<sup>3–5</sup> Whereas high-risk patients who require tubes to be secured with tape may be at highest risk of HAI from tape, HAI risk or colonization with a Multi-Drug-Resistant Organism (MDRO) may be present for any patient-care activity that requires tape.

A standard roll contains 10 yards of tape, which is significantly more than the 1.5 yards necessary for most medical applications.<sup>10</sup> Transitioning to single-use rolls which contain 1.5 yards or standardizing the practice of discarding each 10-yard roll after use on a single-patient are proposed solutions to decrease HAI risk.<sup>1,4,10</sup> The financial and environmental impacts of implementing either of these solutions are important considerations that should be addressed in future studies.

Our study had several limitations. Although we documented widespread practices that could increase the risk of pathogen inoculation on tape rolls and potentially put patients at risk of HAIs, it was beyond the scope of the study to collect culture data or correlate behaviors to actual HAIs. Our study is also limited in that it was performed at a single center; thus our findings may not be generalizable.

With the risk of HAI or colonization with MDRO from improper tape use present but with uncertain impact,<sup>1,6,8,9</sup> the unclear financial implications of practice change, and the barrier of overcoming HCP beliefs about acceptable tape use practices; we propose switching to single-use tape rolls (1.5 yards) in high-risk units such as critical care, transplant, and oncology floors. We suggest addressing education and culture change efforts for remaining hospital areas to encourage single-patient tape roll use. We propose these as feasible first steps to decrease the risk from improper tape use and comply with manufacturing recommendations. We also encourage further studies to determine the risk of non-single-patient adhesive tape use practices and the financial impact of changes in practice.

**Supplementary material.** The supplementary material for this article can be found at <https://doi.org/10.1017/ice.2024.175>

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