

The dirty truth about tape.

Making the case for single use tape
as the clinical standard.

International recommendations and non-critical item infection prevention

All healthcare settings, regardless of the level of care provided, must make infection prevention a priority and must be equipped to observe and follow Standard Precautions. Many international organisations have provided recommendations that can be applied in all healthcare settings and were adopted by many public health authorities across the world.

Classification is a traditional and widely accepted approach that has been used to determine the level of disinfection or sterilisation required in a health care setting.¹⁻⁵ There are 3 categories in this hierarchy:

- 1 Critical items** (e.g. surgical instruments, implants/prostheses, rigid endoscopes, syringes, needles) are involved with a break in the skin or mucous membrane or entering a sterile body cavity and must be sterile.
- 2 Semi-critical items** (e.g., respiratory equipment, non-invasive flexible endoscopes) are in contact with mucous membranes or body fluids and require minimum of high-level infection prevention and disinfection.
- 3 Non-critical items** (e.g., blood pressure cuffs, stethoscopes) may come in contact with intact skin but not mucous membranes and should undergo cleaning and low to intermediate level disinfection.

Ironically, one of the most commonly used non-critical items is medical tape, which has rarely been addressed by these procedures.

In this white paper, we review the merits of shifting medical tape to single use and bringing the same rigorous discipline of infection prevention and control to this key element of delivering care. The COVID-19 pandemic has made making such decisions even more urgent as we all try to minimise potential vectors for transmission of infection.

Medical tape infection prevention

Stocked in every supply room and brought to nearly every patient room, medical tape is one of the most widely used medical devices. Some 69% of clinicians use medical tape multiple times per day.⁶ Tape holds breathing tubes in place, secures IV lines and manages post-operative drains, ports and

other devices. Most importantly, medical tape comes into direct contact with patient skin. Tape is commonly stored in drawers, on counters, or in open bins in supply rooms which are not regularly cleaned. Rolls of tape are carried in pockets, on stethoscopes, and attached to utility belts. Thus, a single roll of tape is routinely used in the treatment of multiple patients and is exposed to multiple contaminants.

Used on multiple patients

While the concept of single use is central to infection control practices in numerous guidance documents, medical tape appears to be one of the only items that is still used on multiple patients and can thus serve as a vector for transmission of infectious agents. Tape appears to be the only item in the ICU that is not single use and does not arrive in a package.

Source of cross contamination

There is irrefutable evidence that multi-use tape rolls are a source of cross-contamination between patients and a vector for nosocomial infections in health care settings.⁷

Medical adhesive tapes have been documented as potential reservoirs of microorganisms as early as 1974 when Berkowitz et al. reported 100% of tape rolls samples being contaminated on day 1, 5 and 7 in a 16 bed ICU.⁸ Later on Bundy et al. discovered that 65% of the specimens of tapes left on the shelves were colonized by *Staphylococcus Epidermidis*⁹ while Redelmeier et al. reported 74% of partially used tape rolls contained some bacterial growth.¹⁰

More recent study from Australia found 52% of tape rolls specimens, used for multiple patients, to be contaminated with Methicillin Resistant *Staphylococcus Aureus* (MRSA) and Vancomycin Resistant Enterococci (VRE).¹¹

Several case reports show fungal infections to be associated with use of medical adhesive tape.^{12,13} Extensive literature review of 169 Mucormycosis cases by Rammaert et al. found that reported infections have been associated with the use of adhesive tape.¹⁴ Another literature review on endotracheal tube securement practices by Krug et al. discovered adhesive tape can harbor pathogens more than 40% of the time. Authors further report a general lack of directions for the safe handling of surgical adhesive tapes.¹⁵

Based on their finding authors have suggested the following:

- ▶ Use of “alternative tape” which should be short in length, disposable for single patient use and individually packaged,¹⁵
- ▶ Prepackaged surgical adhesive tape can be used without being a source of contamination,⁹
- ▶ Introduction of shorter rolls can provide important opportunity to decrease cross-contamination,¹⁰
- ▶ Introducing formal recommendations for tape use and storage to enhance patient safety.¹²

Standard infection control precautions

WHO advocates standard precautions for all patients and recommends cleaning, disinfecting and reprocessing reusable equipment appropriately before use with another patient.¹⁶

Epic3 Guidelines for Preventing Healthcare-Associated Infections is stating that “standard infection control precautions need to be applied by all healthcare practitioners to the care of all patients” and further recommends that “pieces of equipment used in the delivery of patient care must be cleaned and decontaminated after each use with products recommended by the manufacturer.”¹⁷

Related to medical tapes, a guidance was published by US Federal Register (vol. 73, April 15, 2008) which states “Tape rolls must be dedicated to a single patient, or disposed of after patient use.”

This guidance only applies to hemodialysis patients, who have a higher susceptibility to infections in general, as well as increased risk of more severe infection(s).²⁰

However, it is reasonable to conclude that any patient considered at increased risk of infection or severe disease should receive similar infection control precautions as those recommended in the US Federal Register for dialysis patients.

Transmission based infection control precautions

Current ECDC guidelines transmission-based precautions for COVID-19 patients state that “The use of dedicated or, if possible, disposable medical equipment (e.g. blood pressure cuffs, stethoscopes and thermometers) is recommended.”¹⁸

Public Health England (PHE) COVID-19: infection prevention and control guidance says that “Reusable (communal) non-invasive equipment must be decontaminated between each patient and after patient use.”¹⁹

Accordingly, medical tape not dedicated to a single patient, should either be disinfected or discarded. Unused medical tape left on a roll cannot be disinfected and should therefore be considered disposable and discarded.

Revisiting COVID-19 infections control

There are certain clear risk factors for increased susceptibility to SARS-CoV-2 infection in the presence of severe disease (e.g. immunocompromise, chronic disease, advanced age). However, much remains unknown about novel coronavirus-related and many studies are ongoing.

Healthcare providers are recommended by ECDC and WHO to adhere to standard and transmission-based precautions for all COVID-19 patients in order to prevent the spread of nosocomial infection. The rapid spread of SARS-CoV-2 within nursing homes has further demonstrated the ease of transmission, the potentially lethal consequences, and the need for heightened precautions. The need for enhanced precautions, including the importance of single use devices to decrease the indirect spread of infection via fomites, is more important than ever.

Medical tape is used in a variety of healthcare settings besides hospitals and emergency rooms. Almost anywhere healthcare is delivered, tape can be a vector for infectious pathogens (including SARS-CoV-2). Whether patients are receiving care in long term care facilities, skilled nursing facilities, pre-hospital emergency services, or ambulatory care settings (infusion centers, hemodialysis centers, blood and plasma facilities, ambulatory surgery centers, urgent care clinics, and even doctors’ offices), multi-use rolls of tape is posing a significant risk for transmission of serious infections (including MDR microorganisms and SARS-CoV-2). Even patients receiving home health services can theoretically fall victim to this mode of transmission if single roll of medical tape is not dedicated to a single patient.

In the era of COVID-19, single use devices, including single use rolls of tape, have become an essential component of the responsible delivery of health care in every setting where care is delivered to reduce the spread of COVID-19 and other serious infections.

Proposal

The disinfecting or sterilisation of tape is not feasible, and therefore rolls of medical tape must not be shared between patients.

Instead, these items should be considered single use and disposable. Consistent with a large volume of infection prevention and control recommendations from WHO, ECDC and many other international and local organizations we recommend policy update in your facility to reflect following points:

- 1 Individually packed single use medical tape rolls, dedicated to a single patient should be preferred in order to:
 - a avoid potential cross-contamination by reducing exposure to environmental contaminants, facility surfaces, equipment and healthcare worker hands
 - b help indicate new roll
 - c avoid unnecessary waste
- 2 This protocol is applied to ICU or other at risk patients in the first place*

*During pandemic times consider applying this protocol to all patients across all care settings (or dedicated areas) where tape is used, consistent with transmission based infection control precautions.

Summary

Medical tape remains one of the last vestiges of antiquated thinking in its multi-patient use and it must be brought into alignment with existing guidance on infection control precaution measures, including reuse, cleaning and disinfection of medical devices, established by organisations such as WHO, ECDC, RKI, PHE. The best way to accomplish this would be through introduction of single use roll which is shorter in length and dedicated to individual patient.

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