3M Science. Applied to Life.™

3M Medical Securement Solutions

The dirty truth about medical tapes.

Helping reduce the risk of cross-contamination.

Dirty tapes could put your patients at risk.

Stocked in every supply room and brought to nearly every patient room, tape is one of the most widely-used medical technologies. 69% of clinicians use medical tape multiple times per day.[1] It holds breathing tubes in place, secures IV lines and manages post-operative drains, ports and other devices, and it comes into direct contact with patient skin. But are medical tapes clean or invisibly dirty?

100%
of tape rolls are contaminated

A study sampled 24 bedside tape rolls at 1, 5 and 7 days in a 16-bed ICU at a 560-bed teaching hospital. 100% of the tape rolls sampled were contaminated.[2]

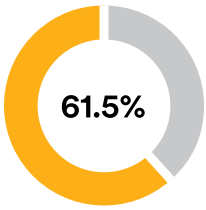
52%
of tape samples contained MRSA and VRE

In a sampling from three hospitals of tapes used on multiple patients, 11 of 21 tape batches (up to 3 tapes each) contained MRSA and VRE.[3]

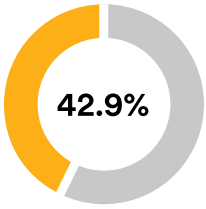
Why are tapes potential sources of contamination?

A survey published in the *American Journal of Infection Control* showed that:

100% of the facilities surveyed had no policies for tape storage. Tape was stored in open bins in supply rooms that were not regularly cleaned.



61.5% of staff members carried rolls of tape in pockets or on stethoscopes.[4]



Only 42.9% of staff discarded unused tape when a patient was discharged.[4]

The evidence is in: your tapes may be dirty.

A 12 year old with relapsed acute myeloid leukemia contracted a suspected cutaneous fungal infection from tape exposure, which required three surgical debridements and a simple mastectomy.

A gap in patient tape storage and use practices puts patients at risk for cutaneous fungal infections

McClusky J, Davis M, Dahl K. *Am J Infect Control.* 2015;43(2):182-184.

Overview:

This case report linked adhesive tape to a cutaneous fungal infection in a 12-year-old oncology patient at a facility with no established guidelines for patient tape. A subsequent survey of multiple healthcare facilities revealed no existing policies or standards of care related to tape storage or use.

Results:

- A member of the Infectious Disease Department suspected that the cutaneous fungal infection was related to tape exposure.
- Three surgical debridements were required. Surgical cultures yielded *Mucor/Rhizopus*.
- Facilities stored tape in open bins in clean supply rooms, neither of which were regularly cleaned.
- There are zero guidelines from the Centers for Disease Control (CDC), Prevention Healthcare Infection Control Practices Advisory Committee, and the Association for Professionals in Infection Control and Epidemiology (APIC) for storage and use of tape.
- The gap in tape policies or standards calls for formal recommendations for storage and use to enhance patient safety.

View abstract:

https://www.ajicjournal.org/article/S0196-6553(14)01297-8/abstract

The tapes found to be contaminated with *Zygomycosis* were removed and the cutaneous fungal outbreak subsided.

Outbreak of cutaneous *Zygomycosis* associated with the use of adhesive tape in haematology patients

Lalayanni C, Baliakas P, Xochelli A, et al. J *Hosp Infect.* 2012;81(3):213-215.

Overview:

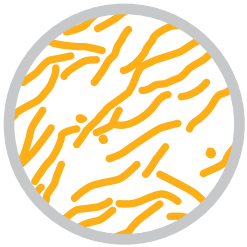
Case report of an outbreak of cutaneous *Rhizopus oryzae* infection associated with adhesive tapes used to stabilize peripheral venous catheters in four patients.

Results:

- A recent review indicated that skin was the most commonly affected site in healthcare-associated *Mucormycosis* and patient mortality was high at 50%.
- The presenting sign appeared as itching erythema under the polyethylene adhesive that progressed to ulceration with necrosis.
- Although the particular tapes used in these patients were not tested, another tape of the same batch tested positive for *Zygomycete hyphae*.
- *In-vitro* cultures of adhesive tape scrapings consistently tested positive for *R. oryzae*.

View abstract:

https://www.ncbi.nlm.nih.gov/pubmed/22633275



Cutaneous *Mucormycosis* has been associated with the use of adhesive tape.

Healthcare-associated *Mucormycosis*

Rammaert B, Lanternier F, Zahar JR, et al. *Clin Infect Dis.* 2012;54 Suppl 1:S44-54.

Overview:

An extensive literature review analyzed the published evidence of 169 cases of *Mucormycosis* that occurred between 1970–2008.

Results:

- The occurrence of *Mucormycosis* during healthcare procedures is not well documented and is probably underestimated.
- The literature review states: "*Mucormycosis* is a severe emerging invasive fungal infection that occurs as a consequence of environmental exposure with portals of entry including surgery and presence of medical devices such as catheters or adhesive tape."

View abstract:

https://www.ncbi.nlm.nih.gov/pubmed/22247444

Molecular typing indicated that tape was the probable source of the infecting strain of *A. flavus* recovered from both infants.

Use of a repetitive DNA Probe to type clinical and environmental isolates of *Aspergillus flavus* from a cluster of cutaneous infections in a neonatal intensive care unit

James MJ, Lasker BA, McNeil MM, Shelton M, Warnock DW, Reiss E. *J Clin Microbiol.* 2000;38(10):3612-3618.

Overview:

This case study investigated two cases of cutaneous *A. flavus* infection in low-birth-weight (LBW) infants in a neonatal intensive care unit (NICU). Both infants were transported by the same ambulance and crew to the NICU on the same day and the same roll of tape was used to fasten their umbilical intravascular catheters.

Results:

- Black abdominal skin lesions were found under adhesive tape used to fasten both infants' umbilical catheters. Culture resulted in an isolation consistent with an *Aspergillus* species.
- The roll of adhesive tape, a canvas bag used to store rolls of tape, the transport isolette, and a roll of clear plastic film all tested positive for *A. flavus*.
- Isolates obtained from both infants' abdominal lesions were indistinguishable from each other and identical to the isolates recovered from the roll of adhesive tape used.

View study:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC87445/

Tape can harbor pathogens more than 40% of the time despite efforts to clean the tape.

Securing the endotracheal tube with adhesive tape: an integrative literature review

Krug L, Machan M, Villalba J. *AANA J.* 2014;82(6):457-464.

Overview:

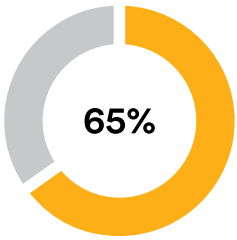
This literature review presents evidence-based research regarding endotracheal (ET) tube taping practice to ensure patient safety.

Results:

- Overall, direction for the safe handling of surgical adhesive tape for patients is lacking.
- Normally, tape is not discarded at the end of a surgical case and is returned to the supply bin for use on other patients.
- An alternative tape would be short in length (30 in), have good adhesion, be disposable, and most importantly would be for single patient use and each tape roll would be individually packaged.

View abstract:

https://www.ncbi.nlm.nih.gov/pubmed/25842644



65% of sampled tapes left on shelves were colonized with *S. epidermidis*.

Sterility in unsterilized surgical adhesive tape

Bundy AT. *Plast Reconstr Surg*. 1989;83(5):880-883.

Overview:

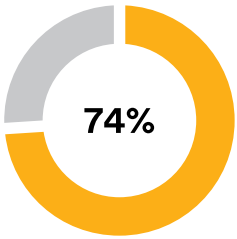
This study investigated the possibility that prepackaged unsterilized tape could be used to provide a barrier to infectious organisms.

Results:

- 480 sliced samples from 120 rolls showed significant contamination of unpackaged tapes left on the shelf of a surgical suite cabinet for two weeks.
- The two sample brands tested showed significant values ($p<0.01$) for contamination on the smooth outer revolution and edge of the rolls.
- The study concluded that prepackaged surgical adhesive tape can be used to approximate wound edges without being a source of contamination.

View abstract:

https://journals.lww.com/plasreconsurg/Citation/1989/05000/Sterility_in_Unsterilized_Surgical_Adhesive_Tape.19.aspx



74% of partially used tape rolls contained some bacterial growth.

Adhesive tape and intravascular-catheter-associated infections

Redelmeier D, Livesley N. J *Gen Intern Med.* 1999;14(6):373-375.

Overview:

The object of the study was to determine whether a roll of adhesive tape can become colonized by organisms and contribute to intravascular catheter infections. 80 rolls of adhesive tape were collected from sites around a hospital over a two-week period and evaluated for rates of contamination.

Results:

- Tape is often found in clinicians' pockets, in drawers, on counters or hanging from stethoscopes or IV poles.
- Tape from the inner layer showed fewer colony formations (2 of 42 specimens) compared with the outer layer (59 of 80 specimens). Adhesive tape may transmit pathogenic bacteria that contribute to infections.
- Switching to shorter rolls of medical tapes can provide an important opportunity to decrease cross-contamination.

View study:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1496597/pdf/jgi_355.pdf

3M can help reduce the risk of cross-contamination.

Every patient deserves a clean roll of tape. 3M's individually packaged single-use length rolls of medical tape are designed to help reduce the risk of cross-contamination. The protective package helps keep the tape clean by minimizing tape contact with healthcare worker hands* and surfaces. The shorter roll lengths help provide the right amount of tape for use on one patient so that tape does not travel between patient rooms.

99%
protection from pathogens such as MRSA, CRE, VRE, C. diff

3M's packaged single-use length medical tape rolls can help reduce exposure to bacteria and spores. In vitro testing showed 99% protection from pathogens such as MRSA, CRE, VRE and C. difficile when compared to unpackaged rolls of tape.**[5] This can help reduce the risk of cross-contamination of the tape roll.*

Institute change at your facility

A simple solution to help reduce risk common in practice with unpackaged tapes, individually packaged single-use rolls can be easily integrated into facility protocols. Intact packaging indicates a new roll, helping communicate compliance to use of dedicated patient care items.

3M's packaged single-use rolls are designed not only to help keep tape clean until use, but also to encourage proper use, by communicating product, lot, and expiration on each roll.

3M™ Micropore™ S Surgical Tape 1 in. x 1.5 yd. packaged single-use roll is shown actual size.

*Practice good infection prevention technique per facility protocols and published guidelines, including environmental cleaning and proper hand hygiene before and after opening package.
**In vitro testing on contaminated hard dry surfaces.

Help reduce the risk of cross-contamination with individually packaged single-use length rolls.

Packaging helps prevent tape from being exposed to environmental contaminants, minimizes contact with surfaces and equipment, and minimizes exposure to healthcare worker hands.*

Non Adhesive Securement

3M™ Coban™ NL Non-Latex Self-Adherent Wrap

- Blood draws
- Dressings
- Immobilization
- Securement for difficult to dress areas (head, fingers, toes)
- Support and mild compression for soft tissue injuries (e.g. strains, sprains)*

*May be used as a component of a compression system under the direction of a wound care specialist.

Catalog #	Size	Rolls	Cases	HCPCS Code
2082-1X	2 in. x 1.6 yd. (5 cm x 1,5 m) stretched	36 per bag	1 bag	A6453
2083-1X	3 in. x 1.6 yd. (7,5 cm x 1,5 m) stretched	24 per bag	1 bag	A6454
2084-1X	4 in. x 1.6 yd. (10 cm x 1,5 m) stretched	18 per bag	1 bag	A6454
2086-1X	6 in. x 1.6 yd. (15 cm x 1,5 m) stretched	12 per bag	1 bag	A6455

Multi Purpose Securement

3M™ Micropore™ S Surgical Tape

- Blood draws
- Light-weight dressings
- IV lines and tubing (secondary securement)
- Non-critical tubes

2770S-1	1 in. x 1.5 yd. (2,5 cm x 1,3 m)	100 per bag	5 bags	A4452
2770S-2	2 in. x 1.5 yd. (5 cm x 1,3 m)	50 per bag	5 bags	A4452

Flexible Securement

3M™ Medipore™ H Soft Cloth Surgical Tape

- Dressings and added pressure
- Chest tubes
- Surgical drain tubes
- When swelling or movement is anticipated
- IV lines and tubing (secondary securement)
- Central venous catheters (secondary securement)

2860S-1	1 in. x 2 yd. (2,5 cm x 1,8 m)	72 per bag	1 bag	A4452
2860S-2	2 in. x 2 yd. (5 cm x 1,8 m)	48 per bag	1 bag	A4452
2860S-4	4 in. x 2 yd. (10,1 cm x 1,8 m)	24 per bag	1 bag	A4452
2860S-6	6 in. x 2 yd. (15,2 cm x 1,8 m)	16 per bag	1 bag	A4452

High-strength Securement

3M™ Durapore™ Surgical Tape

- Urinary catheters
- Nasogastric tubes
- Orogastric tubes
- Patient positioning
- Short-term securement of endotracheal tubes**

**For use in dry conditions. Not recommended for use when excessive fluids and/or secretions are present. Tape securement and tube position should be monitored routinely.

1548S-1	1 in. x 1.5 yd. (2,5 cm x 1,3 m)	100 per bag	5 bags	A4452
1548S-2	2 in. x 1.5 yd. (5 cm x 1,3 m)	50 per bag	5 bags	A4452

Skin performance: The feather designates products that deliver the securement power you need while minimizing damage to skin.

Learn more about selecting the right medical securement solutions at **3M.com/MedicalSecurement**

3M Company
2510 Conway Avenue
St. Paul, MN 55144 USA

Phone: 1-800-228-3957
Web: 3M.com/Medical

*Practice good infection prevention technique per facility protocols and published guidelines, including environmental cleaning and proper hand hygiene before and after opening package.

1. 3M 2018 Medical Tape Market Research. On file at 3M.
2. Berkowitz DM, Lee WS, Pazin GJ, Yee RB, Ho M. Adhesive Tape: Potential Source of Nosocomial Bacteria. *Appl Microbiol.* 1974;28(4):651-654.
3. Harris PN, Ashhurst-Smith C. Berenger SJ, Shoobert A, Ferguson JK. Adhesive tape in the health care setting: another high-risk fomite? *Med J Aust.* 2012;196(1):34.
4. McClusky J, Davis M, Dahl K. A gap in patient tape storage and use practices puts patients at risk for cutaneous fungal infections. *Am J Infect Control.* 2015;43(2):182-184.
5. 3M data on file TECH-REPORT-05-742819.