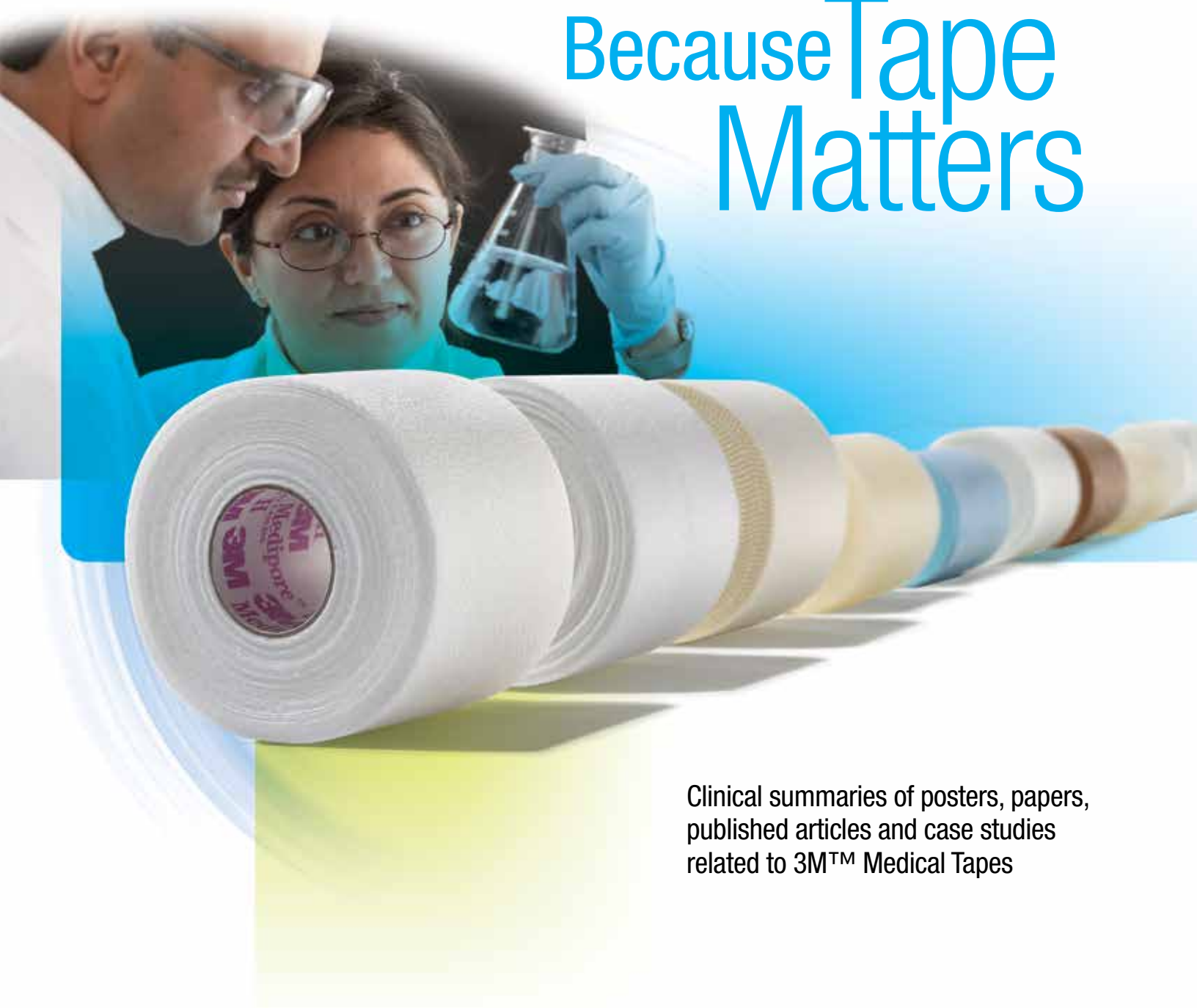


3M™ Medical Tapes  
Clinical Evidence Summaries

# Because Tape Matters



Clinical summaries of posters, papers,  
published articles and case studies  
related to 3M™ Medical Tapes

**3M**





## Helping you make sure her skin is in good hands.

As healthcare delivery becomes more complex, choosing the right product and using it effectively is a key component of successful patient outcomes and cost containment. 3M™ Medical Tapes are designed with the performance qualities you need to provide better patient care.

The studies listed on the following pages feature summaries of posters, papers, published articles and case studies related to medical tapes to help you simplify product choices so you can be assured of providing the best care possible.

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## Adhesive tape trauma evaluation of two gentle tapes in healthy human subjects

Gary L. Grove, PhD, Charles Zerweck, PhD, Timothy Houser, MS, Graham E. Smith, BS, Nancy I. Koski, BA  
Sources: Poster, SAWC 2011, WOCN 2011 (70-2010-9105-8)

### OBJECTIVE OF STUDY

The objective of this study was to determine the relative gentleness of a new gentle tape with a silicone-based adhesive compared to a gold standard for gentle medical tapes. (n= 28)

### KEY FINDINGS / ANALYSIS

- Both surgical tapes were found to be very gentle to the skin during this 11-day repeat application study, which is consistent with historical usage of the control tape.
- The new silicone adhesive tape was found to cause significantly less damage to the stratum corneum based on Expert Grader assessments and on instrumental measurements of TEWL.
- Test subjects perceived less discomfort at removal of the silicone adhesive tape and preferred the new tape more than 2 to 1 over the control tape.
- Both tapes exhibited low mean lift scores throughout the study (<25% edge lift).

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## A randomized and controlled comparison of gentleness of two medical adhesive tapes in healthy human subjects

Gary L. Grove, PhD, Charles Zerweck, PhD, Timothy Houser, MS, Graham E. Smith, BS, Nancy I. Koski, BA  
Source: JWOCN, Jan 2013

### OBJECTIVE OF STUDY

To compare gentleness of a silicone tape to a paper tape and to an untreated control. (n= 28)

### KEY FINDINGS / ANALYSIS

- Based on day-11 TEWL values, the silicone tape was gentler to the skin than a paper tape with a well-accepted history for gentleness.
- Throughout the 11-day study, TEWL values for the silicone tape never exceeded those of the untreated control.
- Throughout the 11-day study, TEWL values for both the silicone tape and the paper tape remained within the range of normal values for healthy human forearm skin, indicating that both tapes were gentle to the skin.

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## Adhesive tape trauma evaluation of two gentle tapes in healthy human infant subjects

Gary L. Grove, PhD, Charles Zerweck, PhD, Bruce Ekholm, MS, Graham E. Smith, BS, Nancy I. Koski, BA  
Source: WOCN 2012, WACOVA

### OBJECTIVE OF STUDY

The objective of this study was to determine the relative gentleness of a silicone adhesive tape in comparison to a marketed tape that is recognized for its gentleness and used as a mainstay in cosmetic surgery and in neonatal care with infants and pediatrics. (n= 24)

### KEY FINDINGS / ANALYSIS

- The silicone adhesive tape exhibited significantly less erythema and denudation than the control paper tape upon removal, 24 hours after application.
- There was significantly less discomfort at removal for the silicone adhesive tape compared to the control paper tape.
- There was significantly less edge lift with the control paper tape compared to the silicone adhesive tape.
- The silicone adhesive tape removed significantly less skin cells than the control paper tape upon removal, 24 hours after application.
- There was slight parental preference toward the silicone adhesive tape compared to the control paper tape.

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## A randomized comparison of a silicone tape and a paper tape for gentleness in healthy children

Gary L. Grove, PhD, Charles Zerweck, PhD, Bruce Ekholm, MS, Graham E. Smith, BS, Nancy I. Koski, BA  
Source: JWOCN (pending publication)

### OBJECTIVE OF STUDY

To compare the relative gentleness of a silicone tape to a paper tape on healthy infants and children. (n=24)

### KEY FINDINGS / ANALYSIS

- The silicone tape caused significantly less erythema and skin stripping than the paper tape after 24 hours of wear on healthy infants and children.
- There was significantly less discomfort at removal for the silicone tape compared to the paper tape.
- Keratin analysis revealed significantly less skin cell removal with the silicone tape than with the paper tape. These results corroborate the skin stripping results.
- There was a low level of tape edge lift with both tapes but significantly more lift with the silicone tape than the paper tape. Clinical significance of this difference is unknown.

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# Case Reports

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## Changing medical tape practice for at-risk skin

Sonia Manriquez, RN, BSN, WOCN  
Source: WOCN 2012 (70-2010-9104-1)

### OBJECTIVE OF STUDY

The objective of this study was to evaluate performance of a new silicone adhesive tape among clinicians caring for patients with fragile skin or at-risk skin.

### KEY FINDINGS / ANALYSIS

- New silicone adhesive tape is ideal for use on patients with fragile skin. It can be applied to either wet or dry skin and is effective in securing dressings without causing further skin damage. Removal is easy and with less pain to the patient or trauma to the skin. The unique blue color also makes the tape easy to identify on the patient and among other supplies.
- Results of the multi-site clinical evaluation show that after a two-week trial of the silicone tape, there was a strong preference (92.0%) for the silicone adhesive tape compared to their current-use gentle tapes.
- Even among the clinical evaluators that indicated that they were satisfied with their current-use gentle tapes, there was a strong preference for the evaluation tape after a two-week trial period, indicating that the silicone adhesive tape fills a previously unperceived performance gap with acrylic tapes on patients with fragile or at-risk skin.

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## CVE Findings

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### Evaluation of a new silicone adhesive tape among clinicians caring for patients with fragile or at-risk skin

Sonia Manriquez, RN, BSN, WOCN, Bonnie Loperfido, RN, MA, MP, Graham Smith, BS  
Source: Advances in Skin & Wound Care (accepted for publication)

### OBJECTIVE OF STUDY

The objective of this study was to evaluate performance of a new silicone adhesive tape among clinicians caring for patients with fragile skin.

### KEY FINDINGS / ANALYSIS

- New silicone adhesive tape is ideal for use on patients with fragile skin. It is effective in securing dressings without causing further skin damage. Removal is easy and with less pain to the patient or trauma to the skin. The unique blue color also makes the tape easy to identify on the patient and among other supplies.
- Results of the multi-site clinical evaluation show that after a two-week trial of the silicone tape, there was a strong preference (92.0%) for the silicone adhesive tape compared to their current-use gentle tapes.
- Even among the clinical evaluators that indicated that they were satisfied with their current-use gentle tapes, there was a strong preference for the evaluation tape after a two-week trial period, indicating that the silicone adhesive tape fills a previously unperceived performance gap with acrylic tapes on patients with fragile or at-risk skin.



# Anesthesiology

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## Comparison of 3M™ Kind Removal Silicone Tape versus standard tapes Durapore/Medipore on the face in patients at risk of skin trauma under anesthesia

A. Zeng, S.A. Lie, S.Y. Chong

Source: Oral Poster - World Anesthesia Conference

### OBJECTIVE OF STUDY

To compare the incidence and severity of facial skin injury and patient satisfaction with different types of tape.

### KEY FINDINGS / ANALYSIS

Facial skin injury is a known complication of adhesive tapes used for taping eyelids closed and securing endotracheal tubes during general anesthesia. 3M™ Kind Removal Silicone tape is designed to minimize injury.

### CONCLUSION

We found significantly less skin injury and greater patient satisfaction with the 3M™ Kind Removal Silicone Tape versus standard cloth tapes used on the face. There were no significant differences in erythema, edema assessed at recovery. Patient satisfaction scores were higher in the silicone tape group.

# Radiation Therapy

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## Evaluation de la tolerance et des benefices d'un nouveau sparadrapp microporeux et silicone sur les peaux irradiees

F. Lampln, E. Rotger Ciria, I. Fromanlin

Source: EWMA 2012

### OBJECTIVE OF STUDY

To evaluate skin tolerance and the benefits of a new microporous silicone tape.

### KEY FINDINGS / ANALYSIS

This tape allowed for a new dressing method other than tubular bandage, thus reducing clothing constraints for the patients. The evaluations were undertaken with 2 cm microporous silicone tape. The 5 cm wide version appears to increase fixation quality given the weight of the dressings, patient mobility and difficult retention on some sites (e.g. neck, axillary area).

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## Evaluation of the tolerance and benefits of a new microporous silicone tape on irradiated skin

Trab, FR, Lamkin, S and Siria, ER and Fromantin,  
Source: EWMA 2012, French Wound Conference CPC 2012

### OBJECTIVE OF STUDY

To evaluate skin tolerance and the benefits of new micropore silicone tape.

### KEY FINDINGS / ANALYSIS

During and after radiotherapy, patients have extremely sensitive skin and do not tolerate adhesive materials. Often non-adhesive fixation such as tubular bandages are used, however, that is not always suitable for the site. Eight patients undergoing radiotherapy secured hydrogel or paraffine gauze dressings with Kind Removal Silicone Tape. Dressing retention averaged 27 hours with a hydrogel dressing and 12 hours with a paraffine gauze dressing. Average pain on removal was 0.7 on a VAS scale of 1 to 10. Overall patient satisfaction was 7.4 for the hydrogel group and 6.25 for the paraffine gauze group (scale 0-10).

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## Evaluation of the tolerance and benefits of a new microporous silicone tape on irradiated skin

F. Rollot Trad, F. Lampin, E. Rotger Ciria, I. Fromantin  
Source: EWMA 2012

### OBJECTIVE OF STUDY

To evaluate skin tolerance and the benefits of a new microporous silicone tape.

### KEY FINDINGS / ANALYSIS

This tape allowed for a new dressing method other than tubular bandage, thus reducing clothing constraints for the patients. The evaluations were undertaken with 2 cm microporous silicone tape. The 5 cm wide version appears to increase fixation quality given the weight of the dressings, patient mobility and difficult retention on some sites (e.g. neck, axillary area).

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## Evaluation of the tolerance and benefits of a new microporous silicone tape on irradiated skin

F. Rollot Trad, F. Lampin, E. Rotger Ciria, I. Fromantin  
Source: *Wounds UK Journal*. April 2013

### OBJECTIVE OF STUDY

To evaluate skin tolerance and the benefits of a new microporous silicone tape.

### KEY FINDINGS / ANALYSIS

This tape allowed for a new dressing method other than tubular bandage, thus reducing clothing constraints for the patients. The evaluations were undertaken with 2 cm microporous silicone tape. The 5 cm wide version appears to increase fixation quality given the weight of the dressings, patient mobility and difficult retention on some sites (e.g. neck, axillary area).

## Adult Study

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### Customer evaluation of a new gentle-to-skin medical tape by 217 clinical evaluators

1. Bart Maene, BSC., RN  
Source: EWMA 2012

2. Bonnie Loperfido, RN, MA, NP, Graham Smith, BS  
Source: 3M 2011 (70-2010-8450-9)

#### OBJECTIVE OF STUDY

Validate that a new silicone tape meets customer needs for a gentle tape and compare its performance to currently available medical tapes.

#### KEY FINDINGS / ANALYSIS

217 clinical evaluators from 15 hospitals in U.S., 2 hospitals in UK and 1 hospital in France. Nurses used Kind Removal Silicone Tape in place of their current gentle tape for 2 weeks. Most commonly used gentle tapes were paper and soft cloth tapes. 92% of nurses rated Kind Removal Silicone Tape better or much better on 10 performance characteristics. 92% preferred Kind Removal Silicone Tape to their current gentle tape. 90% indicated a willingness to replace their current gentle tape with 3M™ Kind Removal Silicone Tape.

## Pediatric Study

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### Customer evaluation of a new gentle-to-skin medical tape by over 950 pediatric & neonatal clinical evaluators

Bonnie Loperfido, RN, MA, NP, Graham Smith, BS  
Source: 3M 2011 (70-2010-9103-4)

#### OBJECTIVE OF STUDY

Validate that a new silicone tape meets customer needs for a gentle tape and compare its performance to currently available medical tapes.

#### KEY FINDINGS / ANALYSIS

950 clinicians at 11 children's hospitals in the U.S. used Kind Removal Silicone Tape in place of their current gentle tape for 2 weeks. The units included NICU, newborn and pediatric units. 94% of pediatric and neonatal clinicians preferred Kind Removal Silicone Tape to their current gentle tape. 90% on nurses rated performance of Kind Removal Silicone Tape better or much better than their current gentle tape. 89% of Neonatal/ NICU respondents rated Kind Removal Silicone Tape better or much better than their current gentle tape.

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# Dialysis

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## Striking a balance between securement and gentleness to the skin using 3M™ Kind Removal Silicone Tape on dialysis catheters

Masami Tanaka, Hiroko Suzuki, Imai Yumiko  
Source: 3M 2011 (70-2010-8426-9)

### OBJECTIVE OF STUDY

Three dialysis team members share their experience with improving fixation of hemodialysis circuits using 3M™ Kind Removal Silicone Tape.

### KEY FINDINGS / ANALYSIS

- Applied the tape to wrap the tubing (omega fixation) and secured the puncture needles with one tape in a V shape.
- Fixation strength changes according to method of securement.
- No pain upon removal and no epidermal peeling or reddening.
- Kind Removal Silicone Tape can be repositioned.

# Chemotherapy

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## Considerations for the selection of medical tape when caring for the fragile skin of chemotherapy patients

Yasumi Matsubara  
Source: 3M 2011 (70-2010-8425-1)

### OBJECTIVE OF STUDY

Considerations for tape selection for the fragile skin of chemotherapy patients.

### KEY FINDINGS / ANALYSIS

- Prefer adhesive products that can be easily removed without pain, no occurrence of skin injuries even when changing the gauze every day.
- Gauze remained in place.

# At-risk Skin

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## Using a “next-generation” tape for patients with high risk of skin lesions

Hirayama Chitose, Shinohara Masaki  
Source: 3M 2011 (70-2010-8427-7)

### OBJECTIVE OF STUDY

Two WOC nurses share their experiences with using 3M™ Kind Removal Silicone Tape for indwelling bladder catheters, peritoneal drains, renal catheters and peripheral intravenous, around a stoma.

### KEY FINDINGS / ANALYSIS

- No pain at time of removal and no itching.
- Less skin irritation.
- No water blisters when used in areas of edema.
- Adhesion strength was found to be stable.

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# Scar Management

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## Scar outcomes of abdominal incisions: a randomized trial comparing use of silicone tape and Transpore White adhesive tape

Matthew Sze-Wei Yeo, Hui Wen Ng, Ju Ming Wong, Michelle S. HO, Timothy W. Shim, Shentehilkumar Naidu, Ee Cheek Cheong, Marcus TC Wong

Source: Accepted as oral in 2012 World Union Wound Healing Society, Japan

### OBJECTIVE OF STUDY

To compare the quality of abdominal scars using a novel silicone-impregnated tape compared with conventional Transpore™ White acrylic tape for patients that underwent abdominal flap reconstruction for breast reconstruction.

### KEY FINDINGS / ANALYSIS

- No cases of adverse reaction to silicone tape
- Silicone tape appears to have a beneficial effect on abdominal scars as compared to Transpore™ White tape:
  - subjective assessment - VAS scores, PSAS scores
  - objective assessment - VSS scores, OSAS scores

# Health Economics

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## The hidden costs of medical tape induced injuries

Bart Maene

Source: *Wounds UK Journal*. April 2013

### OBJECTIVE OF STUDY

To determine, via a survey, the hidden costs of medical tape induced skin injuries

### KEY FINDINGS / ANALYSIS

Novel gentle-to-skin technologies, such as silicone tapes, are a promising evolution that could greatly benefit patients with fragile, compromised, or at-risk skin. Moreover, as this survey suggests, a reduction in tape-induced injuries is likely to reduce healthcare costs.

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# Basic Adhesive Education

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## An evolution in medical tapes: from latex to acrylic

Luc Gryson

Source: *EWMA Journal*, volume 12, #3, October 2012, pg 21-24

### OBJECTIVE OF STUDY

Present advances of acrylate adhesive over natural rubber latex.

### KEY FINDINGS / ANALYSIS

Acrylic adhesives offer benefits over natural rubber latex. They are safer for skin because they pose a much lower risk for allergic reactions in patients as well as clinicians. They are safer for skin because they can be formulated to achieve a variety of performance characteristics and be gentler on skin. The cost of natural rubber latex has markedly increased so natural rubber latex tapes are not always the low cost choice any more.

## Single-Patient Use Rolls

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### Single-patient use rolls of medical tapes reduce cross-contamination risk

Kari Love, RN, MS

Source: *Infection Control Today*, January 2013, pg 48-50

### OBJECTIVE OF STUDY

Identify ongoing risks of hospital-acquired infections through cross-contamination.

### KEY FINDINGS / ANALYSIS

Switching to shorter rolls of medical tapes can provide an important opportunity to decrease cross-contamination, eliminate wasted tape, decrease hospital supply costs and improve the standard of patient care.

## Skin Trauma

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### Comparison of tape products on skin integrity

Joan M. O'Brien, RN, CRNP, MSN, Nancy J. Reilly, Rn, CURN, MSN

Source: *Advances in Skin and Wound Care*, Volume 8, #6, Nov/Dec, 1995, pgs 26, 28, 30 (70-2009-1754-3)

### OBJECTIVE OF STUDY

To examine the prevalence of tape related skin injuries with 3M™ Durapore™ Tape and 3M™ Medipore™ Soft Cloth Tape. (n=496)

### KEY FINDINGS / ANALYSIS

- A significantly higher number of skin tears were found with the silk-like tape.
- This type of damage caused patient discomfort and incurred additional treatment costs.
- Soft cloth tapes are recommended to decrease skin tears in surgical patients. adhesives and their relationship to skin injury.

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## Comparing the effects of two types of groin dressing securements on skin integrity, hematoma formation and bleeding after arterial sheath removal

Mary E. Singleton, RN, MSN  
Source: *3M*, 2003 (70-2009-4553-6)

### OBJECTIVE OF STUDY

The purpose of this project was to evaluate the impact of the tape used to secure the post-femoral artery sheath removal dressing on skin integrity, hematoma formation and bleeding, and to develop a tool that could be used for ongoing patient outcome analysis.

### KEY FINDINGS / ANALYSIS

There was no difference in hematoma formation between the groups ( $p = .960$ ); however, there was a statistically significant difference in loss of skin integrity ( $p < .001$ ). Patients with Medipore™ H tape securing the dressing had significantly lower incidence of loss of skin integrity (6.7%) than patients with Elastikon® tape securing the dressing (80%).

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## Saving the skin from tape injuries

Ruth A. Bryant  
Source: *American Journal of Nursing*, 1988 (70-2010-9192-6)

### OBJECTIVE OF STUDY

Shares best practice for minimizing tape injuries.

### KEY FINDINGS / ANALYSIS

Use a porous tape, rotate sites, use skin protectant, apply to dry and clean skin, do not use CBT, do not apply with tension, clip hair rather than shave, and avoid occlusive tapes.

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## Medical Adhesives

### Medical adhesives and patient safety: state of the science: consensus statements for the assessment, prevention, and treatment of adhesive-related skin injuries

Laurie McNichol, MSN, RN, GNP, CWOCN, Carolyn Lund, MSN, RN, CNS, Ted Rosen, MD, Professor of Dermatology  
Mikel Gray, PhD, PNP, FNP, CUNP, CCCN, FAANP, FAAN  
Source: *JWOCN*, July 2013 (accepted for publication)

### OBJECTIVE OF STUDY

Study on Patient Safety and the role of Medical Adhesives: • Increase awareness of skin damage caused by medical adhesives • Define knowledge gaps • Document the spectrum of care settings and applications where skin damage occurs • Define best practices for prevention of skin damage • Identify research priorities for development of new adhesive technologies and protocols for skin protection

### KEY FINDINGS / ANALYSIS

There is incomplete knowledge about the etiology and occurrence of medical adhesives related skin injury (MARS). A panel of 23 recognized key opinion leaders convened to develop consensus statements on the assessment, treatment and prevention of MARS. An overview of current knowledge regarding occurrence and etiology of skin injury was reviewed. Definitions of medical adhesives and medical adhesives related skin injury were agreed upon. Each consensus statement was discussed and agreed upon by at least 80% of participants, culminating in a total of 22 statements. It is hoped that the outcome of this consensus summit will spur interest into further research and guideline development in the area of medical adhesives and their relationship to skin injury.

**For more information:**

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