Michael Miller, DO, FACOS, SAPWH, WCC, Miller Care Group, Michelle Sanantonio RN, Balboa Navy Hospital, San Diego, CA, Cynthia Gunner RN, Balboa Navy Hospital, San Diego, CA, Skipper Trousaant LVN, Avocado Care Center, San Diego, CA, Michael Moore LVN, Kaleidoscope Clinical Consulting, Redlands, CA

A STUDY OVERVIEW: THE IMPACT OF HANDS-ON EDUCATION AND QUALITY INCONTINENCE BRIEFS AND WIPES IN SUBACUTE LTC FACILITIES

Michael Miller, DO, FACOS, SAPWH, WCC, Miller Care Group,

Michelle Sanantonio RN, Balboa Navy Hospital, San Diego, CA,

Cynthia Gunner RN, Balboa Navy Hospital, San Diego, CA,

Skipper Trousaant LVN, Avocado Care Center, San Diego, CA,

Michael Moore LVN, Kaleidoscope Clinical Consulting, Redland, CA

Correspondence:

Michelle Moore

429 W. Palm Ave Redlands, CA 92373

Phone: 909-435-8372

Fax: 630-206-1007

Email: michellem@kalccedu.com

Sources of support: Educational funding received from FQP Inc. for this study.

Conflict of interest. None declared

ABSTRACT

PURPOSE: Incontinence affects over 25 million Americans and negatively impacts patient health and quality of life. To manage incontinence and reduce healthcare costs, healthcare professionals should use incontinence products that include absorbent pads and wipes and be trained in their usage. This study was to assess the effectiveness of specific incontinence products and incontinence-related management training in long-term care facilities."

DESIGN: Study overview.

SUBJECTS AND SETTING: 424 patients with varying degrees of incontinence and incontinence-related skin issues in three long-term care facilities.

METHODS: A three facility chain were broken into A,B, C facilities. Each facility was either given or not given: a full incontinence line including briefs, underwear and wipes. Clinical education in sizing, skin care and wound care. Laundry costs and economic study obtained.

RESULTS: Each facility had their own daily hurdles to overcome, which impacted the outcomes. However, the facility that received both training and the products had the most favorable results.

CONCLUSION: Because not all incontinence products are the same, more random studies and research in this area of incontinence management are required.

INTRODUCTION

Incontinence is defined as the lack of voluntary control over urination and defecation. Urinary incontinence (UI) can happen at any age and affects over 25 million Americans.[1] According to the National Association for Continence, one in five individuals over the age of 40 have an overactive bladder, urinary urgency, or urinary frequency symptoms.[2] UI occurs in one in four women aged 30–59 years and most frequently in older adults.[3] Among the latter, 50% or more live at home or in long-term care (LTC) facilities. A recent study shows that 25.6% of men and 48.4% of women residing in LTC settings have incontinence that diminishes their quality of life and dignity.[3]

Incontinence can be caused by several factors including age, infections, disease, diet, medications, pregnancy, menopause, and childbirth.[4] Age-related changes can increase the likelihood of incontinence.[5] According to Dr. Lisa Rosenberg, "Incontinence is a common part of aging, but is never normal."[1]

Infections are major risk factors for UI in LTC settings. Urinary tract infections (UTIs) are the most common healthcare-associated infections, accounting for 20–30% of infections in LTC facilities.[6] UTIs more often occur in women than men; approximately 40–50% of women will experience a UTI in their lifetime. They are caused by many different types of bacteria, most notably, *Escherichia coli*, which underlies approximately 85% of all UTIs.[7] *E. coli* lives in the bowels, but can enter the urinary tract when the perineum is wiped in the wrong direction after a bowel movement. Ideally, the perineum should be wiped from front to back (i.e., from the urethra to the perineum), but both LTC staffs and patients wipe from back to front, spreading the bacteria from the perineum into the urinary tract.

There are several types of UI, namely, stress, urge, overflow, functional, and mixed.[8] Stress incontinence is among the most common and occurs when urine leaks from the bladder during strenuous activity that places pressure on the bladder, during coughing or sneezing, or because of weakened pelvic floor muscles. Urge incontinence, also referred to as overactive bladder, is caused by damaged bladder nerves or muscles. Overflow incontinence is the dribbling of urine due to incomplete emptying of the bladder. Its causes include nerve damage, weak bladder muscles, and even constipation. Functional incontinence, which is common in the elderly, results from mental limitations (e.g., dementia) and physical impairments (e.g., decreased mobility that precludes getting to the bathroom in time). Mixed incontinence comprises two or more different types of incontinence. For instance, many women will experience both urge and stress incontinence.

Although the types of UI vary, the causes can overlap. Determining the type of UI requires the collaborative efforts of an entire interdisciplinary team (IDT). Treating and managing UI is also a collective endeavor, and not the lone responsibility of nurses. Therefore, cooperation between nurses and therapists is a crucial element of effective continence programs for facility residents. Statistics indicate a need for structured programs to decrease the incidence of treatable incontinence, and recent outcome studies document real-life improvements in LTC residents managed by IDTs.

Also needed are effective management strategies for the symptoms and conditions that contribute to UI. Novel modalities for treatment of UI have been developed, but are not routinely applied in practice, resulting in inaccurate assessments and untreated UI, particularly in older patients. Consequently, UI patients may experience the following: (1) loss of self-esteem/dignity; (2) altered or negative body image and decreased sense of well-being; (3) embarrassment, anger,

frustration, or fear of how others perceive them; (4) restriction of social activities and isolation; (5) depression and guilt; (6) loss of skin integrity and risk of pressure injuries (PIs); (7) increased risk of falls; and (8) increased risk of UTIs and other infections.

Loss of skin integrity is among the most concerning complications of incontinence. Moisture-associated skin damage (MASD) and incontinence-associated dermatitis (IAD) cause skin irritations and other adversities that pose major challenges for the healthcare staff, particularly nurses. Moreover, caring for patients with skin damage is time-consuming and can be costly. Continued incontinence and lack of treatment and management can eventually lead to even more costly complications, including PIs.

Because IAD is often confused with a PI, it is important that the healthcare staff understand the pathogenesis and causes of IAD. IAD is a mild, moderate, or severe skin ailment associated with exposure to body fluids, specifically urine and feces, as well as altered skin pH and use of incontinence devices. In general, it is costly, painful, often misdiagnosed, undertreated, problematic, and a precursor of PIs. IAD is a type of MASD and is also often referred to as intertrigo, perineal dermatitis, or diaper rash.

IAD occurs when the protective skin barrier is damaged. Its symptoms include redness, patches of inflammation, warm and firm skin, lesions, pain, burning, and itching. It has a diffuse pattern and causes partial-thickness skin damage. It is a common occurrence and creates legitimate concerns among practitioners. If partial-thickness skin damage in IAD is left untreated, it progresses to full-thickness damage and becomes a PI. An observational study of acute care patients showed that 19.7% of patients with incontinence had some level of IAD,[2] which translates to more than 50% of patients in LTC facilities. IAD has a steep economic burden. The inflation-adjusted annual estimated cost for IAD-related skin conditions in the

United States is more than $215 million. Moreover, the treatment for one mild to moderate IAD episode in one LTC resident can cost up to $169 on average.[9]

METHODS

Facilities

We performed this study to assess the outcomes of focused education and training and new incontinence products in LTC facilities. We also determined laundry costs and the incidence of IAD, UTIs, and PIs. The study was conducted in three facilities with both in-house skilled nursing units and sub-acute units. These facilities were labeled A, B, and C by means of a blind draw. We had no previous involvement with these facilities.

1. Facility A is the control facility. No products or staff education or training was provided.
2. In Facility B, cloth-like disposable briefs, gender-specific underwear, and incontinence wipes were provided. The facility staff received no training or education.
3. In Facility C, cloth-like disposable briefs and wipes were provided. The floor and clinical staffs received training and education at the start of and throughout the study.

Products

Test products were sent to the facilities in generic packaging, and their brand names were not revealed to staff members until the end of the study. The products for facility B and C were First Quality Products Prevail® Per-Fit360°™ Briefs (cloth-backed briefs), Prevail Bladder Control Pads™ (Ultimate Absorbency), Prevail Premium Quilted Adult Washcloths™ (wipes), and Prevail Bariatric "A" Briefs™ (Size A).

Patients

Our study included 424 patients (116 women and 308 men) with a median age of 68 years. Among these patients, 115 (27%) had some degree of IAD at the start of the study; 291 had Urinary Incontinence, 35 (12%) of whom had a Pressure Injury in the brief area. All patients with Urinary Incontinence were initially assessed for brief size, skin conditions, and type of UI. (Figure 1).

Product Considerations

1. Before the study, the facilities used plastic-backed briefs sized medium (M), large (L), and extra-large (XL). Because their vendors did not offer a bariatric brief, larger patients were placed in briefs that were too small, resulting in leakage, increased skin moisture, increased episodes of wet linens, and additional pressure if the briefs were stretched to fit. Brief sizes before the study and after sizing are shown in Figure 2.

2. In each facility, there was a small percentage of patients (2–4%) who would have benefitted from the use of protective underwear. Protective underwear, which are gender-specific pull up underwear was not available before the study (the patients were placed in full briefs instead), but was provided during the study based on individual needs, allowing the patients to self-toilet.

3. Before the study, all facilities utilized washcloths and antibacterial soap for incontinence peri care.

4. Laundry services were offered in the facility for personal clothing only; facility linens and the cloths under the incontinence pads were sent out to be laundered.

Study Roll Out

Before handing out the Prevail® incontinence products, we assessed the skin for conditions such as dryness, excoriation, denuded tissue, and turgor. In addition, brief sizes (current size vs the size needed for the height and weight of the patient) were determined. Current sizes were based on the "bigger is better" mentality because the staff felt that the larger briefs would hold more urine and thus reduce the frequency of brief changing. This thought process was a key topic in our educational process. In Facility A, B, and C, 76%, 63%, and 54%, respectively, of the briefs were the wrong brief size before the study. We also completed initial quality reviews of all facilities, which did not identify any system failures with incontinence or skin care. Proper skin protocols were used, with appropriate wound type-specific treatments as per the guidelines.

Brief /Educational Training

1. The facilities were using briefs that did not properly fit many patients. We discussed the negative repercussions of this with the staff, who received training regarding correct sizing, polymer action, and costs.

2. The staff was instructed in the proper turning, positioning, and cleansing (using moistened wipes) of the patients. Skin health and preventative measures were incorporated into the training.

3. The staff was taught the proper use of the incontinence cloths under the incontinence pads, which should not be used as primary turning and repositioning devices.

Continued Education Areas

1. Because patients sat in chairs for extended periods of time, the staff was educated on surface friction, repositioning, and the importance of placing patients on different surfaces at different degrees.

2. Many incontinent patients wore briefs, and the staff used the briefs to help turn them or pull them up in bed or upright. This behavior was modified during the study.

3. The facilities used washcloths instead of disposable wipes for peri care. Facilities B and C were given wipes and taught to use them correctly.

RESULTS

The study ended after 5 weeks. Data collected in the first week were discarded to ensure that no previous product would alter study outcomes. Final skin assessments were completed, and the test products were removed from the facilities.

Based on verbal responses and written questionnaires, the following were affected by the training provided during the study period: brief absorbance based on objective opinion (36% at 2 weeks vs 14% at 5 weeks), side tears in briefs (78% at 2 weeks vs 47% at 5 weeks), torn or non-adhering tabs (57% at 2 weeks vs 20% at 5 weeks), and brief leakage (42% at 2 weeks vs 8% at 5 weeks). These findings show that training of the primary care staff in key areas strengthens the incontinence care program.

Outcomes Immediately and 30 Days after Study Completion

After the test products were retrieved, the facilities reverted to the products they had previously used. We visited the facilities to conduct skin assessments and follow-ups with staff members for feedback.

IAD

IAD was a health factor in the facilities prior to the study: approximately 115 (27%) patients had mild to moderate IAD. In the two facilities in which the test products were used, the number of patients with IAD decreased from 38% at week 2 to 12% at week 5 (Figure 3). However, after the study ended, the facilities went back to using soap and washcloths instead of wipes, and incidence of IAD increased up to 17% in the non-trained facility (Facility B) and up to 4% in the trained facility (Facility C).

UTIs

The incidence of UTIs usually increases in patients with incontinence; thus, proper peri care is essential. Table 1 shows the incidence of UTIs before, during, and after the study at each of the three facilities.

Financial Impact

The product costs for Facilities B and C before and during the study were compared. Costs were only compared for products that could be directly cross-referenced. For example, if the facility did not pay for incontinent wipes before the study, we did not include it in the financial comparison. The cost of the incontinent products used before and during the study at Facility B and C averaged $10,697 and $8,266 per month, respectively. Hence, use of the test product resulted in monthly savings of $2,430 and annual savings of $29,160, which equates to a reduction of 28%.

Personal clothing was laundered in the facility, but all linens and cloths under the incontinence pads were sent out to be laundered. Before the study, bed linens were completely changed each time the patient's current briefs failed and saturated the bed, corralated to inadequate brief absorbency and incorrect size. During the study, bed linens were completely

changed after each episode of brief leakage. At the end of the study, the rate of full bed changes was only 10% of the initial rate. The cost savings for laundry fees was $5,920. The costs returned to pre-study costs after the test products and educators were removed. The monthly laundry fees for Facilities A–C are shown in Table 2.

Brief Sizing in Patients

At the start of the study, the patients were wearing either L or XL regardless of the size of the smaller patients or bariatric size patients, with no underwear those patients with ability to toilet. After the study, 78% and 22% of the patients at the non-trained facility (Facility B) wore brief sizes L and XL, respectively. Size M was discontinued, as were the bladder control under pads and bariatric briefs. In Facility C, brief sizes stabilized at 44% XL, 40% L, and 12% M; the remaining 4% included bariatric briefs and under pads. Regardless of the level of incontinence, 3% of the patients with stress/urge UI initially used full briefs. Among these, 66% were switched to under pads after training of both patients and staff. In Facilities B and C, 100% of the patients given bariatric briefs reported a better fit and appropriate absorption for incontinence. This indicates patient satisfaction.

Staff Feedback

We obtained feedback from the staffs at the facilities via a written questionnaire at 2 and 5 weeks after the study.

1. **Feedback.** The sides of the briefs are weak. They did not hold up very well when using the brief to turn and reposition the patient.

   Response. We cautioned the staff against the use of briefs for repositioning the patients.

2. **Feedback.** Men's briefs should have more padding in the front. The briefs did not have the required absorbency in the areas needed based on sex.

   Response. The staff were trained on the proper placement of genitals to ensure that voiding would be in the area of the polymers.

3. **Feedback.** The briefs were too bulky between the legs and were uncomfortable.

   Response. The staff were instructed on how to properly position the briefs, particularly between the legs.

4. **Feedback.** Body shape differs according to sex (e.g., a 5-foot tall, 180-lb woman is shaped differently than a man of the same height and weight), which affects correct sizing.

   Response. We emphasized that knowing the patient and using the right product size for him/her addresses *the amount of void, body shape, and other patient-specific needs.*

Consultant Feedback

There were challenges that are not unique to the facilities, but rather are industry-related issues.

1. **Staff-to-patient ratio on all shifts.** All three LTC facilities are located in a major metropolitan community that is inundated with medical and nursing facilities that compete for personnel. Hence, all are sometimes understaffed even when the nurse-patient ratio complies with the state-required ratio and exceeds the recommended value.

2. **Turnover.** With heavy competition of facilities vying for the employment pool, turnover is at an all-time high, ranging from 55% to 100%. Consequently, facilities have to implement creative marketing programs to recruit and retain staff. As an example, during the study period, Facility C offered a promotion that included a car to any member of the

floor staff who stayed for 6 months and maintained an exceptional employment record during that time (e.g., no call offs or tardiness). Unfortunately, a car was not an adequate incentive, as there were no qualifying employees during the study period.

3. **Training.** With the high rate of staff turnover, training is a difficult prospect. Training needs to be conducted on a daily basis and across all shifts to ensure that enough adequately trained caregivers are on the floors at all times. The high attrition rate makes one-time training insignificant.

CONCLUSION

Decreases in laundry and other costs and the incidence of IAD and improvements in the continuity of care demonstrate the benefits of the tests products both medically and financially. The combination of high-quality briefs with extended sizes, high-quality bladder control under pads, disposable adult washcloths, staff education, and training positively impact the LTC facilities. However, the staffing problems, high nurse-patient ratios, and a need for continued training with reinforcement may create challenges for manufacturers and patients alike.

Key Points

- Incontinence is a costly epidemic that affects over 25 million Americans of all ages, impacting health and quality of life.
- Managing incontinence is costly and exhaustive and requires a team effort.

- Use of specific incontinence management products coupled with appropriate training and oversight can improve quality of care, with fewer incontinence-related skin issues and lower facility costs.

REFERENCES

1. Burns M. Bladder leakage: No, it's not a part of getting older. https://www.sentara.com/healthwellness/data/blogs/bladder-leakage-no,-its-not-a-normal-part-of-getting-older.aspx. March 9, 2017. Accessed January 24, 2019.

2. Elderly Urinary Incontinence. https://www.aplaceformom.com/planning-and-advice/articles/elderly-urinary-incontinence. April 15, 2015. Accessed, updated January 2018.

3. Rowell C. Functional Pathways. Excellence in Rehabilitation. In http://blog.functionalpathways.com/2013/07/26/urinary-incontinence/. July 26, 2013. Accessed January 24, 2019.

4. Cook K, Sobeski LM. Urinary Incontinence in the older adult https://www.accp.com/docs/bookstore/psap/p13b2_m1ch.pdf. 201. Accessed January 24, 2019.

5. National Institute on Aging. Urinary incontinence in Older Adults. https://www.nia.nih.gov/health/urinary-incontinence-older-adults. May 16, 2017. Accessed January 24, 2019.

6. Urinary Tract Infection (UTI) Event for Long-term Care Facilities. https://www.cdc.gov/nhsn/PDFs/LTC/LTCF-UTI-protocol_FINAL_8-24-2012.pdf. Accessed January 24, 2019.

7. Pevzner H. The Connection between *E. Coli* and Urinary Tract Infections (UTIs). https://www.everydayhealth.com/e-coli/urinary-tract-infection/. Accessed January 24, 2019.

8. Thompson D. What is Urinary Incontinence? https://www.everydayhealth.com/urinary-incontinence/guide/. March 3, 2016. Accessed January 25, 2019.

9. Maynard J. Incontinence-associated Dermatitis—Prevalence and Economic Impact.http://www.shieldhealthcare.com/community/wound/2017/03/28/incontinence-associated-dermatitis-prevalence-economic-impact-and-the-benefits-of-prevention/. March 28, 2017.

Junkin J, Selekof JL. Prevalence of incontinence and associated skin injury in the acute care. *J Wound Ostomy Continence Nurs*. 2007;34(3):260-269.

Beeckman D, Verhaeghe S, Defloor T, Schoonhoven L, Vanderwee K. A 3-in-1 perineal care washcloth impregnated with dimethicone 3% versus water and pH neutral soap to prevent and treat incontinence-associated dermatitis: A randomized, controlled clinical trial. *J Wound Ostomy Continence Nurs*. 2011;38(6):627-634.

Beeckman D, et al. Proceedings of the Global IAD Expert Panel. Incontinence-associated dermatitis: Moving prevention forward. *Wounds International 2015*. Available to download from www.woundsinternational.com.

Long M, Reed L, Dunning K, Ying J. Incontinence-associated dermatitis in a long-term acute care facility. *J Wound Ostomy Continence Nurs*. 2012;39(3):318-327.

Minassian V, Devore E, Hagan K, Grodstein F. Severity of urinary incontinence and effect on quality of life in women, by incontinence type. *Obstet Gynecol.* 2013;121(5):1083-1090.

National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel, Pan Pacific Pressure Injury Alliance. *Prevention and Treatment of Pressure Ulcers: Quick Reference Guide*. In: Haesler E, ed. Australia: Cambridge Media; 2014.

Skin Irritation Related to Incontinence: How to Prevent it and Manage it in Your Patients: White Paper. (n.d.). Convatec. https://kestrelhealth.lpages.co/skin-irritation-related-to-incontinence-how-to-prevent-it-and-manage-it-in-your-patients/.

Mukamel DB, Spector WD, Limcangco R, Wang Y, Feng Z, Mor V. The cost of turnover in nursing homes. *Med Care.* 2009;47(10):1039-1045. doi: 10.1097/MLR.0b013e3181a3cc62.

Table 1. Incidence of Urinary Tract Infections at the Three Facilities

Time period	Facility A	Facility B	Facility C
Month before the study period	6.0% (5/91)	5.0% (12/250)	0.45% (1/224)
Month of the study period	4.5% (4/91)	4.4% (11/249)	0.45% (1/224)
First month after the study period	6.0% (5/91)	3.5% (9/255)	2.2% (5/228)
Second month after the study period	6.0% (5/93)	2.8% (7/249)	1.8% (4/228)

Facility A is the control facility. Facility B received test products but not training. Facility C received test products and training.

Table 2. Laundry Costs at the Three Facilities

Time period	Facility A	Facility B	Facility C
Month before the study period	$24,449	$34,325	$21,901
Month of the study period	$21,975	$32,796	$15,981
First month after the study period	$23,653	$33,740	$20,968

Facility A is the control facility. Facility B received test products but not training. Facility C received test products and training.

Figure legends