

# Evaluation of an Incontinence Management System in the Critical Care Environment: A Case Series

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## ABSTRACT

Exposure to incontinence puts patients at high-risk for painful skin breakdown issues including incontinence associated dermatitis (IAD) and pressure injury (PI). This study evaluated a new incontinence management system (IMS) that detects urine and liquid fecal events which was used in a Neuro Intensive Care Unit (NICU). After using the system, staff provided product feedback and the wound team conducted PI/IAD incidence surveys. This case series demonstrates that the incontinence management system was effective in detecting patient incontinence events (IEs), reducing exposure time, and resulted in staff and family satisfaction. Staff felt the system improved workflow for just-in-time incontinence care. No new cases of IAD developed on patients using the system demonstrating the incontinence management system, when used in conjunction with existing incontinence standard of care practices, can be used as a tool to help prevent incontinence associated skin breakdown in critically-ill at-risk patients.

## BACKGROUND

- Prevalence of urinary and/or fecal incontinence > 50% in the hospital environment.<sup>1</sup>
- Exposure to incontinence puts patients at high-risk for painful and costly skin breakdown issues (e.g. IAD and PI).<sup>2</sup>
- To promote skin health and preserve patient dignity, incontinence events should be removed quickly to reduce exposure. However, this is a significant challenge since staff do not know when incontinence events occur. Staff were polled and estimated that average exposure time to incontinence events on the Neuro- ICU was 56 minutes.
- Our facility's 6-bed Neuro-ICU evaluated a new incontinence management system that employs RFID technology to provide staff real-time notification of patient incontinence events (urine and liquid stool).

## SIGNIFICANCE AND PURPOSE

- The purpose of this presentation is to share our perceptions and experiences with the incontinence management system and provide specific patient outcomes.
- We explored how real-time notification of incontinence events allowing timely action to be taken might impact skin health in the sacral and gluteal regions through collection of IAD and PI incidence surveys.

## METHODS

- Following IRB approval (Catholic Health Initiatives Institute for Research and Innovation Institutional Review Board Approval # 1258604-1), ten (10) incontinent patients (urine, fecal, or dual) consented to participate in the study; the incontinence management system was used for the patients' entire length of stay on the Neuro-ICU.
- Staff, notified of patient IEs through nurse call and discreet lights at foot of the bed, responded per standard hospital guidelines.
- Staff provided product feedback and members of the wound team conducted IAD / PI incidence surveys. Incontinence event exposure time (the time lapse from when a pad is wet or soiled to when the pad is removed) was collected.
- Specific patient outcomes are described. Exposure time data and IAD and PI incidence data are summarized.

## CASE SERIES OUTCOMES

- In 10 patient cases:
- 79 incontinence events detected
  - Average incontinence event exposure time: 9 minutes, 16 seconds
  - Braden score stratification:
    - High Risk: 4 subjects
    - Moderate: 2 subjects
    - Mild: 3 subjects
    - No risk: 1 subject
  - No new cases of IAD
  - 1 pre-existing case of IAD resolved while utilizing the system
  - 1 PI developed in a patient with skin failure identified at the time of enrollment

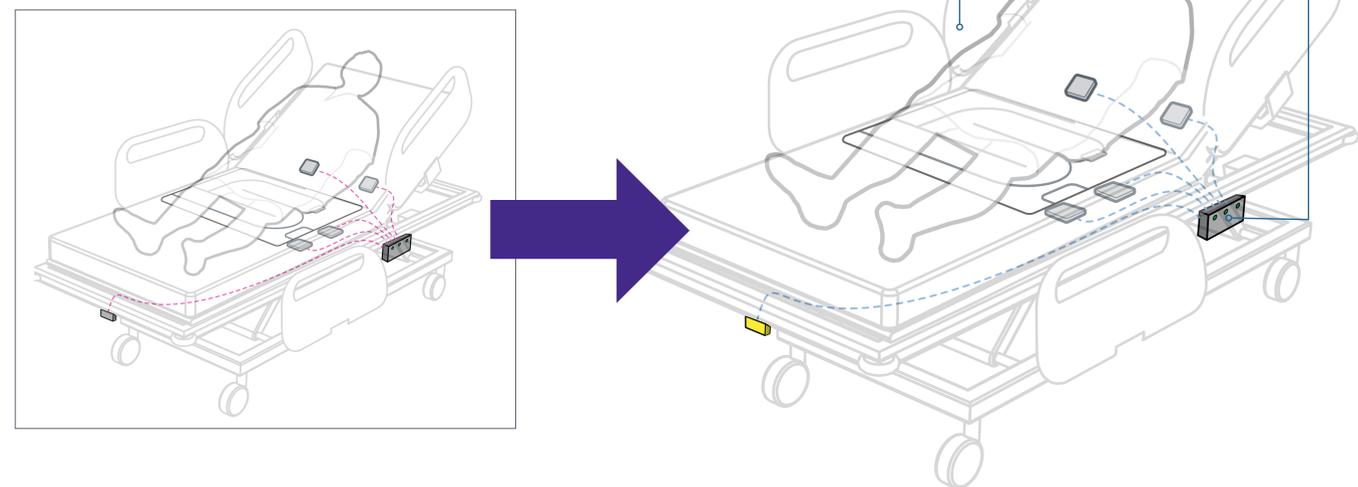
## CONCLUSIONS

- The incontinence management system **prioritized care**, improved staff workflow and **preserved patient dignity** for overall higher quality of care for patients with urinary and / or liquid fecal incontinence.
- Decreased exposure time** has been suggested as the most important factor for development of incontinence associated skin damage.<sup>3</sup> Average incontinence event exposure time with the system was 9 minutes 16 seconds, compared to the estimated 56 minutes standard of care prior to system implementation.
- No new cases of IAD** developed demonstrating that the system was an effective tool, when used with existing incontinence standard of care practice, for helping prevention of incontinence associated skin breakdown in at risk patients. Controlled studies are required to confirm these results.
- In one patient, the system provided a **less invasive option in comparison to a Foley catheter** because staff could respond more quickly.
- The incontinence management **system provided a voice for these patients** where they would not have had one otherwise. In 2 cases, the patients were unable to voice the need for a bedpan due to aphasia.
- Patients' family members expressed appreciation** that the system allowed for patients' needs to be addressed in a timely manner.

## REFERENCES

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	Subject 1: JS	Subject 2: WJ	Subject 3: BM
<b>Demographics</b>	64 year old obese female	67 year old obese male	72 year old male
<b>Pertinent Medical History</b>	<ul style="list-style-type: none"> <li>Acute CVA</li> <li>Advanced Alzheimer's disease</li> <li>Down syndrome</li> </ul>	<ul style="list-style-type: none"> <li>Acute CVA</li> <li>Diabetes mellitus</li> <li>Cardiomyopathy</li> <li>Hypertension</li> </ul>	<ul style="list-style-type: none"> <li>Dementia</li> <li>Chronic renal failure</li> <li>Chronic respiratory failure</li> </ul>
<b>Admission Diagnosis</b>	Acute CVA	Acute CVA	Status post surgical lung biopsy
<b>Assessment</b>	<ul style="list-style-type: none"> <li>Hemiparetic on right side</li> <li>Aphasic (unable to voice need for bedpan)</li> <li>Incontinent of urine &amp; stool</li> <li>NIH Stroke Scale: 28</li> <li>Confined to bed</li> <li>Hourly incontinence checks by 2 staff members</li> </ul>	<ul style="list-style-type: none"> <li>Aphasic (unable to voice need for bedpan)</li> <li>Incontinent of urine</li> <li>NIH stroke scale: 5</li> <li>Hourly incontinence checks by 2 staff members</li> </ul>	<ul style="list-style-type: none"> <li>Sedated</li> <li>Intubated</li> <li>Tube feeds</li> <li>Incontinent of liquid stool</li> <li>Hourly incontinence checks by 2 staff members</li> </ul>
<b>Braden Score (Pressure Ulcer Risk)</b>	11 (High Risk)	13 (Moderate Risk)	10 (High-Risk)
<b>Intervention</b>	<ul style="list-style-type: none"> <li>IMS used to notify staff of IEs</li> <li>Staff responded to alerts per normal care practices</li> </ul>		
<b>Outcomes</b>	<ul style="list-style-type: none"> <li>No new signs of incontinence associated skin breakdown (IAD or PI) despite risk</li> <li>Patient dignity preserved by reducing exposure associated with routine incontinence checks</li> </ul>		
<b>Staff Impressions</b>	<ul style="list-style-type: none"> <li>System alerted quickly and discretely</li> <li>Improved workflow prioritization</li> <li>Family members appreciated timeliness of needs being met</li> </ul>	<ul style="list-style-type: none"> <li>System alerted quickly and discretely</li> <li>Improved workflow prioritization</li> <li>Family members appreciated timeliness of needs being met</li> </ul>	<ul style="list-style-type: none"> <li>System accurately notified staff of liquid fecal incontinence events</li> <li>Despite the critical condition of this patient and repeated episodes of liquid fecal incontinence, he did not develop IAD or PI</li> <li>Family members appreciated timeliness of needs being met</li> </ul>