Incontinence Associated Dermatitis (IAD): Update 2014

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Definition: Incontinence Associated Dermatitis (IAD)

- Irritation and inflammation associated with exposure to stool or urine
- Often accompanied by erosion of the skin
- Sometimes accompanied by secondary cutaneous infection (candidiasis)
- Distinct etiology and pathophysiology from pressure ulceration

Photograph courtesy Linda Bohacek

Associated Factors: IAD & Pressure Ulcers

- Association between these conditions is undeniable; nature of relationship not entirely understood
- IAD vs Stage II PU presents problems along with intergluteal cleft lesions
- IAD impairs skin’s tolerance for pressure/shear
- Ongoing debate & controversy about nature of relationship reflects difficulty differentiating based on visual inspection alone
- FI and double incontinence strongly associated with PU risk, mixed evidence concerning UI alone²-⁶

# Epidemiology: Prevalence of IAD

<table>
<thead>
<tr>
<th>Reference</th>
<th>N</th>
<th>Health Care Setting</th>
<th>Incontinence Type</th>
<th>Method of Measurement</th>
<th>Prevalence, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junkin and associates&lt;sup&gt;6&lt;/sup&gt;</td>
<td>976</td>
<td>Acute care</td>
<td>Urinary and fecal incontinence</td>
<td>Direct observation</td>
<td>27</td>
</tr>
<tr>
<td>Bliss and associates&lt;sup&gt;4&lt;/sup&gt;</td>
<td>10,215</td>
<td>Long-term care</td>
<td>Urinary and fecal incontinence</td>
<td>Review of electronic database</td>
<td>5.7</td>
</tr>
<tr>
<td>Defloor and associates&lt;sup&gt;5&lt;/sup&gt;</td>
<td>19,964</td>
<td>Long-term care</td>
<td>Urinary and fecal incontinence</td>
<td>Direct observation</td>
<td>5.7</td>
</tr>
<tr>
<td>Arnold-Long and Reed&lt;sup&gt;10&lt;/sup&gt;</td>
<td>171</td>
<td>Long-term acute care</td>
<td>Urinary and fecal incontinence</td>
<td>Direct observation</td>
<td>22.8</td>
</tr>
<tr>
<td>Beeckman and associates&lt;sup&gt;11&lt;/sup&gt;</td>
<td>141</td>
<td>Long-term care</td>
<td>Urinary and fecal incontinence</td>
<td>Direct observation</td>
<td>22.5</td>
</tr>
<tr>
<td>Junkin and Selekof&lt;sup&gt;7&lt;/sup&gt;</td>
<td>608</td>
<td>Acute care</td>
<td>Urinary and fecal incontinence</td>
<td>Direct observation</td>
<td>20</td>
</tr>
</tbody>
</table>

# Epidemiology of IAD: Incidence

<table>
<thead>
<tr>
<th>Reference</th>
<th>N</th>
<th>Health Care Setting</th>
<th>Incontinence Type</th>
<th>Method of Measurement</th>
<th>Period of Observation</th>
<th>Incidence, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bliss and associates(^{19})</td>
<td>981</td>
<td>Long-term care</td>
<td>Urinary and fecal incontinence</td>
<td>Direct observation</td>
<td>6 weeks</td>
<td>3.4</td>
</tr>
<tr>
<td>Bliss and associates(^{12})</td>
<td>45</td>
<td>Critical care</td>
<td>Fecal incontinence</td>
<td>Direct observation</td>
<td>Duration of stay in the critical care unit: median time to onset of 4 d</td>
<td>36</td>
</tr>
<tr>
<td>Driver(^{8})</td>
<td></td>
<td>Critical care</td>
<td>Fecal incontinence</td>
<td>Direct observation</td>
<td>Phase 1: Duration of stay in critical care unit: &lt;14 d</td>
<td>Phase 1: 50</td>
</tr>
<tr>
<td>Phase 1: n = 131</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Phase 2: Duration of stay in critical care unit: &gt;14 d</td>
<td>Phase 2: 19(^{a})</td>
</tr>
<tr>
<td>Phase 2: n = 177</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arnold-Long and Reed(^{10})</td>
<td>132</td>
<td>Long-term care</td>
<td>Urinary and fecal incontinence</td>
<td>Direct observation</td>
<td>Duration of stay: Median time to onset 13.5 d</td>
<td>7.6</td>
</tr>
</tbody>
</table>

\(^{a}\)Researchers implemented defined skin care regimen, using 3-in-1 washcloth with skin cleanser, moisturizers, and dimethicone-based skin protectant during phase 2 of the study.

IAD: Screening begins with CNA or other non-licensed care providers.

1. Check skin condition. Check one:
   - Intact
   - Red
   - Broken

2. Circle area(s) of concern.

3. Report to nurse.

ID
Checked by
Date

PeriCHECK
Observe and Report
Incontinence Associated Dermatitis

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Primarily based on visual inspection

- Inflammation (bright red) in persons with lighter skin tones
- Located in skin fold or underneath containment device
- Borders are poorly demarcated & irregular
- Surface of skin may "glisten" owing to serous exudate
IAD: Diagnosis in persons with Darker Skin Tones

- Inflammation not readily apparent (ie: not bright red when confined to epidermal layer); often seen as areas of hyperpigmentation or variable red tones
- Hypopigmented areas with chronic inflammation
- Pattern of skin damage does not vary
IAD Diagnosis:
Do not Forget the History

- Emerging evidence reminds us that isolated photographs do not reflect clinical reality
- The biggest aid in this case is a thorough history
## IAD vs Pressure Ulcer: Differential Diagnosis

<table>
<thead>
<tr>
<th>Factors</th>
<th>IAD</th>
<th>Stage I Pressure Ulcers</th>
<th>Stage II Pressure Ulcers</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of condition</td>
<td>Exposure to urine or stool</td>
<td>Exposure to pressure, shear, and/or microclimate from immobility or inactivity</td>
<td>Exposure to pressure, shear, and/or microclimate from immobility or inactivity</td>
</tr>
<tr>
<td>Location of affected skin</td>
<td>Skin folds in areas where urine or stool can accumulate</td>
<td>Skin usually over bony prominences or exposed to other external pressure (e.g., medical device)</td>
<td>Skin usually over bony prominences or exposed to other external pressure (e.g., medical device)</td>
</tr>
<tr>
<td>Color of wound bed</td>
<td>Shiny, red, glistening, no slough in wound bed</td>
<td>Nonblanchable erythema of intact skin</td>
<td>Shiny, pink, or red open wound, no slough in wound bed</td>
</tr>
<tr>
<td>Color of periwound tissue</td>
<td>Red, irritated, edematous</td>
<td>Normal for race/ethnicity, edema may be palpable</td>
<td>Normal for race/ethnicity, edema may be palpable</td>
</tr>
<tr>
<td>Characteristics of involved area</td>
<td>Blotchy, not uniform in appearance</td>
<td>Tend to be single areas of erythema</td>
<td>Tend to be single ulcers with distinct ulcer wound margin</td>
</tr>
<tr>
<td>Pain</td>
<td>Burning, itching, and tingling</td>
<td>Sharp pain, usually no itching; pain may intensify when patient is initially moved off of injured areas</td>
<td>Sharp pain, usually no itching; pain may intensify when patient is initially moved off of injured areas</td>
</tr>
<tr>
<td>Odor</td>
<td>Urine, fecal odor</td>
<td>None</td>
<td>None unless infected and then may have odor of infecting organism</td>
</tr>
<tr>
<td>Other</td>
<td>Candidiasis common (seen as satellite lesions)</td>
<td>Redness tends to resolve with offloading or repositioning of device</td>
<td>Ulcer bed is shallow and heals through epithelialization</td>
</tr>
</tbody>
</table>

Abbreviation: IAD, incontinence-associated dermatitis.
IAD and its Severity Instrument

- Designed and validated by WOC nurses and their faculty
- 2 WOC nurses established initial face validity
- Content and criterion validity via 9 WOC nurses in North Central Region of WOCN
- Interrater reliability via 247 WOC nurses attending 2007 National Conference
- Descriptive, ranks severity allowing longitudinal assessment; responsiveness has not yet been tested

IAD and its Severity Instrument

LOCATION
The 13 body locations of IAD

1. Perianal skin
2. Crease between buttocks
3. Left lower buttock
4. Right lower buttock
5. Left upper buttock
6. Right upper buttock
7. Genitalia (labia/scrotum)
8. Lower abdomen/suprapubic
9. Crease between genitalia and thigh
10. Left inner thigh
11. Right inner thigh
12. Left Posterior thigh
13. Right posterior thigh

IAD: Institute Defined Skin Care Regimen Routinely Followed

**Recommendation**
A consistently applied, defined, or structured skin care regimen is recommended for prevention and treatment of IAD.

**SORT Strength of Recommendation**
A

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Strength of Recommendation (SORT) grades are based on the following taxonomy:

A: recommendation based on consistent, good-quality patient-oriented evidence evaluating clinical outcomes, symptom improvement, impact on quality of life, and costs.

B: recommendation based on inconsistent or limited-quality patient-oriented evidence.

C: recommendation based on consensus among experts, disease-oriented evidence, or case series studies.

IAD: Institute Defined Skin Care Regimen Routinely Followed

- Latest study is comparison cohort study of 76 critically ill patients (38 in each group)
- Subjects with loose stool (Bristol classes 5,6,7) and fecal incontinence; Braden scale score ≤ 16 Routine care: soap and H₂O, bed pads, skin protectants when indicated; did not specify frequency
- Intervention: no-rinse skin cleanser + moisturizer, ointment based skin protectant daily and after FI episodes
- Patients in intervention group lower IADS scores ($t = 4.836, P < .001$) than control group and were less likely to develop PU ($5$ vs $19$, $\chi^2 = 11.936$, $P = .001$).

IAD: Principles of Prevention & Treatment

Cleanse
Moisturize
Protect
When frequent bathing necessary, current evidence suggests:

- Gentle cleansing: *NO scrubbing* \(^1,2\)
- Consider type of washcloth
- Select cleanser with pH close to acid mantle of skin
- Select product that minimizes potential irritants, scents, etc.

Some clinicians have raised concerns about effectiveness of no-rinse cleansers and residue.

Study comparing bacterial counts in skin of volunteers using controlled bacterial exposure technique (E. coli and Staph aur.); both ↓ CFU dramatically; no differences based on technique¹

Moisturize

- **Humectants** attract water to the skin
- **Emollients** replace lipids to stratum corneum; designed to smooth skin surface
- **Occlusives** shield skin from exposure to moisture and potential irritants; we will call these by their FDA category name: skin protectants
- Sparse evidence concerning role in preventing or treating IAD; recent evidence suggests clinically relevant differences in skin capacitance\(^1\)\(^2\)

Skin Protectants should

- Act as a “moisture barrier”, protecting skin from deleterious effects of exposure to irritants and excess moisture
- Maintain hydration and maintain normal rate of transepidermal water loss (TEWL)
- Avoid maceration when left on for prolonged period of time

Options

- Ointment based skin protectants
- Liquid acrylates (marketed as a skin barrier)

Ointment based skin protectants

- **Petrolatum**: blend of castor seed oil & hydrogenated castor oil
- **Dimethicone**: silicone based oil
- **Zinc Oxide**: white powder, mixed with cream or ointment base
Clinical Evidence

- **Petrolatum**
  - Good protection against irritant
  - Avoided maceration
  - Modest skin hydration

- **Dimethicone**
  - Variable protection against irritant
  - Modest protection against maceration
  - Good skin hydration

- **Zinc Oxide**
  - Good protection against irritant
  - Did not avoid maceration
  - Poor skin hydration

Protect

- Skin barriers (polymer acrylate)
  - Non-alcohol preferred
    - Less pain
    - Less drying

- No different when compared to ointment based skin protectants in one robust RCT (powered for economic rather than efficacy outcomes)

Promoting Adherence to Structured Skin Care Regimen

- Evidence is sparse but clinical experience strongly suggests that adherence to structured skin regimen enhanced by
  - Combining steps to create more efficient skin care
  - Ensuring supplies readily available at bedside for routine and cleansing following incontinence episode
IAD Product Selection: SORT Statements

A skin protectant or disposable cloth that combines a cleanser, emollient-based moisturizer, and skin protectant is recommended for prevention of IAD in persons with urinary or fecal incontinence and for treatment of IAD, especially when the skin is denuded. B

*Strength of Recommendation (SORT) grades are based on the following taxonomy:\nA: recommendation based on consistent, good-quality patient-oriented evidence evaluating clinical outcomes, symptom improvement, impact on quality of life, and costs.
B: recommendation based on inconsistent or limited-quality patient-oriented evidence.
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RCT of 1-Step Pre-Moistened Cloth vs. Soap & Water for Prevention and Treatment of IAD

- Block randomization using units from 11 nursing homes; 6 units allocated to intervention (pre-moistened cloth with no rinse cleanser, emollient & humectant moisturizers and 3% dimethicone skin protectant) and 5 to standard treatment (pH neutral soap and water)
- 141 subjects; prevalence of IAD at enrollment 22.3% in intervention group, 22.8% in control group
- Pre-moistened wash cloth reduced IAD prevalence 8.1% vs 27.1% (p=0.003) and non-significant effect on IAD severity 3.8 vs 6.9 (p=0.06)

Quality Improvement Project

- QI project examined impact of location of supplies on adherence to structure skin care program using 3-in-1 cloth with dimethicone skin protectant
- Overarching goal was pressure ulcer prevention, 25 bed MICU, 20 patients measured on baseline survey day
- 24 patients measured at follow up survey conducted 4 months later

Location and Adherence to Structured Regimen

Providing barrier cloths at the bedside:
- Made it more convenient and easy to apply barrier 100% of the time.
- Made it easier for me to facilitate incontinence care.
- Makes my job more efficient so more time for other patient care duties.
- Skin condition of the incontinent patient looks better.
- I prefer barrier cloths to my previous incontinence care.
- At bedside vs. utility room facilitates better practice.
- Helped me utilize the right product for incontinence clean-up.
- I prefer having the product available at the bedside.

Sample Size = 18

Nursing Management

Location and Adherence to Structured Regimen

15% 3/20
Added barrier cloth stations to bedside

% of patients with IAD
0 2 4 6 8 10 12 14 16
Pre-intervention Post-intervention
0% 0/24

IAD: Treatment

- Establish or continue defined skin care program based on “cleanse, moisturize & protect”, consider changing skin protectant
- Minimize exposure to irritants (aggressively manage UI or FI)
- Treat secondary cutaneous infections
- Allow skin to heal or apply protectant with active ingredients designed to promote healing
## IAD Product Selection: SORT Statements

<table>
<thead>
<tr>
<th>Product Selection</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin care products used for prevention or treatment of IAD should be selected based on consideration of individual ingredients in addition to consideration of broad product categories such as cleanser, moisturizer, or skin protectant.</td>
<td>C</td>
</tr>
<tr>
<td>Select a pH-balanced skin cleanser (one whose pH range approximates the acid mantle of healthy skin).</td>
<td>B</td>
</tr>
<tr>
<td>No rinse skin cleansers are preferred over towel drying.</td>
<td>B</td>
</tr>
<tr>
<td>Gentle cleansing is preferred over scrubbing techniques; use a soft cloth to minimize friction damage.</td>
<td>C</td>
</tr>
<tr>
<td>Routine use of a moisturizer is recommended to replace intercellular lipids and promote moisture barrier function of the skin.</td>
<td>C</td>
</tr>
<tr>
<td>A moisturizer or combination product with a high concentration of humectants is not recommended for hyperhydrated skin.</td>
<td>C</td>
</tr>
<tr>
<td>A moisturizing product or combination product with an emollient moisturizer is recommended to prevent IAD in intact skin.</td>
<td>C</td>
</tr>
<tr>
<td>A product that combines a cleanser and emollient-based moisturizer ensures application of both products in a single step.</td>
<td>C</td>
</tr>
</tbody>
</table>

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IAD Treatment: Severe Cases

- Create Skin Paste with aluminum sulphate or acetate and karaya powder
  - Applied as compress; causes protein precipitation & has antimicrobial properties
  - Exerts drying & soothing effect; followed by application of moisture barrier
  - Often used when dermatitis complicated by extensive erosion and serous exudate
Dressings: Practical Concerns

Role of topical Dressings

- Maintaining adherence significant challenge
- Skin surfaces complex
- Borders often roll when ointments or moisturizing products have been applied
- Undermining of urine or stool may occur
IAD: Contain/Prevent Exposure to Urine Stool

- Establish or continue defined skin care program based on “cleanse, moisturize & protect”, consider changing skin protectant
- Minimize exposure to irritants (aggressively manage UI or FI)
- Treat secondary cutaneous infections
- Allow skin to heal or apply protectant with active ingredients designed to promote healing
Conclusions

- IAD remains a prevalent and clinically relevant condition
- A structured skin regimen is the cornerstone of IAD prevention and treatment
  Principles of skin regimen: cleanse, moisturize & protect