INCONTINENTIE- GEASSOCIEERDE DERMATITIS (IAD)

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European Pressure Ulcer Advisory Panel
Chair of the Scientific Committee
INTRODUCTION

Definition

- A reactive response of the skin to chronic exposure to urine and faecal material which could be observed as an inflammation and erythema with or without erosion or denudation

<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 associates⁶</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 associates⁴</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 associates⁵</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 Reed⁷³⁰</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 associates¹¹</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 Selekov⁷</td>
<td>608</td>
<td>Acute care</td>
<td>Urinary and fecal incontinence</td>
<td>Direct observation</td>
<td>20</td>
</tr>
</tbody>
</table>
ETIOLOGY

- Incontinence: water is pulled into and held in the corneocytes
- Overhydration: swelling and disruption of the structure of the stratum corneum, and leads to visible changes in the skin
- Excessive hydration: irritants may more easily penetrate the stratum corneum to exacerbate inflammation
- Overhydrated skin: epidermis more prone to injury from friction
ETIOLOGY

- Natural moisturising factor within corneocytes
- Intercellular lipid layers between corneocytes
- Desmosome
- Corneocyte
ETIOLOGY

- Exposure to urine and/or faeces: skin becomes more **alkaline** (skin bacteria convert the substance urea to ammonia which is alkaline)
- Increase in **skin pH**: micro-organisms to thrive and increase the risk of skin infection
- **Faeces** contain lipolytic (lipid-digesting) and proteolytic (protein-digesting) enzymes capable of damaging the stratum corneum
ETIOLOGY

- Skin barrier
RISK FACTORS

- Knowledge and awareness of risk factors is helpful to tailor IAD prevention and management.

- IAD prevalence studies identified following key risk factors for IAD:
  - Incontinence: liquid stool is most irritating, followed by double incontinence, fecal incontinence and urine incontinence
  - Health status (critical illness, multimorbidity)
  - Fever
  - Diminished perfusion and oxygenation
  - Poor skin condition (e.g. steroid use/diabetes)
  - Restricted mobility and activity
  - Higher score on care dependency
  - Poor nutritional status
  - Risk of friction and shear
  - Restricted cognitive awareness
Complexity of skin assessment in sacral area
## CLINICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th></th>
<th>IAD</th>
<th>Pressure ulcer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cause</td>
<td>Moisture (+ friction)</td>
<td>Pressure/Shear</td>
</tr>
<tr>
<td>2. Location</td>
<td>Peri- anal (anal cleft)</td>
<td>Bony prominence</td>
</tr>
<tr>
<td>3. Shape</td>
<td>Diffuse - Kissing ulcer</td>
<td>1 spot</td>
</tr>
<tr>
<td>4. Depth</td>
<td>Superficial</td>
<td>Superfical - deep</td>
</tr>
<tr>
<td>5. Necrosis</td>
<td>-</td>
<td>Possible</td>
</tr>
<tr>
<td>6. Edges</td>
<td>Diffuse - irregular</td>
<td>Distinct edges</td>
</tr>
<tr>
<td>7. Colour</td>
<td>Redness is not equal</td>
<td>Redness is equal</td>
</tr>
</tbody>
</table>
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INCONTINENTIE- GEASSOCIEERDE DERMATITIS (IAD) - PROF. D. BEECKMAN, 2017
## IAD ASSESSMENT

- **IAD Severity Categorisation Tool:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Clinical presentation</th>
<th>Definition and related criteria**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 0</td>
<td>No redness, not skin intact</td>
<td>Skin is normal as compared to rest of the body (no signs of IAD)</td>
</tr>
<tr>
<td>Category 1</td>
<td>Erythema, +/- oedema</td>
<td>Erythema but skin intact</td>
</tr>
<tr>
<td>Category 2</td>
<td>As above for Category 1</td>
<td>Red* with skin breakdown +/- vesicles/bullae/skin erosion +/- denudation of skin</td>
</tr>
</tbody>
</table>


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**CATEGORY 1 = PERSISTENT REDNESS**

- CAT 1 A = Persistent redness without clinical signs of infection
- CAT 1 B = Persistent redness with clinical signs of infection

**CATEGORY 2 = SKIN LOSS**

- CAT 2 A = Skin loss without clinical signs of infection
- CAT 2 B = Skin loss with clinical signs of infection
Category 1: Persistent redness

1A - Persistent redness without clinical signs of infection

**Critical criterion**
- Persistent redness
  - A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour.

**Additional criteria**
- Marked areas or discoloration from a previous (healed) skin defect
- Shiny appearance of the skin
- Macerated skin
- Intact vesicles and bullae
- Skin may feel tense or swollen at palpation
- Burning, tingling, itching or pain may be present
--- Category 1: Persistent redness ---

1B - Persistent redness with clinical signs of infection

Critical criteria
- Persistent redness
  A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour
- Signs of infection
  Such as satellite lesions (e.g. pustules or maculopapular rash) or white scaling of the skin (indicating a fungal infection e.g. Candida albicans)

Additional criteria
- Marked areas or discolouration from a previous (healed) skin defect
- Shiny appearance of the skin
- Macerated skin
- Intact vesicles and bullae
- The skin may feel tense or swollen at palpation
- Burning, tingling, itching or pain may be present
Category 2: Skin loss

2A - Skin loss without clinical signs of infection

Critical criterion
- Skin loss
  *Skin loss may present as skin erosion, denudation, excoration, open vesicles, or open bullae. The skin damage pattern may be diffuse.*

Additional criteria
- Persistent redness
  *A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour*
- Marked areas or discolouration from a previous (healed) skin defect
- Shiny appearance of the skin
- Macerated skin
- Intact vesicles and bullae
- Skin may feel tense or swollen at palpation
- Burning, tingling, itching or pain may be present
Category 2: Skin loss

2B - Skin loss with clinical signs of infection

Critical criteria
- Skin loss
  Skin loss may present as skin erosion, denudation, excoriation, open vesicles, or open bullae. The skin damage pattern may be diffuse.
- Signs of infection
  Such as satellite lesions (e.g., pustules or maculopapular rash), white scaling of the surrounding skin or in the wound bed (indicating a fungal infection e.g., Candida albicans), slough visible in the wound bed (yellow/brown/greyish), green appearance within the wound bed (indicating a bacterial infection e.g., Pseudomonas aeruginosa), excessive exudate levels, purulent exudate (pus) or a shiny appearance of the wound bed.

Additional criteria
- Persistent redness
  A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour
- Marked areas or discolouration from a previous (healed) skin defect
- Shiny appearance of the skin
- Macerated skin
- Intact vesicles and bullae
- Skin may feel tense or swollen at palpation
- Burning, tingling, itching or pain may be present
The aim of this systematic review and meta-analysis was to identify the associations between IAD, moisture and incontinence as its most important etiologic factors, and pressure ulcer development. The following research questions were addressed:

1. What is the association between IAD and pressure ulcer development?
2. What is the association between incontinence and pressure ulcer development?
3. What is the association between moisture and pressure ulcer development?
IAD VS. PRESSURE ULCERS

Results

- Fifty-eight studies were included
- Measures of relative effect at the univariate level were meta-analyzed
- In most studies (86%), a significant association between variables of interest was found, with pooled odds ratios in univariate models varied between 1.92 (95% CI 1.54-2.38) for urinary incontinence and 4.99 (95% CI 2.62-9.50) for double incontinence (p<0.05)
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Interventions for preventing and treating incontinence-associated dermatitis in adults (Protocol)


Proceedings from the Global IAD Expert Panel

Cochrane Library

Interventions for preventing and treating incontinence-associated dermatitis in adults.


DOI: 10.1002/14651858.CD011627.

www.cochranelibrary.com
IAD PREVENTION AND MANAGEMENT

Care for incontinent patients includes following strategies:

- **Management of incontinence:** to avoid or minimize contact from the skin with urine and/or faeces

- **A structured skin care regimen:**
  
  - **Skin cleansing:** to remove irritants (urine, faeces, debris and microorganisms)
  - **Skin moisturizing:** to repair or increase the integrity of the skin barrier
  - **Skin protecting:** to avoid or minimize contact from the skin with urine and/or faeces
IAD PREVENTION AND MANAGEMENT

Structured skin care regimen:

- Skin care products usually contain a wide range of ingredients with different properties.
- The actual performance of products depends on the overall formulation, rather than on the principle ingredient.
- As a consequence, the function of a skin care product cannot always be clearly divided into moisturizing or protecting.
- Kottner et al. proposed to categorize skin care products into:
  - Skin cleansers: products used for removing irritants (urine, faeces, debris and microorganisms).
  - Leave-on products: products with moisturizing and/or skin protecting function.
IAD PREVENTION AND MANAGEMENT

Gentle perineal cleansing:

- Should involve a product whose pH range reflects the acid mantle of healthy skin (pH between 5.4-5.9)
- The pH of normal soap is alkaline and in the range of 9.5-11.0
- Increase of stratum corneum swelling
- Alteration in lipid rigidity
- Many no-rinse skin cleansers are “pH balanced” in order to ensure that their pH is closer to that of healthy skin.
IAD PREVENTION AND MANAGEMENT

Gentle perineal cleansing
IAD PREVENTION AND MANAGEMENT

Gentle perineal cleansing

- Minimize friction damage
- Drying the skin by patting with a towel offered no advantage to conventional gentle rubbing as it leaves the skin significantly wetter and at greater risk of frictional damage
- As soon as possible to limit contact with urine and stool
- Fecal incontinence!
IAD PREVENTION AND MANAGEMENT

Moisturization

- Barrier function = intercellular lipids + intact keratinocytes
- Loss of water at the stratum corneum (TEWL)
- Moisturization / skin conditioning involves repairing the skin barrier
- Moisturizers contain varying combinations of emollients, occlusives, and humectants
- The routine use of moisturizers is useful in replacing intercellular lipids and maintaining the barrier function of the skin
IAD PREVENTION AND MANAGEMENT

Skin protecting

- To primarily prevent skin breakdown due to moisture and biological irritants in urine and faeces
- A wide variety of products and formulas with both moisturizing and/or protecting/barrier capability.
- Must allow skin observation!
IAD PREVENTION AND MANAGEMENT

<table>
<thead>
<tr>
<th>Products</th>
<th>Characteristics</th>
</tr>
</thead>
</table>
| Petrolatum-based products | • Form an occlusive layer, increasing skin hydration  
|                         | • May affect fluid uptake of absorbent incontinence products  
|                         | • Transparent when applied thinly                                               |
| Zinc oxide-based products | • Can be difficult and uncomfortable to remove (e.g. thick, viscous pastes)  
|                         | • Opaque, needs to be removed for skin inspection                                 |
| Dimethicone-based products | • Non-occlusive  
|                         | • Do not affect absorbency of incontinent products when used sparingly  
|                         | • Opaque or become transparent after application                                  |
| Acrylate terpolymers   | • Form a transparent film on the skin  
|                         | • Do not require removal  
|                         | • Transparent, allow skin inspection                                            |
IAD PREVENTION AND MANAGEMENT

- Treatment of IAD must include a consistent and well defined skin care regimen, including:
  - Gentle perineal cleansing
  - Moisturization
  - The application of a skin protectant or moisture barrier
- The use of absorptive or containment products and/or indwelling devices, might be needed in specific situations to support treatment of IAD
IAD PREVENTION AND MANAGEMENT

- The addition of antifungal products, steroidal based topical anti-inflammatory products, and topical antibiotics to treat IAD is only recommended in specific situations.
- Referral to a continence specialist if needed!
- Patients who do not respond to treatment within two weeks should be referred for additional evaluation.
CONCLUSION

- Incontinence = risk factor for pressure ulcers, but IAD can occur in the absence of any other pressure ulcer-associated risk factors and vice versa.

- The presence of any urinary and/or faecal incontinence, even in the absence of other risk factors, should trigger implementation of an appropriate IAD prevention protocol.

- Skin care should be an essential element in each pressure ulcer prevention protocol.
BEST PRACTICE PRINCIPLES

INCONTINENCE-ASSOCIATED DERMATITIS: MOVING PREVENTION FORWARD

Addressing evidence gaps for best practice

- Identifying causes and risk factors for IAD
- IAD and pressure ulceration
- IAD assessment and severity-based categorisation
- IAD prevention and management strategies

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