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Granular Parakeratosis Associated with Benzalkonium Chloride (BAC, BZK): Information & Management:

Axilla (armpit)

What is granular parakeratosis?

- Granular parakeratosis is a benign skin condition that affects the outer layer of the skin.
- It commonly appears in skin folds such as the armpits, groin, under the breasts, inner thighs, or diaper area in infants.
- It is not an infection and is not contagious.
- Also called Hyperkeratotic Flexural Erythema (HKFE).

Why does it occur?

- The condition is commonly related to an abnormal skin barrier process involving a protein called filaggrin.
- Filaggrin is a protein that help keep tight keratin bonds in the outer layer of the skin, produces products that help hydrate the skin and maintain the skin barrier.
- In granular parakeratosis, this process is disrupted, causing thickened, scaly skin that is more sensitive to irritation.
- Skin irritants (such as benzalkonium chloride, BAC), heat, moisture, friction, and prolonged occlusion (skin rubbing against skin or clothing) can trigger or worsen rash, red-brown discolouration, skin peeling (exfoliation), itch, burning stinging and pain.
    - Symptoms can last weeks to months.

What is BAC and what other topical products can cause or worsen granular parakeratosis?

- BAC is a quaternary ammonium compound (QAT) used as a disinfectant, sanitisation and preservative.
    - When used as a laundry rinse, it can accumulate in clothing seams and with prolonged contact can trigger granular parakeratosis (even if you have used it for a long time without issue).
    - It is also used as an algaecide in swimming pools.

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- Other products (not containing BAC) that can trigger or worsen granular parakeratosis may include:
  - Zinc oxide in barrier creams.
  - Deodorants / antiperspirants, occlusive powders (eg. Talcum), lotions (eg. Calamine) or creams, hair removal products.

Common products containing BAC:

- **Examples of common laundry rinse aids containing BAC (read the label of any rinse aids used):**
  - Canesten Laundry Rinse.
  - Dettol Anti-Bacterial Laundry Sanitiser.
  - Dettol Washing Machine Cleaner.
  - Pine O Clean Laundry Sanitiser.
  - Pine O Cleen Gold Washing Machine Cleaner.
  - Walch Antibacterial Laundry Sanitiser.
- **Examples of other topical products with BAC (as a preservative):**
  - QV Flare Up Cream.
  - QV Flare Up Bath Oil
  - Aveeno Dermexa Daily Emollient Cream
  - Aveeno Baby Dermexa Emollient Cream

Example product images:

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Management – General Measures:

- **Cease and Reduce Triggers:**
  - Check labels of any laundry sanitisers, washing machine cleaners, creams and bath oils used. **Stop using all products containing BAC, even once the skin heals.**
  - Wash all underwear and clothing in plain water laundry cycle multiple times to attempt to decrease or eliminate any BAC that may have accumulated in clothing seams.
  - Avoid deodorants, powders, zinc oxide barrier creams, waxing or depilatory products on affected areas until completely healed (then these may be resumed).
  - No need to avoid swimming pools. If recently treated with algaecide, following the instructions on the label (usually swimming may occur after 15 minutes).
- **Support the Skin Barrier:**
  - Wear loose, breathable clothing (eg. Cotton).
  - Reduce heat, friction and excessive sweating until healed (including heavy exercise).
  - Keep affected areas clean and dry.
  - Gently pat skin dry after water contact.
  - Soap free or water only wash (avoid hot water baths or showers as this will dry the skin).
  - Use simple, fragrance-free moisturisers, only if advised, and avoid heavy creams in the skin folds.

Management – Prescribed Treatments (In Addition to General Measures):

- General measures may be adequate, depending on severity (ie. Conservative management).
- Combination treatments may be considered.
- Topical corticosteroid ointments or creams.
- Oral steroids (prednisolone).
- Topical or antibiotics such as doxycycline (if secondary infection suspected and / or for anti-inflammatory effects).
- Keratolytic agents (eg. lactic acid, urea creams).
- Mild topical retinoids.
- Calcipotriol (vitamin D analogue).
- For rare, severe. recalcitrant cases: botulinum toxin (for excessive sweating), oral isotretinoin.

What to Expect:

- Improvement often occurs once triggers are removed.
- Full resolution may take weeks to months.
- Post-inflammatory erythema (redness), hyperpigmentation (brownness) or hypopigmentation (whiteness) often occurs and takes months to settle.
- Recurrence can occur if triggers return.