# Topical treatment of **actinic keratosis (AK), SCC in situ/Bowen disease, and selected superficial BCC (sBCC)**

Efudix and imiquimod overlap but have somewhat different strengths.
The regimens below are framed for **New Zealand primary-care practice** and the NZ product information.

Dr. Paul Tervit : Aug 2026

| Feature | Efudix® — fluorouracil 5% (5-FU) | Imiquimod 5% |
|---|---|---|
| **Drug class / action** | Antimetabolite/cytotoxic. Inhibits thymidylate synthase → preferential destruction of rapidly proliferating dysplastic keratinocytes | Immune-response modifier; TLR-7 agonist → induces interferon-α and other cytokines → cell-mediated destruction of abnormal cells |
| **Particularly useful for** | **Field treatment of multiple AKs**; Bowen disease/SCC in situ | **Superficial BCC** and field treatment of AKs |
| **Actinic keratosis — practical regimen** | **Once or twice daily for ~3–4 weeks**. Duration can be shortened for brisk facial response or extended toward 6–8 weeks for slower responding sites. | NZ datasheet regimen: **3 nights/week × 4 weeks**, leave on ~8 h → **4-week treatment-free interval** → assess; repeat another 4-week course if persistent. |
| **SCC in situ / Bowen disease** | **Once or twice daily for ~3–4 weeks**, often extending treatment if response is inadequate. Efudix is specifically indicated for Bowen disease in NZ. | Used in practice/off-label in some settings, but **SCC in situ is not an NZ datasheet indication**. Evidence exists, but generally less straightforward than 5-FU |
| **Superficial BCC** | Can be used for **small, very superficial, low-risk BCC**, particularly when surgery is inappropriate. BPAC describes **BID for 6–12 weeks**, although practice/regimens vary. | **Once daily, 5 consecutive days/week × 6 weeks**; treat tumour plus **1-cm margin**. This is an NZ-approved indication where surgical excision is inappropriate. |
| **Nodular/infiltrative/ morphoeic BCC** | **Avoid** — penetration is inadequate and apparent surface clearance may conceal residual deeper tumour | **Avoid** — intended for superficial BCC; not appropriate for recurrent, infiltrating or nodular disease |
| **Typical application** | Thin layer to treatment field. Wash hands afterwards. Avoid eyes, lips and mucosa | Thin layer rubbed into lesion/field; leave approximately **8 h (usually overnight)** then wash off |
| **Expected reaction** | Erythema → inflammation → erosion/crusting → healing. A substantial inflammatory reaction is **expected and part of treatment** | Erythema, oedema, crusting/erosion and sometimes ulceration. Degree of inflammation often correlates with therapeutic response. |
| **When reaction becomes excessive** | Reduce frequency or temporarily stop. Severe erosion/pain warrants review. Treatment endpoint rather than blindly completing a predetermined number of doses can be useful clinically | Temporary interruption is appropriate for intense inflammation; restart when tolerable. NZ datasheet specifically allows interruption for intense local reactions. |
| **Systemic effects** | Usually negligible systemic absorption, but potentially serious toxicity can occur in **DPD deficiency** | Occasionally **flu-like symptoms**, fatigue, headache, myalgia and lymphadenopathy due to cytokine activation |
| **Pregnancy** | **Contraindicated**; fluorouracil is potentially teratogenic. Also contraindicated in breastfeeding according to NZ product information. | Avoid in pregnancy unless clearly justified; considerably less pregnancy experience |
| **Sun exposure** | **Important problem** — UV exposure can substantially exacerbate inflammation; rigorous photoprotection | Photoprotection also important |

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| **Cosmesis** | Usually excellent after healing, although transient erythema/post-inflammatory pigment alteration can persist | Usually excellent; one reason it is attractive for selected sBCCs |
| **Patient adherence** | Daily/BID therapy plus the conspicuous inflammatory phase can cause poor adherence | Less frequent AK regimen can improve adherence, although the unpredictable inflammatory response can be troublesome |
| **Main clinical advantage** | **Excellent field therapy** — simultaneously treats visible AKs and subclinical dysplasia | Particularly attractive **non-surgical therapy for appropriately selected sBCC** |
| **Main clinical disadvantage** | Treatment field can look dramatically worse before improving; prolonged courses for sBCC are burdensome | More unpredictable inflammation; systemic flu-like effects occasionally significant; relatively long sBCC course |
| **Major pitfall** | **Do not interpret failure to clear as simply requiring endless further 5-FU.** Persistent/indurated/tender/thick lesions need reconsideration of diagnosis and possible biopsy | Same principle: failure to respond raises the possibility of **incorrect diagnosis or deeper/nodular/invasive disease** |
| **Another important pitfall** | Hyperkeratosis can impair penetration; thick AKs may require debulking/curettage before field therapy | Thick/hyperkeratotic lesions also respond less predictably |
| **Cancer-treatment pitfall** | Neither should replace surgery for a lesion with **high-risk features, uncertain diagnosis, invasive SCC or aggressive BCC subtype** | Same |

## Pragmatic choice

| Clinical situation | Usually favour |
|---|---|
| Multiple AKs / widespread field change | **Efudix** |
| Few AKs but patient strongly prefers intermittent dosing | **Imiquimod** |
| Bowen disease / SCC in situ | **Efudix** |
| Small, biopsy-proven superficial BCC in a low-risk site where surgery is inappropriate | **Imiquimod** |
| Thick/hyperkeratotic AK | Debulk first ± **Efudix** |
| Nodular BCC | **Neither — surgery generally preferred** |
| Morphoeic/infiltrative/recurrent BCC | **Neither** |
| Suspected invasive SCC | **Neither — biopsy/excision** |
| Poorly defined lesion where diagnosis is uncertain | **Biopsy before topical therapy** |

## A useful distinction

The biggest practical difference is that **Efudix is predominantly a cytotoxic field treatment**, whereas **imiquimod is an immune-mediated treatment particularly useful for selected superficial BCCs**.

For **sBCC**, imiquimod has relatively strong comparative evidence. A randomized comparison reported 12-month tumour clearance of approximately **83% with imiquimod versus 80% with 5-FU**; longer-term evidence has also generally favoured imiquimod. Neither approaches the histological certainty or long-term cure rates of appropriately performed surgery, so **lesion selection is critical**.

One especially important trap with both drugs is the **apparently healed lesion**: disappearance of the surface abnormality does not guarantee eradication of deeper tumour. This is why nodular, infiltrative, morphoeic, recurrent or otherwise high-risk BCCs should not be treated as if they were simple superficial lesions.