

Dermatology VR Resource



Collaboration
between



Blended Learning Team



Physicians Associate Education

● Overview

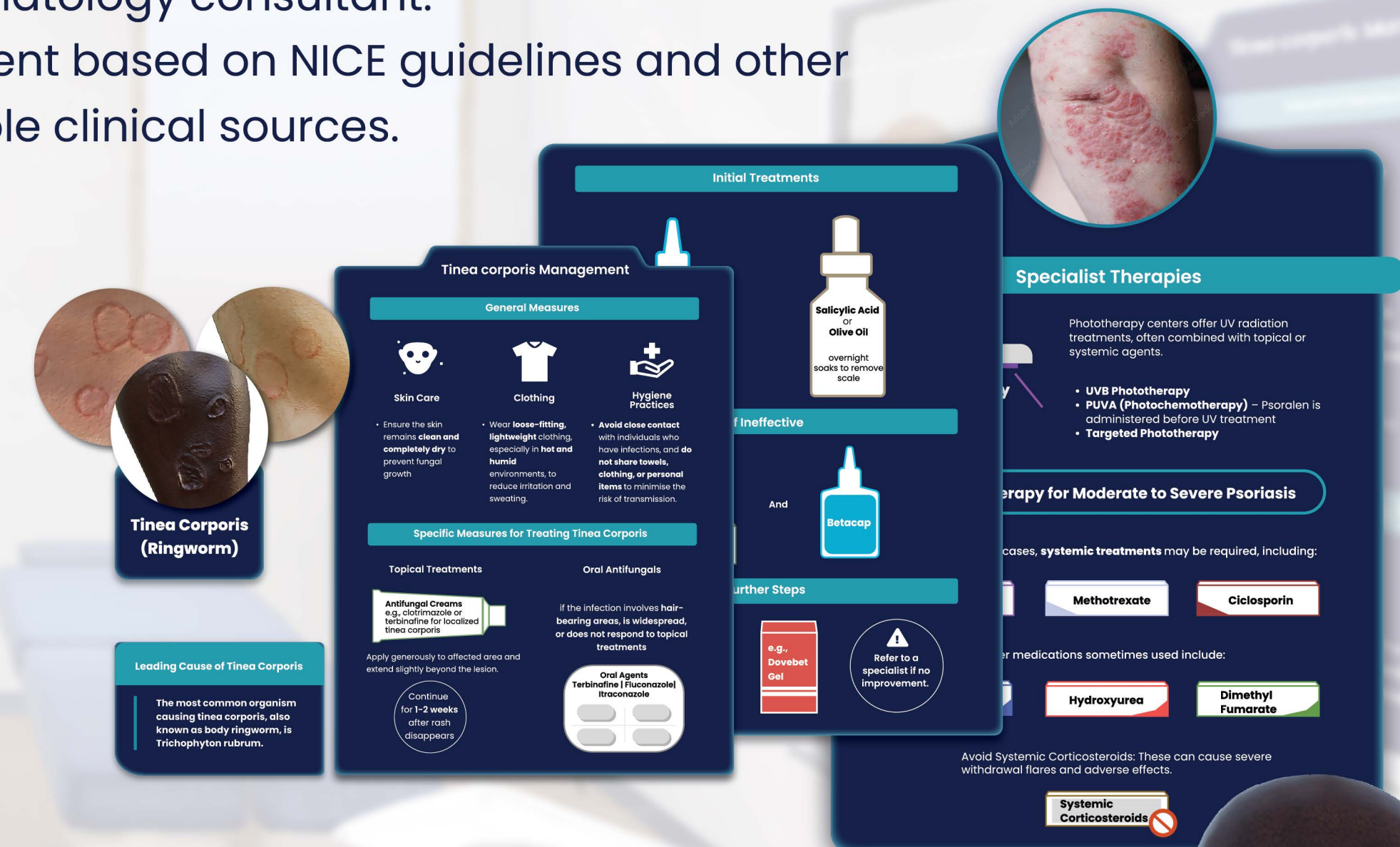
Designed with Physician Associates, the Dermatology VR Resource is an in-house virtual reality learning tool developed at LTHTR to transform dermatology education. It provides immersive, scenario-based training and features a diverse library of skin conditions across multiple skin tones, addressing key gaps in traditional teaching materials. By offering a more inclusive and engaging learning experience, it helps prepare learners for real-world clinical encounters with greater confidence and cultural competence.

Feature 1 • Three Interactive Digital 3D Patients

- Includes three skin tones with a range of dermatological conditions.
- Customise lesion location and severity to support diagnostic skill development.

Feature 2 • Visual Learning Material

- **46** high-quality dermatological images approved by dermatology consultant.
- All content based on NICE guidelines and other reputable clinical sources.



Feature 3 • Simulated Skin Inspection

- Examine skin conditions up close using a virtual magnifying tool.
- Practice real-life diagnostic techniques in a realistic VR environment.



Top View of Patients' Waiting Room

The patients' waiting room has been designed in accordance with Health Building Note 00-01: General Design Guidance for Healthcare Buildings by UK Department of Health, ensuring a realistic and compliant virtual environment.

One of the two main areas in the Dermatology VR is the patients' waiting room. In VR experience, users are guided by a virtual Physician Associate, Rachel, who provides a brief introduction. From there, users can choose to begin with either the VR Tutorial or the Learning Mode to start exploring dermatology content.

Patients' waiting room



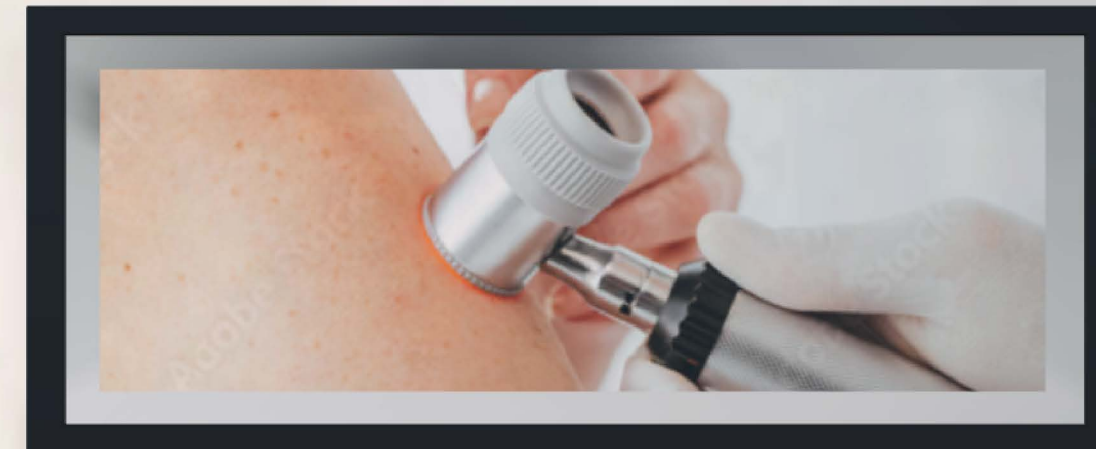
Rachael

Hi, and welcome to Dermatology
Learning VR!

Patients' waiting room



The Department of
Dermatology

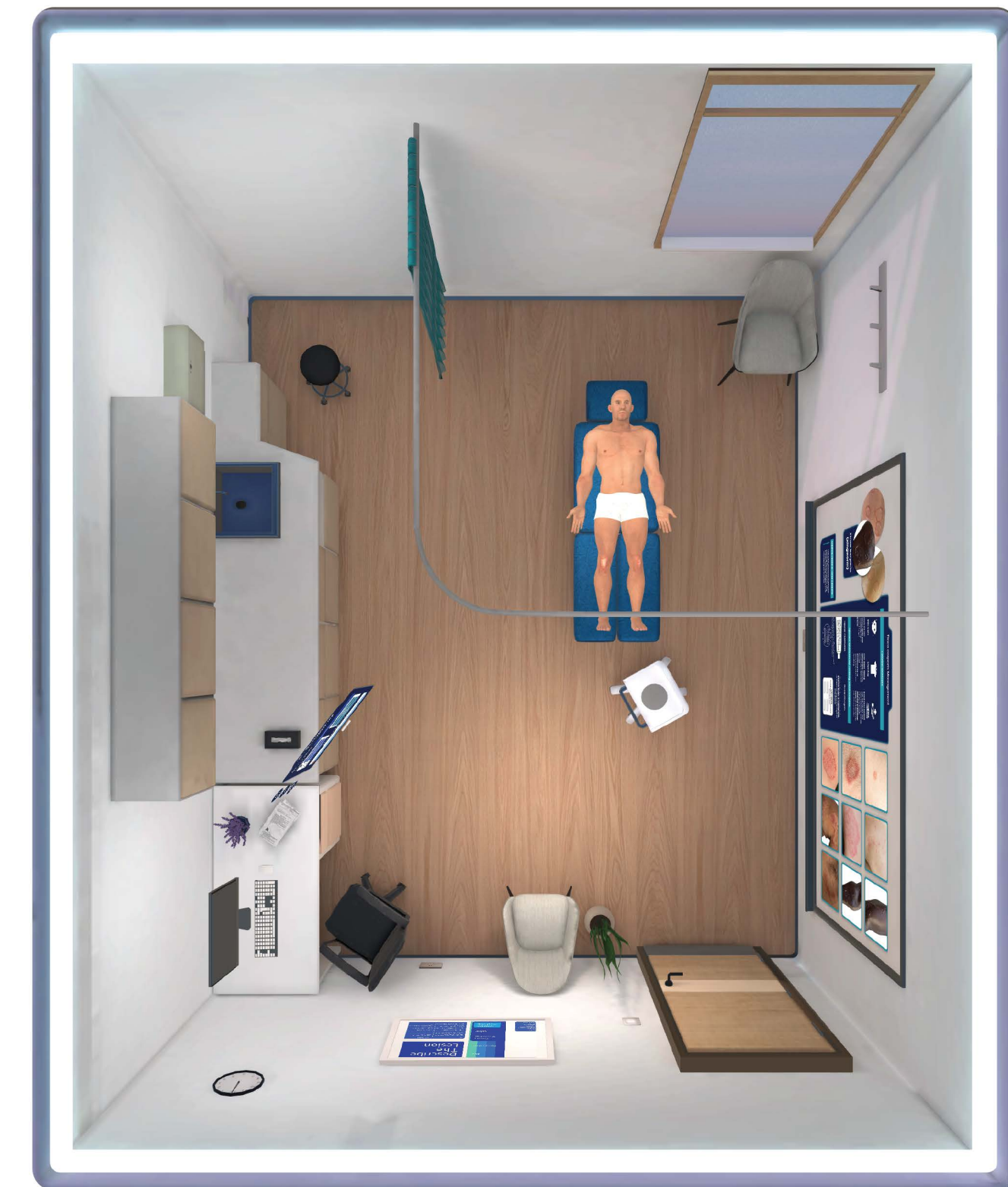


Patients' waiting room



The Clinical Room (Consultation Room) is where users engage in dermatology learning within the VR experience. Users can explore a range of variables, including different skin conditions (currently psoriasis and tinea corporis), patient ethnicity (with varied skin tones), patient positioning, and severity levels of each condition.

Detailed information about each rash is displayed on a whiteboard within the room. Additionally, users can utilise a virtual magnifying glass to examine symptoms more closely and interact with digital patients—enhancing diagnostic skills and preparing them for real-world clinical practice.



Top View of Clinical Room

The Clinical Room has been designed in accordance with Health Building Note 00-03: Clinical and Clinical Support Spaces by UK Department of Health.

Clinical room



Dermatology
Learning

NHS

Lancashire Teaching
Hospitals
NHS Foundation Trust



Menu



Content



Help

Dermatology
Learning

Skin Condition

Psoriasis

Position

Anatomical

Prone

Supine

Patients

David
(Caucasian)

Lee
(Asian)

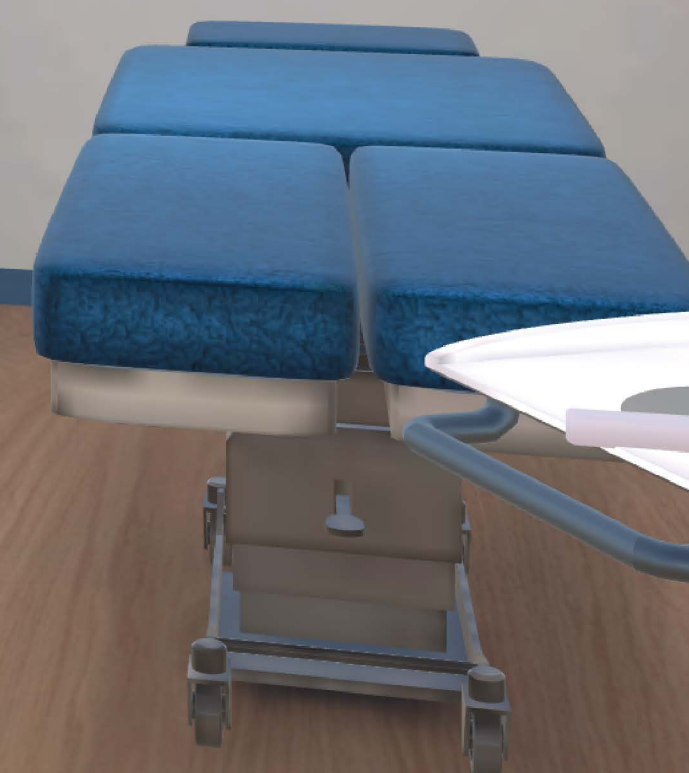
Kofi
(African-Caribbean)

Skin Condition Level

Mild

Moderate

Severe



Symptoms

Fine scaling that resembles dandruff.
Thick, crusted plaques covering the en
Red, thickened patches or plaques.
Well-demarcated edges with silvery-v
Affects part or all of the scalp.

Clinical room



Psoriasis

Treatment for Trunk and Limbs

Symptoms

- Itching
- Patches of thick, raised skin
- Dry, silvery-white scales covering some plaques
- Differently sized plaques
- Smaller plaques joining together

Acute Mild to Moderate Flare-ups

Topical Treatments

- i. Moderately potent corticosteroid ointment (e.g., clobetasone butyrate)
once daily for up to 4 weeks.
- ii. Vitamin D analogues
once daily for up to 4 weeks.
- iii. These can also be used for short contact therapies.

 Coal

 Dithranol
  Topical retinoids (e.g., tazarotene)

Maintenance Therapy

Once the flare resolves, use

 Vitamin D analogues
 or
  Topical Steroids (e.g., betamethasone)

3 times a week

Moderate to Severe Flare

Initial Treatments

- i. Potent topical corticosteroid (e.g., betamethasone)
once daily for up to 4 weeks.
- ii. Vitamin D analogues
once daily for up to 8 weeks.

If Initial Treatments Fails

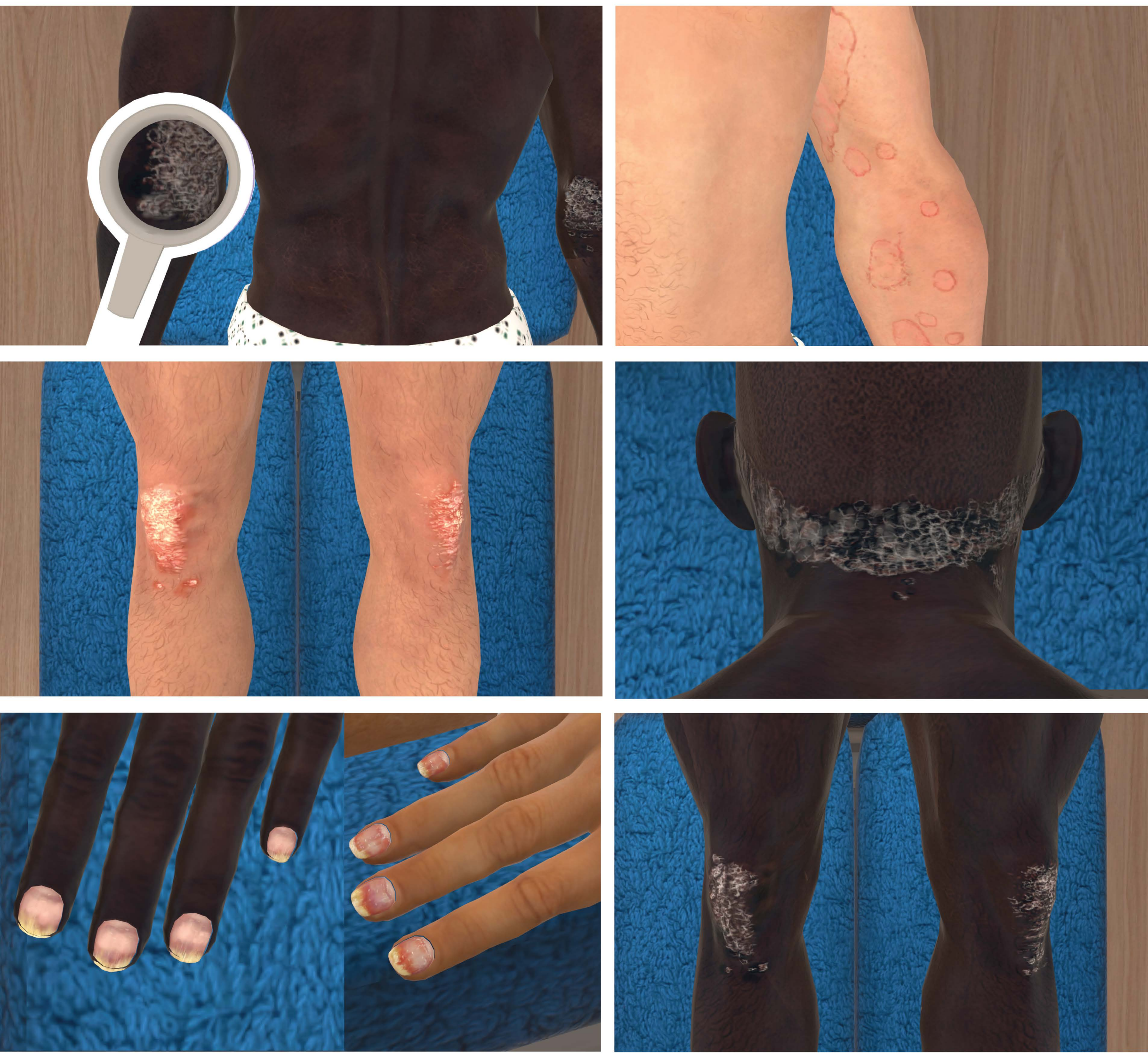
 Vitamin D analogues
Twice daily for 8 - 12 weeks.
 or

 Vitamin D analogues
Combine two together for up to 4 weeks.
  Potent Corticosteroids (e.g., Dovobet)

Further Steps if No Improvement

- i. Potent topical corticosteroid (e.g., mometasone)
Switch to this and apply it
Once daily for up to 4 weeks.
- ii. If still ineffective, refer to a specialist and consider prescribing potent steroid ointment twice daily.
 potent steroid ointment





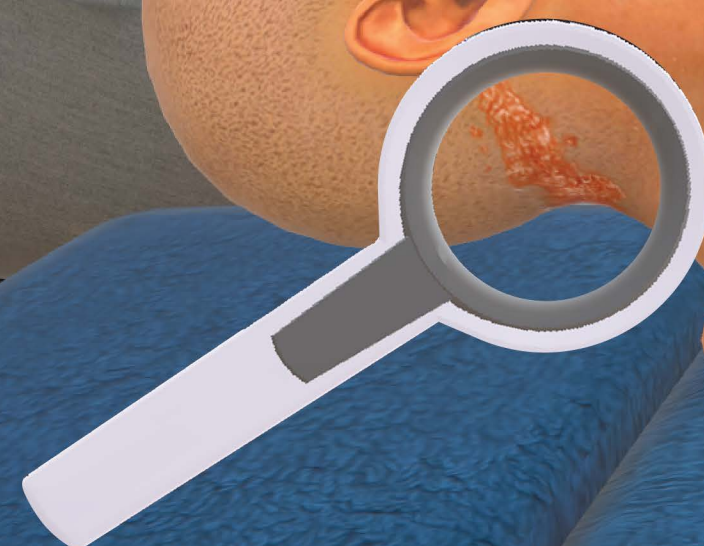
Based on high-quality dermatological images approved by a dermatology consultant, a range of rashes at varying severity levels has been developed across three different skin tones, ensuring clinical accuracy and educational value.



Rashes Creation



Users can use a virtual magnifying glass to closely examine skin rashes in detail. The digital patient's position can be adjusted to provide better visual access to affected areas.



Information Board



Psoriasis Nail Psoriasis Management (NICE CKS)

Symptoms

- Pitting
- Discoloration
- Thickening
- Crumbly or brittle nails
- Separation from the nail bed (onycholysis)
- Ridges or grooves

General Advice

- Keep nails short (this avoids exacerbating onycholysis and reduces accumulation of material under the nail)
- Avoid manicure of the cuticle
- Avoid prosthetic nails

If nail disease is mild and not causing discomfort or distress

No treatment needed!

If nail disease is moderate to severe (Dermet)

Topical treatments

Topical treatments are readily available but are not effective in treating all types of psoriatic nail dystrophy. Options include:

- Topical Steroids (e.g. betamethasone dipropionate)
- Topical Calcipotriol
- Topical calcineurin inhibitors

Systemic treatments

Systemic treatments are readily available but are not effective in treating all types of psoriatic nail dystrophy. Options include:

- Oral retinoids
- Oral corticosteroids
- Oral methotrexate
- Oral cyclosporine
- Oral biologics

Biological agents

The use of biological agents is largely restricted to those with concomitant widespread cutaneous or joint involvement because of cost implications and potential toxicity.

Non-pharmacological agents

Phototherapy

Biological agents

The use of biological agents is largely restricted to those with concomitant widespread cutaneous or joint involvement because of cost implications and potential toxicity.

Biological agents

Infliximab

Adalimumab

By selecting a rash, additional information—including treatment guidance and dermatological reference images—is displayed on the interactive whiteboard for further learning.



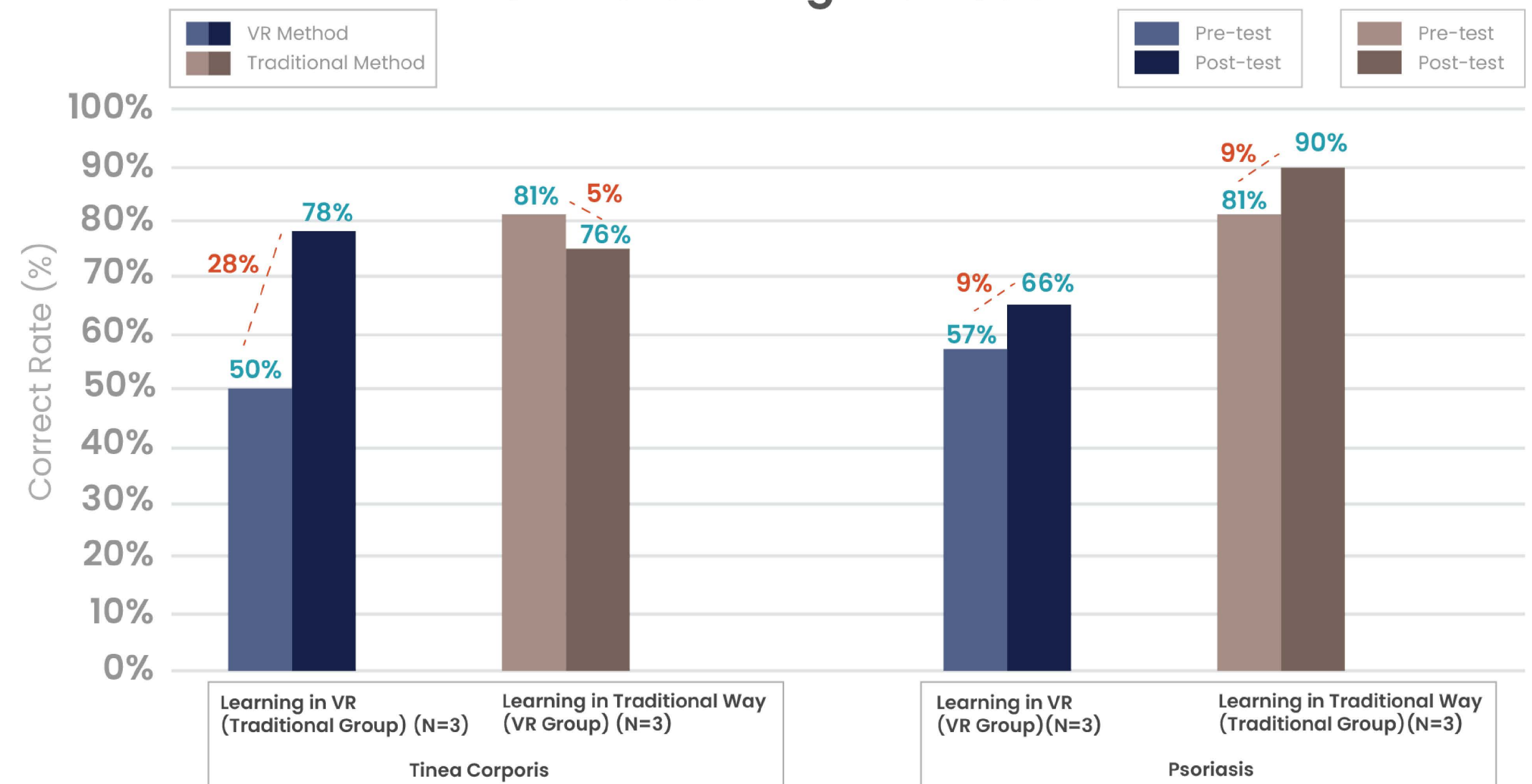
User Testing

A pilot study with six medical students evaluated the Dermatology VR application for usability and learning effectiveness.

The app received an **excellent** SUS usability score of 82.9 (industry average: 68). Participants showed improved knowledge, with a **9% increase for Psoriasis** and a **28% increase for Tinea Corporis**. VR outperformed traditional methods for Tinea Corporis, while both approaches were equally effective for Psoriasis.

While results are promising, the small sample size limits generalisability. As a next step, we plan to conduct further research with a larger and more diverse participant group to validate these findings and assess the long-term impact of VR-based dermatology education.

Comparison of the effectiveness of two learning methods



Tinea Corporis & Psoriasis Questions



Dermatology Learning



Blended Learning Team



Physicians Associate Education



Demo Video Link

<https://vimeo.com/1089057382/c281254f4b?share=copy>