

What is the future of Dermatology; hospital versus office based, NHS versus private?

The future of dermatology looks promising with the growing crop of new technologies, such as artificial intelligence (AI), which has spurred changed in medicine to become more technology centric.

Does dermatology belong in the hospital?

In the dermatology clinic, a dermatoscope is often a definitive tool in investigating lesions, especially when they straddle similar diagnoses, such as seborrheic keratoses and melanomas. Often a second opinion is required.

This could change with the advent of convolutional neural networks (CNN), a specialised form of AI. A CNN developed by Google (1) demonstrated promise in identifying lesions with an on-par performance compared to dermatologists. Thus, CNNs could be used as 'expert systems' to mimic human decision-making processes in terms of making diagnoses; the dermatologist could input metrics into the CNN which would then provide diagnostic and management pathways. However, we should err on the side of caution as this is a nascent technology so a misdiagnosis could have significant ramifications for patient care.

Smartphone apps show a promise to moving dermatology away from outpatients. The apps diagnose skin lesions with smartphone cameras, using backend AI capabilities to provide instant diagnoses.

However, this should be viewed pragmatically. Chuchu *et al's* Cochrane review (2) failed to support the promise of smartphone apps as sensitivities and specificities for classifying images as melanomas were too broad.

On the contrary, a growing global appetite for patients willing to adopt new technologies (3) in global markets; younger generations represented a large proportion of this. With growing smartphone usage, younger patients could see dermatologists over a video-calling app, which would help reduce non-attendances at hospitals and streamline clinical workflows.

Public versus private: the longstanding debate

Morton *et al's* study demonstrated the efficiency measures taken by the NHS for dermatology. Compared to electronic referrals, teledermatology referrals had a greater proportion of patients receiving definitive care. Teledermatology also ensured patients were diverted to the correct clinics. This should be viewed cautiously, as from an economic perspective, teledermatology would only cut costs if patients would have otherwise had to travel more than 75km (4).

It may be prudent for the NHS to offer private services. An NHS trust in Birmingham offers private laser surgery to patients who may have port-wine stains or skin pigmentations (5), for example. This enhances the fiscal reserves in the hospital, which could potentially fund another member of staff who could run more dermatology clinics. It also ensures that money remains flowing through the NHS, and not into a private healthcare provider.

The verdict



Figure 1 An impression of future dermatology

The current picture demonstrates that there will be the continuation of dermatology delivery in the hospital, augmented using AI as expert systems. There is the potential for smartphone apps to be able to route patients into the relevant clinics based on initial diagnosis. Figure 1 shows my impression of how dermatology could be delivered in the future.

Sami Raza

4th year medical student

University of Birmingham

Contact:

SAR538@bham.ac.uk

<https://www.linkedin.com/in/sami-raza/>

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