Skin Analytics Case Study

Chelsea & Westminster Hospital NHS Foundation Hospital

As part of the Artificial Intelligence in Health and Care Award

Background

In June 2021 Skin Analytics were recipients of a Phase 4 award for the AI in Health and Care Award, in collaboration with the Accelerated Access Collaborative (AAC) in partnership with the National Institute for Health Research (NIHR). The award was to evaluate Skin Analytics AI as a medical device (AIaMD) DERM in NHS pathways, supported by an independent evaluation into the health economics for scale across the NHS.

The Dermatology team at Chelsea & Westminster Hospital NHS Foundation Trust (CWFT) worked in partnership with Skin Analytics to deliver a post-referral service for suspected skin cancer. Skin Analytics uses AIaMD products to enable innovative Dermatology pathways within the NHS. CWFT and Skin Analytics have partnered together since April 2022 seeing over 4,000 patients.

"The Chelsea and Westminster team have been at the forefront of innovation with their nationally recognised teledermatology solution. Deploying AI into this pathway was a natural next step but one that took significant input across the Trust and from our AI partner. Unlocking the potential of AI requires a strong partnership as we work to support clinicians to get better outcomes for patients."

Mike Wright, Innovation Business Partner, Chelsea & Westminster NHS Foundation Trust

Challenge

The number of patients seeking clinical review of suspect skin lesions is on the increase. Given the complexity of cancer diagnosis, only 6% of urgent referrals end up with a diagnosis of melanoma or SCC. With rising incidence there is increasing pressure on specialist skin cancer services and NHS Trusts to meet cancer diagnosis timelines.
At CWFT alone these referrals increased by 175% in the year before the pilot. 100-160 patients are referred each week equating to 7,000 referrals each year and all requiring review within 2 weeks. As such this dramatic increase has had an impact on Trust performance, impacting patients on routine dermatology pathways who often have complex skin disease and where 50% of skin cancers are detected. This leads to delays in treatment and worse patient outcomes, negatively impacting patient experience. As a consequence the trust has had to resort to costly solutions, including waiting list initiatives and insourcing, which are not sustainable and affect the ability to invest in and develop the existing service.

Solution

CWFT wanted a solution that addressed the backlog and reduced delays in skin cancer detection and treatment, without the need of additional face to face clinics. CWFT deployed the Skin Analytics AI powered Teledermatology platform into their existing teledermatology pathway.
Prior to attending the hub, patients receive an SMS containing a link to a medical questionnaire and information about their appointment. Medical Photographers capture images using an iPhone and dermoscope which are uploaded into the Skin Analytics platform, where the AIaMD, DERM (Deep Ensemble for the Recognition of Malignancy) triages patients. High risk patients' cases are reviewed by CWFT dermatologists on the Skin Analytics teledermatology platform, where they are booked into the most appropriate next step or discharged. Benign cases are eligible for discharge. For the duration of the pilot, each benign case was reviewed by Skin Analytics Consultant Dermatologist, prior to discharge to confirm benign diagnosis. Post-pilot and based on performance, review of the lesion by a Skin Analytics dermatologist will be removed. Triaging patients in this way enabled CWFT to provide effective management, in a timely manner.

Performance

From 22nd April 2022 to 13th April 2023

Pathway sensitivity for melanoma

100%

CI: 82.4% - 100%

Pathway sensitivity for all cancers

95.3%

CI: 90.2% - 97.9%

Negative Predictive Value for skin cancer

99.4%

CI: 98.9% - 99.7%

Sensitivity targets
>95% for melanoma and squamous cell carcinoma (SCC)
>90% for basal cell carcinoma (BCC)

Impact

4,000
Patients seen through pathway

21%*
Patients discharged by DERM + remote review by Skin Analytics Dermatologists
* Potential to go up to 38% after removal of the Skin Analytics remote review

94%
Patients avoided an urgent F2F appointment

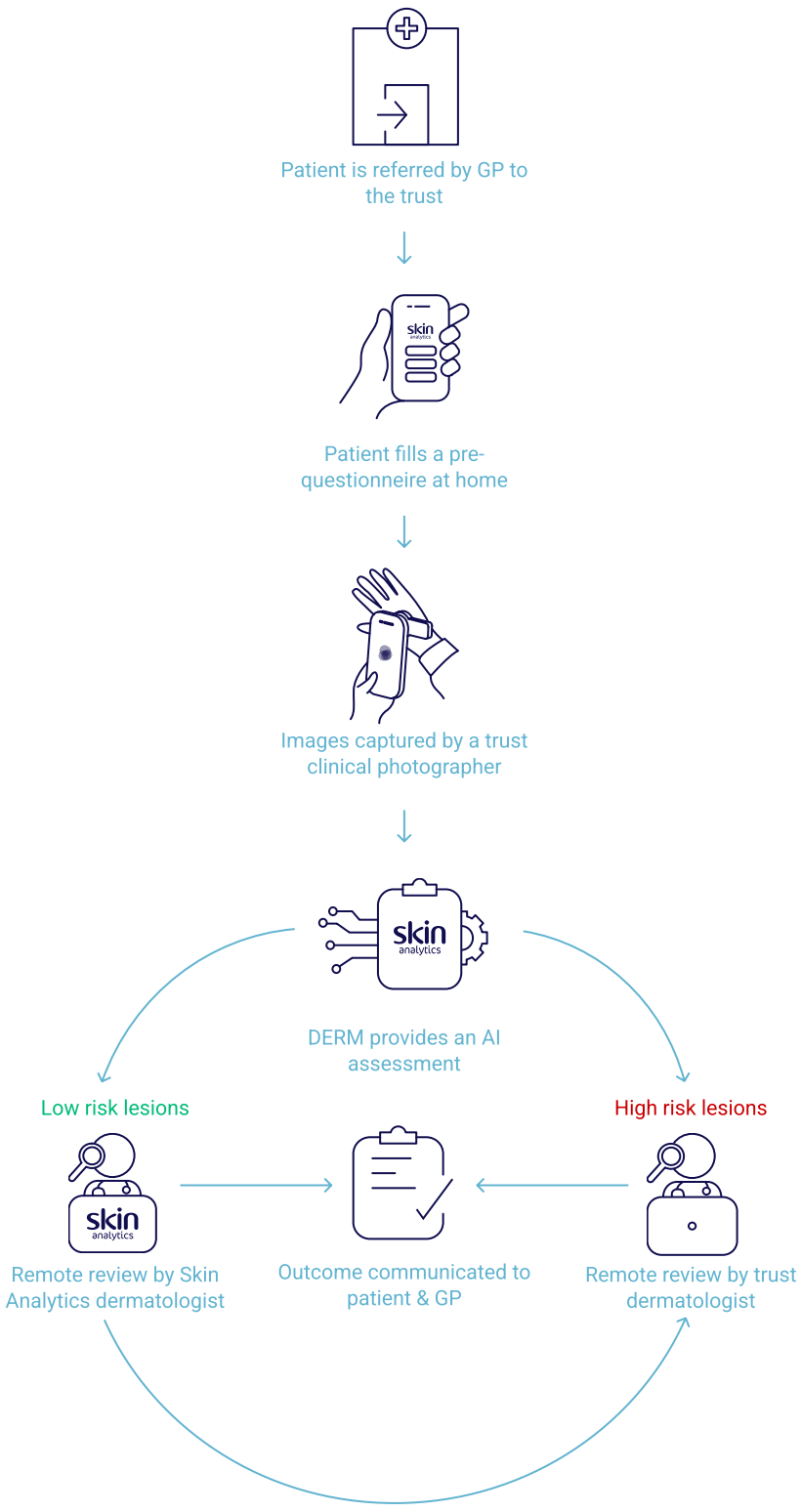
83%
of patients would recommend the service to friends & familiy

10%
reduction in biopsies

13%
reduction in patients booked for a routine follow up appointment since 2021

Pathway

Clinical pathways are individually designed in partnership with NHS sites. With the UKCA Class IIa approval and continued high performance of DERM, CWFT and Skin Analytics plan to remove the remote review by a Skin Analytics Dermatologist to drive further efficiencies in the pathway and enable quicker discharge for benign cases.



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