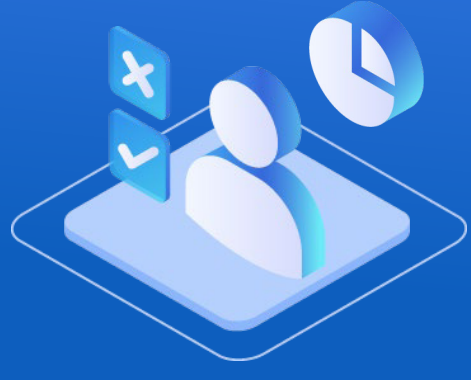




Autonomous AI discharged a quarter of urgent skin cancer referrals without clinician review



Only 6 false-negative cases were discharged among 8,391 patients



8,500 additional face-to-face appointments enabled by autonomous AI triage over 16 mths

Why this matters

- **Rising referrals** challenge dermatology services
- **94% of urgent lesion referrals are not urgent cancers** ¹
- **Workforce shortages** limit specialist capacity ²
- Routine patients often experience delayed access & includes 1/3 of urgent skin cancers ¹
- Autonomous AI as a medical device (AIaMD) offers a scalable solution ^{3,4}
- Evidence is limited & real-world evaluation is urgently needed



Study aim

To evaluate the real-world safety, diagnostic performance and service impact of autonomous AI triage within urgent suspected skin cancer pathways.

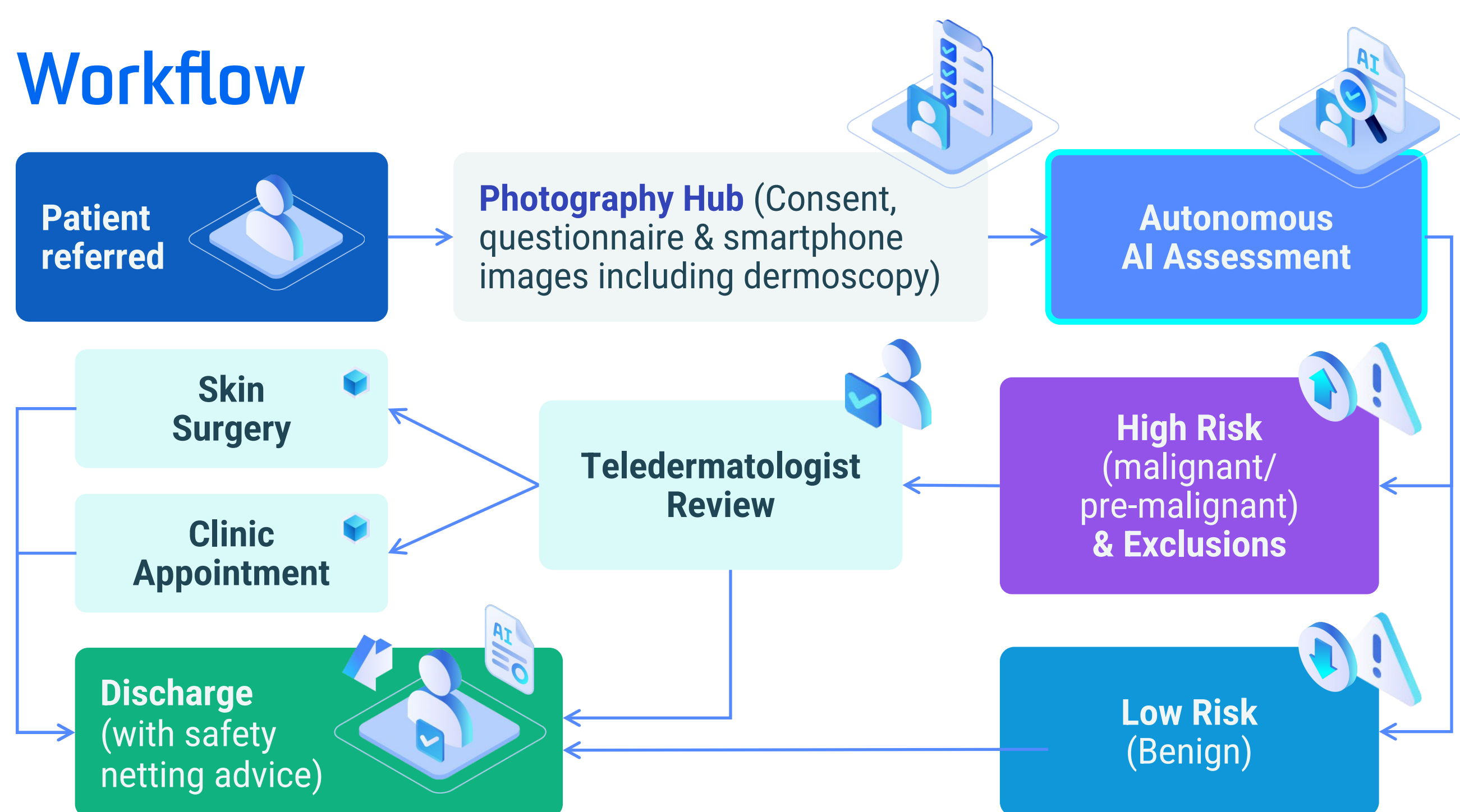


Methods

Real-world prospective deployment

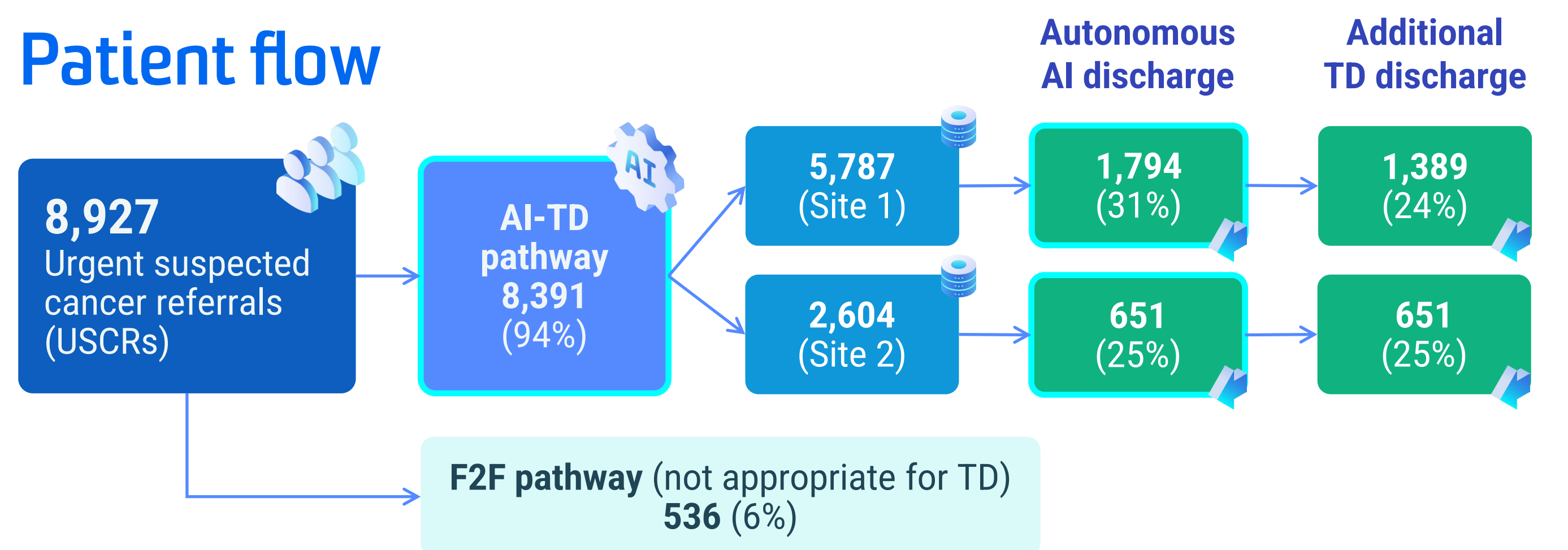
Following pilot validation with teledermatologist second reads, a CE-marked Class III autonomous AIaMD was implemented across two NHS hospital sites and evaluated over 16-months. Histopathology was used as the reference standard for malignant lesions and performance was compared with previous face-to-face (F2F), teledermatology (TD) alone, and AI-assisted TD pathways at the same hospital to evaluate system-level impact.

Workflow



Lesions in Fitzpatrick V/VI underwent AI assessment but were also routed for teledermatologist review.

Patient flow

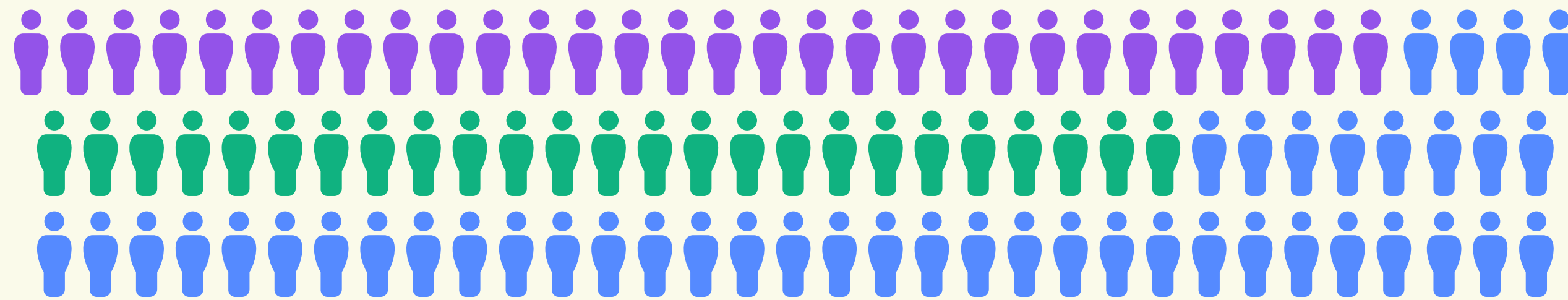
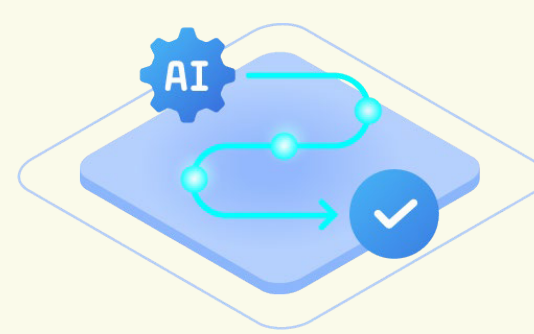


Key results

Autonomous AI successfully integrated into routine clinical care

- **94% or USCR** managed through the pathway
- **>94% managed without urgent F2F** dermatologist assessment
- **86% consent rate** for autonomous decision-making
- Over **one-quarter of referrals discharged** without clinician review
- **All Fitzpatrick skin types represented**

What happened to 100 patients on the AI telederm pathway?



29 discharged autonomously by AI
24 discharged by teledermatology
47 had surgery or clinic follow up

Safety

High sensitivity with low false-negative rates

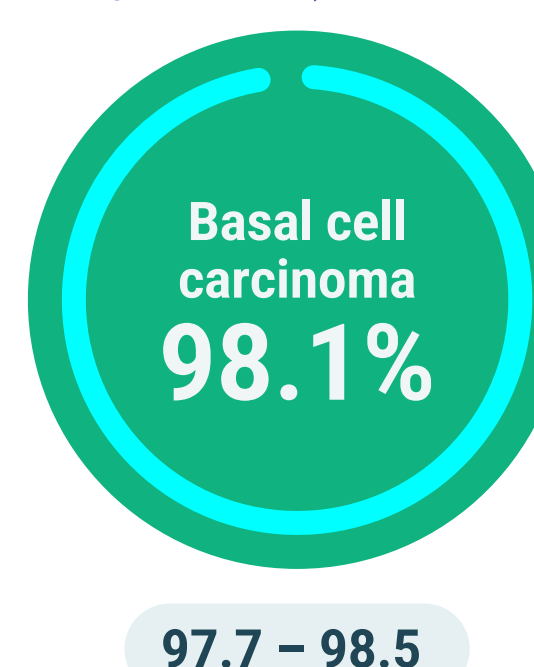
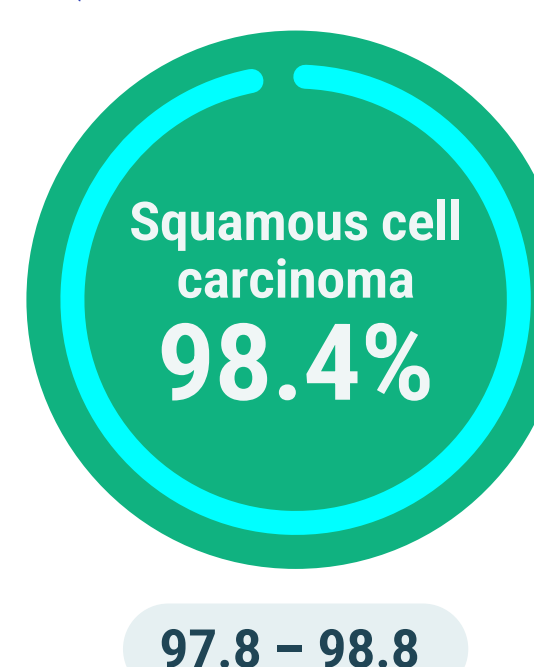
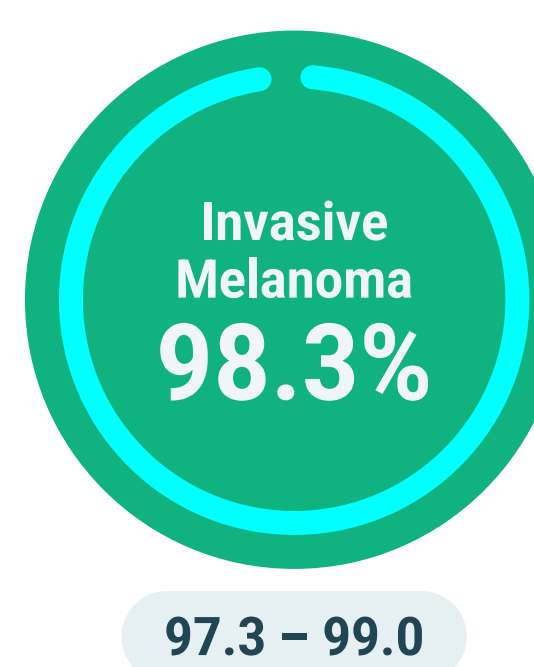
Six false-negative cases discharged from the pathway & subsequently identified during post-market surveillance:

- 5 basal cell carcinomas
- 1 melanoma in situ

National performance data (including both study sites)

Sensitivity for malignancy exceeded 97%

95% Confidence intervals



Autonomous AI maintained high cancer detection performance while enabling immediate discharge of low-risk referrals

Efficiency & resource utilisation

Reduced downstream healthcare utilisation

Compared with **conventional** pathways:

Clinician Processing time

Autonomous pathway: 9 mins
Conventional face-to-face care: 20 mins

Biopsy rates

Autonomous pathway: 27%
Conventional face-to-face care: 43%

Routine follow-up

Autonomous AI pathway: 12%
Standard teledermatology: 27%

These findings suggest improved diagnostic efficiency and reduced unnecessary procedures.

System impact

More specialist time for higher-risk patients

Compared with **conventional face-to-face** pathways:

2,851 clinician hours saved

62% capacity gain

8,553 additional F2F appointments

Autonomous AI enabled dermatologists to focus effort on higher-risk lesions and complex disease while safely managing a substantial proportion of low-risk referrals.

What does this mean for healthcare systems?

Autonomous AI offers a scalable approach to rising skin cancer referral volumes. The pathway demonstrated:

- ✓ Safe autonomous discharge of selected patients
- ✓ Reduced demand on specialist clinics
- ✓ Lower biopsy and follow-up rates
- ✓ Preservation of consultant capacity
- ✓ Potential to improve access for patients requiring specialist assessment



Conclusions

- Autonomous AIaMD was safely integrated into real-world urgent suspected skin cancer pathways across **8,391 patients representing 94% of all USCRs**
- Approximately **one-quarter of referrals were discharged** without clinician review while maintaining high sensitivity for malignancy
- Implementation **improved diagnostic efficiency, reduced healthcare utilisation and generated substantial specialist capacity**
- **Autonomous AI represents a credible and scalable response** to increasing referral demand and workforce pressures within dermatology services

References:

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[3] National Institute for Health and Care Excellence (NICE). Artificial intelligence (AI) technologies for assessing and triaging skin lesions referred to the urgent suspected skin cancer pathway: early value assessment. HealthTech guidance [HTG746]. London: NICE; 2025 May 1 [updated 2026 Mar 17]. [8] Edge Health. AI in dermatology: a white paper for NHS England. London: Edge Health.

Declarations & Disclosures: This study used a commercially available CE-marked artificial intelligence as a medical device. The device was procured and funded by Chelsea & Westminster Hospital NHS Foundation Trust. The study was part supported by a charitable grant from La Roche Posay (L'Oréal Dermatological Beauty - LDB). Dr Lucy Thomas is a clinical advisor to Skin Analytics Ltd (developer of the AIaMD used in this study) and holds shares in the company. She has received educational grants & honoraria from Skin Analytics, LDB & CW+ and has previously worked as a paid independent consultant for NHS England, Chelsea & Westminster Hospitals NHS Foundation Trust has received grant funding from LDB, NHSE and CW+.