Using AI to streamline & scale skin cancer detection

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KNOWLEDGE TRANSFER PARTNERSHIPS

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Current UK skin cancer challenges

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CHALLENGES

- Skin cancer incidence rising
- Waiting times for diagnosis increasing in NHS & private sector
- Short supply of high-quality telemedicine reporters
- Need to extend skin network for improved coverage
- Some patients looking for digital healthcare solution
- Provides greater resilience and sustainability

SOLUTIONS

- Build a skin lesion App to take high quality skin lesion images for triage
- Build a skin cancer AI model based on C4C skin images and clinical data

Current teledermatology pathway

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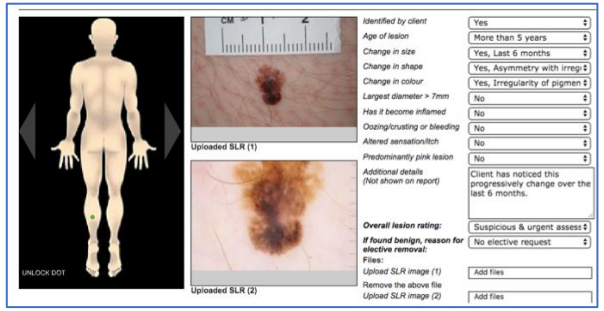
SYMPTOMS
Increased in size
Changed colour
>7mm in diameter
Irregular shape
Irregular colour
Inflamed or oozing



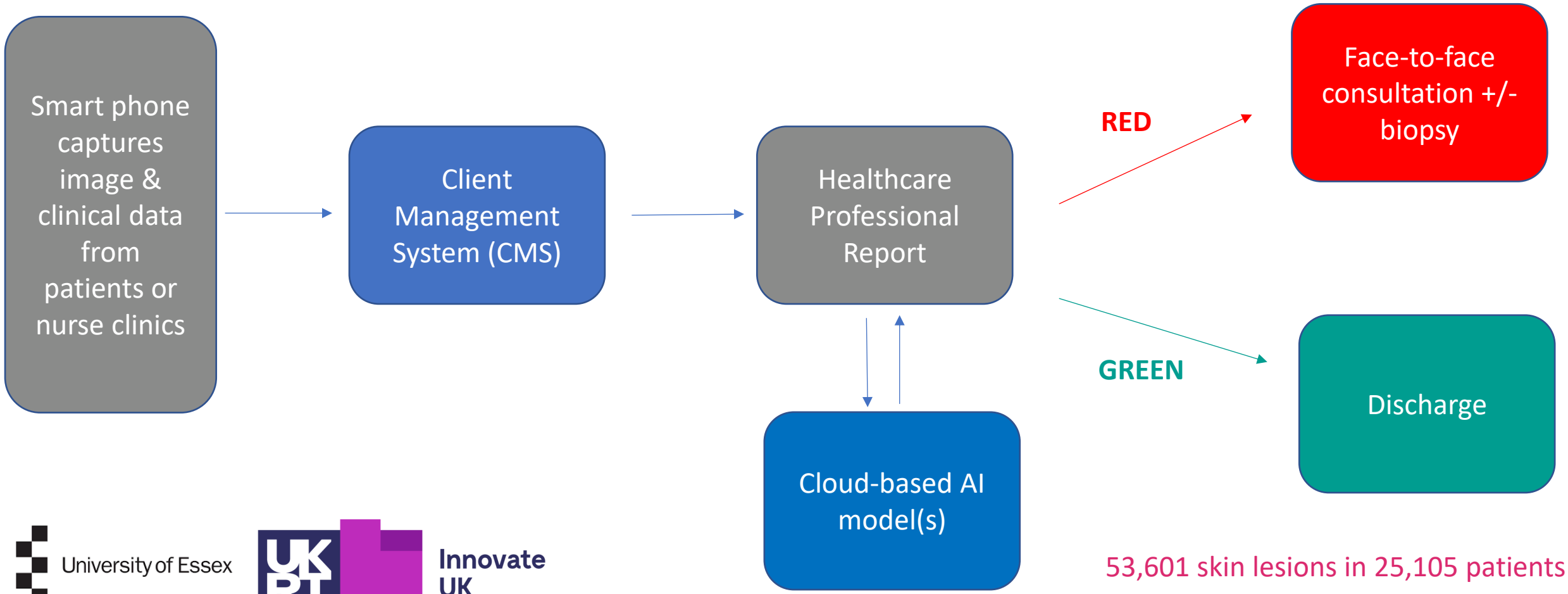
96% of melanomas Stage 1 or 2 where 5-year survival at least 85%

Insurer referral for patients with skin lesion suspicious of melanoma/SCC or BCC

→ ~~SPECIALIST SKIN CANCER NURSES~~ → ~~TELEMEDICINE REPORTING~~ → ~~CONSULTANT SKIN CANCER SPECIALISTS~~

International shortages of skin cancer nurses, telemedicine reporters & skin cancer specialists

Development of App & AI model



53,601 skin lesions in 25,105 patients

Knowledge Transfer Partnership with University of Essex with part funding from Innovate UK.

AI model architecture

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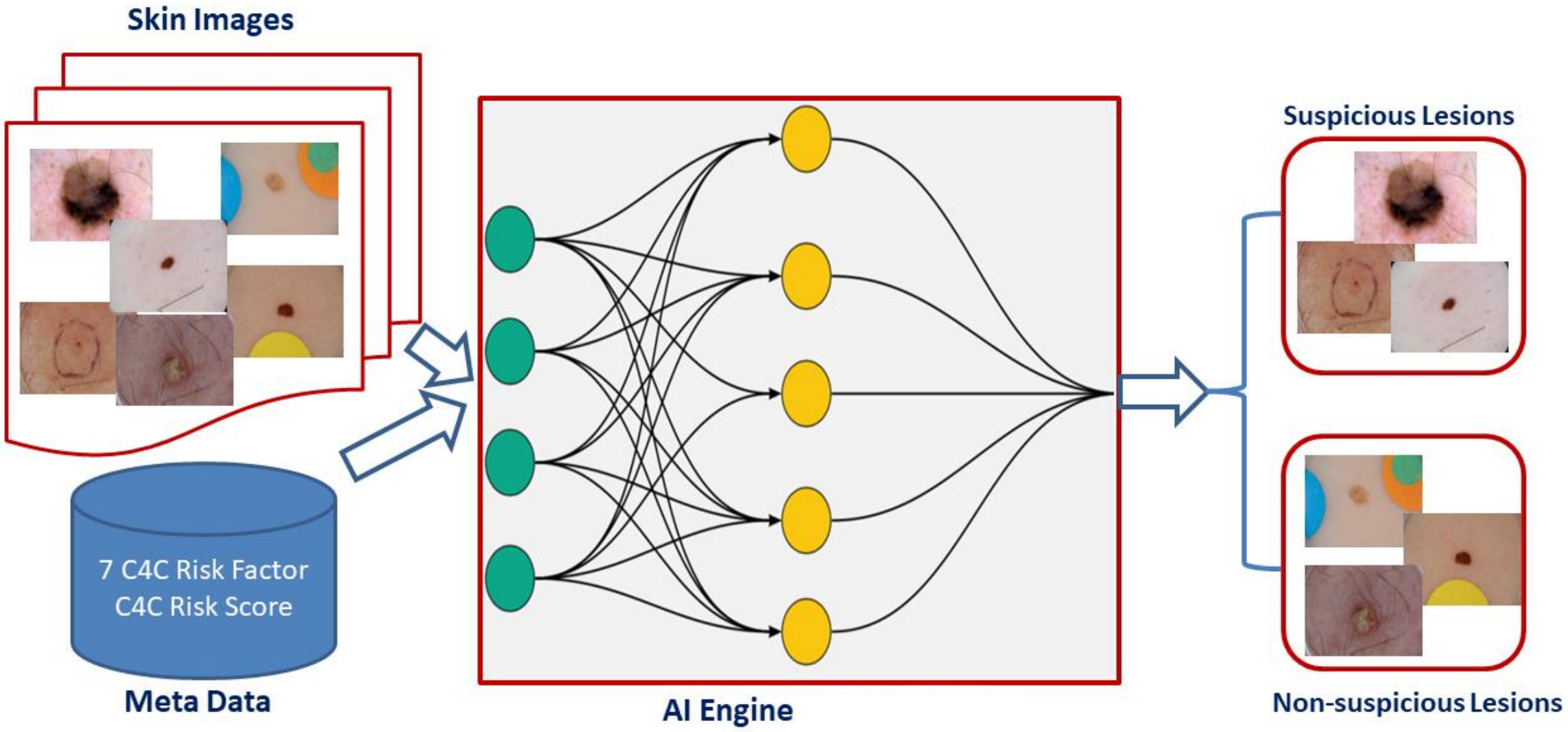

Results

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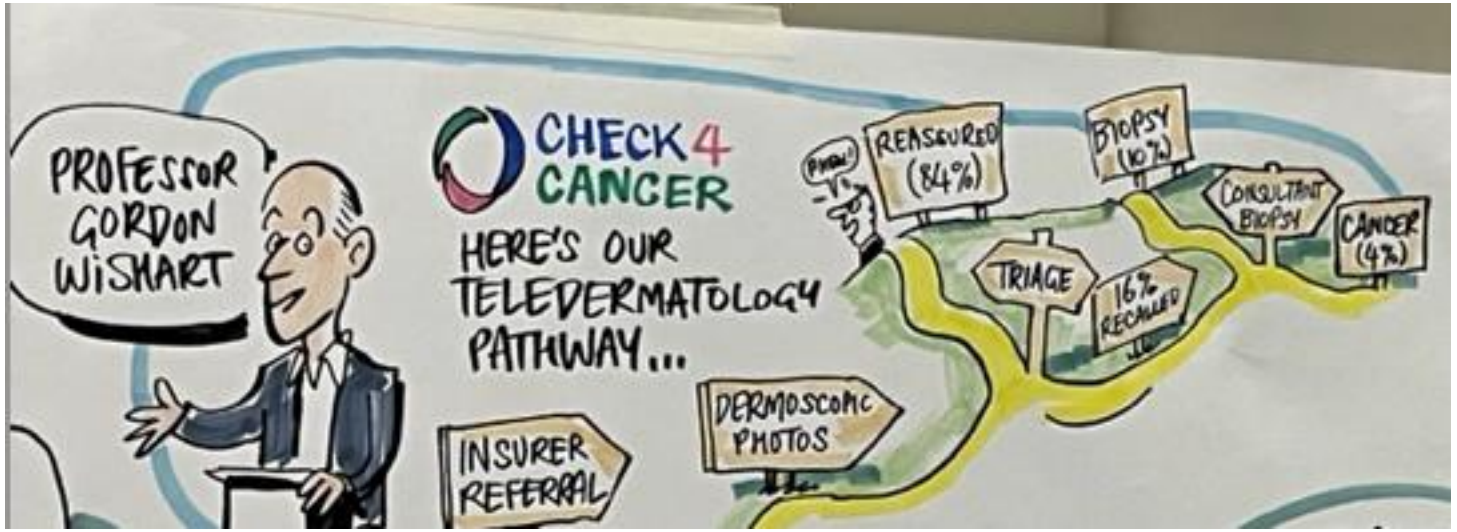
FEATURE
Lesion Age
Has lesion changed colour?
Natural hair colour age 15
Is lesion Inflamed?
Is lesion pink?
Has lesion changed shape?
Has lesion changed size?

Weighted C4C risk score

Lesion Type	C4C AI Model Accuracy				
	Images alone	Images & C4C risk features & C4C risk score©	Images & C4C features & score at 80% specificity	Skin Analytics	HCP reporting
MELANOMA	99%	--	--	95%	
BCC	99%	--	--	98%	
SCC	100%	--	--	97%	
All skin cancer	99%	99%	98%	97%	96%
Benign	63%	74%	80%	73%	80%

22 clinical features distilled down to 7 most important to develop a novel risk score for skin cancer detection



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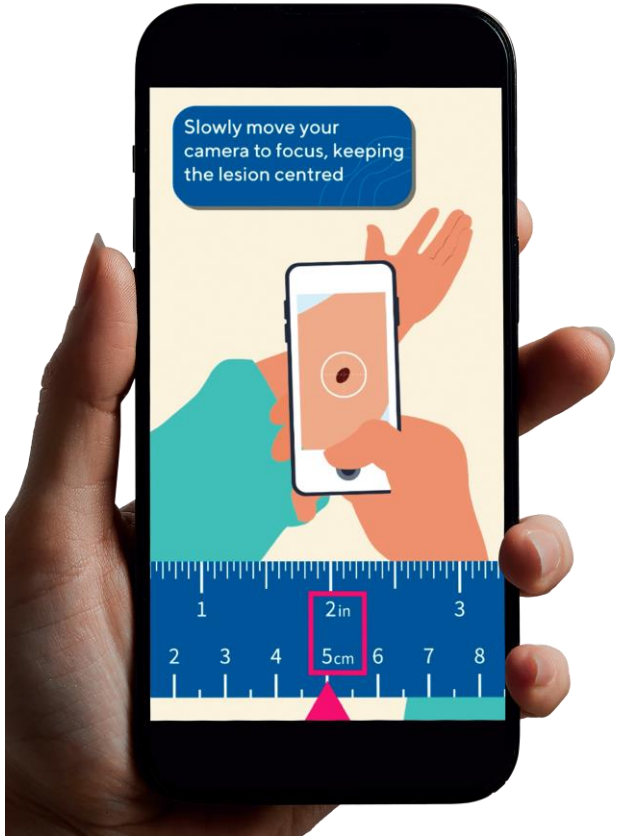
AI for skin cancer detection

Built on a foundation of extensive clinical data



Skin AI project team

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