THE COST-EFFECTIVENESS OF AN AI-BASED SMARTPHONE APPLICATION FOR SKIN CANCER DETECTION IN BELGIUM

A. Meertens[1,2,3], L. Brochez[1,2], J. Kips[1,2], E. Verhaeghe[1,2], R. Willems[3], I. Hoorens[1,2], N. Verhaeghe[3]

1) Department of Dermatology, University Hospital Ghent, Ghent, Belgium. 2) Skin Cancer Research Institute Ghent (Skin-CRIG), Ghent, Belgium.
3) Department of Public Health and Primary Care, Interuniversity Centre for Health Economics Research (I-CHER), Ghent University Ghent, Belgium.

INTRODUCTION

- Given the **upward trend of skin cancer in Europe**, there is clear need of innovative and cost-effective approaches to support early skin cancer detection.[1]
- AI-based smartphone apps for skin cancer detection are becoming increasingly available and promoted by healthcare authorities. Such apps could potentially serve as a triage tool, prioritizing high-risk cases.
- Evidence on their cost-effectiveness is scarce.

OBJECTIVE

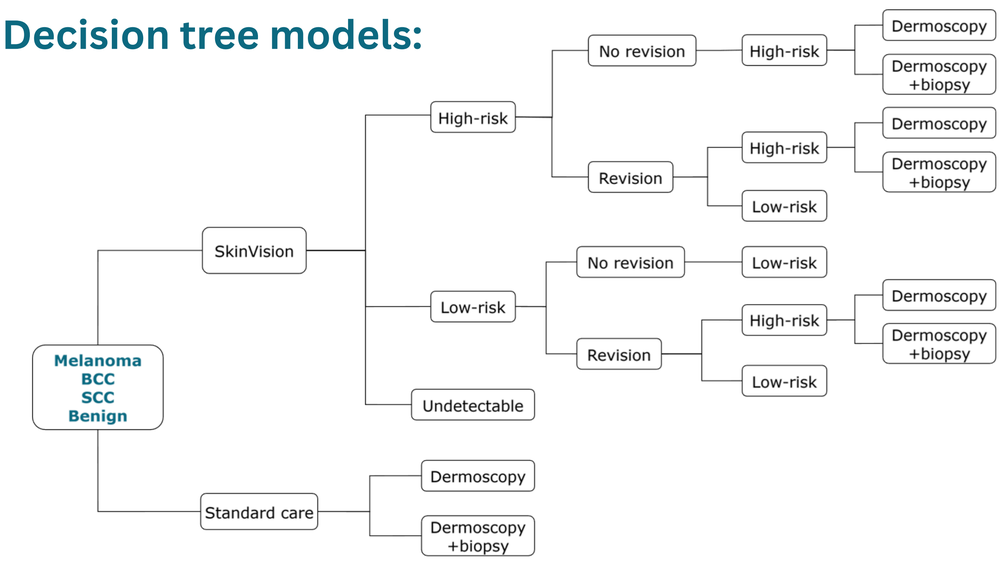
Evaluating the cost-effectiveness of SkinVision, an AI-based smartphone app for skin cancer detection, compared to the standard of care in Belgium.

METHODS

The cost-effectiveness of SkinVision vs. standard care was evaluated for **melanoma, basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and benign lesions.** Time horizon was until diagnosis.

Skinvision provided a risk indication and advice whether to seek medical attention. **In the standard of care,** lesions were evaluated by a dermatologist (referral or own initiative).

Decision tree models:



Model inputs were based on the the app's diagnostic accuracy study (ARTIS-trial, n=1458).[2]

A **healthcare sector perspective** was used, including direct medical costs related to diagnosis.

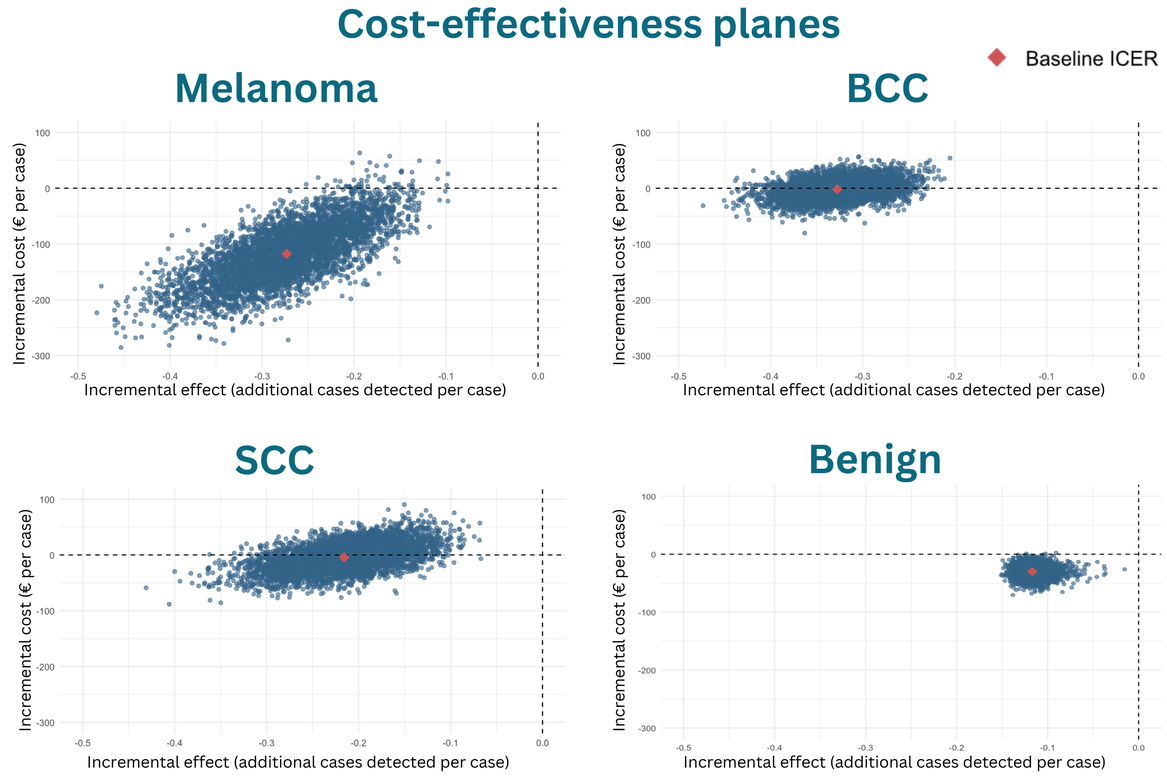
Outcome: Incremental costs per skin cancer case detected (SkinVision vs standard care).

RESULTS

SkinVision app: lower costs but less effective

Type of skin cancer	Strategy	Total cost to detect one case	Total cases detected	ICER
Melanoma	SkinVision	€418.68	60.1%	€430.91
	Standard care	€536.42	87.4%	
BCC	SkinVision	€142.29	58.5%	€5.31
	Standard care	€144.03	91.2%	
SCC	SkinVision	€228.12	70.6%	€20.52
	Standard care	€232.54	92.2%	
Benign lesions	SkinVision	€59.77	82.0%	€256.95
	Standard care	€89.69	93.7%	

Cost-effectiveness planes



Majority of simulations are located in the south-west and north-west quadrants, indicating that SkinVision is less effective and with costs varying per skin cancer type.

Most influencing factors on the ICERs

1. Cost to detect a skin cancer (Melanoma, BCC and SCC)
2. Receiving a high-risk app score (Melanoma, BCC and SCC)
3. Referral of benign lesion to the dermatologist
4. Revision of high-risk lesion by tele-dermatologist (SCC)

CONCLUSION

The app's current diagnostic performance is associated with **lower costs** and **lower skin cancer detection rates**. The app also led to **unnecessary referrals** for benign skin lesions, impacting the healthcare system. In its current form, the app does **not support implementation or reimbursement** in Belgium.

References: 1) Brochez L, Volkmer B, Hoorens I, Garbe C, Röcken M, Schüz J, et al. Skin cancer in Europe today and challenges for tomorrow. J Eur Acad Dermatol Venereol. 2024 Oct 8. 2) Kips J, Papeleu J, Shen A, Mylle S, Genouw E, Hoorens I, et al. Artificial intelligence-based smartphone app for skin cancer detection: a prospective diagnostic accuracy study. Submitted to Journal of Investigative Dermatology.

UZ GENT · GHENT UNIVERSITY · FACULTY OF MEDICINE AND HEALTH SCIENCES

ISPOR Europe 2025 EE234

Annick.Meertens@ugent.be
Nick.Verhaeghe@ugent.be