Community photo-triage for skin cancer referrals: an aid to service delivery

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study examined the costs and effectiveness of photographic store-and-forward teledermatology for urgent referrals to a consultant for patients with suspected skin cancer. The authors concluded that photographic triage could improve service delivery and was cost-effective, even when all patients attended a secondary care appointment. The methods and results were mostly clear and comprehensive, but the data were uncertain and there was no sensitivity analysis, making it difficult to assess the authors’ conclusions.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The aim was to examine the costs and effectiveness of a community-based photographic triage intervention for patients who were referred to a consultant for an urgent appointment, by a general practitioner (GP) who suspected skin cancer.

Interventions
This study compared store-and-forward teledermatology, using photographs, with the conventional electronic letter referral, for skin cancer triage. Teledermatology was the production of digital images, which were forwarded, with patient information, for assessment by a dermatologist who recorded a diagnosis. Patients were then allocated to a skin cancer clinic, a nurse-led clinic, a nurse-led cryotherapy clinic, a skin surgery list, a photodynamic therapy list, or another specialist. For safety, no patients were referred back to their GP without seeing a member of the skin cancer team. With conventional referral, all patients attended the consultant-led skin cancer clinic.

Location/setting
UK/primary care.

Methods
Analytical approach:
A prospective observational study was used to assess the cost-effectiveness of the interventions. The authors stated that they took a UK NHS perspective. The analytic time frame was six months.

Effectiveness data:
The effectiveness data were from an open observational study of 231 referrals by conventional electronic letter and 411 referrals by photographic teledermatology. Ninety patients did not attend photography, and complete data were available for 188 patients for conventional referral and 289 for photographic referral. The outcomes were collected prospectively, using case notes. The clinical outcomes were the patient pathways, services received, waiting time, and health service use. A comparison of the GP and consultant diagnoses was made as an indicator of diagnostic accuracy.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measure of benefit was the proportion of patients receiving definitive care at their first visit to the specialist team.

Cost data:
The direct medical costs included those for the nurse, surgical and specialist referrals and consultations, photography
appointment allocation, photography services, patient notes, clinic letters, cryotherapy, photodynamic therapy, and topical therapy. Health service use was calculated for the 289 patients referred by photography and re-calculated for the same patients had they received conventional referral. The resource quantities were recorded as times in minutes. All costs were in UK pounds sterling (£).

**Analysis of uncertainty:**
None reported.

**Results**
Definitive care (treatment or reassurance) was provided at the first visit to the specialist care team for 91% of patients receiving photographic referral, compared with 63% of patients receiving routine referral. Teledermatology diverted 72% of referrals, from the consultant-led skin cancer clinic, directly to surgery or, for benign lesions, directly to nurse-led clinics for cryotherapy or reassurance.

The waiting time was shorter for skin cancer patients in the photography group. The mean waiting time for malignant melanoma was 36 days with photography and 39 days with usual care. For squamous cell carcinoma, it was 28 days with photography, and 50 days with usual care. For basal cell carcinoma, it was 35 days with photography and 58 days with usual care.

The average savings in the consultant clinics offset the additional average costs for store-and-forward teledermatology, the nurse clinics, and the consultations with GPs with a special interest in skin cancer. The overall cost saving was £1.70 per person, with teledermatology.

**Authors' conclusions**
The authors concluded that referral by photographic triage could improve service delivery and was cost-effective, even when all patients attended a secondary care team member.

**CRD commentary**

**Interventions:**
The photographic and conventional strategies were well described. Photographic triage might be an option in other settings.

**Effectiveness/benefits:**
The effectiveness of the two options was based on service attendance, appropriate care, and diagnostic accuracy. Patient outcomes were not directly monitored and the effectiveness data were observational. The two groups were not balanced in some of their baseline characteristics and no statistical adjustments for these imbalances were reported. The outcomes were open to bias as allocation to the study arms was not randomised. A significant proportion of patients (90 out of 411) who were referred to photography were unable to attend within two weeks, raising questions on the acceptability of the service to patients. No discounting was necessary as the time horizon was six months.

**Costs:**
The perspective was clearly stated, but the resources did not include training and the establishment of the new service (a trained photographer with equipment was bought in); these would be expected to be included for the NHS perspective. The unit costs were clearly reported in an appendix, but the resource use estimates might not be generalisable to other settings as they were from one dermatology centre, in Scotland. The price year was not stated, making it unclear if the costs were appropriately adjusted for inflation.

**Analysis and results:**
The analytic approach appears to have been appropriate and was sufficiently described. The health outcomes and costs were not combined into incremental cost-effectiveness ratios and, in effect, a cost-consequences analysis was performed. Sensitivity analyses were not undertaken, and the effect of uncertainty in the data estimates on the findings was not assessed.

**Concluding remarks:**
The methods and results were mostly clear and comprehensive, but the data were uncertain and there was no sensitivity analysis, making it difficult to assess the authors' conclusions.

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