HRB Centre for Primary Care Research
Research Briefs

Diagnosing malignant melanoma

The value of clinical prediction rules

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The incidence of malignant melanoma in most developed countries has been steadily rising (faster than other cancer types) in recent decades. Early detection followed by curative surgery greatly improves melanoma prognosis. Clinical prediction rules (CPRs) are designed to assist clinicians in stratifying patients according to their probability of having a specific target disorder based on the patient's history and the clinical examination. The Health Research Board (HRB) Centre for Primary Care Research (www.hrbcentreprimarycare.ie) has recently published an important systematic review that examines the role of CPRs in diagnosing malignant melanoma in primary care.

The HRB Centre for Primary Care Research supports placements for medical students and Erasmus students during the summer months each year. In 2015, under the supervision of Professor Tom Fahey and his team, medical students Harkiran Sandhu, Laura Armstrong, and Holly Bennett, and Erasmus student Nieneke Wesseling (University of Nijmegen, The Netherlands), participated in this systematic review.

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In this systematic review published in BMJ Open [1], we identified 24 unique CPRs (validated in 48 individual studies) used to assist in distinguishing malignant melanoma from benign pigmented skin lesions. The most commonly evaluated CPRs were the ABCD dermoscopy Rule and the 7-point dermoscopy checklist.

The research showed that the ABCD rule for dermoscopy was the best performing CPR in a primary care setting to assist General Practitioners (GPs) in differentiating patients with clinically significant lesions requiring referral to specialist care from those who can be treated and monitored in primary care. The ABCD rule reaches 85% sensitivity and 72% specificity, which is reasonably effective at ruling out melanoma. This CPR involves a GP checking a pigmented skin lesion for, Asymmetry, irregular Borders, more than one or an uneven distribution of Colour, or a large (greater than 6 mm) Diameter.

We identified three studies that examined the impact of implementing a melanoma CPR on processes of care (e.g. melanoma diagnosis and referrals), with two reporting an improvement in melanoma diagnosis with the use of a CPR. However, the impact on patient outcomes were not examined in these studies.

The identified CPRs, particularly the ABCD rule for dermoscopy, may be useful tools for primary care physicians prioritising appropriate referrals for higher risk patients and adopting a watchful waiting strategy in lower risk patients. However, a greater focus on impact analysis studies is necessary to translate melanoma CPRs into useful and effective triage tools for use in primary care.

Early detection of malignant melanoma improves prognosis for patients. As the rates of melanoma rise internationally, GPs are increasingly required to assess pigmented skin lesions. Differentiating between a benign and malignant lesion can be a difficult task, particularly at an early stage of presentation in primary care settings. Being able to categorise patients with a skin lesion into the probability of having melanoma is helpful in ensuring only those patients who require further investigation and specialist care receive it. The results of our research show that using CPRs such as the ABCD rule enhance diagnostic accuracy and improve appropriate referral to specialist dermatology care.

Professor Tom Fahey, Principal Investigator at the HRB Centre highlights the value of undergraduate students engaging in research in a supportive environment. Professor Fahey said “This review demonstrates that with some guidance, undergraduate medical students can make a positive contribution to evidence-based medicine. In addition to developing research skills, these placements nurture life-long learning by encouraging critical appraisal of medical literature”.

The article can be viewed at:

[1] Harrington E, Clyne B, Wesseling N, Sandhu H, Armstrong L, Bennett H, Fahey T. Diagnosing malignant melanoma in ambulatory care: a systematic review of clinical prediction rules. BMJ Open. 2017;7(3):e014096 https://www.ncbi.nlm.nih.gov/pubmed/28264830