

# Role of wound clinic teaching in the undergraduate medical curriculum

Lemon JD, Munsif M & Sinha S

## ABSTRACT

Chronic wounds are an increasing cause of morbidity in Western countries with ageing populations. Medical education curriculum of undergraduate medical students should reflect this concern through effective teaching of wound healing and appropriate management of patients with chronic wounds. On the basis of available literature it is evident that at present education in chronic wounds is lacking in the undergraduate medical curriculum. The present study was undertaken to assess the level of knowledge and confidence about management of the chronic wound among students and interns. The results revealed that most of them felt that they had inadequate knowledge of best practice in chronic wound care before attending the wound clinic, and most agreed that attendance at a wound clinic was a useful learning opportunity. This study confirms that short placement in a dedicated wound clinic, with delivery of a structured teaching model, is an effective method of learning about appropriate wound management and, therefore, should be integrated into the undergraduate medical curriculum.

*Keywords: wound clinic, medical education, students, undergraduate teaching.*

## INTRODUCTION

Chronic wounds are an increasing cause of morbidity and financial burden on the health care system in Australia and other Western countries<sup>1,2</sup>. Estimates of the prevalence of chronic wounds in those between 45 and 65 years of age is 120 per 100,000 population, increasing to over 800 per 100,000 in those over 75.2 years of age in the United States<sup>3</sup>. Given the ageing population in most Western countries, it could be anticipated that we are on the cusp of a tidal wave of chronic wounds, associated with a corresponding increase in economic impact on the health care system. Indeed chronic wounds already represent a major burden and drain on health care resources<sup>4</sup>.

Over the last few decades there has been a considerable increase in developments in both wound-care products and knowledge relating

to chronic wound care. Wound care has evolved from the use of simple gauze and bandages to the range of options available today. An improved understanding of wound healing has developed, resulting in a growth in dressing technology as well as new prospects involving growth factors, hyperbaric and oxygen therapy, negative pressure therapy, and bioengineered skin. With this progress, optimising wound treatment and healing is dependent upon multidisciplinary collaboration, structured treatment processes, education and training of the patient as well those involved with the therapeutic team<sup>5</sup>.

Given the importance and burden that chronic wounds present to the society and the medical profession, it would seem logical that education of undergraduate medical students should be a priority to provide a solid understanding in the management of chronic wounds. Despite this, there is evidence that clinicians and medical students are not well educated in wound care<sup>5,6</sup>. It has been observed that the lack of knowledge by clinicians regarding appropriate wound management results in worse outcomes, which potentially can be rectified by appropriate education<sup>7</sup>. Delays in wound healing through inappropriate or ineffective wound management prolong hospital inpatient stays, increase health care costs, and contribute to increased morbidity and mortality<sup>2</sup>.

The authors of this study could find no published evidence of the extent of teaching on education and management of chronic wounds provided to undergraduate medical students in Australia.

Further compounding issues of teaching wound care to medical students is the paucity of comprehensive standards to assess the quality of wound management education<sup>8</sup>. The lack of education in regard to wound management appears to span the entire spectrum, from the basic pathology through to evidence-based care and assessment of the teaching curricula on wound care.

With this background, the authors of the present study investigated the effectiveness of the model of teaching at a dedicated wound clinic in an outpatient setting at the Royal Hobart Hospital (RHH), the principal teaching hospital of the University of Tasmania (UTAS).

### Jason D Lemon

MBBS Year V University of Tasmania, BAppSc(Clinical), BChiroSc, GradDipMuscMgmt

### Maitri Munsif

MBBS University of Tasmania, MIPH Year I  
University of Sydney

### Professor Sankar Sinha \*

BSc, MBBS(Hons), MEd, MS, MNAMS, FRACS, FACS  
Professor of Wound Care (Discipline of Surgery), School of Medicine, Faculty of Health Science, University of Tasmania, Australia; Staff Specialist Surgeon, Wound Clinic, Royal Hobart Hospital, Tasmania, Australia; Professor and Head of Anatomy, University of Notre Dame Australia, School of Medicine Sydney, Australia  
Email [sankar.sinha@utas.edu.au](mailto:sankar.sinha@utas.edu.au)  
Mob 0438 254 623

\* Corresponding author

## METHODS

A survey tool (Table 1) for medical students in their clinical years in Tasmania was developed to assess pre- and post-attendance confidence in managing chronic wounds (Figures 1 & 2). A similar tool with some modifications was used to assess junior doctors in their first and second years following graduation to measure the effectiveness of attendance at the wound clinic (Figure 3). Subjects were canvassed directly by the authors or via email to complete the survey online or in hard copy.

The RHH wound clinic was founded in 1993 and currently sees patients twice per week. The clinic provides specialist management of chronic wounds and consists of specialised wound-care nurses and specialist doctors and surgeons with special interest in chronic wound management. Students enrolled at UTAS medical degree course and posted at the Hobart Clinical School were initially advised to attend the wound clinic at least once during their surgical term as a part of the undergraduate teaching requirements during the clinical years (Years 3 or 4). At the time of writing this article, attendance at the wound clinic has become a compulsory requirement of the course. The UTAS has two other clinical schools in Northern Tasmania — one in Launceston (Launceston General Hospital — LGH), the other in Burnie (North West Regional Hospital — NWRH). There is no wound clinic at the NWRH, and although there is a recently established wound clinic at the LGH, student attendance is not a part of the curriculum.

## RESULTS

The participants invited in this survey were equally divided among the three clinical schools. There were approximately 60 students in each clinical school in the final two years. Of the total participants (those who attended the clinic in pre-clinical years for Launceston and Burnie, and throughout the five years in Hobart) a total of 53.7% who responded to the questionnaire attended the wound clinic at RHH.

Table 1. Items used for Survey tool

Before attending the wound clinic.....	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No response
1. knew about healing of acute wounds.						
2. knew to manage a small acute wound.						
3. had adequate knowledge of chronic wound.						
After attending the wound clinic.....	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Applicable
1. comprehended burden of health care associated with chronic wound.						
2. learnt to take a focused history of chronic wounds						
3. learnt to analyse the factors delaying wound healing.						
4. understood concept of moist wound healing.						
5. learnt how to choose an appropriate wound dressing						
6. observed the pocket Doppler to estimate A/B index.						
7. understood the graduated compression bandaging.						
8. observed the application of four layer compression bandage.						
9. understood benefits of wound debridement.						
10. observed the procedure of wound debridement.						
11. experience in the wound clinic has been positive.						
12. recommend colleagues to attend the wound clinic.						

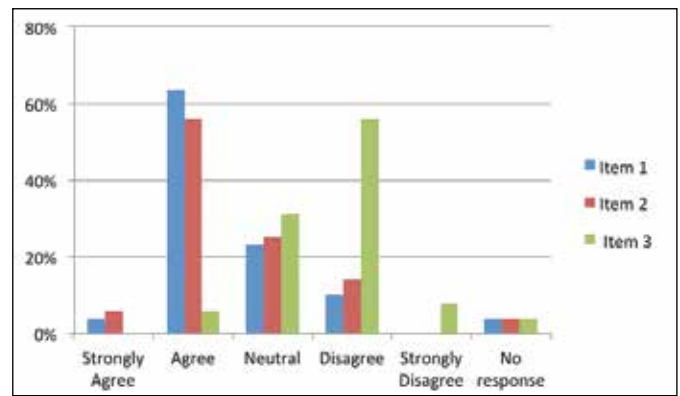


Figure 1. Summary of data – Students' Pre-confidence

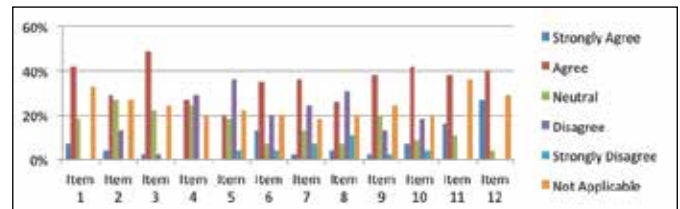


Figure 2. Summary of data – Students' Post-confidence

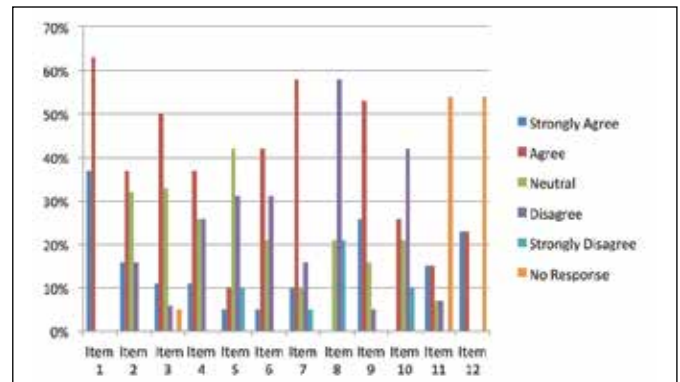


Figure 3. Summary of data – Junior Doctors' response

The percentages of eligible subjects who responded to the questionnaire were 31.5% for the RHH, 31.5% for the LGH, and 37% for the NWRH. All of the Hobart students were expected to have attended the wound clinic, whereas only a small number of the respondents from the other campuses would have had the opportunity to attend a wound clinic.

Of the junior doctors who responded to our survey, only 31% had attended a specialised wound clinic during their undergraduate course. This contrasted with the student responses, where half of the students did attend the wound clinic.

## DISCUSSION

To our knowledge, this study is the first of its kind investigating the teaching of chronic wound care within the undergraduate medical curriculum in Australia. Woodward in 2002<sup>6</sup> reported suboptimal knowledge of chronic wound management among the Australian geriatricians and recommended that the undergraduate and postgraduate medical curricula need to be reviewed and adjusted to incorporate comprehensive wound management education.

Investigations into the degree of training of medical students in the United States found that they were inadequately trained in wound care, with hours dedicated to wound care ranging from none, to an average of 2.1 hours in first year and 1.9 hours in second year<sup>2</sup>. Other studies published on the degree of training of medical students in wound education internationally have provided total numbers of hours in wound education, with the United States having a total of 9.2 hours, United Kingdom 4.9 hours, and Germany 9 hours required of their medical students<sup>9,10</sup>. Some medical schools in the United States do not have any teaching on wounds<sup>2</sup>. This is surprising given that as little as two hours of lecture or clinical intervention can be sufficient to improve evidence-based wound care when measured two months after delivery<sup>11</sup>. It has been stated that wound care education needs to be focused on quality, be patient-centred, clinically driven and flexible<sup>12</sup>.

The management of chronic wounds should include a specialist clinician as part of the multidisciplinary team. In this regard, there are disparate views as to whether a medical doctor or a nursing staff member should be the team leader and director of therapy — given the fact that many doctors perceive wound care as the preserve of nurses<sup>13,14</sup>. Some have suggested that it does not matter who is in charge of wound care, as long as they have an interest in the subject and have access to a multidisciplinary team including surgical, pharmacological, physical and biological therapies<sup>4</sup>. To this, we add that the person in charge should be an experienced teacher.

In this study we assessed medical students and recent graduates about their experiences of an outpatient wound clinic, and their confidence in appropriately managing chronic wounds.

The authors used direct approaches to both students and interns, and emails sent to all students and interns in all three clinical schools within Tasmania. The email response rates were lower than the response rates from direct approach, which is consistent with other published studies<sup>15</sup>. An average response rate of 36% has been reported for this method of surveying a target population<sup>6,15</sup>, which is close to our response rate in this study. Even with our low response rate, we found the responses are homogenous to a large extent, and therefore indicative of a true sample.

The results from our survey demonstrated that even though there was the availability of a weekly wound clinic, only 54% of the respondents attended the clinic. All of the RHH respondents should have attended the wound clinic, which indicates that the rest of the respondents could be from the LGH or NWRH campuses. On the basis of this result, it may be justifiable to recommend that attendance at a dedicated wound clinic should be made compulsory during clinical rotation for all medical students.

We found that 68% of students had prior knowledge about the healing process of acute wounds, and 61% indicated they knew the appropriate treatment for acute wounds. This contrasts strongly with the responses of students in regard to chronic wound care, with over 64% indicating they did not have adequate knowledge of chronic wound care. This highlights an obvious bias or deficit in clinical teaching within the medical curriculum. It also identifies the need to place an emphasis on chronic wound care given the magnitude of burden, as discussed earlier.

The results also revealed that student attendance at a wound clinic was helpful to raise awareness of the magnitude of burden of health care associated with chronic wounds. A third of the students also positively indicated that they had learnt how to take a focused history from a patient with chronic wounds. The majority of students indicated that they could apply their knowledge to analyse the factors which delay the wound healing process after attendance. Most students also understood the benefits of wound debridement. These responses indicate that the wound clinic provides a positive contribution to improving the knowledge and competency of students in dealing with chronic wounds.

Students who had attended the wound clinic were less consistent in their responses as to whether they understood the concept of moist wound healing. Even after attending the wound clinic, many student respondents still failed to understand the concept. This was also reflected by over a third of the students still having difficulty in choosing appropriate wound dressings after attending the clinic, and many of them indicating that they still did not understand the rationale for applying a graduated compression bandaging. The intern responses in choosing appropriate wound dressings also indicated that most were not familiar with the appropriate dressings, despite 48% understanding the concept of moist wound healing. This may possibly be addressed with structured education and increasing attendance at the wound clinic, leading to increased levels of knowledge and confidence among the students and interns.

The majority of students had observed the use of a pocket Doppler to estimate the ankle-brachial index (ABI), just under a third had observed the application of a four-layer compression bandage on a chronic leg ulcer, and most had observed a wound debridement. Obviously, a longer exposure with multiple attendances is required to provide hands-on experience. This fact is also reinforced by the intern responses to being able to perform wound debridement independently, with over 50% indicating that they were not confident to perform debridement, despite their understanding of the benefits of the procedure. Nearly half of the interns indicated that they could use a Doppler to estimate the ABI and most understood the benefit of graduated compression bandaging, but they did not know how to apply a four-layer compression bandage on a patient with chronic leg ulcers.

Overall, the student responses were unanimous for having a positive experience at the wound clinic, and nearly all respondents indicated that they would recommend their colleagues to attend. This was also reflected by the intern responses for the same questions.

Learning in an outpatient setting has some advantages for medical students. A comparison of perceived learning by medical students during an orthopaedic rotation showed that students learned more by attending an outpatient clinic than from ward rounds<sup>16</sup>. Studies into the shifting of medical education from ward-based teaching to outpatient clinics have shown significant improvements in objective examination of skills, along with a clear advantage in student enjoyment of ambulatory-care experiences<sup>17</sup>. This may also prove true for the teaching of wound management, as medical education moves to case-based learning in outpatient settings.

The results of this study led to the development of a structured teaching process in the wound clinic in 2013. As the students arrive at the clinic they receive a brief 15-minute overview on assessment, selection of dressings, rationale of graduated compression in leg ulcers and the importance of documentation in the medical record. Following this, the students are asked to assess a patient with a chronic wound and present their findings to the specialist. Discussion on aspects of management and explaining this to the patient is observed with immediate feedback. The students also observe wound debridement, ABI measurement with pocket Doppler and application of four-layer graduated compression bandage. At the end students are required to obtain endorsement in their logbook by the specialist.

## CONCLUSION

Given the significant burden that chronic wounds present to the population and the health care system, we recommend that there be a concerted effort for more education in wound care in the undergraduate medical curriculum. This is achievable with a short placement in a dedicated wound-care clinic.

## CONFLICTS OF INTEREST

None declared.

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