Solutions to the Chronic Wounds Problem in Australia: A Call To Action

On behalf of the Chronic Wounds Solutions Collaborating Group*

*Collaborators listed at the end of the article

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Executive Summary

Chronic wounds are a silent epidemic in Australia. They are under-recognised as a public health issue, and their health and economic effects are under-estimated. Wound management services receive little attention and investment compared to other comparable chronic conditions.

Evidence-based practice in wound care has consistently been shown to have significant health and economic benefits, yet there are still considerable evidence-practice gaps across Australia. The persisting key challenges to implementation of evidence-based practice are a general lack of awareness, poor education and training of health professionals, and high costs of chronic wound care.

To identify solutions to overcome these barriers, surveys were administered to solicit key stakeholders' opinions, and national forums provided further facilitated discussion to refine and prioritise solutions. At the conclusion of this process, the main recommendations were to raise awareness of the significance of this problem, and to make chronic wounds a strategic priority for governments. Urgent action, however, is needed at all levels, including federal, state and local governments, non-governmental organisations, medical and nursing organisations, industry, healthcare professionals, academics and the public to address such recommendations if Australia is to reduce the significant preventable national burden of chronic wounds and improve patient outcomes. The Chronic Wounds Solutions Collaborating Group was established to encourage, support, and monitor action on the implementation of such recommendations to prevent and control chronic wounds in Australia.

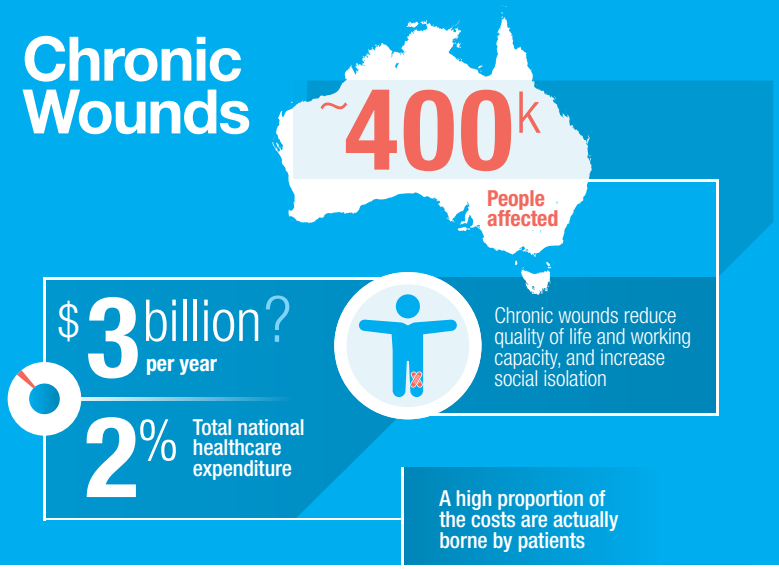
Introduction

Chronic wounds are an under-recognised issue in Australian healthcare, and are under-considered in terms of both research and public policy receiving little attention and investment compared to other chronic conditions [1].

This apathy is unjustified given the associated disease and economic burdens. Chronic wounds severely reduce quality of life, capacity to work and increase social isolation [2]. They also impose substantial costs to patients and the healthcare system. A recent study in the United Kingdom described the health and economic burden of wound management, as comparable to that of managing obesity [3]. The burden of chronic wounds is often underestimated, as chronic wounds are considered complications of other comorbid conditions, or a normal part of ageing. In burden of disease studies, venous leg ulcers are frequently hidden within skin and subcutaneous diseases while diabetic foot complications are included as sequelae of diabetes with estimates presented at the level of diabetes as the cause [4]. Despite clear evidence demonstrating that implementation of evidence-based wound care coincides with large health improvements [5, 6] and cost savings [5-8], research has demonstrated that the majority of Australians with chronic wounds do not receive best practice treatment [5, 9, 10]. Furthermore, as wound management is not recognised as a discrete healthcare field or a national health priority, securing any impetus for change is particularly challenging.

Box 1: Key messages

1. Chronic wounds impact on quality of life and are expensive to treat but are seriously under-considered in the Australian public-health agenda.
2. Achievement of improved wound management at a lower cost remains a sensible goal for Australia.
3. The barriers to implementation of evidence-based wound care in Australia include lack of awareness of the significance of chronic wounds, poor coordination and communication between health care providers, limited access to evidence-based wound management, poor education and training in evidence-based wound care and high costs of wound services and consumables.
4. Chronic wounds must become a strategic priority for governments to ensure the delivery of affordable, accessible and timely high quality services to all Australians.
5. The Chronic Wounds Solutions Collaborating Group will encourage, support, and monitor action on the implementation of recommendations and evidence-based efforts to prevent and control chronic wounds.
6. We provide evidence that this goal is achievable and call for a critical and sustained national effort to prevent and treat chronic wounds in Australia and improve patient outcomes.



Introduction

Barriers to implementation of evidence based wound care

Wound management and funding in Australia is complex and involves a multitude of service providers with poor continuity of evidence-based treatment and prevention along the health service continuum [5]. Key barriers to implementation of evidence-based wound care can be categorised into 5 groups: poor coordination and communication between health care providers and a complex web of services that patients find difficult to navigate, lack of awareness of the significance of chronic wounds, limited access to evidence-based wound management, poor education and training in evidence-based wound management and high costs and reimbursement for wound services and consumables [11] (Figure 1). As a result of this poor implementation of evidence-based wound care, chronic wounds take longer to heal, have high recurrence rates, require frequent assessment and treatment from health care professionals and often result in hospitalisation through infections and other complications. In addition to the adverse impact on patient morbidity, mortality and quality of life, this also places a significant burden of largely avoidable costs on the health care system [1]. Given the ageing population, the increased incidence of chronic disease and emerging concern about the sustainability of hospital service delivery in Australia, providing evidence-based prevention and treatment for all Australians with chronic wounds is imperative.

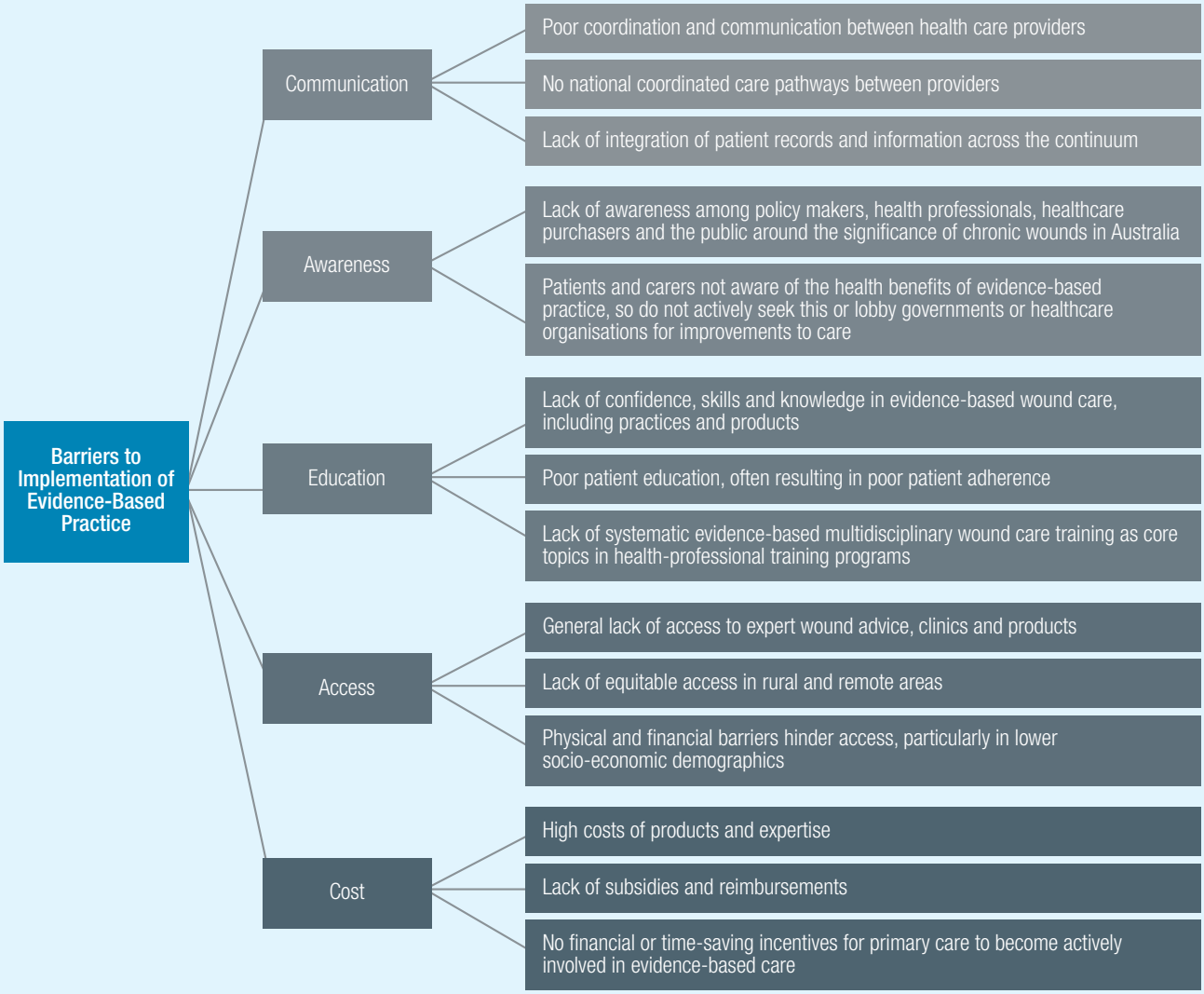


Figure 1 – Summary of barriers to implementation of evidence-based wound care in Australia

The health and economic burden of chronic wounds in Australia

There is a lack of reliable and recent data on the prevalence and treatment costs of chronic wounds in Australia. Based on data from studies carried out in several high income countries identified through a literature review of the prevalence and incidence of chronic wounds, [12] it has been estimated that there are about 400,000 cases in hospital and residential care settings in Australia each year, with pressure injuries being the most common wound type, comprising 84% of these wounds, followed by venous leg ulcers (VLUs) (12%), diabetic foot ulcers (DFUs) (3%) and arterial insufficiency ulcers (1%) [13].

Regardless of wound type, the treatment costs are substantial, with an estimated national spending of US$2.85 billion (about AUD$3 billion) a year, or approximately 2% of Australian national healthcare expenditure [13].

These direct healthcare costs only include costs in hospitals and residential care settings but do not include general practice and community nursing costs, indirect costs of lost productivity, the intangible costs of pain and suffering and travel and other costs of consumables to individual patients [1]. As well as these initial costs, recurrence rates for most chronic ulcer types remain unacceptably high [14], resulting in ongoing costs to patients and the Australian community for many years [15].

Social and economic benefits of evidence-based wound care

There are many studies that have demonstrated the effectiveness of different treatment options and product-oriented interventions related to wound management[5, 8, 16-19]. These have resulted in improved healing times, less pain, and reduced likelihood of infection and hospitalisation. This has societal impacts in terms of improvements in quality of life as well as reduced hospital and general practitioner (GP) visits, reduced costs to patients, and faster return to work. There is also evidence that evidence-based wound care is cost-effective and even cost-saving. Ragnarson Tennvall et al. [20] evaluated the cost-effectiveness of optimal prevention of DFUs based on recommendations from the international diabetic foot management guidelines [21] and reported that optimal prevention would be cost-effective for populations at-risk of DFUs. Similarly, Ortegon et al. [22] and the Australian study by Cheng et al. [23] found that guideline-based prevention and management of DFUs was cost-effective and cost-saving compared with usual care. A United States study by Padula et al. [24] provided evidence that a guideline-based pressure ulcer prevention program would also improve patients' quality of life at a lower cost. Furthermore, guideline-based care for VLUs that included public sector reimbursement for compression therapy was also found to result in cost savings of about AUD$1.4 billion to the health system over 5 years in Australia [25]. Much of this evidence has formed national and international treatment and prevention guidelines. Unfortunately, in general, this has not necessarily resulted in a widespread or sustained change to practice in Australia. This paper aims to investigate solutions to the current knowledge translation challenges through stakeholder engagement and calls for a critical and sustained national effort to prevent and treat chronic wounds in Australia.

Methods

Stakeholder Engagement Part 1 – Chronic Wounds Solutions Forum

The Chronic Wounds Solutions Forum, held on the 31 August 2017 in Brisbane, Queensland, Australia, was organised by the Australian Centre for Health Services Innovation (AusHSI), with support from the Wound Management Innovation Cooperative Research Centre (WMI CRC), Brisbane North Primary Health Network, and Metro North Hospital and Health Service. Invited stakeholders included policy makers, nationally-recognised clinicians specialising in chronic wound management, general practitioners, representative members of Primary Health Networks (PHNs), Hospital and Health Services (HHS), consumers with previous or ongoing chronic wounds, private health insurers, consumer advocates, private sector and pharmaceutical industry representatives, health economists and other university academics from across Australia, with a total of 87 participants attending the forum. The aim of the forum was to provide an opportunity for key stakeholders to bring together their knowledge and expertise to explore the identified barriers to evidence-based wound management and the delivery of wound services in Australia and discuss solutions to the chronic wounds problem. The forum consisted of didactive presentations of identified barriers [11] from the perspective of select national experts, followed by active participation and sharing of ideas using the World Café method [26]. As forum participants were those at the forefront of Australian wound management, they were able to provide useful information from a variety of perspectives and make recommendations on what should be changed to benefit patients and improve health service delivery. A panel of experts then summarised the recommendations arising from the forum with input from the larger group of participants. This discussion was recorded through non-identifiable notes taken at the forum. Content generated throughout the forum, including the presentations and panel discussion, was also captured through a graphic recording artist. An image depicting the visual recording of Chronic Wounds Solutions Forum is shown in Figure 2. The forum concluded by supporting the publication of a recommendations paper and call to action.

Stakeholder Engagement Part 2 – Online survey to identify priority recommendations

Stakeholders invited to attend the forum were asked to complete an online survey two months prior to the forum. Data were collected through the online platform '*Survey Monkey*'[27], using a secure account known only to project investigators. Settings within the tool were configured to ensure that personal information, beyond the questions in the survey, was not recorded, thus ensuring that all responses remained anonymous when the data were analysed.

Survey respondents were asked to rank priorities to overcoming identified barriers to increased uptake of evidenced-based chronic wound management, in the field of education, provision and access to wound services and financial support, from highest (1) to lowest (6). Forum participants were then contacted by email about two months after having attended the forum and they were asked to repeat the initial online survey. Through this engagement, we were able to determine which strategies stakeholders determined to be the highest priority, and how responses changed after attending the forum, forming the basis of key recommendations.

Stakeholder Engagement Part 3 – Establishment of The Chronic Wounds Solutions Collaborating Group

The Chronic Wounds Solutions Collaborating Group was born from a partnership between the independent chronic wound stakeholders, experts and consumers attending the Chronic Wounds Solutions Forum with the aim to encourage, support, and monitor action on the implementation of evidence-based efforts to prevent and control chronic wounds in Australia.

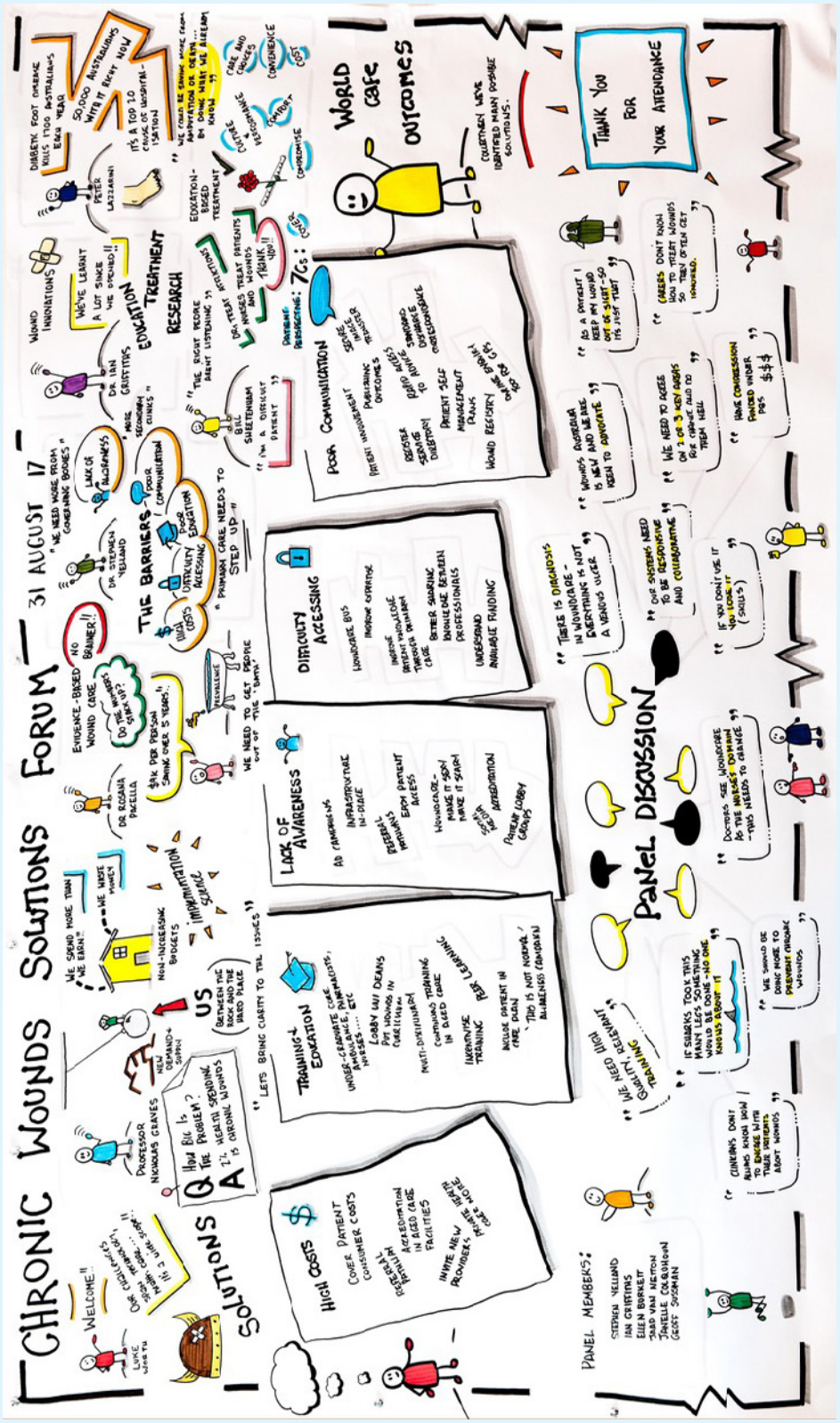


Figure 2 – Graphic recording during the Chronic Wounds Solutions Forum

Results

Recommendations arising from Chronic Wounds Solutions Forum

When drafting the 17 key recommendations arising from discussion at the forum (Table 1), the focus was on capturing what participants considered attainable and achievable, designed to incite action and encourage uptake. We acknowledge that many of these recommendations are interconnected and could address more than one barrier.

Recommendations

Advocacy and awareness

1. Chronic wounds should be one of Australia's National Health Priority Areas, with recognition by government of the health and economic impact of chronic wounds.
2. Launch a widespread public health campaign to raise awareness of the significance of chronic wounds.
3. Improve national leadership of chronic wound stakeholders and work together in strong partnerships.

Intensify and improve education and training

4. Incentivise the undertaking of further training by primary healthcare workers by assigning Continuing Professional Development (CPD) points to accredited programs.
5. Increase evidence-based practice training that is affordable and accessible, and spread awareness of existing resources, modules and programs available.
6. Upskilling of the multiple disciplines required to treat or monitor chronic wounds in their field of care.

Accreditation / Credentialing

7. Nominate a governing body to perform and monitor accreditation and credentialing of wound care activity, to ensure consistency and transparency, in consultation with other accrediting bodies.
8. Accreditation for training/education programs delivering evidence-based wound management practice.
9. Implement a credentialing process for transdisciplinary clinics providing evidence-based wound management.

Access to wound care products and services (improving physical access and financial support)

10. Public funding and adequate reimbursement or subsidy plans for evidence-based wound products and services based on outcomes of care.
11. Implement models of transdisciplinary wound care teams across the country and promote wound management in primary health care as a priority.
12. Encourage the use of telehealth particularly within rural/remote areas and for residents of aged care facilities, whose frailty may increase the burden of travel to appointments .

Transdisciplinary patient-centred care

13. A transdisciplinary and patient focused approach should be taken with all patients, encouraging open communication between providers, patients and carers.
14. Develop clear referral pathways to ensure patients are referred to the right service in a timely manner.
15. Develop an efficient interface or platform to improve communication and efficiency across wound care services.

Surveillance and research

16. Conduct a nationally representative prevalence survey at regular intervals and in line with international best practice to identify baseline prevalence and size of the problem, measure costs and track changes over time, enabling assessment of the impact of policy and practice changes.
17. Establish a national wound registry linked to international wound registries as a tool for enabling evidence-based wound management research, analysis and evaluation.

Table 1 – Recommendations arising from Chronic Wounds Solutions Forum

Survey results and recommendations identified as priorities by stakeholders

The majority of respondents who completed the survey were clinicians or healthcare providers (57.14%), followed by researchers (28.57%), hospital administrators (8.57%), policy and decision makers (2.86%), and patients/carers (2.86%).

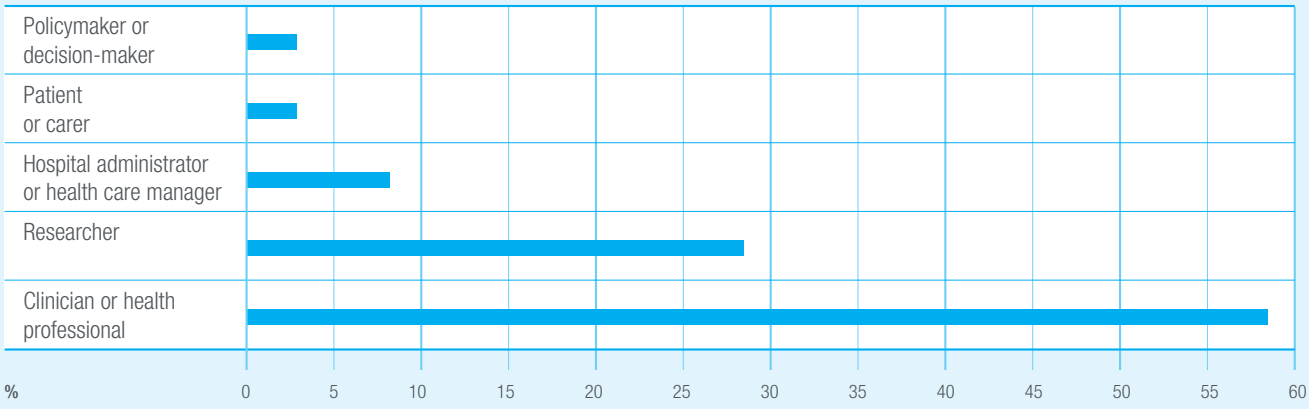


Figure 3: Survey respondents' characteristics

Results

Priority recommendations to overcome barriers to Education and Provision of Services

The graphs below display the results – the length of the bar indicates importance, with the longest bar representing the action rated as the highest priority by respondents. The top bar represents the post-forum responses, and the bottom bar represents the pre-forum responses, and displays the change in opinions and expectations following a multidisciplinary discussion. Stakeholders identified increasing awareness among clinicians about wounds and treatment methods as their highest priority, whereas prior to the forum the highest priority was having more staff in primary care settings trained in wound management.

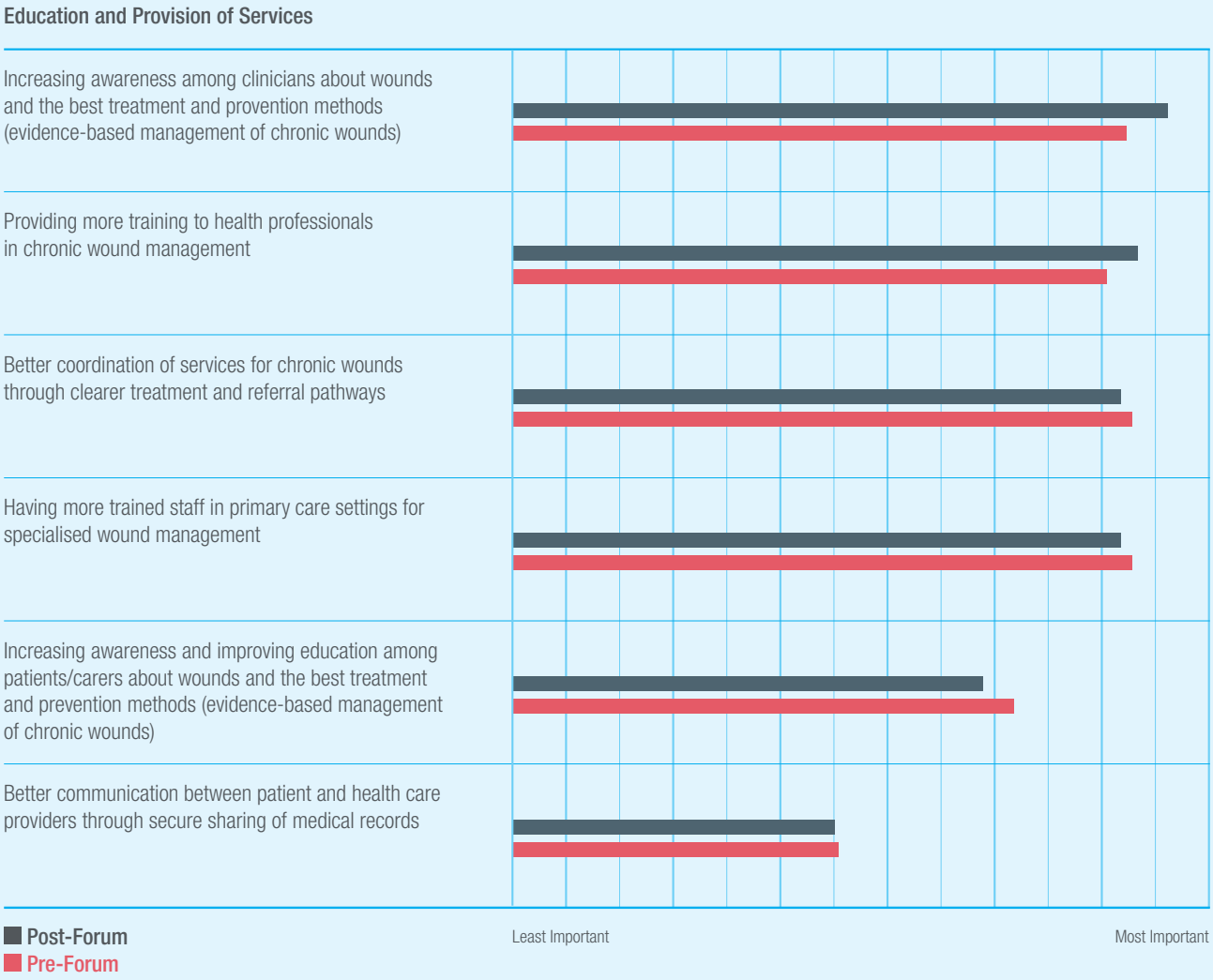


Figure 4 – Results of stakeholder survey – Education and Provision of Services in chronic wound care

Priority recommendations to overcome barriers relating to Access and Financial Support in Wound Management

Forum participants were also asked to prioritise suggested solutions to access and financial barriers surrounding effective chronic wound management from highest (1) to lowest (6). The priority identified as most important both pre- and post-forum was making chronic wounds management a strategic objective for governments followed by having patient reimbursements for wound care products.

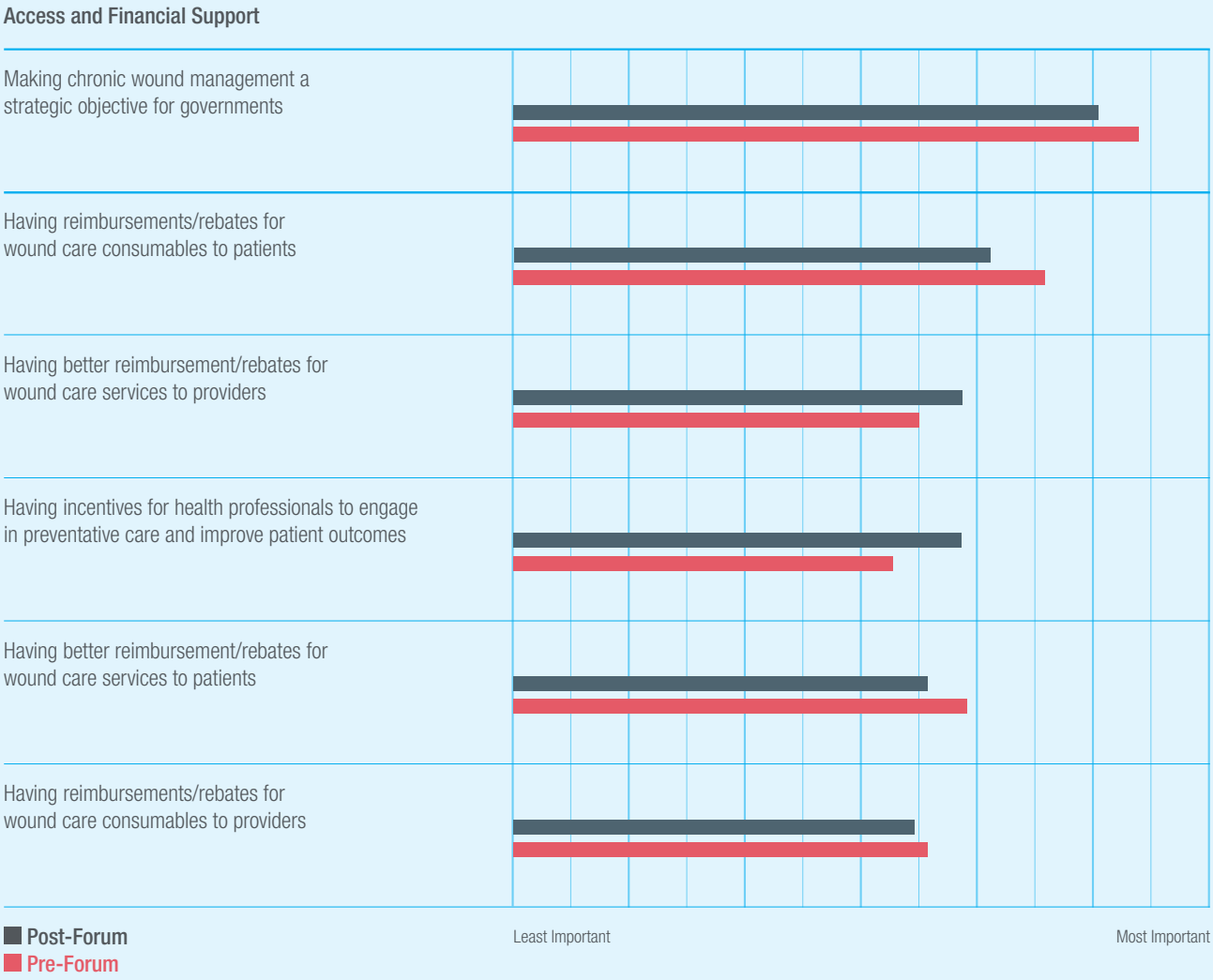


Figure 5 – Results of stakeholder survey – Access and Financial Support

Discussion

Based on the consensus recommendations of national chronic wound stakeholders from diverse background/fields, achievement of the goal of providing evidence-based prevention and treatment for all Australians with chronic wounds relies on the availability of resources, as well as political and community support and improved cohesion of our state and national health systems.

We also need an approach that draws on best evidence from translational and implementation research. The undertaking of these key recommendations should ultimately lead to improved health outcomes for all Australians with chronic wounds. Some suggested strategies to achieve the recommended solutions (summarised in Table 1) are outlined below drawing on successful existing local and international initiatives for chronic wounds and other chronic diseases.

Wound Awareness Week

Wounds Australia runs an annual Wound Awareness Week campaign directed at the general public and health consumers to raise awareness of wounds as a health issue, around the key message 'Are you wound aware?'. The campaign uses a combination of traditional and social media channels to raise the profile and provides resources to www.woundaware.com.au. In 2018, Wound Awareness Week will be held from Sunday 15 July to Saturday 21 July 2018.

Strategies to achieve key recommendations

Advocacy and Awareness

Chronic wounds should be one of Australia's National Health Priority Areas

There is a critical need to raise awareness of the links between chronic wounds and the Australian National Health Priority Areas, as well as to recognise chronic wound management as a National Health Priority Area in its own right [28]. This has the potential to significantly increase the awareness of the national burden of chronic wounds and thereby secure increased support from policy makers and research funders to deliver significant health benefits to people living with chronic wounds [28], as has already occurred for other National Health Priority areas such as diabetes [29, 30].

Launch public health campaign

Australia has been a world leader in several public health campaigns, backed by trusted governing bodies, that have been hugely successful in addressing and raising awareness of public health needs in the past, resulting in changes in behaviour and reductions in associated mortality and morbidity. Past campaigns that have successfully increased public awareness, incited a change in behaviour and reduced incidence and prevalence include the SIDS and Kids 'Reduce the Risks' campaign [31, 32], the FAST stroke awareness campaign [33-35], various anti-smoking campaigns [36-38], and the 'Slip! Slop! Slap!' Campaign [39]. This last campaign proved particularly effective – the awareness and prevention campaign was launched by the Anti-Cancer Council of Victoria (ACCV) in 1980, and was followed by the 'SunSmart' campaign, launched in 1988 [40]. Programs now operate in each state and territory of Australia by respective Cancer Councils, all using common principals but tailored to jurisdictional priorities, with the sun protection messages expanding to 'Slip! Slop! Slap! Seek! Slide!' [41]. Data captured since the launch of the campaign has indicated a steady decline in the incidence of invasive melanoma in progressively older age groups, and is consistent with a birth cohort effect that coincides with the safety and awareness campaigns [39]. The 'SunSmart' program is estimated to have prevented more than 43,000 skin cancers and 1400 deaths in Victoria alone between 1988 and 2011, and a net cost saving of $92 million nationwide [41, 42].

The success of this campaign may be attributed to the ongoing and evolving nature of the messages it presented – initially the ACCV was dealing with a health issue that was not understood by members of the community, with the evidence they were presenting emerging from epidemiological research, as opposed to the experiences of the wider community [40]. This draws significant comparison with the barriers faced within the wound care field – awareness of the prevalence of chronic wounds is not currently understood within the clinical, policy and public communities. A campaign to raise awareness of chronic wounds should focus on creating a 'community of concern' – until there is widespread concern and interest there will be limited local and community efforts to assist in resolving the problem [40]. Chronic wounds are not limited to one demographic, and mass media campaigns should target everybody – in this way, awareness can spread to those who are at risk, as well as those who may be treating or caring for people who fall into at-risk categories. As a campaign evolves, the focus of the message should evolve, with more targeted approaches towards specific groups and the drive for systemic and policy changes, as the 'SunSmart' campaign has done [39].

Crucially, the ACCV's credibility in the public's eyes had a positive impact on the reception the sun safety messages of the 'Slip! Slop! Slap!' and 'SunSmart' campaigns. It has also given weight to the advice, training, and resources available in relation to the messages they were and are sending [40]. This creates a strong argument for a chronic wounds campaign to be initiated and backed by a reputable governing body, with a focus on evidence-based guidance and research – displaying gold-standards in knowledge and practice. Not only would a public awareness campaign of this nature spread information within the general public, it would also give weight and backing to the argument of clinicians and patients campaigning for increased subsidies and improved education.

Improved national leadership

Although the Australian Government has made an important first step to raise the profile of chronic wounds by funding the Wound Management Innovation CRC as a means to support collaborations between industry, researchers and the community, much remains to be done in this field. National leadership is a prerequisite for the effective implementation of evidence-based wound care but this is still missing in Australia. We need strong political will for the planning and implementation of priority health policies to combat chronic wounds. We need strong leadership and cohesion across all levels of government: national, state, regional and local to unite the many stakeholders, including the private and industry sectors, non-governmental organisations, and the public and coordinate efforts for the prevention and management of chronic wounds. In addition, we also need non-governmental national wound organisations such as Wounds Australia to intensify leadership and work in close partnership with relevant stakeholders to support goals.

Intensify and improve education and training in wound management

There is an urgent need for improved education and training of health professionals to increase uptake of evidence-based practice. Discussion during the forum reached the consensus that an overhaul of the education and training available in a variety of sectors was required, an opinion backed by recent research and evidence. Wound management should be part of routine training for healthcare professionals and incorporated into the national curriculum for all Australian medical, nursing and allied health schools, with ongoing comprehensive and accessible wound management education for all healthcare providers [1].

Discussion

Education and training should also be provided to the consumers themselves. There is clear evidence that patient education is also necessary to allow patients the option of self-management of their chronic wounds, which would result in better patient outcomes as well as a reduced strain on healthcare funding leading to cost savings [43]. In a recent Australian study, the two main reasons for patients deciding to peruse self-treatment were, 'to be independent' (58%) and 'to do the treatment at a time that suited' (56%). However, only 6% of respondents stated that they had formal education or training on the self-management of chronic wounds [43]. Patient education is vital for increased uptake of evidence-based practice and patient outcomes.

Increasing evidence-based practice training and upskilling that is affordable and accessible

Where innovative wound management upskilling and training programs have been implemented in Australia, it has resulted in improvements in evidence-based knowledge, confidence and skills amongst healthcare providers [44-47]. One such training program focused on DFU, and reported significant long-term retention of improved knowledge, skill and competency [45], which was identified as a factor in improving regional evidence-based clinical practice [48] and reductions in state-wide diabetes-related amputation rates [49]. Internationally, telementoring programs incorporate the use of videoconferencing to create local content experts within primary care clinics that may be in rural or remote areas, or otherwise cannot gain access to training. One such program – the Extension for Community Health Outcomes (ECHO) project – was developed in 2009 at the University of New Mexico Health Sciences Center. The program was designed to address rural health access issues for Hepatitis C in New Mexico, and has been adapted successfully in other US states to address a range of complex health issues, such as pain management, diabetes, and cervical cancer prevention [50-52]. Significant increases in knowledge, confidence and attitudes in providing care to patients were reported, even with more individualised and multifaceted conditions such as diabetes [52]. The program uses videoconferencing technologies and combines peer-mentoring within a telehealth system, and could present an interesting opportunity to make use of existing facilities and resources in Australia.

A recent education and training needs analysis identified staff working in primary healthcare and residential aged care facilities as having the highest need for increased wound education and training, particularly in more specialised areas such as wound diagnostics, products and devices [53]. In addition to formal courses, a range of education modes should be available to meet the needs of all levels of healthcare providers and unregulated workers especially in the aged care or remote setting, such as developed by the 'Champions for Skin Integrity Program' [54]. A key component of a primary care practice is coordinating health care services and other health resources to ensure that patients receive appropriate and timely care [55]. Education programs should include information regarding appropriate referral times and pathways, to ensure patients who are not progressing in their treatment are receiving an evidence-based approach. Work-force capabilities growth, including plans for growth and recognition of wound care as a specialty, research opportunities, and skills sharing with community partners – as currently demosntrated by the University of the Sunshine Coast partnership with Blue Care wound services - is also recommended.

Incentivise the undertaking of further training and upskilling by primary healthcare workers

Healthcare professionals often rely on continuing professional development to upskill, and in the case of GPs and nurses it is a compulsory aspect of continued registration with their respective accrediting bodies [56, 57]. However, with so many competing chronic diseases, wound care is not high on the agenda and there is a need to assign Continuing Professional Development (CPD) points to accredited programs. Models that have proven to be effective for other chronic diseases, such as mental health, could be replicated where, in order to access certain Medicare Benefits Schedule (MBS) items, GPs need to first complete a range of accredited activities [58]. Information and recommendations on credentialing and accreditation is discussed further in 'Accreditation/Credentialing' section.

Accreditation / Credentialing

The use of highly trained wound specialists has been fundamental to the successful implementation of evidence-based care in chronic wound health services [59-61]. Accreditation of education programs aims to ensure the quality of education, improves consistency across practice, and promotes continuous quality improvement, with the ultimate goal of providing optimal patient care [62]. Additionally, certification contributes to a clearer definition of the profession, with individuals meeting certain requirements before they are allowed to practice. Patients accessing credentialed healthcare professionals can feel confident that the clinician is competent in services provided [63].

There are a number of supporting professional bodies and organisations whose collaboration would be essential in performing accreditation and credentialing, such as the Australian College of Nursing, the Australian College of Midwives, the Australian Nursing and Midwifery Council, community nursing organisations such as the Royal District Nursing Service, the Australian Health Practitioner Regulation Agency, the Australian Medical Association, the Royal Australian College of General Practitioners, the Rural Doctors Association of Australia, the Australian College of Rural and Remote Medicine accredited by the Australian Medical Council, Dietitians Association of Australia, Occupational Therapy Australia, Pharmacy Board of Australia, the Australian Primary Healthcare Nurses Association and the Australasian Podiatry Council. This large number of organisations, however, creates room for variability in method, and other issues related to a lack of standardisation across programs [63].

We need a single accrediting body to be responsible for performing accreditation and setting agreed-to standards of wound care, or at the very least consistent collaboration between all existing accrediting bodies. In the US, the American Board of Wound Management (ABWM) performs credentialing for clinicians who wish to specialise in wound care, and is dedicated to ensuring a standard of excellence in transdisciplinary wound certification [64]. There are three levels of credentialing, depending on prior experience and proposed career path within wound care: 1) Certified Wound Care Associates include registered nurses, dieticians, sales and marketing professionals, and academic researchers; 2) Certified Wound Specialists include physical therapists, nurses, nurse practitioners, and 3) Certified Wound Specialist Physicians include physicians and podiatrists. While it is not a requirement for those working in wound care in the US to be accredited under the ABWM, it does create a high standard of care, demonstrates a successful integration of wound care as a specialty within a variety of healthcare positions, and guarantees knowledge of best practice care is continually assessed in line with current research.

Discussion

Access to wound care products and services (improving physical access and financial support)

Concerns around access to wound products and services stem from two main issues – physical access to providers and products, and the financial barriers surrounding the need for costly ongoing care.

Improving physical access

To address this, both static and mobile wound management clinics are needed. There is a need to implement standard models of transdisciplinary wound care teams across the country and to promote wound management in primary health care as a priority. Primary healthcare, with general practice at its core, has a crucial role in wound management. Improving education, skills and financial incentives in primary care can prevent wounds, increase recognition of infection and complications, and reduce hospitalisations. For example, primary care has the potential to reduce the incidence of VLUs by 50% in 10 years [65]. Transdisciplinary outpatient clinics can also improve ulcer healing rates at a reduced overall cost to the health-care system [66]. Secondary level wound specialty clinics run by appropriately trained healthcare providers would fill referral gaps in the community, provide education and training in wound management and encourage the implementation of evidence-based wound management [1]. Specialists, tertiary clinics, or secondary tier clinics in the community are often confined to metropolitan areas and since chronic wounds are linked to chronic diseases such as diabetes and vascular disease, older persons and indigenous Australians are over-represented. This lack of equitable access to services and consumables means lower socio-economic as well as rural and Indigenous populations are most affected.

For those patients who cannot access specialist care such as those living in rural and remote areas and/or older patients with various comorbidities who may be unable to travel or are in aged care facilities – telemedicine may be particularly appropriate [67]. Formats may include digital imaging options for wound assessment and algorithms for treatment decisions, which enhance clinical and learning outcomes [68-71]. In addition, improving outcomes for Indigenous Australians remains a priority and we need stronger commitment from governments to work together, and with Indigenous leaders, to refresh the Closing the Gap agenda.

Box 2: Chronic Wounds Directory

In Queensland, Metro North Hospital and Health Service (MNHHS) has developed a Chronic Wounds Directory of clinics with assistance and input from members of the Brisbane North Chronic Wounds Governance group, comprised of wound specialists and researchers from within the Brisbane North PHN. The webpage was launched on the 16th of October 2017, and has seen increasing traffic and usage since it became live.

This directory is featured as a page on the MNHHS website, and details a list of public and private clinics that provide treatment or management of acute and chronic wounds in the Brisbane North PHN region. It is designed for use by referrers and patients, and incorporates a user-friendly interactive map. Users also have the option to search for a specific clinic, or a general search within a specified area, such as a suburb or postcode.

For each clinic on the list, information is provided on contact details (including phone numbers, fax and direct links to emails and websites), types of referrals required, payment options and any other information that may be important for patients or clinicians.

The list is made up of a variety of clinics, including specialists in wound management, dermatology and skin integrity clinics, podiatry, lymphedema specialists, and community health services who provide wound management as part of their care.

The website and directory is managed by MNHHS administrative staff with providers encouraged to inform them of updates to existing or new clinics with the PHN region.

To view the webpage, visit:

https://www.health.qld.gov.au/metronorth/health-professionals/chronic-wounds-directory

Mobile wound clinics can also deliver wound management expertise to support residential aged care facilities and peripheral hospitals. The 'Mobile Wound Care Program' in the Gippsland region, Victoria [72], implemented over 3 years, recorded significant decreases in wound-healing time and costs of treatment. The participating organisations also benefitted with regard to skills development with consequent improved workforce capacity to manage chronic wounds [73]. An online chronic wounds services directory such as the one developed by MNHHS (Box 2) is a user-friendly option for referrers and patients to locate important information on where to find specialist wound care within their area. It is a simple tool that could benefit from widespread implementation across all PHNs and would assist in spreading awareness and promoting access and referral to a variety of specialists.

Financial support

Even for those who have access to products and services, the lack of reimbursement associated with contemporary wound management products, such as compression bandaging, means that patients with chronic wounds outside aged care facilities and the acute hospital system incur high personal out-of-pocket costs [74]. For many, the lack of access to affordable products could be perceived to compromise care decisions, and policies should be amended to ensure a sustainable funding model for product and service delivery. A subsidy should be implemented through MBS for the total cost of evidence-based wound care, including products and services with increased access to specialists, nurse practitioners and allied health services [75, 76].

Given the strong evidence that guideline-based wound care is cost-saving and improves health outcomes in Australia, subsidising evidence-based treatments such as compression therapy and pressure off-loading devices via government funding is a priority. With regard to venous leg ulcer management in particular, specific MBS item numbers for the prescription of compression bandaging and for the time component of the wound management procedure are needed. In addition, new item numbers are needed to recognise GPs, nurses and allied health services in wound management, working in primary care to reduce avoidable hospital presentations and admissions. However, this remains a challenge when healthcare budgets are already constrained. Health purchasers need to identify areas and opportunities for disinvestment in low value care to redirect savings toward high value services. A major obstacle however is that health-care spending has strong political implications. Innovative funding models, such as those developed in the area of chronic diseases, where a portion of tobacco taxation is used to fund effective prevention programs, are also needed to support government funds in the area of chronic wounds.

Another challenge is that we are seeking investment by the Australian government in primary healthcare while savings are perceived to be accrued predominantly in the acute sector. We recognise a need for a cohesive health system working together in strong partnerships with better collaboration between federal and state and territory governments with the vision that investing in primary care and prevention avoids downstream costs. Interestingly, according to our modelling work in the area of VLUs, the Australian government would benefit from a larger proportion (85%) of cost-savings compared with state and territory governments. It was estimated that the cost savings to the Australian government through reduced health service utilisation as a result of improved healing of wounds, and ulcers and hospitalisations avoided would be about AUD$1.2 billion and to state and territory governments about AUD$200 million over 5 years through reductions in hospitalisations due to complications [25]. We need to monitor rates of wound complications in acute care, as we should see a reduction in acute admissions if primary care is improved. We also need to incentivise cost-effective care and prevention within MBS moving from a fee for service to a more proactive service that incentivises positive patient outcomes.

Discussion

Transdisciplinary, patient-centred care

There is evidence that when individual professionals from different disciplines come together with a shared goal that is patient focused, enhanced clinical outcomes can be achieved [77]. There are a range of clinical professions that could be included in a patient's wound care journey, including (but not limited to) GPs, dermatologists, registered nurses, nurse practitioners, occupational therapists, vascular/plastic/orthopaedic surgeons, podiatrists, dieticians, pharmacists, diabetologists, physiotherapists and a range of other administrative and clinical staff [78]. The essence of the team approach in wound management is that the team is interdependent and team members share responsibility and are accountable for attaining positive patient outcomes [77]. An example of transdisciplinary, patient-centred care is provided in Box 3.

The patient should be an active participant at the heart of all shared decisions and care plans – effective communication with patients and their carers, and recognising barriers to adherence, is important in any patient/provider experience, but may be even more crucial when there are multiple health practitioners involved in the treatment plans and patient care [77, 79, 80]. In addition to costs, major contributors to patient non-adherence can include a lack of understanding of the aetiology of wounds on the part of the patient; physical issues such as pain and discomfort, excessive and malodorous exudate, skin irritation, aesthetic and cosmetic factors such as unattractive compression stockings, burdensome offloading devices, limited choice of clothes/ footwear, inability to bathe or shower frequently and psychological issues such as limited social relationships, feeling dirty, and poor relationships with healthcare providers [81].

Box 3: Wound Innovations Clinic

Wound Innovations is the cornerstone of the Wound Management Innovation Cooperative Research Council clinical translation activity. It is a unique and innovative service, capable of transforming patient outcomes through clinical best practice, education and research. Wound Innovations has been operational since January 2017, and in the short time since its opening has achieved positive patient outcomes. Wound Innovations provides a specialist, holistic service for patients, their carers and clinicians to improve wound outcomes. Each patient sees a transdisciplinary team comprising of a Vascular Specialist, a Wound Nurse Practitioner Candidate, an Advanced Clinical Podiatrist, Occupational Therapist and a Registered Nurse. All clinicians work together with the patient and other health care teams to provide the best wound care possible. This is provided through a tailored wound dressing plan that is managed in the community, through further clinic visits, or augmented through telehealth. Referrers receive a detailed report outlining the diagnosis, treatment provided and recommendations for follow up care.

Wound Innovations provides the option of a telehealth service to all patients. A telehealth consultation is a real-time video consultation between health professionals, the clinical team at Wound Innovations and the patient. This valuable service helps to reach those who may not be able to attend the clinic but require specialised care, for example those in rural and remote settings or those in residential aged care facilities.

Wound Innovations also offer education and training for health professionals to provide them with the latest, evidence-based treatment methods and approaches for wound management. The clinic offers specialist training to nurses, doctors, allied health professionals, pharmacists and students to maximise the translation of wound research evidence into clinical care. Training is delivered through a variety of approaches, including seminars, wound education workshops, clinical skills development programs, clinical placement opportunities and online education modules. Wound Innovations also collaborates with various health organisations to conduct research to advance wound knowledge and treatment.

A transdisciplinary team equipped with specialist knowledge and training has resulted in extremely positive patient outcomes within this clinic. Although this clinic is also equipped with specialist equipment and dressings, the foundation of a transdisciplinary, patient-centred methodology with effective communication between all parties is an effective approach that can be implemented in any clinic, and may be achieved through simple changes to policy and targeted professional development.

Acknowledgement of these concerns and limitations by healthcare practitioners can help tailor a plan that encompasses not only essential treatment requirements, but also addresses these concerns, giving the patient a voice and a feeling of control over their healthcare [77]. Furthermore, as previously mentioned, education and training of patients and carers will improve self-management, preventative measures and the implementation of published evidence-based guidelines and pathways in clinical practice leading to improved patient outcomes [43, 65, 82].

In a transdisciplinary approach the use of a 'wound navigator', or team leader, who acts as an advocate for the patient, may be the most appropriate method of communicating between all healthcare providers and the patient [83]. This navigator would take responsibility for the coordination of care services based on the patients' needs and treatment aims, and may be their primary physician, chosen by the wound care team, or simply the initial practitioner [77].

To achieve this transdisciplinary care, team members may be within the same clinic or site of care, however this is not integral to the outcomes of the patient, with successful organisation and communication of care having the most influence on patient outcomes. Where in-clinic or one-on-one service providers is not possible, effective team communication (inclusive of consultation with the patient and their carers) may come in the form of Telehealth consultations, direct communication between healthcare providers (for example through wound care plans or phone conversations). Communication may also occur through the use of electronic databases such as the Australian Government's 'My Health Record' (My HR) [84]. While it has the potential to be an effective communications tool in the future, it is important to acknowledge that My HR currently has some limitations [85, 86], and it would be wise to use it in conjunction with the other communication methods mentioned above, rather than a singular reliance on this resource.

The Metro South Health Value Based Wound Care – Chronic Venous Ulcer Project also aims to develop: a framework for the provision of consistent evidence-based service delivery; clear referral pathways for chronic venous wound resources across Metro South Health; and policies and procedures to ensure uniform documentation, digital photography, follow-up of chronic wound and discharge planning. Although still in its planning stages, the development of an efficient and effective interface between general practice, community wound care services and acute services is expected to improve co-ordination and navigation of services, and reduce hospital presentations and admissions. The primary driver for these changes is to improve patient outcomes and patient satisfaction while also aiming to improve overall fiscal and clinical efficiency across Metro South.

Surveillance and research needs

There is an urgent need for an improved understanding of the size of the chronic wounds problem and the population affected. Researchers and health policy makers often rely on outdated statistics on the prevalence of chronic wounds in Australia, but population ageing and the obesity epidemic probably means prevalence has increased in recent years. Effective implementation and evaluation of evidence-based prevention and management strategies depend on the availability of reliable and comparable information for monitoring the burden of chronic wounds.

Conducting a national wound prevalence survey that clearly identifies the magnitude of the problem is imperative, while the development and rollout of a national wound registry, similar to the model developed for the Welsh Wound Registry and the United States Wound Registry, would provide a comprehensive electronic data collection system, and an opportunity for identifying the national scope of the wound burden and benchmarking healing and cost outcomes [1, 87]. It could also validly predict the likelihood of wound healing among real-world patients, facilitate comparative effectiveness research to identify patients needing advanced therapeutics, highlight the gaps in knowledge, and inform future clinical trials to be managed within the healthcare environments [87, 88]. However, for this to be achieved in the Australian context it would be necessary to overcome barriers to collaboration between sectors because of jurisdictional funding issues, sensitivities around sharing of data, the costs of establishing national resources such as a wound registry, and the challenge of sustainability.

Discussion

Chronic Wounds Solutions Collaborating Group Call to Action

The establishment of the Chronic Wounds Solutions Collaborating Group was modelled on the success of the Chronic Disease Action Group [89], adopting their framework and call to action to encourage, support, and monitor the implementation of evidence-based efforts. We call for urgent and strengthened action from all stakeholders to respond to the chronic wound problem in Australia based on all the available evidence, and including the recommendations presented in this paper. Our call to action is summarised in Box 4.

Conclusion

Large health and economic gains can be achieved with modest investments in evidence-based strategies for the prevention and control of chronic wounds in Australia. This paper provides 17 stakeholder-driven recommendations and strategies to improve the outcomes of Australians with chronic wounds. All recommendations are interdependent – not one recommendation is strong enough on its own and all need to be implemented to support achievement of sustainable improvements in wound care and patient outcomes across the care continuum.

Ultimately, all recommendations are underpinned by an urgent need for increased awareness of the significance of chronic wounds and the imperative that chronic wounds management be made a strategic objective for all levels of government. Urgent action is needed by federal, state and local governments, non-governmental organisations, medical and nursing governing bodies, industry, academics and the public to address such recommendations if Australia is to reduce the significant preventable national burden of chronic wounds and improve patient outcomes. We have established the Chronic Wounds Solutions Collaborating Group to encourage, support, and monitor action on the implementation of such recommendations to prevent and control chronic wounds in Australia. We provide evidence that this goal is achievable and call for a critical and sustained national effort to prevent and treat chronic wounds in Australia and improve patient outcomes.

Box 4: Chronic Wounds Solutions Collaborating Group Call to Action

We call for:

Federal, state and territory and local governments to:

- Recognise chronic wounds cause a significant burden to the national health budget, as well as a deeply negative impact on those affected.
- Increase financial support for evidence-based wound products and services to harvest appropriate economic savings and improve outcomes.
- Provide stronger leadership and coordination for the prevention and management of chronic wounds.
- Make policies and funding for evidence-based initiatives that focus on the prevention and treatment of chronic wounds a priority, involving all relevant stakeholders.
- Support integrating health-service approaches to prevention and management with an emphasis on primary healthcare to help people manage their health across the life course.
- Improve co-ordination of services through development of an efficient interface across wound care providers to drive down the number of avoidable hospital admissions.
- Strengthen commitment to work together with Indigenous leaders to improve outcomes for Indigenous Australians as a priority.
- Fund research into chronic wounds particularly to strengthen data collection and surveillance and support a national wound prevalence survey for monitoring progress in prevention and treatment.

National non-governmental organisations such as Wounds Australia to:

- Intensify leadership and work closely together with relevant stakeholders to support goals.
- Promote evidence-based advocacy to support health authorities in their planning, implementation, and assessment of prevention and treatment efforts.

Medical and nursing governing bodies to:

- Ensure the availability of skilled healthcare professionals with adequate education and training in evidence-based wound management.
- Represent all practitioners when lobbying to address these barriers, while actively supporting the implementation of solutions within their practice.

Academics and researchers to:

- Recognise that more progress can still be made in this field.
- Focus on knowledge translation and disseminate evidence on the cost-effectiveness of guideline-based wound management and ensure end users of research (policy-makers and health care professionals) are involved in the research process from design to dissemination.
- Participate fully in the development, implementation, and assessment of evidence-based wound management.
- Focus on implementation science to promote the adoption and integration of evidence-based wound practice, interventions and policies into routine health care and public health settings.
- Drive the establishment of a national wound registry and develop a national wound prevalence survey for monitoring progress in prevention and treatment.

Private health insurance companies and pharmaceutical industry to:

- Become more aware of the chronic wounds issues and facilitate partnerships with health care professionals and academics.
- Ensure the availability, affordability, and accessibility of low-cost wound products.
- Subsidise wound management procedures and products outside of the hospital setting particularly in areas such as compression therapy and negative pressure therapy to reduce hospital admissions.
- Use powerful marketing forces to support evidence-based wound prevention and treatment.

Healthcare professionals to:

- Collaborate with internal and external stakeholders.
- Ensure effective communication with patients and their carers and that the patient is an active participant at the heart of all shared decisions and care plans.
- Ensure effective communication and continuity of care within multi-disciplinary teams of healthcare professionals.
- Understand the importance of accessing growth opportunities and upskilling in wound management.
- Make every effort to ensure best outcomes for patients by referring to the right service in a timely manner.

Affected individuals, carers and the public to:

- Understand that wounds are not just part of the normal ageing process but are treatable.
- Engage more seriously with national and local efforts in education and prevention and treatment of chronic wounds.
- Ensure that the needs of disadvantaged and remote and rural populations are met as a priority through participation in appropriate partnerships.

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Contributors

RP, RT and QC prepared the first draft. RP, RT, TP finalised the draft based on comments from other authors and reviewer feedback. RP, NG, KC, IG, MS conceived of the study and provided overall guidance. RT performed final statistical analyses. All other authors reviewed results, provided guidance, and reviewed the manuscript.

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Declarations of interest

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