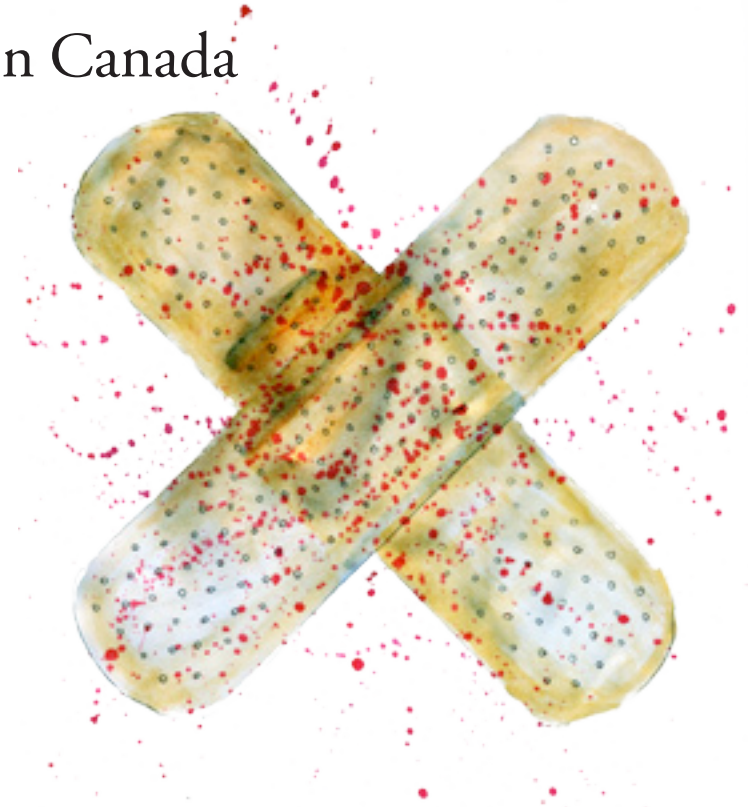
Compromised Wounds in Canada

Keith Denny, Christina Lawand and Sheril D. Perry



Abstract

Wounds are a serious healthcare issue with profound personal, clinical and economic implications. Using a working definition of *compromised wounds*, this study examines the prevalence of wounds by type and by healthcare setting using data from hospitals, home care, hospital-based continuing care and long-term care facilities within fiscal year 2011–2012 in Canada. It also evaluates several risk factors associated with wounds, such as diabetes, circulatory disease and age. Compromised wounds were reported in almost 4% of in-patient acute hospitalizations and in more than 7% of home care clients, almost 10% of long-term care clients and almost 30% of hospital-based continuing care clients. Patients with diabetes were much more likely to have a compromised wound than were patients without the disease.

Wounds are a serious healthcare issue with profound personal, clinical and economic implications. They can be excruciatingly painful and debilitating, and they can undermine function, mobility and quality of life. Chronic wounds in particular present unique healing challenges to those whose health is already compromised. The treatments, medications, interventions and dressings associated with wounds also represent a significant financial burden to the healthcare system. Most importantly, many wounds are avoidable with the provision of better healthcare services and a greater focus on prevention.

To inform better management of wounds, a working definition of *compromised wounds* was developed. This category includes wounds that are persistent and healing poorly (chronic wounds); wounds that result from an infection introduced to the skin (skin barrier breaches); and wounds that result from surgical interventions that do not heal as expected (iatrogenic wounds).

This study presents wound data from hospitals, home care, hospital-based continuing care and long-term care facilities within fiscal year 2011–2012 in Canada. It examines the prevalence of compromised wounds by type and by healthcare setting. It also evaluates several risk factors associated with wounds, such as diabetes, circulatory disease and age.

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Data Sources and Methodology

Three data sources from the Canadian Institute for Health Information (CIHI) were used to identify wound prevalence across various health service environments in 2011–2012. Discharge abstract data were used to identify wounds in the acute in-patient setting. As Quebec data are collected according to different data standards, they were excluded from most of the analyses. Mental health patients are excluded from the analysis

to ensure comparability across provinces. The Continuing Care Reporting System (CCRS) was used to evaluate wounds in long-term care. CCRS has partial coverage of residents in Newfoundland and Labrador, Nova Scotia, Manitoba, Saskatchewan and British Columbia and full coverage in Ontario and Yukon. The full assessment for CCRS clients was used to measure wound prevalence in 2011–2012. CCRS also includes hospital-based complex continuing care patients primarily in Ontario. The prevalence of wounds in home care was evaluated by use of Home Care Reporting System (HCRS) data, which include full coverage of home care services in Ontario, British Columbia and Yukon. Home care data are based on the first assessment per patient in 2011–2012.

Results

Prevalence of Wounds by Type and Setting

Table 1 illustrates that potentially preventable wounds are a burden across healthcare settings. Prevalence was highest in complex continuing care (28.2%), followed by long-term care (9.6%) and home care (7.3%). Chronic wounds in particular were more frequent in the continuing care setting (15.8%). The acute-care setting had the lowest rate of wound prevalence (3.7%) but represented almost 90,000 patients with a compromised wound. In acute in-patient care, iatrogenic wounds were the most common type of wound. This is not surprising given the large number of surgical patients.

Risk Factors for Wounds

Wound management can be affected by factors that have little to do with the wounds themselves (Guo and Dipietro 2010). These factors can make the development of wounds more likely, or they may compromise wounds in their progress through the normal stages of healing. Risk factors for wounds include diabetes, thyroid disease, stroke, peripheral vascular disease, cognitive problems, neurological disorders, incontinence and cardiovascular disease. Several factors (such as obesity, medications, alcoholism and smoking, malnutrition and immune-compromised conditions) were unavailable for inclusion in the analysis. However, their important contribution to the prevalence of wounds should not be overlooked. A summary of the prevalence of the risk factors included in the report is presented in Table 2.

Diabetes is a serious chronic disease, and Table 3 illustrates that it is a major factor in compromised wounds.

Table 2 clearly illustrates that risk factors were consistently lowest in acute care, while complex continuing care and long-term care had a high prevalence of most risk factors. This largely explains the higher wound prevalence reported in these healthcare settings. Diabetes was reported in just less than 4% of acute in-patients; but one out of four home and long-term care clients reported it, and prevalence in complex continuing care was nearly 30%. Mobility concerns, cognitive impairment and incontinence were also higher in non-acute settings.

Diabetes is a serious chronic disease, and Table 3 illustrates that it is a major factor in compromised wounds. In the acute-care setting, patients with diabetes were nearly six times more likely than other patients to experience compromised wounds. Patients with diabetes were nearly 40 times more likely than other patients to develop arterial and venous wounds due to poor blood circulation. Diabetes was also associated with more than 60% of amputations performed in a hospital in 2011–2012 (data not shown).

Discussion and Conclusions

Wound rates found in home, complex continuing and long-term care settings were broadly consistent with rates presented in the literature (Rodrigues and Megie 2006; Timmerman

TABLE 1.
Summary of wounds by type and healthcare setting

Compromised Wound	Acute In-patient (%)	Home Care (%)	Complex Continuing Care (%)	Long-Term Care (%)
Arterial and venous chronic wounds	16,986 (0.7)	2,573 (2.4)	516 (2.6)	2,033 (1.5)
Pressure ulcer chronic wounds	9,594 (0.4)	2,584 (2.4)	2,806 (14.1)	9,338 (6.7)
Any chronic wounds	25,867 (1.1)	4,934 (4.6)	3,155 (15.8)	10,922 (7.9)
Skin barrier breaches	26,613 (1.1)	Not available	492 (2.5)	1,270 (0.9)
Iatrogenic wounds	41,255 (1.7)	3,152 (2.9)	2,753 (13.8)	1,818 (1.3)
Any compromised wound	87,429 (3.7)	7,892 (7.3)	5,618 (28.2)	13,298 (9.6)
Healthcare setting total	**2,359,431**	**107,631**	**19,935**	**138,994**

TABLE 2.
Overall summary of risk factors by healthcare setting

Risk Factor	Acute In-patient (%)	Home Care (%)	Complex Continuing Care (%)	Long-Term Care (%)
Diabetes	3.9	25.5	29.7	24.9
Thyroid disease	0.2	14.9	15.0	18.1
Stroke	1.6	15.3	20.2	22.1
Peripheral vascular disease	0.4	6.3	7.4	5.7
Other cardiovascular disease	8.9	62.5	63.6	62.7
Lung disease	3.9	16.7	19.3	17.0
Cognitive impairment	0.6	24.5	24.6	60.1
Neurological disorders/ conditions affecting mobility	0.6	6.7	17.7	13.9
Bowel or bladder incontinence	0.4	7.1	34.6	43.0

TABLE 3.
Summary of wounds by healthcare setting for patients with and without diabetes

Wound	Status	Acute In-patient (%)	Home Care (%)	Complex Continuing Care (%)	Long-Term Care (%)
Arterial and venous chronic wounds	No diabetes	0.3	1.6	1.9	1.2
	Diabetes	11.5	4.8	4.3	2.2
Pressure ulcer chronic wounds	No diabetes	0.3	2.0	12.5	6.2
	Diabetes	1.8	3.5	17.8	8.3
Any chronic wounds	No diabetes	0.6	3.4	13.9	7.1
	Diabetes	12.9	7.9	20.5	10.0
Cellulitis	No diabetes	1.0	–	2.0	0.8
	Diabetes	4.8	–	3.5	1.2
Iatrogenic wounds	No diabetes	1.7	2.8	13.2	1.2
	Diabetes	3.6	3.4	15.1	1.6
Any compromised wound	No diabetes	3.1	6.1	25.8	8.7
	Diabetes	18.1	10.9	33.7	12.1

et al. 2007), as was the prevalence of compromised wounds other than pressure ulcers in acute-care settings (Amsler et al. 2009; Astagneau et al. 2009; de Lissovoy et al. 2009; Graham et al. 2003; Nelzen 2008; Smyth et al. 2008). However, while a lower pressure ulcer rate in acute care than in home and continuing care is to be expected, a prevalence of 0.4% is not in line with other Canadian studies, which have reported rates ranging from 25% including stage 1 ulcers (Woodbury and Houghton 2004) to 8% in an Ontario study of stage 2 ulcers, and above (VanDenKerkhof et al. 2011). It is probable that the acute in-patient pressure ulcer numbers were considerably underestimated. Several studies in other countries have suggested that hospital patient records do not always capture adequate information about pressure ulcers (Baharestani et al. 2009; Gunningberg and Ehrenberg 2004) and that inadequate documentation, particularly of lower-stage ulcers, is common in both nurses' and doctors' notes.

Furthermore, while there is good coverage in the acute in-patient setting across most of Canada, the home care and complex continuing care data focus primarily on Ontario. In addition, there is limited information on the development, progression and treatment of wounds, which makes it difficult to estimate the financial burden of wounds to the healthcare system.

The analysis demonstrated that compromised wounds are highly prevalent across all healthcare settings examined.

Approximately 4% of acute in-patients, more than 7% of home care clients, less than 10% of long-term care clients and almost 30% of those in complex continuing care reported a compromised wound. Diabetes and peripheral vascular disease were identified as significant risk factors for having compromised wounds in all four healthcare settings. Wounds are increasingly recognized as a quality-of-care, clinical and policy issue. Compromised wounds can be avoided, or at least more effectively managed in their early stages. This report demonstrates that wounds are a heavy burden for Canadians and their healthcare system, and it points to the importance of wound prevention and management across all healthcare settings.

Compromised wounds can be avoided, or at least more effectively managed in their early stages.

These findings and others, as well as more information on data and methods, are described in detail in a recent CIHI publication, *Compromised Wounds in Canada* (2013). This report is available free of charge at https://secure.cihi.ca/estore/productFamily.htm?locale=en&pf=PFC2320&lang=en. HQ

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About the Authors

Keith Denny is a senior researcher with the Health System Analysis and Emerging Issues department at the Canadian Institute for Health Information (CIHI). Keith is leading work to evaluate health system use and the impact of CIHI performance measurement tools and analytical reports.

Christina Lawand is a senior researcher with the Health System Analysis and Emerging Issues department at CIHI. Christina leads the development of analytical projects that help identify and address the health priorities of Canadians.

Sheril D. Perry is a program lead with the Health System Analysis and Emerging Issues department at CIHI. Sheril led the development of the methodology and analysis for this and other analytical projects at CIHI.