

Monitoring pressure ulcer prevalence: A precise methodology

KEY WORDS

- ▶ Audit
- ▶ Data collection
- ▶ Pressure ulcer
- ▶ Prevalence

The occurrence of pressure ulcers is widely accepted as an indicator of the quality of health care provided, and quality targets and financial penalties are linked to data on pressure ulcer occurrence. Therefore it is very important that the counting of pressure ulcers is carried out in a thorough and precise way, but frequently this is not the case. The purpose of this article is to describe current limitations in the measurement of pressure ulcer prevalence, and to outline a thorough and systematic methodology for collecting pressure ulcer prevalence data.

Pressure ulcer occurrence is widely used as an indicator of the quality of health care provided to patients. Quality targets and financial penalties are based on data on pressure ulcer occurrence, so it is critically important to collect data in a thorough and accurate way. However, this is often not the case. The aim of this article is to describe current limitations in data collection and reporting on pressure ulcer prevalence, and to propose a thorough and systematic approach to collecting information on pressure ulcer occurrence.

Pressure ulcer data are widely collected and published, yet there are no standards for how this is done. A best practice statement published by MEP Ltd in 2009 provides definitions of prevalence and incidence, but as yet, there is no consensus around the definitions used in practice. Many authors variously describe their surveys as either prevalence or incidence, possibly indicating a lack of understanding of the terms. *Box 1* describes how prevalence and incidence are measured.

In recent years in England there has been an increased focus on using pressure ulcers as a quality marker as part of the Commissioning for Quality and Innovation programme (Department of Health, 2012). This programme rewards organisations for achieving targets on pressure ulcer occurrence (e.g. for achieving a 50% reduction in pressure ulcers). This financial incentive has generated a strong focus on regular data collection, primarily via the monthly Safety Thermometer census. Similar strategies are in place elsewhere in the UK, such as the “HEAT” targets in Scotland (Healthcare Improvement Scotland, 2009) and the “1000 Lives Plus” campaign in Wales (NHS Wales, 2013).

Various authors have described the mechanism by which they collect data, and several articles present critiques of this information (MEP, 2009). It is evident that some approaches provide more robust data than others. Tissue viability nurses suggest that data collected on pressure ulcers can be inaccurate, with anecdotal reports of missed or incorrectly reported instances varying from 20% up to 67%.

One comprehensive prevalence survey (unpublished data, available from the authors) identified that 23% of the pressure ulcers identified by the data collection team had been missed by ward staff and a further 16% were incorrectly recorded, meaning that only 61% of the reports would have been accurate. Should these data have been used to generate payments or fines, they would have been inappropriate.

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Box 1. Definitions of occurrence (MEP, 2009). These formulae describe how percentage is calculated (i.e. prevalence and incidence per 100 patients). When prevalence is reported for larger numbers (e.g. per 10000 or 100000), the $\times 100$ is replaced by (e.g. $\times 10000$ or $\times 100000$). Prevalence is then reported per number of patients and cumulative incidence is reported per time period per number of patients.

$$\text{Point prevalence (\%)} = \frac{\text{number of patients with a pressure ulcer at particular time-point}}{\text{total number of patients in studied population at particular time-point}} \times 100$$

$$\text{Cumulative incidence (\%)} = \frac{\text{number of patients developing pressure ulcer during specified time period}}{\text{total number of patients in studied population over specified time period}} \times 100$$

The purpose of collecting data is to provide a baseline on which to base improvements in patient care. Carrying out data collection is time consuming, and can take clinical staff away from providing hands-on care. Given that the data collected may contain inaccuracies, whether this is a morally and ethically appropriate thing to do must be considered.

HOW ARE DATA COLLECTED?

A variety of ways of collecting pressure ulcer data are reported. These include reviewing documentation, relying on ward or community staff to collect the data, and the checking of patients' skin.

Nursing and medical documentation is frequently incomplete, and many patients will have no record of pressure damage in their notes, meaning that reports based on documentation are likely to be significant underestimations of true prevalence.

One acute Trust carried out surveys in successive years (Elliot and Gibson, 2010). The first allowed the ward staff to report the number of patients with pressure ulcers, and in the second, tissue viability nurses completed the survey. This was done at the patient's bedside, and all patients were examined. It was concluded that there was a "vast difference" in both the identification and grading of pressure ulcers.

Many Trusts attempt to verify their pressure ulcer reports before uplifting them to Safety Thermometer, and anecdotal evidence suggests that at this step as many as 67% of reports are identified as inaccurate (personal communication, 2013).

What other inconsistencies in data collection might exist?

Data may be presented in a variety of ways, including in Europe, where the prevalence of pressure ulcers has been reported in myriad ways over recent years. A rapid review of studies of pressure ulcer occurrence (Marsh R, unpublished data; available from the authors) identified 24 studies (conducted between 2000 and 2012), in which the reported prevalence data show wide variations – from 1.4% in one study (Stausberg et al, 2005), to 28.7% in another (Bours et al, 2001). Variation in pressure ulcer prevalence data is summarised in *Table 1*.

Table 1. Variation in pressure ulcer prevalence data (Marsh R, unpublished data).

Grade	Prevalence % (95% CI)
Grades 2–4	10.27 (7.85, 12.7)
Grades 2–4 in hospitals	10.74 (8.31, 13.16)
All grades	15.19 (12.77, 17.62)

Marsh concluded that "Unfortunately, although some of the reports contained actual data on pressure ulcer prevalence and incidence, none of them contained more than summary data, or explicit details of the data collection procedures, or anything resembling 'raw' data" (Marsh R, unpublished data; available from the authors).

More recently, Safety Thermometer data shows overall prevalence in England to be 5.21% (Health and Social Care Information Centre, 2013). This is very low compared with other published data, and within the total, the overall prevalence for individual organisations varies dramatically. In the past 12 months, the overall prevalence has varied between 6.69% and 5.21%, although this has fluctuated and it should be considered whether this is a real improvement or simply background noise/natural variation.

Kottner and Halfens (2010) examined the use of statistical process control for monitoring the prevalence of hospital-acquired pressure ulcers, and suggested that apparent trends in prevalence may be an artefact of the reporting methods and that variation in the rate may be purely a result of chance. It should also be noted that in the Safety Thermometer data, the sample size has varied considerably over time from a minimum of 116 484 to 210 306, making the data points far from stable.

In addition to these differences, other publications have described variation in grading and diagnosing what is and is not a pressure ulcer (Defloor et al, 2006; Guy et al, 2013). Therefore, when attempting to measure or report prevalence, it is important to ensure that consistent definitions have been used.

Some organisations report only facility- or organisation-acquired pressure ulcers. Prevalence measurement is purely to identify the size of the problem and cannot be used to distinguish between pressure ulcers acquired inside or outside the organisation (apart from cases in which it is very clear that the pressure ulcer existed on

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admission). The attribution of where damage occurred can frequently only be determined following a full and thorough root cause analysis investigation. Furthermore, the purpose of prevalence is *not* to identify the quality of the care provided, but simply to evaluate the disease burden, so attribution of cause is not relevant.

Some organisations report only category 2–4 data, reducing the overall prevalence dramatically. Others do not report any pressure ulcer that is determined to be unavoidable. This is a contentious issue as it is not possible to determine in a short period of time if everything that should and could have been done *was* done. This is usually determined as part of the serious incident reporting process.

METHODOLOGY DEVELOPMENT

A thorough and repeatable methodology has been developed in Cardiff using the Medstrom Clinical Insight Prevalence Programme, which is believed to give a true picture of the size of the pressure ulcer burden. The methodology is resource intensive and time consuming, but the data reflect the real size of the problem. Here, the authors report use of this methodology across six sites.

Prior to the data collection, tissue viability nurses determined what data would be collected. Following previous years' evaluations, it was decided to collect only data about which actions could be taken and for which clear objectives could be set. Once the questions were agreed,

Table 2. Number of patients classified as at risk.

Level of risk	Patients at risk (<i>n</i>)
Not at risk (Waterlow <10)	261
At risk (Waterlow 10–14)	476
High risk (Waterlow 15–19)	461
Very high risk (Waterlow ≥20)	251
Not recorded	46

Table 3. Number of pressure ulcers in each category from 2011–2013.

Severity	2011	2012	2013
Category I	67	84	82
Category II	111	102	131
Category III	26	38	24
Category IV	40	32	26

staff who were designated to participate in the data collection day attended a pre-prevalence meeting. At this meeting the data collection tool was discussed and expected responses illustrated and debated. For example, a definitive decision was reached regarding what constitutes an “unstageable” pressure ulcer, and how it would be recorded. Participants were also familiarised with the data collection device (an iPad™ mini; Apple). Wards were contacted to determine the best time for data collection, and a plan set out for the structure of the day.

The day before data collection, a paper version of the form (see *Appendix I*) was circulated. Ward staff could complete the form any time after midnight on the data collection day.

On the day, two data collectors (one member of clinical staff, one nurse member of the company team) visited each ward, where they collected the forms then visited each patient. Once consent was obtained, the patients were examined fully for skin damage and dressings were removed from any pressure ulcers to verify the damage category.

Once the data collection team were satisfied with the information, it was transferred to the iPad mini. At the end of each ward round, the iPad mini was synchronised with the main system and the team contacted the central office to advise them of the addition of a new dataset. This allowed central staff to assure the quality of data before staff moved on, and for any missing or incomplete data to be rectified immediately.

At the end of the day, data were ready for review and a full report was made available within 2 days of data collection. The prompt return of the data ensured that any issues could be addressed quickly. Many patients would still be in hospital so could be revisited if necessary.

Following data collection, staff pointed out how easy the data collection system was to use, and the management team particularly appreciated the rapid turnaround of the data, as it allowed them to immediately target any problem areas while the audit was fresh in staff members' minds.

RESULTS

In total, 1495 patients were seen across six hospital sites, of which 201 patients had 263 pressure ulcers. This gave an overall prevalence of 13%, which is

consistent with data obtained in 2011 and 2012 (unpublished data; available from the authors). Prevalence varied between sites from 11% to 27%.

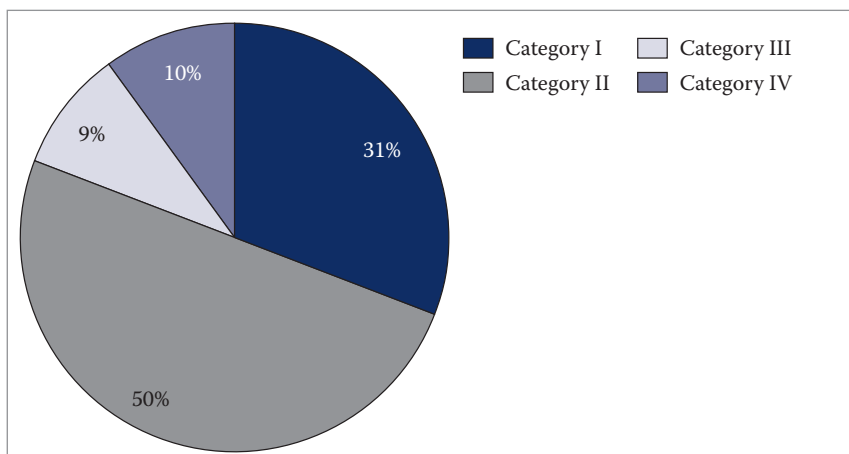


Figure 1. Severity of pressure ulcer by category.

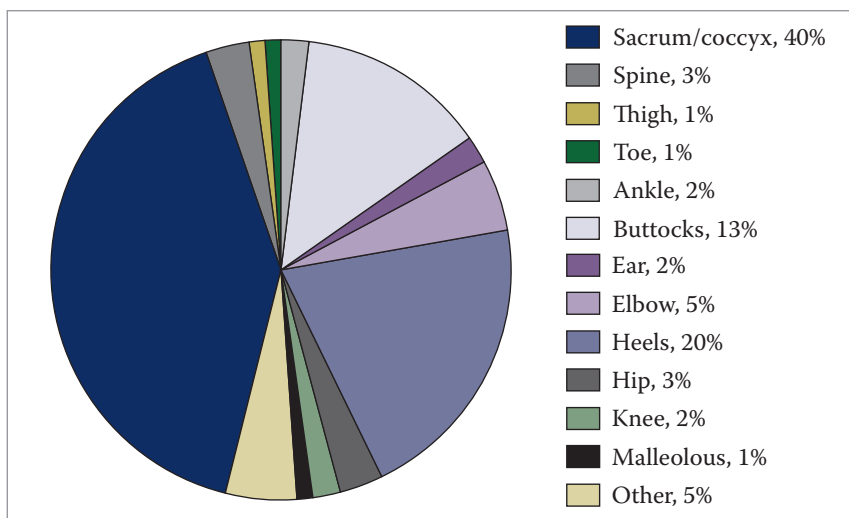


Figure 2. Pressure ulcer location.

A large proportion of patients seen were deemed to be at some level of risk of pressure ulceration (Table 2).

Fifty-six staff days were required for data collection, which took place on 10–13 June 2013.

Overall, 74% of patients had their skin physically examined by the team. Of the remainder, 10% were deemed to be too unwell, 9% were off the ward and a small number (7%) declined.

The majority of pressure ulcers (50%) were category II. There was a noticeable decrease in more severe categories compared with previous years (Figure 1; Table 3). The most common location for ulceration was the sacrum (40%), with the heel the second most common location (20%; Figure 2).


Only 61% of pressure ulcers were correctly identified and reported by ward staff. Sixteen percent were incorrectly categorised and a further 23% not recorded at all. This underlines the importance of a full skin inspection, including the removal of dressings, to validate the category of pressure damage.

As per hospital protocol and in-line with the existing Total Bed Management contract, 764 patients were cared for on high specification foam replacement mattresses, 487 on Repose® (Frontier Medical), 167 on Primo™ (Hill Rom), 66 on Duo2® (Hill Rom), four on Arise® (Joerns), and two on Dolphin® (Joerns) mattresses.

CONCLUSION

Conducting a thorough prevalence audit, in which skin is inspected and all pressure ulcers

APPENDIX I. Multicentre wound care survey form (based on Fletcher [2010]).



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Pre Prevalence Survey Form

Please complete all columns in black and have ready for collection by 9am on

Please provide date for all patients on your ward - detail each pressure ulcer separately

Ward:								Hospital:						
Bed No	Patient ID	Date Admitted to Cardiff and Vale UHB	Risk Score	Risk Score within 6 hrs of admission to current ward - Yes/No	Pressure Ulcer - Yes/No	Category of PU	Location of PU	Was the PU accurately categorised?	Source of PU Acq/Adm	Where did the PU develop?	Acq PU - was it device related? Yes/No	Skin bundle documentation completed?	Support Surface	Skin checked by audit team?
1	Example - JM	01.05.13	High Risk		Yes	III	Sacrum		Adm	Nursing Home				
2	Example - JM				Yes	II	Occiput		Adm	Nursing Home				
Risk Score			At Risk	High Risk	Very High Risk									
Category of PU			I	II	III	IV	Moisture Lesion							
Where did the PU develop			Ward name	Own Home	Nursing Home	Residential Home	Other UHB	Not known						

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are verified, is both labour intensive and time consuming. However, data generated can be relied on to be accurate.

The mechanism reported here highlights significant differences compared with methods that rely on staff reporting of pressure ulcers – methods which, it can be argued, raise questions about the validity of that data and the moral and ethical implications of using that data for target setting and awarding of financial rewards or penalties. Serious consideration should be given to the time and effort currently being devoted to collecting data that may be flawed, and how these data are used.

The approach of focusing on a small number of questions has allowed us to initiate a plan resolve the issues identified. A small working group is to identify how best to address these issues. It is envisaged that increased staff training will be required and there is a possibility that a member of staff (most likely a healthcare support worker) will be employed to ensure equipment is being used appropriately. Additional staff training will focus on skin inspection and correct grading of pressure ulcers to ensure that full data capture occurs. **WUK**

DECLARATION OF INTEREST

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