Title: Establishing the characteristics of people with pressure injuries over a single year in a defined diverse community using existing, routinely collected data.

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Abstract

Aims To determine if meaningful patient characteristics pertaining to pressure injury (PI) can be derived from routinely collected community health data.

Methods Retrospective cohort analysis of records. To provide a detailed dataset on PI for the community of interest, demographic, general medical, and PI data were extracted from mandatory incident reports and audit of electronic and paper medical records. This study is reported in accordance with the RECORD Guidelines from the Equator Network.

Adult patients were enrolled from a district nursing service in the target region (n= 1085), during 2015. The target region was based on a geographical region bounded by a single postcode district (target region) consisting of 62,000 people of whom approximately 50,000 were adults, 3000 of whom were aged 75+years.

Results The total number of recorded PI was n=137 in 103 individuals. Data from mandatory incident reports was obtainable for nearly all variables. Electronic and paper medical records were less reliable due to missing data.

Conclusions Detailed characteristics of community-dwelling PI patients can be derived from routinely collected data and provides various forms and levels of information which could feed into different projects. The use of mandatory reporting fields increases the level of reporting and reduces missing data. Data enriched with information from electronic and

paper records could inform the addition of variables to mandatory forms to improve characterisation of community dwellers with PI.

Keywords: pressure injury, pressure ulcer, community care, case study, register, registry, data collection

Introduction and literature review

Pressure ulcers or injuries (PI) are costly to health systems and harmful, even deadly to patients. These injuries are associated with poorer outcomes and a high degree of human suffering related to pain, loss of independence and mobility, and reduced social engagement (blinded for peer review). In the UK, the enormous economic cost associated with PI is estimated to exceed £500 millon per year.[1] It is now widely acknowledged that the bulk of patients experiencing PI are community dwelling[2] older adults with co-morbidities.[3] Despite this recognition, comprehensive understandings about the burden and nature of PI for individuals in community settings remains relatively poor.[4,5] For some time, routinely collected patient data have been used as a predictive measure for risk and importantly, patient outcomes in those living with chronic illness.[6] In the community context, even though population-based data detailing patient characteristics is routinely collected from a range of sources (such as General Practitioners (GP) records and other community healthcare providers) less attention has been given to developing comprehensive understanding of the characteristics of patients with PI.

In recent years, various attempts have been made to standardise PI data. This standardised data could provide detailed information on factors such as prevalence and healing times, and insights into which equipment is useful and whether certain groups of people are more vulnerable. Standardised information is often collected through a register, defined as a "collection of information about individuals, usually focused around a specific diagnosis or condition" [7] and provides data on populations not typically studied in clinical trials.

Standardisation of PI data has been widely espoused by international advisory bodies.[8,9] However, there is currently no specific registry for PI,[10] compounding the lack of robust evidence for all aspects of PI.[11,12] Internationally, registries exist for hard-to-heal wounds, but PI are only identified as a subset of wider wound data. [13]

In 2002, the European Pressure Ulcer Advisory Panel (EPUAP) introduced a minimum dataset concept (the Pressure Ulcer Prevalence Collection Sheet) to record PI in hospital settings. As of 2019, this sheet has not been updated to reflect changes in PI classifications,[14] and it is not suited to community settings as it contains check boxes pertaining to type of hospital facility and length of stay but no categories for non-hospitalised patients. Furthermore, differences in the interpretation and implementation of national PI guidelines[15,16] and a lack of standardisation in terminology have produced PI data that are complex and difficult to compare between health systems.[17] Yet, health systems need reliable comparative data to assess baseline economic drivers and assure quality improvement.[18.] In the United Kingdom (UK), attempts to unify data on PI through mandatory reporting using the NHS Safety Thermometer suggests that reduction in PI rates has stalled, fluctuating around 4.6% (range 4.2 to 4.8% from November 2013 to May 2019).[19]

Much contemporary literature focuses on risk of PI, rather than *actual* PI.[20] The pathogenesis and aetiology of PI is shifting from models based on physical factors; pressure, shear, moisture and friction, to one that also includes intrinsic processes.[21] Current approaches to assessment focus mainly on extrinsic factors, perhaps explaining the poor predictability of risk assessments.[22] Newer evidence now recognise the potential role of various data including standard laboratory tests (such as albumin levels), patient-reported symptoms, patient characteristics and comorbidities. [21,22, 23] Some of these parameters are better suited to hospitalised patients who undergo regular blood tests, skin tests and intentional rounding , not PI patients living in their own homes. Such evidence suggests that information on wider patient characteristics, rather than purely medical information could be useful in the population of community PI patients that is predicted to grow.[24]

Aim

In this paper we sought to identify patients with PI from mandatory incident reports. Quantitative data was added from electronic and paper medical records to derive information regarding demographic, general medical and PI characteristics to enrich and inform our

understanding of community dwelling PI patients receiving medical care within their own homes.

Data from this cohort study were drawn from a larger mixed-method case study which sought to establish the burden of PI in a defined geographical region bounded by a single postcode district (target region) using existing, routinely collected data.

Methods

Study design: Retrospective **c**ohort analysis of electronic and paper records and mandatory incident reports, nested within an ongoing mixed methods study that aimed to establish the extent, health provision and experiences of community-dwelling patients with PI. The study focused on a defined, diverse population bounded by a single UK postcode district (target region) located in South-East England. Referring to similar hospital based studies we estimated 100 patients were needed to ascertain the quality, accessibility and value of the data.[23] This study is reported in accordance with the RECORD Guidelines from the Equator Network.[25]

Setting: The target community was chosen because it was the most socially and culturally diverse in the local health system area, with 17 ethnic groups and 79 languages being spoken. It had a total population of 62,000, with approximately 50,000 being adults, and 3,000 aged in the 75 years and above age group.[26] The community is served by a range of health providers, including 8 general practice clinics and 4 district nursing teams with input from a single community tissue viability team. It covers an approximate area of 20km^2, with 23,500 households, 25% of which is social housing and 9% comprising single person households of people aged 65 and over. From the 2011 census, 7.5% of the local population were reported as unemployed, long term sick or disabled compared to 4.6% in the larger postcode area. Within the target area community NHS Trust, PI were routinely recorded on an electronic risk management system, with mandatory incident reporting of PI categorised as 2-4 according to international consensus guidelines [27].

Eligibility criteria: All adult patients aged over 18 located within the target region, with a mandatory incident report for PI filed by the local community health trust during 2015 were eligible .

Data collection: Variables relating to PI's were informed by the current literature; age, comorbidities and BMI are significantly associated with PI development,[28] as are tissue ischaemia and undernutrition [1] . Review by tissue viability nurses, district nurses and a

patient representative with previous PI experience in the home setting provided further insight into the data routinely collected by GP's and community nursing teams, to inform the research team of potentially meaningful data variables. Data were systematically extracted from patient medical records, with all eligible electronic and hand-written paper patient records screened for relevant information. Data was de-identified through an individual numbered code and tabulated in an Excel spread sheet. Data from the electronic and paper sources were cross checked for veracity at each stage.

To improve consistency, all data were collected by a single health professional who had not been responsible for the medical care of any of the patients in the target region in 2015. The data collector was able to link the individual numbered code to the NHS number to provide data linkage for any queries. The anonymous dataset was cross-validated and audited by a second member of the research team, to confirm the data collected and input by the first member was correct. Missing data and anomalies, such as erroneous dates, and a list of queries labelled by the individual numbered code was returned to the data collector for updating. The database was finalised and locked for analysis on 23rd November 2016. This was the date from which the patient's ages were calculated. If a patient died during the data collection time frame, their age at the date of death was recorded.

Measures: PI were defined according to the EPUAP pressure ulcer classification system from category 1-4, where category or stage 1 is non-blanchable erythema; 2 is partial thickness skin loss; 3 is full thickness skin loss; 4 is full thickness tissue loss. 'Acquired' and 'inherited' are terms that define the origin and attribution of PI, with a hospital acquired PI becoming an inherited PI by the community team on discharge. The terms acquired and inherited were used to track newly developed PI within the study.

General health information collected included demographic characteristics, co-morbidities, smoking status and BMI. PI specific data of sensation, continence, nutrition and mobility were recorded from the Braden score and other sources such comments in written paper notes. Information on treatments, dressings and pressure-relieving equipment were sourced from the paper medical records. Braden risk assessment, [29] devised from summing 6 sub-scores has been investigated in formal care settings, rather than patients' homes, and may have limited predictability in community dwellers.

Statistical methods: Descriptive and comparative analysis was performed using SPSS v22.0.[30] Due to the small sample size, the dataset was assessed independently by an expert in PI related health economics and statistical data (author initials blinded) and considered not large enough to use inferential statistics.

Ethics and funding: Ethical approval and permissions were sought and gained for the study from the National Research Ethics Committee, the University who sponsored the project and the NHS health trusts who hosted the study. In accordance with approvals, the research team did not have access to identifiable patient information for this part of the study.

Results

Demographic data Electronic records showed 1,085 individuals in the target area had at least one visit from the district nursing team in 2015. Of these patients, 9.5% (n=103) had mandatory incident reports for PI, with a total of 137 PI recorded. Details of gender, ethnicity, mortality and domestic situation are detailed in Table 1.

Table 1 Demographic data of PI patients in the target region

	Data Source*	**Percentage of individuals with reports (n=103**	**Detail**
Gender	M, E, P	100% recorded	57% female (59/103) 43% male (44/103)
Age	M, E, P	100% age recorded	Mean age 81.1 (range 54-102) Female mean age 82.5 (range 54-102) Male mean age 79.2 (range 54-101)
Ethnicity	E	96% ethnicity recorded	85% white British (88/103) 7 % white other (7/103) 4% BME- black & minority ethnic groups (4/103)
Living conditions	E, P	99% living conditions recorded	25% residential care (26/103) 74% living at home with a private address (76/103) Home dwellers could be further classified by the level of help they received: 32 people lived alone with carers or family attending regularly

			25 lived with family with 9 of these also have carers attending regularly (25/103) 2 lived with full time paid carers (2/103) 17 people lived at a private address but had no record the level of help they received
Mortality (status when database finalised)	E	100% mortality recorded	57% alive (59/103) 43% deceased (44/103)

* Mandatory reports (M), Electronic records (E), Paper medical notes (P)

The PI patient population comprised mainly older people with a mean age of 81.1yrs, and females outnumbering males, 57% to 43%. The overall adult population of the target region differed to the PI sample, with 49% female to 51% male, with a mean age 45. However, this disparity faded in the general older population aged 80-85 year in the target area, 58% female to 42% male reflecting a skew towards female gender in older people both with and without PIs. Older PI patients were more likely to reside in residential care (25%; 26/103), with females more likely to be in residential care (65%; 17/26); these patients had a mean age 87.2, compared to patients at home (mean age 78.9 years). PI's were more likely to be recorded as white British patients 88/103 (85%) than any other ethnic group. Of interest, the division of PI patients does not approximate to the greater postal district statistics of people aged 50 and over (compared to ages 54-102 range in PI patients), which reported only 77% of residents identifying as white British, 9% as other white categories and 13% black and minority ethnic groups.[26] Unfortunately, factors such as under-reporting or under-identification of PI in minority groups was not available from these data.

General health information To evaluate PI against commonly reported risk factors, general health information was collected for co-morbidities, smoking status and BMI (Table 2). PI patients had co-morbidities in most cases (89%) only a single patient was documented to have PI without any further medical condition recorded, 10% had incomplete electronic and paper records. Multiple co-morbidities were prevalent and common chronic conditions included dementia, diabetes, heart and vascular diseases and kidney disease. Parkinson's

disease, strokes and multiple sclerosis were also present and grouped as 'other CNS' as a possible means to evaluate collectively patients who might have sensory or movement challenge, presenting risk factors for PI development. BMI was poorly recorded (49% individuals). Mean BMI placed both males and females as overweight, although the result may be skewed by the effects of a few morbidly obese individuals within the small sample size.

Table 2 General health information of PI patients within target region

General Medical Information	**Data Source***	**Percentage of 103 individuals with reports**	**Detail (percentage of individuals or number of incidences as one individual may have more than one co-morbidity)**
Comorbidities	E, P	90% comorbidities recorded	29% Single-morbidity (30/103) 60% Multi-morbidity (62/103) 1% reported as PI only (1/103) Heart & vascular diseases 31/103 incidences Dementia 18/103 incidences Diabetes 15/103 incidences Kidney disease 13/103 incidences Other CNS 23/103 incidences
Smoking status	E	72% smoking status recorded	51% non-smoker (53/103) 12% ex-smoker (12/103) 9% smoker (9/103)
BMI *Underweight <18.5* *Normal 18.5-24.9* *Overweight 25.0-29.9* *Obese 30 and over*	E, P	49% BMI recorded	Female records (n = 28) Female mean BMI 27.3 (sd 9.34) Male records (n = 22) Male mean BMI 25.4 (sd 7.36)

* Mandatory reports (M), Electronic records (E), Paper medical notes (P)

Pressure injury specific information Data for the numbers, location and categories of PI were consistently recorded (100%), as was mandatory recording of PI status as being 'acquired' or 'inherited' (98%). Our data suggests more than half (53%) of PI in the community were inherited, the primary report of the PI was not filed by the district nursing

teams visiting the patients at home. Most individuals had a single PI (78%), but 23 patients had multiple PI's. Of these patients, 16 could be confirmed from the records as having multiple separate PI's with different anatomical locations or dates of healing, 4 individuals had records for the same PI that had deteriorated over time, reflected by an increase in NPUAP category which triggered further mandatory reporting, 3 patients had multiple PI's at different anatomical sites, one of which had been reported more than once. The majority of the 137 PI were category 2 (see table 3); although it should be noted that reporting of category 1 PI was not mandatory, and so were likely to be under-represented in the data. Category 3 and 4 PIs were present in small numbers. Sacral and buttock sites accounted for 64% of the PI's, followed by heels (13%).

Table 3 Characteristics of pressure injury for PI patients within target community

PI Related Information	**Data Source***	**Number or percentage of individuals with reports**	**Detail**
Number of PI's	M, P	103 patients had 137 PI	78% single PI (80/103) 16% two PI (17/103) 2% three PI (2/103) 3% four PI (3/103) 1% five PI (1/103)
Sites of PI's	M, P	100% of PI anatomical sites recorded	37% Buttock (50/137) 28% Sacrum (38/137) 13% Heel (18/137) 6% Foot or toes (8/137) 5% Ankle (7/137) 3% Hip (4/137) 2% Thigh (3/137) 2% Knee (3/137) 2% Back (3/137) 2% Spine (3/137)
Categories of PI's	M	100% category of PI recorded	1% cat one (2/137) 75% cat two (103/137) 15% cat three (20/137) 9% cat four (11/137)
Acquired of inherited	M, P	98% acquired or inherited status recorded	45% acquired (62/137) 53% inherited (72/137)

* Mandatory reports (M), Electronic records (E), Paper medical notes (P)

Sub-scores and total score for the Braden risk assessment tool were poorly recorded and only available in the paper medical notes. A little under half of patients (47%; 65/137) with PI had a complete record of Braden sub scores and total score. Partial Braden scores with at least one element missing were evident in 39% (53/137) of PI records, and 14% (19/137) PI had no Braden scores recorded. Table 4 highlights the information available. Only 8% of patients with PI were rated as high risk or very high risk according to the Braden total score; 12% assessed as moderate risk and 43% assessed as mild or no risk.

Table 4 Pressure injury Braden risk assessment data for PI patients within target area

PI Related Information	**Data Source**	**Percentage of individuals with reports**	**Detail** **Percentages of patients (n=103) or pressure injuries (n=137)**
Sensation	P (Braden)	66% sensation recorded	32% Full sensation (44/137) 31% Partial sensation (43/137) 3% No sensation (4/137)
Continence	P	66% continence recorded	27% Fully continent (37/137) 17% Urinary incontinence (24/137) 6% Catheterised (8/137) 16% Faecal and urinary incontinence (22/137)
Nutritional status	P (Braden)	72% nutritional status recorded	10% Excellent (14/137) 37% Adequate (50/137) 15% Probably inadequate (21/137) 10% Very poor (13/137)
Level of activity	P (Braden)	82% activity recorded	12% Fully mobile (17/137) 29% Slightly limited (40/137) 23% Very limited (32/137) 17% Completely immobile (23/137)
Braden Score *Very high risk: 9 or less*	P (Braden)	62% Braden score recorded	7% Very high risk (9/137) 1% High risk (2/137) 12% Moderate risk (17/137) 23% Mild risk (31/137)

High risk: 10-12 *Moderate risk: 13-14* *Mild risk: 15-18* *No risk: 19-23*	20% No risk (28/137)

* Mandatory reports (M), Electronic records (E), Paper medical notes (P)

Pressure redistributing equipment, such as dynamic air mattresses, mattress overlays, cushion and boots were provided to nearly all of the 103 patients (87%). Treatment for PI using dressings and pressure-redistributing equipment to offload pressure on damaged areas was widely implemented (Table 5), only a single PI was noted as not needing a dressing, although 14% of PI had no records. 86% of PI were treated with a variety of dressings categorised as; *absorptive*, for exudative PI; *moisture maintaining*, to promote wound healing; *debriding*, to remove slough and eschar; *barrier forming*, films or creams to prevent infection and surface drying; *pressure relieving*, to offload pressure and cushion the area. In most cases only a single dressing type was reported (48%), although 37% had multiple dressing types presumably reflecting the wound as it changed through different stages of healing or decline. Single dressing types were more common in category 2 PI and multiple dressings used most frequently for more complex category 3 and 4 PI. Mandatory reporting ensured 100% of incidents had a date, recording the first formal recognition of the PI. Recording the healing status of the PI was slightly less robust and relied on the interpretation of the written paper medical notes. 81/137 PI were recorded as healed, 69 of these had a date when the PI was documented as healed by the district nurse. 37/137 (27%) were recorded as not healed, 19/137 (14%) had no records. Of note, 44/103 patients had died during the year.

Table 5 Dressings and pressure-relieving equipment for PI patients within target area

PI Related Information	**Data Source**	**Percentage of individuals with reports**	**Detail**
Treatment	P	86% treatment recorded	48% Single dressing type (66/137) 37% Multiple dressing types (51/137) 1% No dressing (1/137) Absorptive dressings (27/137) Moisture maintaining dressings (61/137) Debriding dressings (13/137)

			Barrier dressings (73/137) Pressure relieving or redistributing dressings (5/137) No dressing applied (1/137)
Pressure redistributing equipment	P	93% equipment recorded	4% Did not require equipment (4/103) 2% Refused any equipment (2/103)
Use of equipment (concordance) (Full details blinded for peer review)	P	78% record of concordance with equipment	31% Using all equipment as recommended (28/90) 40% partially using equipment as recommended (36/90) 7% Not using equipment as recommended (6/90)
Date of PI	M, P	100% recorded	
Healing status	P	86% healing status recorded	59% healed (81/137) 27% not healed (37/137) 14% not recorded (19/137)
Date healed	P	85% recorded as healed or not healed	59% died after PI had healed (81/137) 27% died with unhealed (37/137)

*Mandatory reports (M), Electronic records (E), Paper medical notes (P)

Discussion

The findings presented in this paper provide a detailed cohort study describing the characteristics of community dwelling patients with PI identified by existing, mandatorily collected data and further enriched by information from electronic and paper medical notes. Differences in methodology are known to affect PI reporting and prevalence rates.[15, 24] Therefore, in order to use these different forms of records, the completeness and accuracy of the data needs to be considered.

We found that nearly 100% of patients had data for the variables available from the mandatory incident reports. These should represent the gold standard for data collection although a large study (n=2239) examining NHS in-patient facilities found only 6% of

existing/healed PI reported on incident reports against 8.4% from a full skin inspection of the same patients[15.] It is questionable if all community dwelling patients were analysed in our study as those with PI being managed as ambulatory patients by GP surgeries or those self-managing would not be included in the district nursing incident reports. However a recent UK comparison between home and GP care found all of the PI patients[31] received wound care treatment in their own homes. Category 1 PI were not required to be mandatorily reported during the collection period for this study and are under-reported compared to other the studies.[24]

Electronic records were useful for deriving demographic information but often incomplete for general medical data. Records were missing for key risk factors such as BMI (51% missing) and smoking status (28% missing). Data that were present for BMI agreed with a comprehensive UK wound study based on a large database of GP electronic records [39] who found BMI averaged in the overweight range for 44% PI patients, although in another study[1] they reported higher levels of smokers (18%) than our study (9%). Interestingly, their data did not pick up multiple PI on the same patient or show the location of the PI in 95% cases.. This important data was revealed through the mandatory incident reports in our study with multiple PI recorded in 22% of patients. Additionally, GP derived data only examined records for patients who lived for a full year during the study period [39], not reflective of our data where 43% died within the year. Electronic databases are key sources for modelling and health economics [1,32] but this study suggests that these may lack vital data.

PI related data in paper medical records was less reliable. The documented rate of completion of the Braden risk assessment scale was only 62%. Previous point prevalence studies of PI in NHS community patients assessed the majority of patients with PI to be at high risk using both the Braden scale and clinical judgement; with 84% of patients assessed as at risk on the Braden or Waterlow scale when PI status was verified by nurses trained in data collection.[24] Of note, in the current study, only 8% of patients with PI were assessed as high risk or very high risk on the Braden total score. These data were not included on mandatory incident forms and reporting rates were low in accordance with our rates for electronic or paper records. A 2018 study by Ivins et al [31] found that key reports relating to wound care were lacking in the community with wound size, clinical photos and skin assessments absent in the majority of home dwelling patients. The implementation of electronic recording of risks

scores, such as Braden, in the hospital setting has been shown to improve reporting rates [33] and reduce the number of hospital acquired pressure injuries. [34] Methods of electronically recording data in patients' homes would likely improve reporting rates, rather than current practices of paper records which are left in-situ for the next health professional to access.

Given nearly half of the PI reported in the current study were acquired in the community, the low rate of documented risk assessment is of concern. Moreover, the presence of a PI should trigger a high risk rating, regardless of Braden scores. Our findings highlight that issues remain with the accuracy of PI risk assessment and documentation. There is a need to collect data more consistently, and in comparing the accuracy of PI nursing documentation in electronic and paper medical records[35] reported risk assessment was documented at a much higher rate in electronic records (81% vs 44%). An important consequence of poor data is reflected in the lack of a PI register not just nationally but internationally.

Recently, we have shown that community patients with PI are high service users, yet despite regular contact with health professionals, this group still experience poorly controlled pain, feel vulnerable and often fail to use pressure-redistributing equipment in ways that are optimally therapeutic [36, 37, 38] (blinded for peer review). To date little attention has been given to quantifying the incidence of both community acquired PI, and patients discharged home from in-patient facilities with an acquired PI.

Similar to the incidence rate in our study of 45% (n=62), an earlier UK study with a smaller sample of community dwelling patients reported 51% (n=17) of PI were community acquired.[40] Whereas an Australian study reported 40.8% of identified PI developed during care by community nursing services, with nearly 70% of the PI being caused by devices such as shower chairs[41.] A Chinese study found a lower prevalence of PI in community dwelling older people[42], however these patients self-reported PI and in another publication we have shown poor recognition of PI's by patients who often fail to recognise PI or understand risk factors.[43] (blinded for peer review)

Analyses of a UK hospital admission records found 32.9% of PI were acquired in the community[44], suggesting that many patients treatment remains home based. Previous studies

of community dwelling patients in the UK have employed cross-sectional, point prevalence data collection methods, commonly over brief periods and employing surveyor data collection or self-report by healthcare providers.[24, 45-47] Many of these previous point prevalence studies identified fewer people living within their own homes with PI, with the study by McGinnis and colleagues[46] reporting a similar prevalence to the current study. This suggests that previous studies utilising cross-sectional provider self-report or expert audit and assessment may have given insufficient attention to sampling patients in community settings.

Attributing acquired or inherited status is important to inform decisions on health care monitoring and provision in the community. 98% of mandatory incident reports included this data, alongside dates for acquisition and healing this could be used to quantify the timescales of PI. The value of this benchmark is exemplified by the Swedish national registry for hard-to-heal wounds which was successful in driving down both healing times for PI (146 days to 93 days) and the use of antibiotics (from 71% patients to 29%) between 2009 and 2012.[13] Our study shows that information pertaining to the management of PI, such as healing status and use of equipment are readily available. This may aid the implementation of preventative strategies such as foam heel pads or sacral dressings. [48]

This study has shown that important PI related data is recorded in many different sources and sampling of a single source[39] does not provide a rich or rounded picture of community patients with PI. It also shows how standardised risk assessments of PI, such as the Braden scale, were not comprehensively recorded in our community setting.
The manual collation of data from different sources is time consuming and potentially error prone. Standardisation of collection data results in an improvement in PI reporting rates. [31] Our study supports the enrichment of data by linking several information sources, however disparities in data systems and the addition of relevant variables and fields to mandatory reports could yield further improvements.

Strengths and limitations

The study was conducted in one small contained local region. The design, a cohort study, offers greater rigor to the results than other methods such as case study. In addition, the data were collected from multiple sources. Use of multiple datasets provides opportunities to confirm results from more than one source and thus strengthen the outputs of the study.

The use of incident report data as the source of information on patient with PI is likely to underestimate the presence of PI. A further limitation includes potential challenges with inter-rater reliability. Though a standard measure is used and the classification is made by trained health professionals, none the less, there is the potential for misreporting. Stage 1, unstageable and deep-tissue injuries, introduced in the 2014 guidelines, were not reported in this study as they were not implemented into the community NHS trust practices within the study timeline. Therefore, the incidence of these PI is most likely higher than reported here.

Conclusions and suggestions for further research

By using a cohort study and concentrating on a target region we have demonstrated that it is possible to gain insights into the burden of this common health harm in a particular community using routinely collected community health data. A complex wounds register that serves both clinical care and research would be valuable in providing better evidence around wound healing and a means of providing live data to monitor progression and efficacy of interventions. Challenges to establishing a register include an absence of existing electronic routine clinical data collection, limited IT infrastructure, a requirement for individual participant consent and the difficulty of accurately tracking multiple wounds in the same patient. With the data we have are we now in a position to implement controls to produce a register.

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