

# Diagnosing skin damage through the mechanism of injury

## KEY WORDS

- ▶ Community nursing
- ▶ Diagnosis
- ▶ Education
- ▶ Pressure ulcer

**Background:** Pressure damage is seen as a measure of the quality of nursing care, but are all skin lesions pressure damage? **Aim:** To promote accurate diagnosis of skin damage and therefore accurate reporting and resource allocation in a community nursing service. **Method:** Educate nursing staff to examine the history of any patient with a skin lesion and identify the mechanism of injury before reaching a diagnosis, rather than “seeing and reporting”. Teaching was delivered via formal and informal education, prompt cards and peer review meetings. **Results:** There was an increased understanding of the causes of skin damage in the community and improved accuracy of incident reporting. Multiagency and multidisciplinary working increased. **Conclusion:** The focus on pressure ulcers as a quality measure has led to an increase in the understanding that not all skin lesions are pressure ulcers. Accurate diagnosis leads to improved treatment strategies and resource allocation for patients with pressure ulcers and for those who develop other skin problems.

Pressure damage, that is, ulceration of the skin caused by unrelieved pressure has rightfully become, part of the patient safety and governance portfolio. A great deal of knowledge has been gathered about pressure ulcers, in particular the idea that they can be prevented. They are seen as a measure of the quality of nursing care received and many NHS resources are devoted to reducing pressure damage.

While there are many projects that focus on systems and processes of care and improving the quality of nursing and patient education, little has been done to increase what we actually know about the skin as an organ and how different injuries may manifest.

Since the introduction of targets and measures, there has been some resurgence in work examining other factors that affect the skin, such as age, moisture, deep tissue injury, trauma, poor blood supply and death, but these have not necessarily been accepted or fully understood in relation to identifying and reporting skin damage attributed to pressure.

Three years ago the community nursing service in County Durham and Darlington began to quantify the numbers of patients with pressure

damage in the community. At the start of this work it was very apparent that much skin damage was reported as pressure damage, regardless of the cause. Inaccurate diagnosis skews results and waste resources.

This led to tissue viability staff beginning to question what they thought they knew about the subject and how skin damage was diagnosed. An accurate diagnosis requires a history and understanding of the patient including identification of what has caused the skin damage; the mechanism of injury.

## METHODS

Pressure ulcers are reported through the CQUIN mechanism and Safety Thermometer. However, what and how is reported differs across the NHS, so comparison between organisations is not possible.

Care in the community is multiagency, with multiple care providers. A patient's pressure ulcer risk may remain static for many years or have subtle changes that cannot be identified by current risk assessment tools.

How then do clinicians accurately decide on not only the cause of the skin damage, but whether it was preventable? As no healthcare professional

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would begin treatment without examining a history and deciding on a diagnosis, the service’s work started here and staff began to promote the concept of “mechanism of injury”.

**Mechanism of injury**


The term mechanism of injury is used in trauma medicine. Understanding how an injury was caused helps us comprehend the effect it has on the body. The mechanism could be thermal (burns, for example) or kinetic in the case of being hit by a car or a bullet.

In terms of diagnosing skin lesions the same process can be used. Nurses examine the history of the patient to see how the damage initially occurred, then they can predict how the skin damage they see at today’s visit occurred.

Community nursing staff use their knowledge

of anatomy and physiology, the phases of wound healing, and how age and comorbidities affect healing. The majority of patients will be elderly with multiple comorbidities, polypharmacy, poor general health and in many different environments, all of which affect skin health.

A minor trauma such as a knock to the hip area on the edge of a table can be easily forgotten, but may cause enough damage that eventually presents as a necrotic area of skin and is diagnosed as a pressure ulcer when reported to the nurse. Moist, damp skin due to incontinence may be well managed for many years, but a change in routine or a urinary infection can, combined with friction, break the skin and present as a category 2 pressure ulcer to someone who sees it several days later when it is beginning to heal and the incontinence is once again well managed.

County Durham and Darlington   
NHS Foundation Trust

**Pressure Ulcer: Guidance Card**  
**Community Nursing Services.**

**Diagnosing Skin Damage**

	Moisture Lesion	Pressure Ulcer
<b>Cause</b>	Moisture must be present (e.g. shining wet skin caused by urinary incontinence or diarrhoea)	Pressure and / or shear must be present
<b>Location</b>	May occur over a bony prominence perineum, buttocks, inner thigh, groin skin folds	If not over bony prominence then unlikely to be a pressure ulcer. Equipment related – under a device/ tube Skin folds (combination)
<b>Shape</b>	Diffuse differential areas/ spots Kissing Anal cleft- linear	Circular Wounds Regular shape
<b>Depth</b>	Superficial partial thickness Skin loss Can enlarge if infection is present	Dependant in category of ulcer
<b>Necrosis</b>	No Necrosis	Dependant on category of ulcer
<b>Edge</b>	Diffuse and irregular edges	Raised edge (chronicity)
<b>Colour of the wound bed</b>	Non uniform redness Pink/ white surrounding skin (maceration) Peri-anal redness	Erythemia Slough Necrosis Granulation tissue Epithelial tissue Dressing residue Infection
<b>Distribution</b>	Confluent or patchy	Isolated individual lesions

(adapted from Defloor et al (2005), Nix and Haugen (2010))

**? Have you CONSIDERED**

- How the skin damage has occurred
- The cause of the wound: is there an identified mechanism of injury that involves pressure and/ or shear
- Are there any factors in relation to moisture , continence status, acute episodes of diarrhoea , vascular disease or trauma.
- The location of the Wound: Is this over a bony prominence
- The shape of the wound: Pressure sores are usually circular and regular in shape.
- Are the lesions isolated and individual
- If this is a safeguarding adults concern

**? Have you CHECKED:**

- The history of the wound in the patients records (both paper and electronic).
- What measures have been taken so far i.e. equipment provision, training, carer involvement , seating / wheelchair
- The skin condition at the different pressure points
- Whether movement, transfers and changes in position may have caused the lesions

**HAVE YOU DOCUMENTED A COMPREHENSIVE PLAN OF CARE IN THE PATIENTS NOTES .**


  
Produced by Care Group : Care Closer to Home

Figure 1. The pressure ulcer diagnosis card distributed to all community nurses in County Durham and Darlington. The card was developed with the help of Sarah Johnson, Clinical Quality Lead, Care Closer to Home, County Durham and Darlington Foundation Trust

Before diagnosing skin damage as pressure damage, nurses are encouraged to investigate the actual cause against the definition of pressure damage. If in doubt, they seek help from a senior nurse or the tissue viability team. They do not report skin damage as pressure damage until a diagnosis is reached. Of course, after completing a pressure ulcer risk assessment, they can start preventative measures if their patient is at risk of pressure damage.

### Defining pressure damage

The European and National Pressure Ulcer Advisory Guidance (2009) defined pressure damage as “a localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear. A number of contributing or confounding factors are also associated with pressure ulcers; the significance of these factors is yet to be elucidated.”

The definition recognises that there are many different factors affecting skin health, but that they are poorly understood. The definition gives us three important questions to consider when a diagnosis of pressure damage is required:

1. Is there unrelieved pressure +/- shear?
2. Is the injury localised?
3. Is the injury over a bony prominence?

### Diagnosing pressure damage

Prompt cards were developed for staff to keep in their diaries (*Figure 1*) and distributed as PDFs. Both elearning and formal classroom learning sessions were developed. Staff new to the community team attend a full day of training on pressure ulcer prevention and treatment, which includes a session on diagnosing skin damage. Other staff can access an elearning module which takes 20 minutes to complete. This includes an assessment on diagnosing skin damage. Additionally, Tissue Viability Service staff have laptops and projectors and can be booked by individual teams to deliver a formal presentation.

Rather than seeing a wound to a patient's skin and diagnosing immediately based on what they can see, nurses examine the history, ask questions and identify the mechanism of injury. Staff reporting incidents are challenged if their report does not include a mechanism of injury and diagnosis.

In addition, a system of peer review through a regular meeting of the Tissue Viability Steering Group where incidents, reports, research and knowledge can be discussed and which is attended by as many of the community staff as possible (including students), have all helped us move forward.

### RESULTS

The County Durham and Darlington Foundation Trust Care Closer to Home (CCtH) directorate has been monitoring patients with pressure ulcers for the last 3 years. All categories of pressure damage are reportable from category 2 upwards. Incidents are then classed as:

- ▶ New – these are patients under the care of Community Health Services (CHS) who are seen at least on a weekly basis.
- ▶ Deteriorating – these are patients who have existing pressure damage that deteriorates while receiving care from CHS. Deteriorating is defined as an increase in category and depth of the ulcer.
- ▶ Transfer into service – these are patients who present with pressure damage who were not under the care of CHS, or received infrequent visits by CHS. These are not part of the CCtH reporting framework.

Several other skin lesions are now locally reportable because nurses can accurately report the damage they are diagnosing, rather than having pressure ulcer as the only option to pick on the incident reporting system. Other lesions include moisture lesion, traumatic injury, non-healing surgical wound, and vascular ulcer.

All reported new or deteriorating pressure ulcers undergo a Root Cause Analysis (RCA) to determine whether the damage was preventable and identify key lessons learned. The nursing teams complete the documentation and investigation. For category 2 pressure ulcers, this process is completed by peer review and presentation at the Tissue Viability Steering Group.

For category 3 and 4 ulcers, the RCA is examined by a member of the corporate team and the lead tissue viability nurse together with the team involved, including multidisciplinary and multiagency members.

*“Several other skin lesions are now locally reportable because nurses can accurately report the damage they are diagnosing.”*

*“The accuracy of incident reports has improved over this 3-year period.”*

It is then distributed to a wider email forum and the Trust’s safety committee and commissioners.

An audit in 2010 showed that pressure ulcer prevention was not seen as part of the role of district nurses as there were no pressure ulcer prevention care plans in place in the community. By 2012 97% of at-risk patients had a pressure ulcer prevention plan in place.

Pressure ulcer incidents were not reported in the area until 2011/12. The number of patients reported as having pressure damage increased from 506 in 2011/12 to 695 in 2013/14. However, the number of avoidable pressure ulcers has decreased (*Table 1*) — from 93 in 2011/12 (18%) to five in 2013/14 (0.72%).

A true measure of the quality of pressure ulcer preventative care is that patients who develop category 2 damage do not deteriorate to category 3 and 4. In the author’s opinion, this is more important than counting the numbers of ulcers in each category because achieving zero pressure ulcers is not possible.

Recognising the aetiology and accurate diagnosis has improved treatment strategies, but has not decreased the numbers of patients who develop pressure damage.

Anecdotally, the accuracy of incident reports has improved over this 3-year period. The number of patients with pressure damage has not decreased because the community population has continued to age, with increasing comorbidities and acute illness. The purpose of this work was to promote accurate diagnosis and reporting, rather than pressure ulcer reduction, because time and



**Figure 2.** The author originally classified this skin damage as a category 2 pressure ulcer, but he would now class it as a moisture lesion.

**Table 1.** Avoidable pressure ulcers

	Total	Newly acquired	Deteriorating
2011/12	93	82	11
2012/13	30	26	4
2013/14	5	3	2

resources were being wasted when everything was reported as pressure damage.

Other work has focused on preventative measures, such as providing a poster about skin assessment for the 256 care homes in our area and a document that allows district nurses to share recommendations about skin care and pressure ulcer prevention with carers. Both these have led to closer working and understanding between members of the multiagency, multidisciplinary team in the community. The key individual in pressure damage prevention is the person who performs personal care and therefore sees the patient’s skin.

**DISCUSSION**

This work has led to further questions about skin lesions and how they occur. As the development of a pressure ulcer is seen as poor nursing care, it seems strange that nurses are so ready to label many lesions as pressure ulcers.

For example, 10 years ago the author diagnosed the skin damage in *Figure 2* as a category 2 pressure ulcer. However, now when he looks at the wound, the patient and her history, he would diagnose it as a moisture lesion. Why? It is in the natal cleft, linear, clearly macerated due to moisture, the patient is doubly incontinent, is in 24 hour nursing care with a pressure relieving mattress and positional charts completed and has very good nutrition.

Is the second example in *Figure 3* category 4 pressure damage or not? It is over a bony prominence and circular, but the injury is on the inner aspect of the patient’s heel and, most importantly, the man is mobile. When he was young, he injured his lower leg and required fixation and arterial repair. It is this repair that has broken down, causing osteomyelitis due to the necrotic dead bone.

Other non-pressure reasons for skin lesions can often be found in carers’ notes. Trauma or falls

may not be reported to district nurses because the person has been seen by a GP or paramedic. Old skin is less able to tolerate any insult, however minor, so a scratch or a knock to a malleolus when transferring bed to chair can be easily forgotten, but develops into an ulcer.

If a person is able to move but does not, should a wound ever be diagnosed as pressure damage?

Nursing practice changes with new knowledge. There were 245 poster presentations at the Wounds UK conference in 2014, and by far the most numerous were those describing the prevention and treatment of moisture lesions — which were not really recognised 10 years ago.

It is now recognised how skin changes at life's end (Sibbald et al, 2009). But as people live longer, when does the end start?

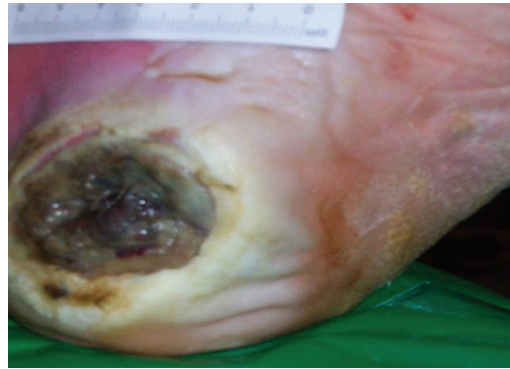
Much was made in the press about a lack of sunlight causing vitamin D deficiency in the UK. What is the effect of a lack of vitamin D on bone strength, in particular the sacral and heel bones that have a limited blood supply? If these bones crumble is ulceration inevitable, and are the resulting wounds pressure damage?

Category 2 pressure damage seems to be the most difficult to diagnose because superficial skin loss is very common in older skin. In practice, the author would say that many of these category 2 skin lesions are not pressure damage. True pressure damage occurs when there is no blood supply to that area of skin, the blood supply is in the dermis and underlying tissues not the epidermis, so in order to diagnose accurately the first rule is to confirm that it is pressure damage and return to the EPUAP definition.

### Game playing

Questioning routine practice and perceived understanding of a subject that encompasses nursing has been challenging. For some staff, the perception was that we were “game playing”; manipulating diagnoses to affect the figures and therefore the targets. It is far easier and quicker not to investigate and question, but to carry on and “see and report” — particularly when community patients move around and between organisations and care providers.

While the quality improvement targets did provide a focus and an impetus for the work, the



**Figure 3.** This wound could be mistaken for a category 4 pressure ulcer, but is caused by osteomyelitis.

purpose was to ensure the community nursing service is providing the right care and treatment with an accurate diagnosis. The service also wants to try and stop the finger pointing that happens as patients move between organisations which all report and count pressure damage. The process of education and peer review allows staff at all levels to ask questions. Presentation and publication of the work also invites questions. This is an ongoing process of learning.

### CONCLUSION

The community nursing staff are continuing to learn and adapt, and they are much improved.

This change has led to learning, much debate and questioning at all levels of what used to be done, what is done now and how this influences future practice.

The author believes passionately that skin care and pressure ulcer prevention embodies nursing, because it needs to be holistic for it to be right. All nurses will recognise that not all pressure ulcers are preventable, but without accurate diagnosis and reporting, how can they actually say how many patients suffer needlessly and therefore how can they focus their efforts and improve? **WUK**

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