

# Should the EPUAP adopt the NPUAP's new pressure ulcer terminology and definitions?



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As healthcare professionals involved in tissue viability, constant monitoring and effective reporting of pressure damage are a daily activity. Commissioning for Quality and Innovation (CQUINs) payments framework were introduced in 2009 (Department of Health [DH], 2010) with clear targets to reduce pressure ulcers on a year-by-year basis. Subsequently, the NHS Five Year Forward View (DH, 2014) set out the vision for promoting wellbeing, preventing ill health and promoting quality. They include

in their definition of quality: patient safety, clinical effectiveness and patient experience with a mission to empower patients to manage their own health, stay healthy, make informed choices and to avoid complications. This clearly represents the role of all professionals involved in tissue viability, yet there is no one accepted term or definition that visibly describes skin damage or the exact causes.

There has been a range of terms used to label skin damage including: pressure ulcers, pressure ulceration, pressure sores, bed sores, bed ulcers and decubitus ulcers. In 2014, The National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance (NPUAP, EPUAP, PPIA, 2014) recommended using the term pressure ulcers and defined it as: 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. Despite the recommendation, the Australian Wound Management Association (AWMA, 2012) use and continue to use the term pressure injury. Nevertheless, correct terminology and clear identification of each stage surrounding skin damage has created much discussion recently. The NPUAP (2016) announced they would be replacing the term pressure ulcer with pressure injury. They argue this accurately describes pressure injuries to both intact and ulcerated skin. The updated definition states:

*"A pressure injury is localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and*

*shear may also be affected by microclimate, nutrition, perfusion, comorbidities and condition of the soft tissue."*

This updated pressure ulcer definition is quite different to the previous one as it includes medical device injuries. Thus, in their updated staging system, the NPUAP added two further pressure ulcer definitions: Medical Device Related Pressure Injury and Mucosal Membrane Pressure Injury. In the past, healthcare professionals have recognised these types of injuries but have had little guidance as to how they should be staged or recorded. There remains little consensus as to correct terminology and definition of this skin damage between healthcare professionals, indeed Professor Dan Bader (2016) presents a bioengineering perspective of pressure injury arguing that the term could be interpreted as instantaneous trauma, associated with impact damage, which he states is a completely different damage mechanism than the sustained or quasi-static mechanical loading considered to be critical in pressure ulcer aetiology. *Karen Ousey*

**1. What is your opinion about the term 'pressure injury'? Should the EPUAP consider changing their definition and terminology to that suggested by NPUAP and the AWMA?**

**LS:** I think EPUAP should not consider changing their terminology to that suggested by NPUAP and AWMA for several reasons. First, I think the term 'pressure injury' is incorrect. Pressure ulcers are caused by prolonged pressure and shear resulting in deformation of tissues. "Injury" implies acuity, which

would suggest a pressure ulcer can occur within a fraction of a second, which is not the case. Moreover, the International Statistical Classification of Diseases and Related Health Problems (ICD) also reserves the term 'injury' for damage related to acute trauma: maternal injury, birth injury, contusion, puncture, traumatic rupture and amputation, crushing ... Second, the discussion about 'injury' or 'ulcer' is irrelevant for most European countries as they do not use English as their first language. They call a 'pressure ulcer or injury' a 'drukletsel', 'decubitus', 'une escarre', 'ulcera da pressione' etc. Finally, I believe that any change should be driven by an international debate. Definitions should be aligned to the international guideline and the ICD-10/ICD-11 pressure ulcer definitions to facilitate benchmarking and reduce confusion amongst clinicians, carers and coders. For that reason, the AWMA also did NOT adopt the changes to the definition or stages.

**ZM:** The rationale for changing the terminology is not clear to me and has not been justified from an empirical perspective. The term used to describe a 'pressure ulcer' has changed many times, indeed Hippocrates (460–370 BC) described sores developing in association with paraplegia with bladder and bowel dysfunction. During the renaissance, Ambrose Paré, wrote in his autobiography about a wounded French aristocrat who had a sore as great as the palm of a hand on the coccyx (for he has been too much in the bed) (Agrawal and Chauhan, 2012). In 1866, Nightingale wrote: "*another who cannot move may die of bed-sores ...*" and in the 1877, Jean-Martin Charcot described in lecture notes his study of decubitus ulcers: "*decubitus ominosus signifies not*

*the patient in the bed, but the bed-sores supposed to result from such positions*" (Levin, 1992). In PubMed in 1963, the term 'pressure ulcer' was introduced and is taken to mean: bedsore, pressure sore or decubitus ulcer. The point I am making here is that despite the longevity of knowledge and understanding of pressure ulcers, we are still arguing about what to call them, and the question is: has this actually helped in prevention and management of the problem? Should we not be focused more on ensuring that every patient has appropriate risk assessment and prevention strategies employed, rather than on what to call them?

**JE:** I have no strong feelings about ulcer or injury, I believe it is semantics and makes no clinical difference as it does not affect in any way what does or does not happen to the patient. I wish we would focus on things that make a difference rather than playing with words. However, I do believe the EPUAP should not consider adopting the new term and definition, the amount of time and effort it would involve is hugely expensive and distracting. Instead, let's spend that time, effort and money on preventing pressure ulcers.

**HS:** 'Pressure injury' instead of 'pressure sore' is another, maybe logical, step in describing a medical phenomenon. The problem lies in the basic idea of giving a phenomenon a descriptive name. Each time our knowledge shifts, the name changes too. So, even if the endeavour is noble, the result is not productive. Why not take the traditional approach we did with cancer: around 400 BC, Hippocrates is said to have named masses of cancerous cells *karkinos* — Greek for crab. This name is generic and allows us to focus on the disease itself and

not the name. Perhaps history can provide us with a good name for the phenomenon at hand? For example, in 19th century, Jean-Martin Charcot named the phenomenon '*decubitus ominosus*'. Looking at the term 'pressure injury' again, both words seem sub-optimal. For one, the application of force on tissue leads to pushing, pulling and shearing forces in the tissue. Therefore, pressure is not an appropriate term. 'Force-induced tissue deformation' would be a more appropriate term. Also, the term 'injury' is also not covering the events. Adaptation and stress in one tissue (or cells) can lead to injury and damage in another tissue (or cells). Applying force to cells leads to a range of events, from adaptation, stress, injury and finally (sub)cellular tissue loss. All depending on the way involved tissue is able to cope with applied force. A generic expression that incorporates damage, injury, stress and adaptation could be something like 'tissue response'. The problem is that a balanced, precise and descriptive term like 'force-related tissue response' apparently lacks any relation to the usually evident lesion. The outcome depends on the duration, magnitude and direction of the force applied in relation to the state of the cells and tissues involved. So it is not a force issue but also a tissue and/or a patient issue. Since damage is the real clinical outcome, the logical name for the phenomenon would be 'force-related tissue damage'. My suggestion would be to use a general term like 'decubitus: force-related tissue damage'. In the end, that may make more sense.

**2. In view of the definitions afforded to 'pressure ulcer' and 'pressure injury', do you believe they encapsulate a true picture of the potential causes of skin damage or are there omissions?**

**LS:** This depends on who the intended users of the definition are. If you ask bioengineers, they would prefer to use other terms to describe the cause of a pressure ulcer. However, the definitions are part of clinical guidelines, therefore the language used should relate to clinical practice. The definition in the 2014 international guideline is short and refers to pressure and shear as the cause of pressure ulcers. Although it does not mention devices, it does not exclude them either. As such it is correct. The updated NPUAP definition of pressure injury is much longer, and gives more explanation. I am not sure this explanation should be part of the definition. It does not necessarily make it clearer.

**ZM:** The 2014 NPUAP definition stated: “A *pressure ulcer is 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.*” The updated NPUAP (2016) definition states: “A *pressure injury is localized damage to the skin and underlying soft tissue usually over a bony prominence or related to a medical or other device [...] The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear.*”

Time and again, Gefen et al (2008) and Oomens et al (2015) remind us that cell deformation arising from pressure and shear causes damage extremely quickly, whereas ischaemia causes damage much more slowly. Thus, when you put the two definitions side by side, the inclusion of the word 'intense' pressure in the 2016 definition, can be useful in helping to visualise the impact such pressure/shear may have on cell deformation. However, we also know that high pressures over bony prominences for a short period of time, and low pressures over bony prominences for a long period of time, are equally deleterious (Husain, 1953) — as seen in injuries arising from some mechanical devices, such as an external

catheter. Therefore, the 2016 definition, aside from use of the word 'injury', may be more in keeping with the potential causes of skin damage.

**JE:** No I don't. If we were going to have a phrase that encapsulated the full causes, we would have to call it a force-mediated tissue ulcer/injury/damage — not the most catchy. We waste hours of our life allocating meaningless numbers to these wounds, yet can't differentiate the actual cause. Most of us have just about grasped reducing pressure, but few people understand shear and its full impact.

**HS:** As previously stated, both definitions are logically flawed. These terms imply only a simple factor like pressure plays a role. In reality, it is everything but pressure that dictates an eventual outcome. So neither 'pressure injury' nor 'pressure ulcer' is a proper description of the phenomenon at hand. You may include pressure 'adaptation' and 'stress', which prelude 'injury' and 'damage'. The list should also include 'trauma', especially since some superficial and deep tissue events can be related to some form of trauma (damage resulting from a higher than normal force applied for a, usually, short period and/or in a specific direction). Both terms do, therefore, not reflect the underlying aetiology behind the occurrence of lesions in the skin, the point where the events become clinically relevant. The aetiology involves two major aspects: force and tissue. Parameters related to the force and the events in the involved tissue dictate the outcome. If and how tissue adapts, stresses, injures and damages depends on the quality of the tissue(s) and biological systems involved. The effect of the amount (duration, magnitude and direction) of force applied depends on the quality of the tissue involved, some kind of 'tissue threshold' and the position of the tissues (and patient) in time and place, which can be summed up as 'behaviour.' In other words, if you cannot move, 'normal' forces become damaging and if the involved

tissue (or patient) is compromised, even 'light' forces are damaging. The missing part in the definition is, therefore, a description of the behaviour of the patient and a description of in what way the patient or his/her tissue is compromised.

**3. The Cambridge dictionary defines 'injury' as 'physical harm or damage to someone's body caused by an accident or attack'. As such, does the term pressure injury imply that healthcare professionals are causing actual harm to the patient?**

**LS:** I think it could be interpreted that way more easily. Certainly in the US, people are warning that the term 'injury' arms plaintiff attorneys with jargon that will help convince juries that it was inflicted upon a patient intentionally (Mrdjenovich et al, 2016). Although the NPUAP has changed the terminology and definition, this does not mean there is consensus on this change in the US. The American College of Clinical Wound Specialists and the Association for the Advancement of Wound Care both have urged NPUAP to rescind their decision.

**ZM:** I think that this is a real issue, particularly when consideration is given to the International Statistical Classification of Diseases, Injuries and Causes of Death (ICD-10) (World Health Organization, 2010), which includes the following in addition to pressure ulcer: bed sore, decubitus ulcer, plaster ulcer, pressure area and pressure sore. There is no mention of 'injury' in this classification. Conversely, the International classification does not use the term 'injury' in relation to pressure ulcers at all, rather the term 'injury' in this classification refers to: injury, poisoning and certain other consequences of external causes, which in itself implies harm to the person. Therefore, it is not as simple as changing

the terminology, rather consideration needs to be given to the meaning of the words in the broadest sense and how the terminology fits with the classifications systems currently in place.

**JF:** No I don't think so. Especially as in a large percentage of cases, the patient isn't even known to a healthcare professional.

**HS:** This can be seen as an example of how facts get lost when society meets medicine. In addition, we see how British and American societies dictate events in other societies. Due to juridical practice, this medical non-issue suddenly becomes an issue. Either we stand tall and defend science or we are practical and use a different word for the same phenomenon. It is an ethical issue, not a medical one. Besides, in my opinion, since both terms are inappropriate, it is a non-issue.

**4. Given that 'medical device-related pressure injury' and 'mucosal membrane pressure injury' have been included as separate definitions in the updated NPUAP document, was an opportunity missed to incorporate them into one of the four revised stages that indicate the extent of tissue damage?**

**LS:** I think they are both pressure ulcers. Medical device-related pressure ulcers indicate the source, i.e. they are due to pressure and shear from a medical device, for example an oxygen mask. They can be classified using the stages 1–4 described in the updated NPUAP document. Mucosal membrane pressure ulcers indicate a location on the body, i.e. mucosal membrane. They are often device related. These lesions are more difficult to classify as the staging is based on the layers of the skin and the mucosal membrane has a different tissue structure. How to indicate severity of these lesions is a topic for future debate.

**ZM:** One of the challenges we face in health care today is the wide variety of screening and assessment tools that are currently available. If these tools are reliable and valid, sensitive and specific, then they are an advantage to practice, if not, then they are not of benefit. The rationale for not including these ulcers in the four stages is that the underlying anatomical structures are different. Thus, it may not be reliable and valid to apply a staging system to these wounds as it would not fit with what is seen clinically. It, therefore, seems reasonable to me that the clinical practitioner is asked to simply note the presence or absence of the mucosal ulcer without actually staging it.

**JF:** No as they often don't fit the categories — they only apply to skin not mucosa and some areas such as the ear do not have the underlying structures (muscle and bone) used in the deeper categories.

**HS:** Both injuries are a result of forces on tissue and should, therefore, be an integral part of any definition. The only advantage is that by setting them apart, one directs much needed attention to the phenomena. Scientifically they are an oxymoron. However, the NPUAP's four injury stages are a poor representation of the actual events in the case of decubitus. They describe the size of the lesion, not unlike the black, yellow and red description of wounds. These descriptions are useful in describing and following the progress of events. However, they bear no relation to the aetiology and/or the interventions applicable. The most interesting part of a decubitus lesion is not its dimension or aspect, it is the tissue surrounding the lesion, the tissue involved and the behaviour (in terms of mobility) of the patient. The NPUAP's four injury stages have an immediate effect of directing the attention away from the issue at hand. It leads to treatment of the effects and not the causes of the problem. A side effect of this phenomenon is the lack of scientific progress. Levine (1992) already noticed the disappointing state of our current

understanding and treatment of decubitus. *"Ambrose Paré, a 16th century French army barber-surgeon, wrote about a wounded French aristocrat developing a pressure ulcer. He mentioned cure with good nutrition, pain relief and debridement; which is no different than the present modality to some extent."* This lack of progress is further illustrated by the disheartening number of expert opinion based recommendations in the 2016 NPUAP guideline. It appears as if we have not made progress beyond Pare's approach.

The four stages provide insight in the gravity of the decubitus but offer no clues for diagnosis or to what intervention to undertake. Diagnosis should include the 'behaviour' of the patient and the state of the patient and his/her local tissues. Even though the paramount of intervention will be related to reduction of forces on the tissue and 'traditional', be it modern, wound care. Sadly, we have only limited information on issues like reperfusion injury, hypoxia, tissue fibrosis, neuropathy, biotensegrity, causes for not repositioning and many other underlying phenomena leading to tissue adaptation, stress, injury and damage. So we need a new algorithm that, instead of describing the lesion, will help us in preventing and treating those in need.

**5. In your opinion is it essential that the community agrees on one term?**

**LS:** I do think that a country should agree on one term. This is important for clarity to patients, carers and clinicians. It is also important for coding in local registration systems and the ICD. However, in practice patients often call pressure ulcers 'bedsores', and in non-English speaking countries other words are used (see question 1). For now, ICD has resolved the issue by identifying synonyms. Therefore, I do not think it is essential to agree on one term (ulcer or injury) worldwide. We do, however, need to agree on the definition and classification, to avoid measurement differences.

**ZM:** We have spent much time and energy in arguing/discussing what the term should be. At this stage it is important to stand back and reflect on why we have been having these debates. Do we really feel that changing the terminology will help staff in the clinical field recognise the potential for pressure ulcer development, in addition to recognising when one is present? If, as the evidence demonstrates, the reliability of pressure ulcer grading varies enormously, for example,  $\kappa=1.0$  (Nixon et al, 2005);  $\kappa=0.52$  (Defloor et al, 2006);  $r=0.69$  (Russell Localio et al, 2006),  $\kappa=0.50$  (Stausberg et al, 2007),  $\kappa=0.33$  (Beeckman et al, 2007) and  $\kappa=0.56$  (Beeckman et al, 2008), does the problem relate more to challenges in recognising what is going on with the patient, rather than what to call the actual problem? PubMed recognises the different terms, and we are used to seeing these written in the literature. Practically, it would be useful to agree one term, but I think it would more useful to spend our energy on considering/developing more reliable methods for recognising impending pressure damage, which could be of real benefit to those whom we care for.

**JF:** Not really. We currently survive saying, pressure ulcer also known as bed sore, pressure injury or decubitus. I don't think we should create any new terms but I have no problem with having more than one.

**HS:** In my opinion it is essential to have one common term for 'force-related tissue adaptation, stress, injury and damage.' A generic term will allow us to delve into the many aspects causing lesions. The current guideline addresses issues like nutrition, dressings and mobility. There is a stress on dressings and other topical interventions. This is questionable regarding Cochrane reports. There is no guidance in how to assess mobility (behaviour). Also missing is any guidance regarding measuring mobility and tissue evaluation tools like biochemical markers, medication or blood

values. There is a question mark over how the legal system will respond to the lack thereof. It is conceivable that the lack of knowledge regarding common medical factor is not acceptable in 2017 and beyond. How nice would it be if we had a treatment algorithm that included general information (e.g. age, comorbidity, inflammation, nutrition, cachexia, cerebral issues, mobility, medication), wound-related information (e.g. microbiome, debris), systemic information (e.g. neuropathy, myopathy, sarcopenia, fibrosis, bio tensegrity) and cellular information (e.g. molecular dysfunction, genetic disorder, epigenetic events, inflammaging) and hypoxia-related information (e.g. HIF1a). Even knowing that most lesions have a straightforward cause, research into the more exotic causes of decubitus lesions will undeniably help us finding quick wins for all those involved. I strongly believe that moving away from any descriptive terms to a mere generic term will stop us spending time discussing non-relevant issues such as 'ulcer' or 'injury', allowing us to open up the dramatically needed scientific progress in diagnosing and treating decubitus (force-related tissue damage). The everyday clinical reality can only benefit.

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