

Pressure Ulcer Risk Assessment

Paper developed by Prof. Zena Moore to support the Pressure Ulcer Collaborative (2014)

Introduction

Risk assessment is the first step in planning pressure ulcer prevention strategies (Moore and Cowman, 2014). The purpose of this assessment is to identify those at risk of pressure ulcer development by identifying key factors considered important. Following this, prevention interventions may be planned, implemented and evaluated (Moore and Cowman, 2014). In order to identify which individuals are at risk of pressure ulcer development, it is first necessary to understand what is meant by risk. Risk has been defined as the probability of an individual developing a specific problem i.e. a pressure ulcer (Deeks et al., 2002).

Interventions employed to combat pressure ulcer risk are often expensive and healthcare resources are finite, therefore, accuracy in identifying those patients who need prevention strategies is critical. Inaccurate assessment will mean that interventions may be offered to those who do not require it and conversely, not offered to those who do (Moore and Cowman, 2014). It is evident that this has important implications for health care efficiency and effectiveness (Sackett et al., 1996).

Definition of a pressure ulcer

In order to place pressure ulcer risk assessment in to context, it is important to have cognisance of the definition of a pressure ulcer. As such, *a pressure ulcer is defined as a localised 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 (National Pressure Ulcer Advisory Panel, 2014). Keeping this definition in mind will aid in the risk assessment process, because clearly what is being asked during risk assessment is whether the individual is exposed to pressure and

shear as these are the causative factors that lead to the development of a pressure ulcer (Moore, 2008).

Accuracy of current risk assessment tools

Currently, no one risk assessment tool exists that has been shown to have 100% sensitivity and specificity. Pancorbo Hidalgo et al (2006) argue that the Braden scale (Bergstrom et al., 1987) has the best validity of all the tools in use, yet the sensitivity (the percentage of patients who are correctly identified as being at risk) and specificity (the percentage of patients who are correctly identified as not being at risk) are only 57.1% and 67.5% respectively. This suggests that there is still a substantial margin for error and, as yet, the clinical implications of this have not been fully explored.

Vangilder et al. (2008) noted, across 9 international prevalence studies, that 48% of all patients who had existing pressure ulcers and 48% of patients with hospital acquired pressure ulcers were assessed as mild or no risk (Braden scale score >14). Logically, it does not make sense that an individual with an existing pressure ulcer could be scored as low risk of developing that problem. However, an individual with an existing pressure ulcer is potentially at risk for the development of further pressure ulcers (Kaltenthaler et al., 2001). In a study by Moore & Cowman (2012), 62% of the pressure ulcers identified were in individuals classified as not at risk or low risk according to the Braden Scale. Conversely, exploring the individual components of the Braden Scale showed that 68% of pressure ulcers occurred in those who were bed-fast or chair-fast, and 64% occurred in those who were completely immobile or had very limited mobility. A previous Irish study also identified that 72% of the patients with pressure ulcers were deemed to be not at risk or low risk according to Braden, despite 10% of the same patients having grade-4 pressure ulcer damage (Jordan O'Brien and Moore, 2004). Furthermore, 23% of patients were identified to be not at risk according to Braden were classified as high/medium risk according to the Waterlow Tool (Jordan O'Brien and Moore, 2004). Fundamentally, as with risk and the presence of a pressure ulcer, this does not make clinical sense. The two tools, Braden and Waterlow, are supposed to be measuring the same risk status, therefore, to have conflicting results questions their validity (how well the instrument is actually measuring risk) and reliability (how consistently the instrument measures risk) and as such their usefulness within the clinical setting.

The presence of a pressure ulcer in an individual identified to be at risk is not a reflection of the success of the tool; rather it suggests a failure to initiate appropriate interventions to combat risk (Defloor and Grypdonck, 2004). Risk assessment tools are used to identify

risk should no interventions be put in place (Moore and Cowman, 2014). As such, it is almost impossible to determine the sensitivity and specificity of any given tool because interventions offered to an individual automatically alter the identified risk status (Moore and Cowman, 2014). Indeed, Anthony et al. (2008) argue, if there was the “perfect” tool, there would not be a requirement for any others and yet over 40 tools are presently in existence.

Overall, one of the concerns regarding risk status classification relates to behavioural issues, where a low risk score would not prompt staff to the need for pressure ulcer prevention strategies (Moore and Price, 2004). Conversely, having a high risk score does not necessarily mean that the patient will have a pressure ulcer prevention care plan either (Anthony et al., 2008). Indeed, in one European study, only 4% of individuals at risk were identified to have an appropriate prevention care plan (Vanderwee et al., 2007). This may arise because staff do not necessarily believe the outcomes of risk assessment.

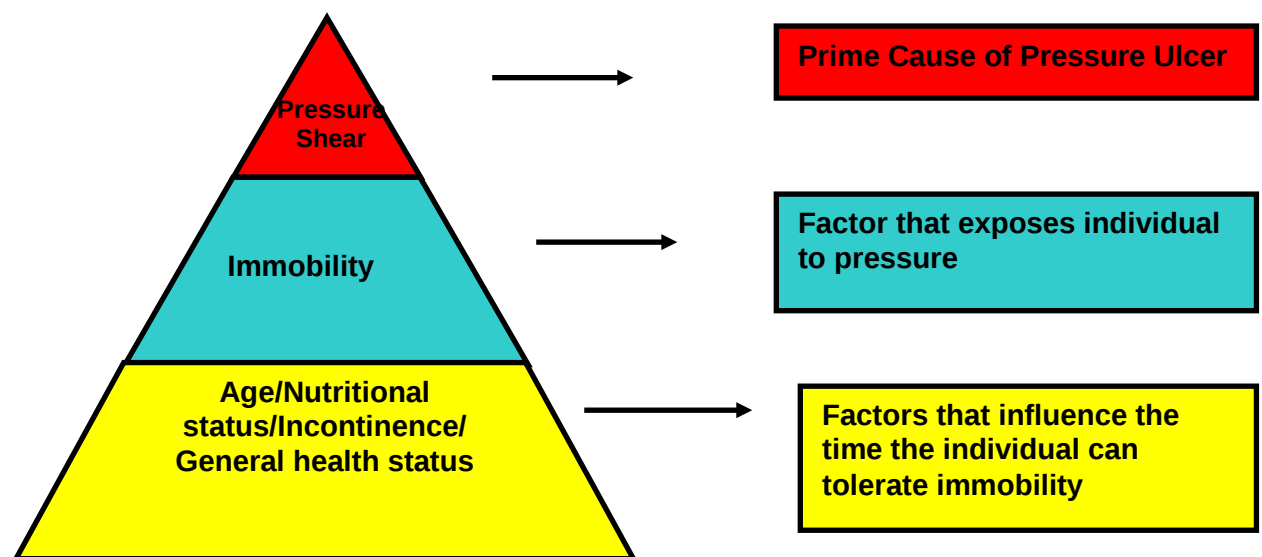
Pressure ulcer risk

Pressure ulcers occur due to prolonged unrelieved exposure to externally applied mechanical forces (Gefen et al., 2008). Those who are vulnerable to exposure to this pressure are the immobile, with the older person population demonstrating the highest propensity to mobility problems (Moore et al., 2011, Moore and Cowman, 2012, Moore et al., 2013, Moore and Cowman, 2014). Therefore, it is logical that activity and mobility are the highest predictors of risk, as it is these factors that cause an individual to be exposed to pressure/shear. The hierarchy of risk factors shown in figure 1 makes clinical sense and may contribute to simplifying the risk assessment process. In other words, if the individual does not demonstrate mobility or activity problems, then the factors lower on the hierarchy are not relevant in terms of pressure ulcer risk. This theory is similar to that of Defloor (1999), who posits that there is a conceptual scheme for pressure ulcer development that includes four elements: pressure, shearing force, tissue tolerance for pressure and tissue tolerance for oxygen. Primarily, Defloor (1999) argues, pressure is the key, because without pressure there cannot be shearing forces. Furthermore, the intensity and duration of pressure are fundamental in the subsequent development of tissue damage (Defloor, 1999). As such, it is argued here that the risk assessment process should begin with an assessment of mobility and activity and should proceed to a more complete assessment should impairments in these be identified. In this way, the process is simplified and focuses attention to the key causative factor, which is pressure/shear (Moore et al., 2013).

Conclusion

Pressure/shear is the prime cause of pressure ulcers and those who are exposed to pressure/shear are those who are immobile and cannot relieve pressure from bony prominences. The older population display the greatest propensity for mobility problems. Therefore, it is logical that the first question to ask is whether the patient can move independently or not. If problems regarding mobility and activity are identified, then the remaining process of risk assessment should ensue. If no problems regarding activity and mobility are noted, then the patient is unlikely to develop a pressure ulcer.

Figure 1: Hierarchy of Risk Factors (Moore et al., 2011)



Author: Professor Zena Moore PhD, MSc (Leadership in Health Professionals Education), MSc (Wound Healing & Tissue Repair), FFNMRC SI, PG Dip, Dip First Line Management, RGN Professor and Head of the School of Nursing and Midwifery