LAMK Lahden ammattikorkeakoulu
Lahti University of Applied Sciences

Pressure ulcer prevention and early detection

An introductory guide in English

LAHTI UNIVERSITY OF APPLIED SCIENCES
Degree programme in Nursing
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Lahden ammattikorkeakoulu
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SAVOLAINEN, JENNI; SIHVOLA HEIDI:

Painehaavojen ehkäisy ja aikainen tunnistaminen
Englanninkielinen opas

Hoitotyön suuntautumisvaihtoehdon opinnäytetyö, 53 sivua, 17 liitesivua

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TIIVISTELMÄ

Tämä toiminnallinen opinnäytetyö tehtiin yhteistyössä Lahden kaupunginsairaalan osasto 32:n kanssa. Haavanhoitoon erikoistuneen osasto 32:n työntekijät tunnistivat englanninkielisen materiaalin hyödynnettävyyden kansainvälisten opiskelijoiden harjoitteluissa - työntekijät toivoivat opinnäytetyön aiheen liittyvän painehaavoihin. Painehaavat ovat yleisesti esiintyviä ihorikkoja, jotka eivät pelkästään ole huonosti tunnistettuja ja kalliita hoitaa vaan ne aiheuttavat myös tarpeetonta kärsimystä ja lisäävät hoitotyön kuormittavuutta - vaikkakin ne voitaisiin useimmiten estää.

Tämän opinnäytetyön tarkoituksena oli tarjota Lahden kaupunginsairaalan osasto 32:lle helppotajuinen englanninkielinen perehdytysopas painehaavojen ehkäisyyn ja aikaiseen tunnistamiseen liittyen.

Perehdytysoppaan oli tarkoitus selkeällä tavalla korostaa painehaavojen ehkäisyn ja aikaisen tunnistamisen tärkeyttä sekä tarjota opiskelijoille ja työntekijöille keskeistä tietoa painehaavoihin liittyen. Aiheen ydinkohdat esitettiin oppaassa tiivistetysti niin, että tärkeimmät kohdat korostuivat. Opas toteutettiin sähköisessä muodossa sekä levittämisen että muutosten tekemisen helpottamiseksi.

Palautekyselyllä selvitettiin kuinka perehdytysopas vastasi opiskelijoiden tarpeeseen. Kyselyn tulokset viittaavat siihen, että opiskelijoiden mielestä perehdytysopas sisälsi asiaankuuluvaa tietoa ja että se oli kirjoitettu helppotajuisella kielellä - oppaan rakennetta pidettiin myös selkeänä.

Perehdytysoppaaseen tehtiin muutoksia opiskelijoiden ja osasto 32.n työntekijöiden palautteen mukaisesti oppaan hyödynnettävyyden ja käytön maksimoimiseksi.

Asiasanat: opas, painehaava, ehkäisy, riskitekijät, sairaanhoito

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ABSTRACT

This functional thesis was done in collaboration with ward 32 in Lahti City Hospital. The staff members of the wound care specialist ward 32 recognized the utility of English material in supporting the international students during their clinical training - they requested that the thesis topic relates to pressure ulcers. Pressure ulcers are common form of tissue damage that are not only poorly recognized and expensive to treat but they also cause unnecessary suffering and increase the nursing workload - although they could, in most cases, be prevented.

The purpose of this thesis was to provide ward 32 in Lahti City Hospital with a comprehensible introductory guide in English on pressure ulcer prevention and early detection.

The aim of the introductory guide was to emphasize the importance of pressure ulcer prevention and early detection in a distinct manner as well as to provide students and employees essential information relating pressure ulcers. The central points of the subjects were presented in the guide in compact form so that the emphasis was on the most important parts. The guide was executed in an electronic form in order to allow for both easy distributing and future changes.

A feedback enquiry was conducted in order to discover how the introductory guide met the students' needs. The results of the enquiry suggested that the students found the introductory guide contained relevant information written in a comprehensible language and that it had a clear structure.

The introductory guide was further modified according to the students' and the ward 32 staff members' feedback in order to maximize its utility.

Key words: guide, pressure ulcer, prevention, risk factor, nursing

CONTENTS

1 INTRODUCTION

The topic of this thesis is pressure ulcers. The main emphasis of this thesis is on the importance of prevention and early detection of pressure ulcers but facts concerning the prevalence of pressure ulcers as well as the risk factors and pressure ulcer formation are also explored.

Many international students attend practical placements in the hospitals around Lahti region every year, yet it has been noted that much of the introductory material concerning the different processes that take place on the wards is not yet provided in English.

The purpose of this thesis is to produce a comprehensible introductory guide on pressure ulcer prevention in English. The guide itself aims, in a distinct manner, to emphasize the importance of pressure ulcer prevention and early detection as well as to provide information on pressure ulcers. Final modifications made on the guide were based on verbal feedback given by staff members in Lahti City hospitals ward 32 and according to a feedback enquiry that was conducted in order to discover the student's needs. The feedback enquiry was analysed through an adapted content analysis method in order to gain an understanding of the utility of the introductory guide (Vilkka & Airaksinen 2003, 63). The definitive guide is presented in Appendix I.

The working life partner for this thesis is ward 32 in Lahti City Hospital. Ward 32 specializes in wound care thus making it an ideal partner for a wound-related thesis. The thesis topic was narrowed down to cover pressure ulcer prevention and early detection with the help of the staff members on ward 32. Pressure ulcers are an essential topic especially when it comes to working with elderly or bedridden patients, particularly when taking into consideration that the amount of elderly patients is on the rise (Tilastokeskus 2012). The importance of preventing and recognizing pressure ulcers is further emphasized by the The Nursing Research Foundation as it released a new nursing guideline on pressure ulcer prevention and identification in adult patient care in October 2015

(Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015.)

Pressure ulcers are a very common form of tissue damage. In Finland pressure ulcers occur on about 5 - 25 percent, or approximately 55 000 - 85 000, patients regardless of their age or diagnosis. More effort should be put on pressure ulcer prevention because they cause pain and suffering and increase the patient's' vulnerability to infections, hence also reducing quality of life. Pressure ulcers also increase nursing workload and also cut productive time and, in their severest form, expose patients who suffer from them to sepsis and even an increased risk of death. On top of humane factors pressure ulcers cause up to 530 million euros expense in Finland annually. (Soppi 2014; Aisla 2015; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 3; Varga, M. 2015, 26.)

Core concept “pressure ulcer” was discovered through TERO and MeSH search engines (Finto 2015) - some emphasis is also being put on the term “instruction”. The following search engines were used to obtain the latest evidence based information on pressure ulcers: Medic, CINAHL (EBSCO), Terveysportti, PubMed, Nice clinical guideline center and Google Scholar. EPUAP (European Pressure Ulcer Advisory Panel) website was used as a source of information as its guidelines are widely used in Finnish health care and Nursing Research foundation's website for the reason it hosts The Finnish Centre for Evidence-Based Health Care platform.

2 THE REQUIREMENTS AND BACKGROUND FOR AN INTRODUCTORY GUIDE ON PRESSURE ULCER PREVENTION IN ENGLISH

A 2014 study by Rafiei, Mehralian, Abdar and Madadkar states that nursing students' knowledge in evaluating pressure ulcers was significantly higher than their knowledge on pressure ulcer prevention and classification thus emphasizing the importance of further guidance on the topic. The new nursing guidelines published by The Nursing Research foundation further states that roughly 60 percent of all pressure ulcers go undetected in health care. This is partly explained by the lack of skills in identifying pressure ulcers and/or telling them apart from other skin lesions, for example skin damage caused by incontinence - a fact that can be seen to support the 2014 study by Rafiei et al. (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 3; Rafiei et al 2014.)

2.1 Wound care in nursing studies

The nursnuing bachelor programme is largely self-study and practice oriented. Wound care is not a distinct part of the international curriculum in Lahti University of Applied Sciences (LUAS), but some matters concerning it are covered in the internal and chronic diseases study module. (Lahden ammattikorkeakoulu 2016.) In comparison, students say that in Metropolia basics of wound care is being taught as a part of acute care studies for paramedics and in Salpaus the practical nurses study it in nursing and care programme. In other words, getting familiar with wound care when completing a nursing degree in Lahti university of Applied Sciences largely comes down to the selection of practical placements any given student is able to acquire during the 3,5 year studies. However, desired outcome-wise, it is important to remember that even in a learning environment that does cover wound care, the students active participation and the nursing tutors ability and eagerness to explain the procedures do count. Pressure ulcer prevention is an important part of almost all the clinical training

placements, but the question remains whether the students get familiarized to the process and if so how profoundly it is explained to them.

Foreign students studying in English degree programs in Finland have been noted to lack Finnish language skills at the time of graduation. The lack of language skills is widely seen as an obstacle in Finnish working life, but it has now been suggested that the Finnish employees should lessen their expectations when it comes to Finnish language skills and the focus should, instead, be put towards deepening the language skills whilst switching over to actual working life. (Kiuru 2012, 99.) English instructions can thus be seen to promote a more accepting atmosphere when it comes to multicultural collaboration hence lowering the international students/trainees/workers threshold in transferring to Finnish working life.

The staff members on ward 32 expressed that pressure ulcers and their prevention and early detection is a current topic that should be properly understood by all members of the care staff. The role of the international trainees and employees and their needs was also discussed and an introductory guide was found to be a useful source of information for students as well as staff members. A need for instructions that provides information to students as well as employees and helps emphasize the importance of prevention and early detection of pressure ulcers was hence discovered.

2.2 A functional thesis

This is a functional thesis that is implemented with a working life partner. According to Vilkka and Airaksinen (2003, 9) a functional thesis aspires to for example instruct or organize different functions within a professional field and can thus be produced in the form of for example a guide or an instruction. As the aim of a functional thesis is to always produce a concrete product (Vilkka & Airaksinen 2003, 51) this thesis aims to produce an introductory guide on pressure ulcers. The target group of this thesis consists of international students, trainees and staff members.

2.3 Core consepts

Instructions: The Merriam-Webster online dictionary (2015) defines instructions as “a statement that describes how to do something”, “the action or process of teaching” and “the act of instructing someone”. For the purpose of producing good instructions, the authors of this thesis looked into instructions for patients in order to define what makes for good instructions. Hyvärinen (2005) states that it is important that the instructions are addressed to the target group; the vocabulary needs to be appropriate and sentence structures clear. It is also important to provide an explanation for the given instructions, so that the reader understands why it is important to follow them. Hyvärinen (2005) also emphasizes the impact of an appropriate layout as a means of producing good instructions.

Guide. A good guide is said to have two crucial factors: whether the guide manages to function correctly for its target group and whether the target group receives relevant information. For the target group to understand the guide, it needs to be distinct and comprehensible and written in standard language. Adding well-chosen pictures supports the reader's’ motivation and the comprehensibility of the subject. Clear headings and subheadings not only make the guide easier to follow, it also helps the reader to get a better understanding of the subject. (Torkkola, Heikkinen, Tiainen 2002, 35-40.)

Pressure ulcers can develop when an area of skin and tissues is being exposed to pressure; either a large amount of pressure over a short period of time or a small amount of pressure over a longer time period - staying in the same position for a long time causes prolonged pressure, whether it is lying down or sitting. The pressure causes disturbances in the blood flow of the skin and underlying tissue - the bony areas of the body are at a particular risk of becoming ischemic. As the tissues are deprived of oxygen and nutrients they begin to break down. The breakdown of tissue leads to ulcer formation. (NHS 2014; Finto 2016.)

Prevention as a term is used with disease headings and refers to either increasing resistance against disease, for example with vaccinations, or other provisions made against possible hazards, also in individual cases (NIH 2016).

Risk factors are characteristics associated with e.g. health related conditions that are considered significant and thus also important to prevent (NIH 2016).

Nursing is a term that refers to the profession of providing care. It is also associated with the care and techniques of different diseases as well as their management. It covers a holistic view of the patient as well as the different stages of treatment, prevention, maintaining condition and curing. (NIH 2016; Finto 2015.)

2.4 Working life partner: Ward 32 in Lahti City Hospital

Working life and education providers' cooperation can be seen as a part of the society's development, where social, political and economical transitions have changed the education and professional requirements in social and health care. Close cooperation between educational establishments and working life is emphasized because educational establishment centered training has been found to be too slow to react quickly to the changing needs of working life - changes in learning visions have occurred though. The theory is also considered to be too far apart from the practice resulting in a situation where what is learnt at school has proven to be insufficient at a working place. It is important to remember that the development of skills and training do not mean the same thing and that there is no guarantee that one learns the skills in an educational institution that is required in the actual occupation. Traditional educational institutions and a modern workplace learning environments are also very different, but learning on the job means that one also learns about the negative side of things. (Lehtonen 2014.)

The connection between universities of applied sciences and working life

can be seen as partnership, when research and development is benefiting both of the parties. Rissanen (2003) approves that functional thesis develops pervasive professional abilities. Thesis' working life aspect indicates the emphasis of different methods as well as sharing the knowledge and know-how. (Rissanen 2003.)

Initial enquiries were made to the Social and Health care faculty teachers in Lahti University of Applied Sciences in order to find an appropriate working life partner. As this thesis is produced in English, the authors of this thesis decided to initially contact hospital wards that were known to take on international trainees and recommended by the faculty teachers. Ward 32 in Lahti City Hospital was contacted first due to their field specific profile.

Ward 32 in Lahti City Hospital is a geriatric ward that treats patients who are in need of challenging wound care - the patients must have a doctor's referral to be admitted to the ward. The referrals are written either through health centers or from specialist care as an in-/between -hospital transfer. Often there is a need for more specific long term care, due to for example challenging wounds or infections or a need for isolation procedures. (Lahden kaupunki.) A meeting with the head nurse and specialist wound care nurses was arranged in early spring 2015 to explore the possibilities of the proposed collaboration.

Wound care is a vast topic and the importance of careful cropping emerged in the first meeting the authors of this thesis had with ward 32 staff members. A decision to focus on pressure ulcers was made based on the emphasis the specialist wound care nurses put on them. The nurses brought up the upcoming release of the new nursing guidelines and stressed the importance of preventing pressure ulcers. The initial plan also included the treatment of pressure ulcers but a decision was made to focus exclusively on pressure ulcer prevention and early detection as those are the topics that require raising awareness on.

3 PURPOSE AND AIMS

The purpose of this thesis is to provide Lahti City hospital ward 32 with a comprehensible introductory guide in English on pressure ulcer prevention and early detection. The introductory guide will be executed in an electronic form in order to allow for future changes. The guide can be found particularly useful by new trainees and new staff members as they familiarize themselves on the different processes on ward 32. By being a part of the wards introductory material, the guide can also help staff members take international trainees'/workers' needs into consideration thus also improving multicultural collaboration.

The aim of the guide is to emphasize the importance of pressure ulcer prevention and early detection in a distinct manner as well as to provide students and employees information on pressure ulcers - risk factors, common locations, care considerations, vocabulary and phrases. This thesis also aims to evaluate the student's needs through a feedback enquiry according to which the guide will be modified.

4 NURSING PERSPECTIVE ON THE IMPORTANCE OF PREVENTING PRESSURE ULCERS

The importance of prevention and early detection cannot be overemphasized when it comes to pressure ulcers. According to Soppi (2014, 3038; 2013a) and the new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 4), up to 60 percent of all pressure ulcers go unnoticed by the care staff until a proper examination is performed and sometimes other wounds, caused by e.g. incontinence, are mistaken for pressure ulcers. They also add that a recent international estimation suggests that preventing pressure ulcers would cost as little as 10 percent of the overall expenses their treatment currently costs (Soppi 2014, 3038; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 5) - in other words a 53 million euro investment would help save up to 480 million euros. According to the new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 5) in its simplest form, preventing pressure ulcers requires recognizing the patients at risk and removing/minimizing the pressure and stretching forces on bony areas.

4.1 Etiology

According to internist and MChD (Doctor of Medicine and Surgery) Esa Soppi (2010, 261-268; 2013b, 6 - 7), the effects of pressure on different types tissue are complex, hence the pathophysiology of pressure ulcers is not yet entirely understood. The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 4) states that pressure ulcers are caused by either pressure alone or pressure combined with friction and/or stretching/shearing forces. Soppi and Marlene Varga (2015, 26) also agree that, as per its name, the key feature concerning pressure ulcer formation is unrelieved pressure and the different effects it has on tissues. Firstly, the pressure results in pressing and stretching forces within the tissues, that again can cause either the stretching/tearing of the local capillaries and lymphatic vessels or other

changes in the skin's elastic properties. Secondly, recurrent pressure initiates stress reaction on the tissues, thus disturbing the blood flow because of the tightening and stretching forces - again resulting in changes in the skin's elastic properties or increased heat production and ischemia. Thirdly, the pressure obstructs the blood flow so that the partial pressure of oxygen decreases - this phenomenon can result in disturbed collagen synthesis that again can lead to increased heat production and ischemia or changes in the skin's elastic properties. Whatever the route, without efficient interventions, the end result is always the same - the ischemia eventually provokes pain, swelling and inflammation on the surrounding tissues; Varga (2015, 26), Kivivuori (2015) and Soppi (2013b, 7) remind that the skin can endure more pressure than muscle and fat tissues and that is why the actual damage that has already occurred in the tissues under the skin may not be immediately visible to the naked eye.

In more detail, capillaries are fine, hair-like, branching blood vessels that form a link between the arteries' and veins' smallest branches and thus are a key feature when it comes to supplying the skin and subcutaneous tissues with essential nutrients and gas exchange. Soppi (2010, 261-8; 2013b, 6 - 7) reminds that the capillaries can get flattened or completely closed up when compressed with pressure, hence blocking the vital perfusion that allows the delivery of nutrients and oxygen to skin and underlying tissues. Hypo- or inhibited perfusion causes hypoxia that eventually leads to tissue death, or necrosis. In other words the tearing of capillary blood vessels inflict the first visible signs of a first stage pressure ulcer: a redness on the skin that doesn't fade.

According to Lyder & Ayello (2008; 1 -2) normal blood pressure within capillaries is 20 to 40 mmHg and keeping external pressure less than 32 mmHg is thought to be enough to prevent pressure ulcer formation as that is considered to be a critical line above which the capillaries begin to close up. However, accurate guidelines are difficult to draw as an even lesser pressure than the 32 mmHg that in normal circumstances is still considered safe may induce ulceration in critically ill patients - this is due to possible comorbid conditions and hemodynamic instability (Lyder &

Ayello 2008; 1 -2). Esa Soppi (2013b, 7) agrees with the aforementioned but, with Varga (2015, 26), also takes individual factors and different pressure ulcer mechanisms into consideration - the intensity and duration of the pressure still being prime concerns. According to Soppi (2013b, 6 - 7) and Varga (2015, 26) the tissues also stretch and tear or reshape under the pressure - they believe that the tissue stretching/tearing is one of the main reasons for ulcer formation - pressure could thus perhaps be better tolerated if the outside shearing forces could be minimized. The impact of fluctuating pressure on ulcer formation is also regarded to be considerable by Soppi (2010, 261-8), who states it may be even more harmful than ischemia caused by pressure alone; this ischemia-reperfusion refers to a situation where the tissues are first ischemic, or deprived of oxygen, then re-perfused. The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 4) further stresses the role of patient's inability to change their own position - whatever the reason behind it - in pressure ulcer formation because in a normal situation the sensation of pain forces a person to change their position thus relieving the pressure on a single point. The repositioning of the partially or completely immobile patients should thus be carefully executed.

4.2 Common pressure ulcer locations

Pressure ulcers generally occur in areas of bony prominences.

- Pelvic area: sacrum, ischium (the bones on which the body rests when one is sitting), hip bones and greater trochanter of femur (the bony prominence on the top part of the thigh bone).
- Lower limbs: malleolus (the bony protuberance on both sides of the ankle), heels and shin bone (tibia)
- Head: earlobes and the back of the head (occiput)
- Torso: the tips of the shoulder blades, spine and elbows

It is also important to remember that patients can lie on their stomachs for long periods of time thus exposing areas such as the face, chest, knees,

toes and genitalia to pressure ulcers. (Soppi 2013a; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 13; Hietanen 2016.).

Figure 1 represents the most common pressure ulcer locations.

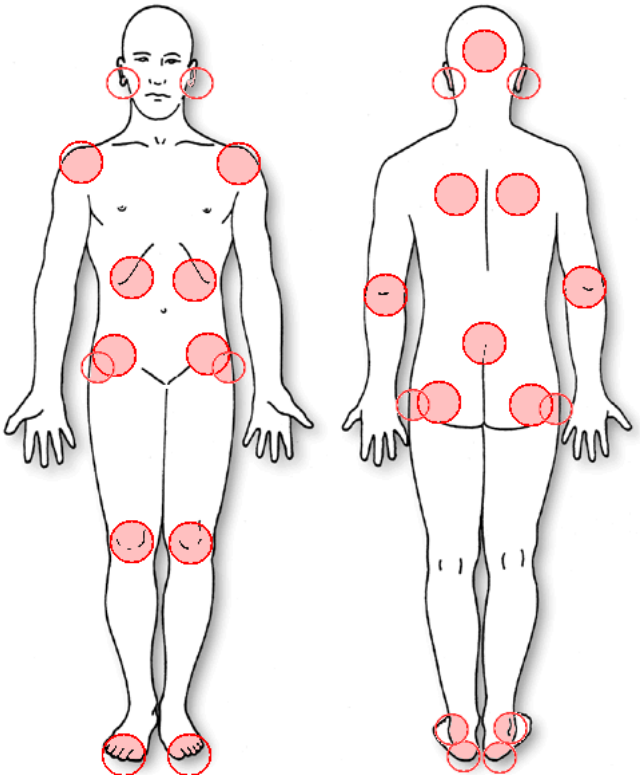

FIGURE 1. Common pressure ulcer locations (Beele, Bours, Coignez, Dealey, Defloor, De Schuijmer, Fletcher, Furtado, De Vleesschouwer, Heyman, Hietanen, Jolie, Koek, Lyder, Mauws, Quataert, Roovers, Schoonhoven, Teeuwissen, Torra-i-Bou, Tack, Vandeputte & Witherow 2007.)

4.3 Risk factors

Creating a list of pressure ulcer risk factors can be quite complex as overlapping conditions and situations combined with individual factors create innumerable amount of different scenarios. What can be said

though is that there are different internal and external risk factors that can affect pressure ulcer formation.

Age. 70 percent of patients with pressure ulcers are over 70 years old. Old age further increases pressure ulcer risk not only because of the likelihood of decreased skin elasticity and increased comorbidity but because it often affects the person's mobility and their ability to take care of oneself (incontinence, skin care, nutrition etc.). It is also important to remember that it is not only the very old that are exposed, but that also premature infants are at risk. (Soppi 2013a; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 12; Kivivuori 2015; Lyder & Ayello 2008, 3.)

Decreased mobility and comorbidity. As pressure ulcer formation has to do with pressure it is quite easy to identify compromised mobility (e.g. bed patients, patients in wheelchairs), a hard base (e.g. a hard mattress or a chair) and friction as risk factors. What also needs to be taken into consideration is that although decreased mobility and comorbidity (peripheral vascular disease, reduced mental alertness etc.) are strongly linked to old age it is not the sole reason behind them - other conditions linked to them are for example neurological conditions, malnutrition, dementia, depression, heart/kidney failure, immunodeficiency and stroke. (Kivivuori 2015; Lyder & Ayello 2008, 3; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 12; Castledine &Close 2009, according to Leaker 2013, 66 .)

Skin. It is important to also take the skin's condition into consideration, as dry but also constantly moist (due to incontinence of urine/feces, sweat, wound secretion) skin along with skin that has lost its elasticity due to normal aging process or because other reasons can increase the risk of pressure ulcers - compromised skin integrity may cause the wounds to heal slowly. Other skin-related factors that expose to pressure ulcers are e.g. smoking, numbness linked to neuropathies induced by e.g. diabetes and even long-term use of cortisone. Redness and swelling and/or pain may indicate a pressure ulcer and previous pressure ulcers are also

considered to be a risk factor. (Kivivuori 2015; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 11, 13; Lyder & Ayello 2008, 3; Castledine & Close 2009, according to Leaker 2013, 66; Soppi 2013a.).

Malnutrition. Good nutrition is essential to health and links between malnutrition, pressure ulcers and old age have been discovered. Malnutrition refers to a nutritional state where an imbalance of protein, energy and other nutrients cause detectable changes not only in body/tissue structures but also in their function; an insufficient uptake of energy and protein forces the body to use protein as energy. Insufficient nutrition may lead to impaired/prolonged wound healing. Nutrition can thus also be seen to play a role in wound healing and in fact in preventing pressure ulcers altogether. Malnutrition is listed as a risk factor for pressure ulcers also by the new nursing guideline. (Mathus-Vliegen 2004, according to Leaker 2013, 67; Johnston 2007, according to Leaker 67; Todorovic 2002, according to Leaker 2013, 67; Abbasi & Rudman 1993, according to Leaker 2013, 67; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 14.)

Medical conditions. Different acute conditions and surgical operations also increase pressure ulcer risk: changes in body temperature, immobilisation (a pressure ulcer can form in a matter of hours, e.g. during surgery or unconsciousness due to substance abuse) and possible casts etc. not to mention being a bed patient in intensive care. (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 4, 12; Kivivuori 2015.)

Medical devices. Medical devices can also predispose patients for a greater pressure ulcer risk. Such devices can be meant for stabilization (neck collars, backboards, and endotracheal tubes), oxygen and nutrition delivery masks and tubes and other monitoring devices that have wires etc. The devices themselves can cause straight pressure in the area they are in contact with for a longer period of time, especially if an edema has already developed. Patients need for monitoring and specialized care also

tells about the patient's condition: for example underlying malnutrition or low oxygen levels can, in their part, have an effect pressure ulcer formation. (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 19-20; Black, Edsberg, Baharestani, Langemo, Goldberg, McNichol, Cuddigan & the National Pressure Ulcer Advisory Panel 2011.)

Individual factors. Many individual factors also influence pressure ulcer formation: for example the ability to endure pressure created by different types and hardnesses of material our skin comes into contact with when lying down and how tissues react to the stress caused by the pressure (the amount, type and duration of the mechanical load (Soppi 2013b, 6-7).

Medication. The long-term use of some medication can affect skin properties and thus also expose for pressure ulcers; e.g. corticosteroids, that are used as anti-inflammatory and anti-allergy agents (e.g. synthetic glucocorticoids with brand names Prednison, Prednisolon and Dexamethason etc.) can make the skin very thin and fragile, almost "paper-like", especially with elderly. Strong pain medication and/or sedatives can have other, not so straightforward effects, such as effects on the patient's sense of feeling. When patients do not register the numbness and/or bad position they are unlikely to change their position as often as needed hence exposing themselves to pressure ulcers. The origin of pain should be inspected instead of just administering pain medication as local pain is often the first symptom of a forming pressure ulcer. (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 12-13; Soppi 2013b, 7; Kivivuori 2015; Duodecim lääketietokanta 2016.)

4.4 Risk assessment

In 2013, Soppi stated that a risk assessment and a thorough skin inspection should be performed on every bed patient within 24 hours of admission. In 2014, he re-stated that those assessments should in fact be done within 8 hours of admission - the new nursing guidelines agree with

the latter but recommend an assessment immediately upon arrival or 8 hours after admission at the latest as well as according to an individual care plan and when discharged or transferred (Soppi 2013b; Soppi 2014, 3038; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 11-12). The new nursing guideline (2015, 12) and Soppi (2013a) also state that a pressure ulcer risk assessment that is made using a validated risk assessment tool is more accurate than an assessment that is only based on clinical evaluation but that clinical evaluation is always necessary, despite the use of a validated risk assessment tool. The new nursing guideline further stresses that on top of other risk factors the risk assessment must include the evaluation of skin condition, mobility and activity as well as other additional health and individual factors (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 12).

4.5 Braden scale

Braden scale is a tool used for assessing patients at risk of getting pressure ulcers and towards whom nursing interventions must be made. The Braden scale was tested for reliability and published in Nursing Research already back in 1987. It then went through a larger multi-site study after which the results were published in Nursing Research in 1998. A 2002 follow-up report in Nursing Research further proved its validity in the care of different ethnic groups. To this day Braden scale is used worldwide as it is a validated risk assessment tool and it has been proven to be a better predictor of pressure ulcers than mere nursing judgment. (Prevention Plus 2016; Kauppinen 2013, 26-27.) The Braden Scale is also a part of the wound care process in ward 32 in Lahti City Hospital and it is considered to be a valuable asset by staff members in ward 32. Braden Scale is covered in this thesis because it is regularly used in ward 32; staff members would like their trainees to be familiar with its use.

The Braden scale risk assessment chart consists of six different components; sensory perception, moisture, activity, mobility, nutrition as

well as friction and shear. The idea behind the chart is to assess the patient's health on that moment thus making it a valuable tool as all patients should be assessed on arrival as well as when their situations possibly change (e.g. when a mobile person becomes bedridden during their hospital stay). Minimum score on the chart is 6, whilst maximum is 23. It is important to remember that the smaller the score, the greater the risk is; results lesser or equal to 9 points thus represent an extremely high risk, whereas a score of 18 points already indicates an existing risk. Some healthcare facilities use a modified scale but they also instruct its use accordingly. (Kauppinen 2013, 26-27.) Two versions of Braden Scale - one in English, one in Finnish - were attached to the introductory guide that was presented to ward 32 in order to further familiarize foreign students to Finnish language. The two Braden scales were omitted of the published thesis due to copyright reasons.

Regular pressure ulcer auditing is also being made on ward 32- the purpose of the auditing is to see whether sufficient measures are taken towards pressure ulcer prevention, control and treatment. The auditing applies to all of the patients on the ward at the given time, not just the ones at risk of getting pressure ulcers.

5 NURSING CONSIDERATIONS

Staff sufficiency and proper training are considered to be two core components when it comes to effective pressure ulcer prevention; pressure ulcers that could be avoided, can also form if and when staff members do not implement care properly. In other words, staff members need to be made available of recommendations and their execution because well made care plans and pressure relieving mattresses alone do not prevent pressure ulcers. (Black et al 2011; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015,12, 25.)

5.1 Basic care considerations

The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 13) and Soppi (2013b, 7) stresses the importance of acknowledging and treating the potential first signs of tissue damage - pain and possible local swelling/burning sensation. Soppi (2013b, 7) further reminds that it is important to remember that that pain manifests itself in different forms and that a patient may not be able to communicate it in other ways besides expressions or general anxiety - medicating the patient with only painkillers and/or sedatives would in these situations only lead to exacerbation of the tissue damage. Individuals at risk of developing pressure ulcers should thus be accurately identified and provided with necessary mattresses and sufficient positioning in order to prevent ulcer formation as the ulcers can develop in as little time as 2 to 6 hours. (Kivivuori 2015; Soppi 2013b, 7; Lyder & Ayello 2008, 2; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 13.)

5.2 Skin assessment and skin care

According to Castledine and Close (2009) the aging skin goes through many changes: the epidermis thins and there is a 20 percent reduction of dermis, and there is a reduced amount of blood vessels, nerve endings,

elastin fibers and collagen. All of these changes impair wound healing and predispose patients to developing chronic wounds. (Leaker 2013, 66.)

The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 12) prioritizes the assessment of skin and the underlying tissues as well as the importance of skin care because skin is the largest organ of the body. Skin intactness needs to be maintained because it protects the body from other risk factors such as microbes, chemicals and temperature changes. Regular assessment, even as often as on every repositioning, reveals any risk areas because the first visible signs of pressure ulcers manifest in the form of skin and tissue changes. The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 13) also recommends paying attention to red skin areas when assessing the skin; redness indicates that the skin has not had time to recover from trauma hence pressure on these areas should be avoided. Redness on the skin may indicate a non-blanchable erythema that is an indicator of a pressure ulcer; to check for it, the red area should be pressed for three (3) seconds to see whether the redness turns lighter or completely fades.

Good hygiene enhances skin intactness, whereas creaming on one hand nurtures dry skin and on the other protects it from excess moisture. Protective skin lotions should be used for pressure ulcer risk areas especially on patients at risk. Red skin areas, especially around bony prominences should be protected with thin wound care foams, transparent skin foil or thin hydrocolloid- or polyurethane foams. (Sihvonen, Kääriäinen & Korhonen 2014; Soppi 2013a; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 12–13.)

The new nursing guideline also emphasizes the importance of maintaining optimum skin moisture and that skin should be protected against excess moisture caused e.g. by incontinence, as it further increases the risk for pressure ulcers (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 11, 13). The use of incontinence

protection or diapers help prevent moisture on skin; it is important to remember that e.g. diuretics increase the amount of urine passed, the need for daily diaper changing etc., is thus individual. The affected skin areas should be assessed at least twice a day and also whenever changing the diapers - one must be careful not to stretch the moist skin when changing diapers etc. Possible dents from the diaper and/or its adhesives should be acknowledged as well. If the skin has been exposed to prolonged moisture and has a friction injury, a temporary indwelling urinary catheter or cystofix catheter can help improve the skin's healing. Protection with lotions and thin, self-adhesive protective skin foils might also be needed if a patient's bowel empties often and if the stools dampen the skin or even "burns" it; some stool management systems, such as anal catheter, also exist. Different medical devices/equipment (oxygen masks, monitors etc.) should also always be correctly sized and used only for as long as necessary, taking into consideration that adhesive tapes and moisture building up underneath the equipment increase the risk of pressure ulcers. The skin areas involved should be checked at least two times per day to make sure the skin is not further damaged because of the use of protective products/equipment. The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 14) also reminds that the use of protective materials and dressings does not eliminate the need for thorough and regular assessment of the skin; other preventive methods will still have to be taken. (Sihvonen, Kääriäinen & Korhonen 2014; Soppi 2013a; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 12–13, 19-20.)

5.3 Patient positioning

Soppi (2013a) states that a general recommendation of repositioning bed patients once in every two hours exists because preventing pressure is seen to be foundation of preventing pressure ulcers. But he also adds that there is no scientific evidence to back up "the two hour rule". The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan

hoitotyössä: Nursing guideline 2015, 17) states that on moderate to high risk patients no statistical difference was discovered in pressure ulcer occurrence whether the patients were repositioned every two, three or even four hours. The authors of the guideline do however recommend regular repositioning due to the fact it does help decrease the amount of pressure and its intensity especially on the risk areas of bony prominences; repositioning using the 30 degree angle seems to effectively prevent pressure ulcer incidents, but the position should only be changed if the patient's health tolerates it. Mattresses should always be selected according to pressure ulcer risk and pressure relieving mattresses should be used on patients that can not be moved as often; they should however still be repositioned, even if not that often and a minimum amount of sheets, diapers and lifting straps should be used between the patient and a pressure relieving mattress to further the benefits of its use. One of the benefits of repositioning has to do with rehabilitation; long term bedrest gradually weakens the muscles and decreases the constitution altogether, patients should thus be encouraged to shift their own position. The spontaneous repositioning of elderly patients in long-term care can for example be activated with the use of music. (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 17; Soppi 2013a; Sihvonen, Kääriäinen & Korhonen 2014.)

A patient's position should be changed so that pressure is relieved from affected areas but also so that it does not create new pressure directly to areas with bony prominences or existing redness that does not fade. Different aids (lifter, carryover plates and -fabrics, pillows, wedges) should be used for patient repositioning in order to prevent friction and stretching/abrasion; the patient should be lifted instead of dragged on the surface and the aids should be removed after repositioning unless they are meant to stay beside/under the patient. One must make sure different aids used do not cause new pressure points. It is also important to remember to use the bedpans only for as long as necessary as they too put pressure on the tissues. (Painehaavan ehkäisy ja tunnistaminen

aikuispotilaan hoitotyössä: Nursing guideline 2015, 17; Soppi 2013a; Sihvonen, Kääriäinen & Korhonen 2014.)

Half sitting position and a 90 degree side position increase the pressure in the tissues and should thus be avoided. Heels should be propped up but the aids used for support should also be under the calves. One must also avoid putting pressure on the Achilles heels. Raising the head of the bed may be essential in order to alleviate respiration or in order to prevent aspiration; the optimum angle is 30 degrees and the patient should be adequately supported in order to prevent friction and abrasion on the skin that is caused by sliding downwards on the bed. Sitting on a chair, position should be changed every 15 minutes and an appropriate sitting position should be guaranteed in order to prevent pressure build-up in particular areas alone; a patient must be able to maintain their balance, the seat height must enable a position where the patient's torso can lean back and where their thighs are below horizontal level - high knees that are bent cause additional pressure on the sacrum area. (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 17; Soppi 2013a; Sihvonen, Kääriäinen & Korhonen 2014.)

5.4 Nutrition

Nutritional issues are a considerable problem and a health risk especially with elderly and people with dementia (Kivivuori 2015). Malnutrition can be caused by a variety of reasons e.g. difficulty chewing or swallowing food, reduced sense of taste/smell, cardiac failure, respiratory problems, inflammatory illnesses, and/or even medication and it can have serious effects on an individual's health. Malnutrition can disturb organ function and thus reduce the body’s oxygen supply, disturb collagen synthesis (collagen synthesis is vital in wound healing as it helps the skin become stronger against pulling forces through cross-linking with other collagen and protein molecules) making the healing wounds more frail, increase the risk of infection through impaired immune function as well as increase damage caused by free radicals by disrupting the antioxidant activity.

(Raffoul, Far, Cayeux & Berger 2006, according to Leaker 2013, 67; Johnston 2007, according to Leaker 2013, 67; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 14-15.)

To detect malnourishment patients at risk of getting pressure ulcers the new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 14-15) recommends screening with methods such as the MUST (Malnutrition Universal Screening Tool) or the MNA (Mini Nutritional Assessment, designed especially for the elderly) because pressure ulcer risk assessment (e.g. the Braden Scale) alone does not cover the entire nutritional status. An individual nutritional plan should always documented and implemented on the patients at risk (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 14-15).

According to the new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 15) as well as Johnston (2007) and nutrition planner Jäntti (2011), in order to prevent and treat pressure ulcers, and in fact to help the wound healing process, a sufficient amount of energy, protein and certain vitamins are needed. Protein is an essential part of tissue synthesis and repair and thus a particularly important nutrient when it comes to wound healing. Wound healing consists of the formation of granulation tissue at the bottom of the wound and the contraction of the wound, both of which require protein and energy. Protein is also important because it is lost through wound secretion - this also causes collagen development to decrease and in fact delays wound healing altogether. The energy required for wound healing is largely used on collagen synthesis. (Johnston 2007, according to Leaker 2013, 67-68; Jäntti 2011.) Other important vitamins and essential minerals in skin and tissue well-being are A-, C-, E-, D-vitamin, copper, manganese, zinc, iron, calcium and vitamin K. Selenium and vitamins A, C and E can help neutralize the free radicals hence improving wound healing; free radicals are formed in ischemic tissue such as a pressure ulcer, they are unstable molecules that can damage healthy tissue. (Johnston 2007,

according to Leaker 2013, 67-68; Jäntti 2011; Todorovic 2002, according to Leaker 2013, 68.)

To advance wound healing and to prevent protein-energy malnutrition Jäntti (2011) and Johnston (2007) emphasize the importance of adequate intake of protein and carbohydrates - carbohydrates can be used as a source of energy after it is broken down to form glucose and fat is not only a source of energy, it is also plays a part in cell membrane synthesis and other cell processes (Jäntti 2011; Johnston 2007, according to Leaker 2013, 67-68).The risk group patients nutritional recommendations are in the upper limit of the normal recommendations: Jäntti (2011) refers to the EPUAP recommendation and, together with the new nursing guidelines (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 15) and Soppi (2013a), agrees that the energy intake of high risk patients should be 30-35 kcal/kg/day. The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 15) also emphasizes the increased energy demand of patients who have an infection, fever, trauma or an operation; the energy intake should be increased by 10-30 percent on these patients.

The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 16) and Soppi (2013a) recommend a slightly higher protein intake of 1.25-1.5 g/kg/day than Jäntti (1.0-1.5 g/kg/day); the new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 16) also reminds that an increased protein demand can translate up to 2 g/kg/day.

Adequate fluid intake should also be taken care of as fluids help maintain blood flow (also to the wound) and help protect the skin whereas dehydration disrupts cell metabolism and hence also affects wound healing (Brooker & Nicol 2011, according to Leaker 2013, 68; Todorovic 2002, according to Leaker 2013, 68.) Patients may lose excess fluids due to wound secretion and also due to bedding material/mattresses covered in plastic.The new nursing guideline (Painehaavan ehkäisy ja

tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 16) and the National Institute for Health and Care Excellence (2006) recommends a 30-35 ml/kg/day fluid intake in a normal situation (Leaker 2013, 68). Signs for dehydration should be monitored (high blood sodium concentration, changes in weight, fever, vomiting and other fluid loss) and additional hydration should be provided when needed (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 15-16).

The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 16) agree with Lyder & Ayello (2008, 12 -14) in recommending supplements for high risk patients; critically ill patients, who received extra oral supplements on top of regular diet have a lower risk of pressure ulcers compared to those who only got standard hospital meals (Lyder & Ayello 2008, 12-14). Soppi (2013a) agrees with giving supplements to high risk patients.

5.5 Pressure ulcer categories and nursing actions

It is also important to identify different pressure ulcer categories in order to take appropriate nursing actions. The pressure ulcer scale consists of four different stages or categories; stage I marks that there is a risk of a pressure ulcer formation whereas stage IV indicates there already is an existing severe pressure ulcer.

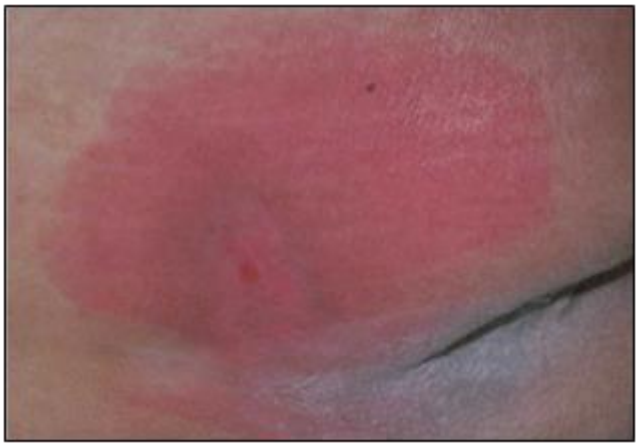

FIGURE 2. Stage I pressure ulcer (Beele et al 2007.)

Stage I, “Nonblanchable Erythema”, indicates that there is a risk of a pressure ulcer - the skin is still intact but there is visible superficial redness (erythema) that is often non-blanchable, in other words the redness does not fade, as seen in Figure 2. On a darkly pigmented skin stage I pressure ulcers may be more difficult to detect as the non-blanching redness may not be visible - the vulnerable areas should be compared to areas surrounding them in order to notice any changes in colour that may indicate pressure ulcers. Affected areas can be painful and they might be warmer or cooler than their surrounding areas. It is important to alleviate the pressure and avoid rubbing motion and friction on these areas as they can cause additional tissue damage. An authorized wound care nurse should be consulted and necessary products should be used to protect the skin. (National Pressure Ulcer Advisory Panel, European Pressure Ulcer

Advisory Panel and Pan Pacific Pressure Injury Alliance 2014, 12; Suomen Haavanhoitoyhdistys ry 2010; Soppi 2013a.)

FIGURE 3. Stage II pressure ulcer (Beele et al 2007.)

FIGURE 4. Stage II pressure ulcer (Beele et al 2007.)

Stage II, superficial skin damage that is often referred to as “Partial Thickness Skin Loss” or “Partial Thickness Loss of Dermis”. Stage II indicates more advanced damage on the dermis; dermis is the thick layer of tissue under the outer layer of the skin (epidermis) that contains structures such as blood capillaries and nerve endings. The skin damage may present itself in different forms such as a shallow open wound with a pink or red wound base without debris, as pictured in Figure 3, or a tissue fluid/blood filled blister that may either be intact or ruptured, seen in Figure

4. Stage II pressure ulcers are normally shallow wounds that do not secrete heavily and are not bruised. Bruising would indicate an injury deeper in the tissue. It is important to distinguish the difference between a Stage II pressure ulcer and other damages on the skin such as tears, burns caused by adhesive tape, dermatitis linked with incontinence and maceration (softening of the wounds' edges that is caused by excess moistness in and around the wound). It is important to consult an authorized wound care nurse and alleviate the pressure as well as to protect the skin from abrasion, moisture and infection. (National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance 2014, 12; Suomen Haavanhoitoyhdistys ry 2010; Soppi 2013a.)

FIGURE 5. Stage III pressure ulcer (Beele et al 2007.)

Stage III is commonly known as "Full Thickness Skin/Tissue loss". Stage III refers to a situation where the protective layer of skin is penetrated and the underlying, or subcutaneous, fat may also be visible - at this stage there is no tendon, muscle or bone exposure. An example of a Stage III pressure ulcer is presented in Figure 5. The depth of the wound varies depending on the location - wounds are more shallow in locations where subcutaneous tissue is absent, for example on protruding bones, the ears or on the bridge of the nose. Deeper wounds occur in areas of greater adipose, or fat, tissue, but the depth of the wound should be detectable

despite possible wound secretion; the wound might have pocket-like cavities and tunneling but as mentioned before, tendons or bones should not be visible.Consult a doctor when suspecting a stage III pressure ulcer. The pressure needs to be alleviated and the skin needs to be protected from abrasion, moisture and infection. (National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance 2014, 12; Suomen Haavanhoitoyhdistys ry 2010; Soppi 2013a.)

FIGURE 6. Stage IV pressure ulcer (Beele at al 2007.)

Stage IV, or “Full Thickness Tissue Loss”, presented in Figure 6, is the severest form pressure ulcers characterized by tissue loss that leaves tendons, muscles or even bone exposed - the ulcers can also affect the surrounding support structures (fascia, muscle etc.) hence exposing the patient to severe infection such as osteomyelitis (bone infection). As with stage III ulcers the depth of stage IV ulcers vary according to anatomical location and the amount of adipose tissue. The wounds may have pocket-like cavities and tunneling. Secretion and even tissue necrosis, or eschar (dry, dark scab) may also be present. Consult a doctor when suspecting a stage IV pressure ulcer. The pressure needs to be alleviated and the skin needs to be protected from abrasion, moisture and infection. (National

Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance 2014, 13; Suomen Haavanhoitoyhdistys ry 2010; Soppi 2013a.)

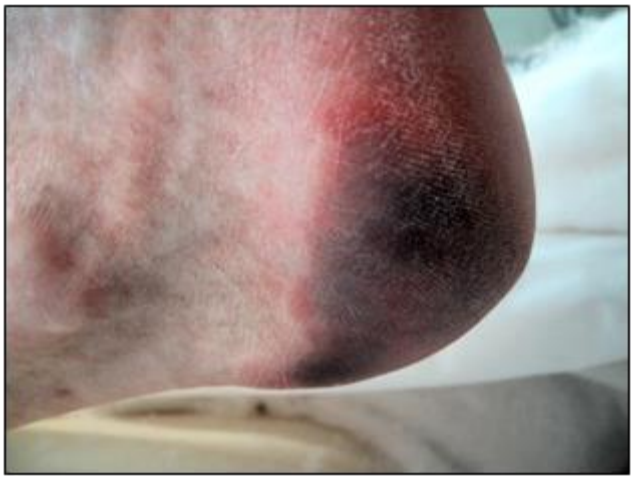

FIGURE 7. Unclassified pressure ulcer (Beele et al 2007.)

Three more additional categories can be found on top of these four categories; they refer to situations where the ulcer is either unstageable - due to e.g. secretion or eschar that prevents adequate visibility - or there is a suspicion of a deep tissue injury but the common ulcer markers are missing or the wound is caused by moisture. Figure 7 represents an unclassified pressure ulcer. Pain, temperature differences in adjoining areas, blisters or other changes on the skin as well as moisture should thus be monitored daily. Pressure and stretching the skin should be avoided on these areas and possible moisture should be treated and prevented. (National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance 2014, 13; Suomen Haavanhoitoyhdistys ry, 2010.)

5.6 Documentation

According to Ministry of Social Affairs and Health (298/2009), patient documents should feature essential, adequate information regarding the arranging, planning, implementing and monitoring of the care. The documentation should also be conducted in a clear manner using universally recognised vocabulary. The reason of admission, medical history, current status, observations, research results, problems, diagnosis, conclusions, care planning, implementation, monitoring and the final statement all need to be traceable from patient notes. Any test results and procedures as well as other incidents need to be clearly documented and hence also available for further purposes. (Liljanen, Kinnunen & Ensio 2012.)

Nursing documentation is done according to Finnish care classification, or FinCC. FinnCC consists of SHTaI (Finnish health care classifications), SHToL (Finnish nursing function classifications) and STHuL (Finnish treatment outcome classifications). SHTaL and SHToL have common hierarchic structure (component, main- and subheadings). (Liljanen, Kinnunen & Ensio 2012.) Lahti City Hospital uses the electronic patient record system Pegasos. The different entry components in Pegasos follow the FinnCC classification; pressure ulcer documentation is thus done under the main component "Tissue integrity" or "Kudoseheys" that is followed by "Chronic wound" ("Krooninen haava") main heading and again "Pressure ulcer" ("Painehaava") subheading. "Pressure wound" ("Painehaava") subheading also divides into different components such as "Pressure ulcer risk point system" ("Painehaavan riskipisteytys") under which the Braden scale scores and nursing actions that followed can be recorded. Patient positioning is documented under "Blood circulation" ("Verenkierto") main component and "Blood circulation enhancing patient positioning" ("Verenkiertoa edistävä asentohoito") subheading. Figure 8 represents FinnCC classification's "Tissue integrity" ("Kudoseheys") component (Liljanen, Kinnunen & Ensio 2012).

Pääluokka	Alaluokka
Ihon eheyden muutos	Ihorikko
	Ihon rikkoutumisen riski
	Kanyylin pistokohdan tulehdus
	Ulkoisen fiksaatiolaitteen aiheuttama ihovaurio
	Ihottuma
Limakalvon eheyden muutos	
Akuutti haava	Kirurginen haava
	Ihosiirre
	Ihonottokohta
Krooninen haava	Säärihaava
	Painehaava
	Infektoitunut haava
	Diabeettinen haava
Traumaattinen haava	Palovamma
	Paleltumavamma
Kudoseheyteen liittyvä tiedon tarve	

FIGURE 8. FinCC classification, Tissue integrity component's main- and subheading (Liljanen, Kinnunen & Ensio 2012).

The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 11) states that wound care documentation is inadequate and incoherent. A more structured documentation would help improve the monitoring of the situation and the effectiveness of the treatment and indeed help to prevent pressure ulcers altogether. The documentation should begin alongside with the actual care; that is with the pressure ulcer risk assessment along with a thorough skin check-up that should be completed within 8 hours of admission - preferably when the patient is first met. A risk assessment that is made with a validated tool e.g. the Braden Scale or the Shape Risk Scale (SRS), should also be clearly documented along with the care plan that is based on the clinical assessment; note that there are specialized risk assessment tools and recommendations on certain risk groups. One should also note that the next assessment date should be planned and written to the care plan after the initial check-up. The actual care actions taken after the risk assessment will also have to be well documented as the steps may vary depending on the results. The new nursing guideline (Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline

2015, 24) recommends the use of Care Bundle SSKIN (Surface, Skin, Keep moving, Incontinence, Nutrition) for pressure ulcer prevention as well as interventions and documentation. Figure 9 contains, in short, some of the additional points that need to be taken into consideration when completing a care plan and when doing daily documentation.

Points for the care plan

Point	What to consider
Support assessment	It is important to asses the support surface and the need for a pressure relieving mattress or other aids. All equipments should be thought through carefully.
Repositioning	When and how it was done (general recommendation is every two hours), other notifications concerning the repositioning e.g. pain.
Pain assessment	It is very important especially if the patient has trouble communicating by speech. The effects of (pain) medication should also be assessed and documented.
Skin	Treatment and observations about skin condition should be documented at least once a day or when repositioned or when diapers/bandages are changed (more often if the skin is in contact with medical devices) e.g. any changes compared to the last time it was checked, colour, hardness, swelling, temperature; the ulcers should also be photographed to follow-up with the progress.

Nutritional status	A malnourishment risk assessment, using e.g. the MNA, should be performed on every patient and the results should be taken into account. An individual nutritional plan is a part of an inclusive care plan.
Report	Pressure ulcers are considered to be a treatment injury and they need to be reported as such through the official channels such as Haipro.

FIGURE 9. Additional points for the care plan. (National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance 2014; Suomen haavanhoitoyhdistys ry 2013; Soppi 2013a; Painehaavan ehkäisy ja tunnistaminen aikuispotilaan hoitotyössä: Nursing guideline 2015, 5, 11-12, 20.)

It is very important to update the individual care plans as patients' situations change. Pressure ulcer-related vocabulary was added to the introductory guide using MOT dictionary that is available through LUAS domain. One of the purposes of the vocabulary is to help foreign students with the daily documentation.

5.7 Guidelines and recommendations

EPUAP. The "European Pressure Ulcer Advisory Panel" or EPUAP, created in 1996, started as an international collaboration whose goal was to prevent and treat pressure ulcers in Europe through education and research as well as by improving European pressure ulcer policies. EPUAP continues to pursue those goals and the guidelines it releases are widely used in Finnish health care, hence also in Lahti City Hospital and therefore referred to in this thesis. The latest update on the International Pressure Ulcer guidelines was published in 2014. It was a result of the collaboration between The European Pressure Ulcer Advisory Panel

(EPUAP) and its US counterpart (NPUAP) as well as the Pan Pacific Pressure Injury Alliance (PPPIA). The quick reference guidelines can be found in the EPUAP website in more than a dozen languages. (EPUAP 2016.)

Nursing Research Foundation. Nursing Research Foundation (Hotus) is a non-profit research and development organisation. It coordinates the development of clinical practice guidelines and develops evidence-based practises in Finland. Nursing Research Foundation website was used a source of information for this thesis because it released a new clinical guideline on Pressure ulcer prevention and identification in adult patient care in October 2015.Nursing Research Foundation also hosts two international collaboration centres on their website: The Finnish Centre for Evidence-Based Health Care and WHO Collaborating Centre for Nursing platform. The Centre again utilizes Best practise guidelines from the Joanna Briggs Institute (JBI) that is renowned from its vast international collaboration thus making the website a valuable source of current nursing information. (Nursing Research Foundation 2016.)

6 THE THESIS PROCESS

This thesis process began in spring 2015. The initial idea for this thesis arose from an interest towards wound care. The topic was then narrowed down to cover pressure ulcers with the help of the staff members in ward 32 in Lahti City Hospital.

6.1 Executing the introductory guide

The application for the research permission was submitted already in spring 2015 and soon after the head nurse of the Lahti City Hospital granted permission to cooperate with ward 32. The first meeting with staff members on ward 32 was held in spring 2015. The summer of 2015 was spent on preliminary data collection and creating the first drafts of the guide to be. The planning seminar was held in August 2015 after which a second meeting was held at ward 32. The meeting further emphasized the need to focus on the prevention and early detection of pressure ulcers. A prototype of the guide was presented on that meeting as well.

The initial aim was to complete the guide so that the thesis would be submitted by the end of 2015 but the schedules got stretched more than once due to personal reasons. Theoretical knowledge and especially new information on the topic had been sought after for quite some time by February 2016 but the lack of certain logical progress that had been missing from the project already in the planning seminar slowed the process down. Although the thesis was in need of a lot of revising a final push forward was made in March/April 2016 in order to complete the guide by late April 2016 and to submit the thesis by May 2016.

To incorporate the staff members wishes the introductory guide was presented at ward 32 in April 2016. The staff members were pleased with the outcome regardless of the stretched schedule and gave useful feedback concerning for example the vocabulary. The introductory guide was also presented to nursing students in April 2016 - data concerning the nursing students' opinions about the guide was also collected at that time

and analysed in order to further improve the content of the guide. The overall costs of this process remained under 10 euros and consisted of printing and stationery purchases.

6.2 Information retrieval

To obtain the most relevant search terms, the Finnish vocabulary and ontology site Finto (2015) was used. Through Finto both TERO - the Finnish Ontology of Health and Welfare - and MeSh - Medical Subject Headings - index term lists were checked in order to gain consistent terminology. Keyword “painehaava” in Tero-search engine provided terms such as “makuuhaava” and in English “pressure sores” and “pressure ulcers”. The MeSH search was ran with the keyword “pressure ulcer” and it, in return, provided terms such as “bedsore”, “pressure sore” as well as “painehaava” and “makuuhaava”. (Finto 2015.)

“Painehaava” and “pressure ulcer” combined with additional words such as “prevention” and “nutrition” were then primarily used when searching for evidence based information. Essential nursing search engines - Medic, PubMed, Cinahl (EBSCO) and Nice clinical guideline center along with Google scholar and Terveysportti - were used in order to obtain the latest evidence based information on the topic. The staff members on ward 32 also recommended the use of Finnish Wound Care Associations Haava-journal as a source of information. EPUAP and Nursing Research Foundation (Hotus) websites were also used as sources due to their field-specific nature; materials of EPUAP origin are also at use in ward 32.

Although pressure ulcer-related research is constantly being made, the established practises concerning the classification of existing pressure ulcers and the key mechanisms related to pressure ulcer formation have been available for years if not decades, hence an alignment concerning the theoretical part of this thesis was made to use data that was published within the last ten years. Material published prior to 2006 was thus discarded, but secondary sources older than that are likely to occur. Other criteria for successful research was a free full text available through LUAS

domain. Selected results also needed to be published or otherwise available either in Finnish or in English. Discarded results either only had an abstract available or their topics were too limited in context, for example concerning only intensive care patients. The online data collection process is presented in Figure 10. As well as online research, material that was provided by the working life partner was also utilized; matters concerning the confidentiality of using that material were taken into account.

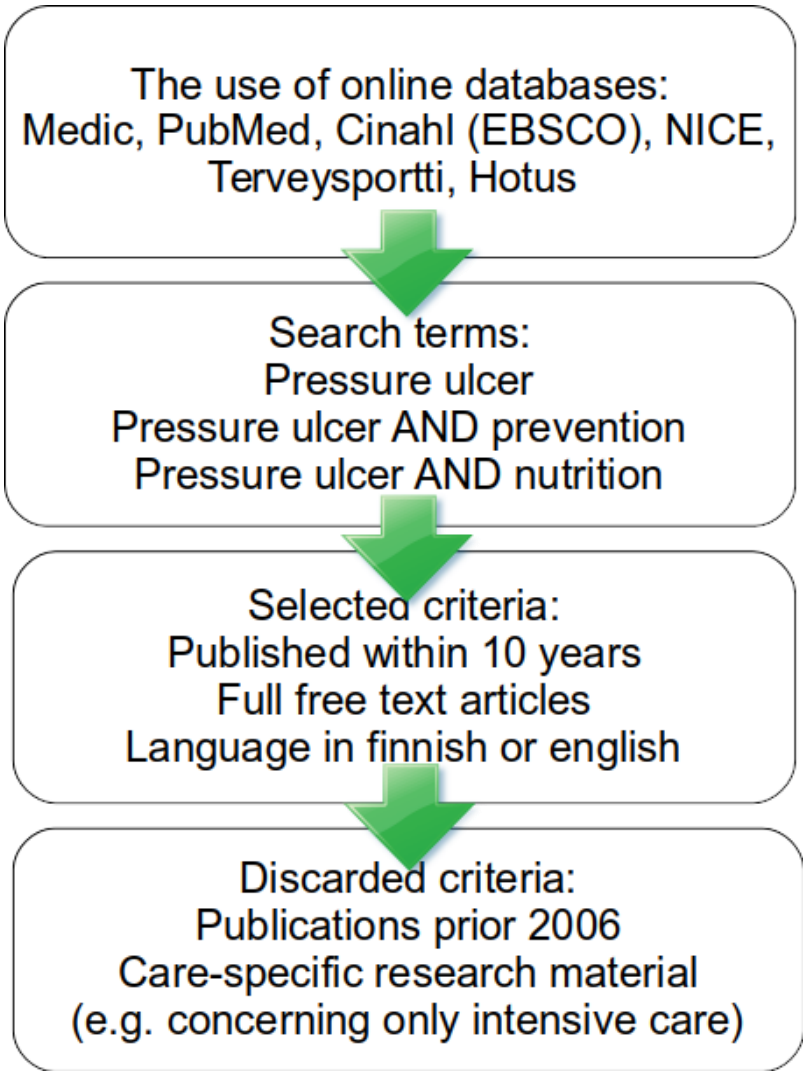

FIGURE 10. The data collection process

6.3 The staff members and nursing students' feedback of the guide

A meeting with the staff members on ward 32 was held in April 2016 to receive feedback on the introductory guide and suggestions for possible alterations. The introductory guide was sent to the nurse in charge of the project a couple days in advance of the meeting. The staff members' felt that a lot of effort had already been put into the content of the guide and that neither was there anything essential missing nor was there unnecessary information. The essential points that needed emphasizing were checked but a need for general wound care instructions was not discovered during the meeting. The staff members did request page numbers to be added in order to clarify the order after printing and brought up the need for vocabulary that was more wound specific in terms of describing them etc. The language barriers also arose within the meeting - the staff members specifically highlighted that the lack of Finnish skills leads to difficulties in essential nursing duties such as documentation and making care plans. The staff members also recommended Oppiportti when asked about additional information on wounds for students. Oppiportti contains a wide variety of nursing related material in Finnish, such as articles, lectures and videos of procedures etc. (Duodecim 2016). It is governed by Duodecim and it can be accessed through Lahti City Hospital or MastoFinna that operates under LUAS domain.

Nursing students' feedback of the introductory guide was collected at a joint tutor class held for various nursing groups in April 2016 in order to modify the guide so that it met the students' needs. The introductory guide along with a brief cover letter was published in the nursing groups' tutor platforms that are governed through LUAS; the cover letter is presented in Appendix II. A feedback enquiry was conducted in order to discover the students' need and the actual enquiry form consisted of three open-ended questions - the enquiry form is presented in Appendix III. 10 additional copies of the introductory guide, along with the question forms, were handed out at the venue along with verbal instructions in case the cover letter had not reached all of the participants.

Content analysis is a basic method used for analysing a qualitative research. The type of content analysis used to analyse the feedback enquiry was an adapted inductive analysis method, in other words it followed the basic principles - the reduction, the clustering and the abstraction of the data - but it does not meet the standards of a qualitative research as such. (Tuomi & Sarajärvi 2009, 91, 95, 108.) The given answers were first grouped under the respective questions and then highlighted with different coloured highlighters according to similar meanings. The answers that represented the most commonly occurring highlighter were considered to represent the general opinion of the students and are thus featured as the primary answer under each question.

The first question the students were asked “What do you think about the content of the introductory guide?” The students found the introductory guide to be good at the very least, the structure was considered clear, the language comprehensible and the information relevant, detailed and useful/helpful. *“Very informative and extensive.” “Contains all the important factors that should be considered.”*

The second question was “How would this introductory guide help you with your clinical training?” The majority of the students felt that the guide would help them prevent pressure ulcers because they learn how to recognize the risk factors/ high risk patients. The students also thought they were given good tips on how to care for the patients at risk. Some of the students also brought up the language barrier they had experienced in previous trainings and the usefulness of English introductory material. The vocabulary at the back was also considered helpful. *“It will help me to better understand the potential risk patients and emphasize more on prevention.” “It will prepare me for practice so that I know what to expect.”*

The third question aimed to find out how the students would improve the introductory guide. Many students found the guide be good as it is. Some requests were made for more visual information about pressure ulcers, especially images and details about other wounds compared to pressure

ulcers so that pressure ulcers would be correctly identified. Different facts and diagrams concerning e.g. the prevalence of pressure ulcers in the Lahti region and protocols concerning pressure ulcer treatment were also sought after. The layout inconsistencies and spelling errors were also commented on and page numbers and an extended vocabulary were requested. *“It’s pretty fine in my opinion. I love it.” ”The vocabulary is what the students need much more.”*

The introductory guide was further modified according to the students’ and the ward 32 staff members’ feedback in order to maximize its utility.

7 THE INTRODUCTORY GUIDE

Many healthcare facilities offer their students/trainees introductory material prior to the actual training period. By doing so, the employers introduce new staff members to the specific nursing tasks performed in specialized wards. An introductory guide was seen as an appropriate means of distributing information for students by all parties involved in this thesis process.

7.1 The layout of the introductory guide

The guide was initially designed to act like a map-like foldaway pocket version roughly the size of A3 paper. The design was discarded due to hygienic aspects that were raised on the subject by the staff members on ward 32 and because of further enquiries that were made on the actual printing and possible plastic coating requirements of such guide. That initial idea has been through quite a transformation since. The final form of the guide was decided on by comparing students past clinical training experiences and what sort of information they found to be most useful. The definitive guide will be used as an electronic introductory material sent to the students prior to their clinical training. An electronic form not only ensures an easy way of distributing the introductory guide, it also makes it easier for the working life partner to make changes to the guide in the future if necessary. Electronic introductory material that is sent to the students ahead of their training can be seen to prepare them for the upcoming training as well as the ward's needs. The introductory guide was completed in electronic form using the Word programme as it is used in most institutions and because it allows for future changes to be made. Individual pages such as the vocabulary can also still be printed out should the student find it useful during the actual training.

Some modifications were made on the layout of the introductory guide according to the feedback received from the nursing students and staff members of the ward 32. A table of contents and page numbers were

added to enhance the readability after printing. Front- and back covers were added due to visuality and practicality matters.

7.2 The content of the introductory guide

The theoretical information for this thesis was gathered using different search engines as described in the thesis process. The content of the introductory guide consists of the main elements of the gathered information that emphasizes pressure ulcer prevention and early detection.

The content of the introductory guide was modified according to the feedback received from the nursing students and staff members on ward 32 in order to maximize the guide's utility. General aspects, such as the language used in the guide as well the spelling, were revised in order to make the content more coherent and clear. Some matters, such as the importance of heel protection and matters concerning documentation that were raised by the staff members on ward 32, were further emphasized within the text in order to lead the students to particularly acknowledge their importance. Some pictures were also rearranged although new ones were not added due to the extent of the introductory guide. The vocabulary was also extended to cover wound related expressions and common phrases used in documentation.

The order of content in the definitive introductory guide was dictated by the actual thesis. The content first focuses on pressure ulcers, their etiology and risk factors, then covers prevention and early detection and looks through different nursing actions - skin assessment and skin care, patient positioning and nutrition. The pressure ulcer categories are presented before matters concerning documentation whereas the final pages are dedicated to vocabulary and common phrases used in documentation. Two versions of the Braden scale were also attached to the complete introductory guide that was presented to ward 32.

8 THE EVALUATION OF THE THESIS

Many thesis concerning pressure ulcers have previously been made - literary reviews and instructions in Finnish - but not one thesis with a similar aim to this one was discovered through online research preceding the thesis process. This thesis can thus be seen to be relevant, not only because there is a demand for guidance material especially for the international students but also because of the possible cost- and workload reducing aspects. The subject is being made more visible as new information and new research is available on this topic - awareness of an important topic allows one to put more effort into it.

8.1 Reaching the goals set for the thesis

Quality usually refers to the product's ability to meet customers' needs or requirements, or the equivalence of the objectives and results of operations. Patient safety is a key dimension of quality; it is integrated into the organization and decision-making as part of everyday activities. Patient safety is realized through different practices and tools. Good quality health care uses resources in the best ways possible - safely, without wasting, in high quality and by having treatment/preventive measures meet the health needs. In health care, good quality requires the management and the entire staff to commit to common goals, as well as seamless cooperation between the various operational units. (Kuntaliitto 2011.)

The purpose of this thesis is to provide Lahti City Hospital with a comprehensible introductory guide in English on pressure ulcer prevention and early detection. The aim of the guide is to emphasize the importance of pressure ulcer prevention and early detection in a distinct manner as well as to provide students and employees information on pressure ulcers. In conclusion of the feedback received from the staff members on ward 32 and the nursing students the goals of this thesis can be seen to be accomplished. The guide was considered to contain relevant information on pressure ulcer prevention and early detection and the facts were

presented in a clear, understandable manner. The students also felt that the guide would help them be better prepared for the clinical training and that they had a better understanding of how to prevent pressure ulcers in the actual working environment.

The feedback suggests that the introductory guide meets the customer's needs for the most parts and it can thus be seen to be of good quality. The introductory guide is seen to help the students/trainees prepare themselves for the training and to provide the students with practical tips on pressure ulcer prevention and early detection - pressure ulcer prevention and early detection is found not only demanding by the staff members but also an essential part of nursing work in ward 32. The prevention and early detection of pressure ulcers may also help reduce patients suffering, nursing workload and even care costs. The introductory guide can thus also help realize patient safety in its own part. Written in English, the guide can also be seen to promote multicultural collaboration and thus help further improve the quality of care.

8.2 The ethicality and reliability of the thesis

The purpose of ethical guidance is to give competence in how to act in moral situations, in other words to help make a distinction between “right and wrong”. The commitment to the ethical code of conduct in nursing starts during the social- and health care studies and becomes stronger in working life - it is referred to as the professional ethics. As work-based, commonly agreed norms can be hard to come by, emphasis is being put on the importance of constant development and assessment. (Sosiaalialan korkeakoulutettujen ammattijärjestö Talentia ry.)

According to Finnish Advisory Board on Research Integrity (Tutkimuseettinen neuvottelukunta 2012) “*in order for research to be ethically acceptable and reliable and for its results to be credible, the research must be conducted according to the responsible conduct of research.*” Every university and universities of applied sciences, in all their graduate and postgraduate programmes, are responsible for teaching

research integrity and how to conduct a research. All students and every individual in a group is from then onward responsible of their actions and that they follow the given rules. It is important to be careful and accurate throughout the thesis process - in recording, presenting and evaluating. Ethical guidelines were followed during this thesis process. The authors of this thesis have cited the work of other authors appropriately and thus also respected their work. The necessary documents and permits were acquired for the thesis and the data protection legislation was also taken into consideration, in matters concerning the use of material provided by a third party as well as the handling of the consent form signed by participants in the enquiry. The introductory guide can also be seen to promote patient safety, thus increasing its ethical value.

According to Pirkko Anttila (2016), *"a qualitative research is primarily evaluated from the perspective of validity but also through its reliability".* Validity refers to the research keeping within its subject, whereas reliability refers to the repeatability of the results, or in other words the reliability of the analysis and processing of the data (Tuomi & Sarajärvi 2009, 136). In order to improve the reliability of this thesis search engines and other sources of information known to be reliable were used for the collection of the theoretical data, data as recent as possible was applied and as a whole, the topic of the thesis was methodically kept. The goals of this thesis were met well and this thesis can thus be seen to be valid. However, as the method used for analysing the feedback enguiry represented an adapted content analysis method rather than a qualitative research the results can only be seen as suggestive - the reliability of this thesis is hence also diminished.

8.3 Discussion

During this thesis process the authors of this thesis discovered that although they may not always proceed to do damage, pressure ulcers occur in a large number of patients in Finland every year. Pressure ulcers do not only cause a lot of suffering but they are also one of the top ten

most expensive conditions to treat – 530 million euros in care costs every year in Finland alone. All this when, quite incredibly, most of the pressure ulcers could be prevented. It is difficult to imagine why more effort is not being put towards pressure ulcer prevention yet, but as legal actions concerning pressure ulcers in e.g. the United States have resulted in a situation where pressure ulcer prevention is now considered to be more of a nursing obligation rather than a guideline. The reason for that remarkable change in the U.S. was most probably due to the fact that the insurance companies ceased to compensate for pressure ulcer related claims after 90 percent of the claims made concerning pressure ulcers that originated in care institutions were resolved in favor of the plaintiff. The legal actions concerning pressure ulcers have not yet peaked in Finland - between 2010 and 2014 30 - 50 incidents were reported by patients, out of which roughly one in four were compensated. The reason behind the dissimilarities may lie in the different health care systems in Finland and the U.S. – now that the health insurances do not cover pressure ulcer related costs patients are forced to sue the nursing homes and hospitals in order to cover the treatment costs, whereas in Finland individual patients do not have to rely on a private insurances because health care costs along with follow-up care are largely covered through the The National Health Insurance scheme that is a part of the Finnish social security system. It may, however, only be a matter of time when the lawsuit phenomenon can be seen in Finland also. Pressure ulcers are, after all, considered to be a treatment injury and should be reported as such through the official channels such as Haipro. (Soppi 2010, 261 - 268; Soppi 2013a; Soppi 2014, 3038; Sipponen 2016.)

The importance of pressure ulcer prevention is further emphasized by the aging population – more and more patients are in danger of becoming bedridden and the amount of care staff is not on the rise by the looks of it. Perhaps the difficulty in preventing pressure ulcers lies in the diversity of underlying risk factors and lack of routines, e.g. on admission. What makes the matter confusing is that some patient get ulcers easily, some do not seem to get them at all although the nursing actions might be the

same – the pressure ulcers also often begun forming in the first care facility, thus emphasizing the importance of early detection in follow-up care. Also, settling on a single nursing action, such as completing a risk assessment using a validated tool or assessing the patient clinically, may also give nurses a false sense of sufficiency when it comes to performing their duties. The different tools should however be used alongside clinical assessment as the tools alone cannot tell when the patient's condition changes – the tools also disregard some factors that can be crucial to the patient's wellbeing e.g. cachexia, the loss of body mass (Sipponen 2016).

When taking about pressure ulcer prevention and early detection, one should consider the holistic view of things, as in nursing in general. In short, pressure ulcer prevention consists of: early intervention, as ulcers can start to form in 30 to 45 minutes, minimizing the pressure, pain and friction, taking care of the skin and the possible ulcer and taking the nutritional aspects into consideration. There is not one without the other - if one element is defective, it affects the whole situation. (Sipponen 2016.)

This thesis project did not proceed as planned – the initial idea was modified, the topic narrowed down further along the way and the schedules were optimistic yet unachievable due to personal variables. Granted, a certain logic was also missing in the beginning of this process but meetings with the ward and the tutor teacher brought the undertaking back on track. The general atmosphere on completion is that the end result is something all parties involved can be pleased with and that students can benefit from the guide during their future clinical trainings. After all, the aim from the authors view was to do something useful.

9 SUGGESTIONS FOR FURTHER DEVELOPMENT

The staff members on ward 32 brought up not only the need for more guidance material in English but also the international students' difficulties in documentation as well in drawing up and updating individual care plans. All students would undoubtedly benefit from a framework that would assist with the assembly of care plans (FinCC care classification is briefly studied in LUAS but the benefits of it are probably slight at best it as it only exists in Finnish). The international students especially would benefit from rehearsing the common phrases used in patient documentation as it is often quite different from the spoken language and varies according to the author – *"Haava-alue on punainen, haava erittää paljon kudosnestettä/The wound area is red, the wound secretes a lot of tissue fluid"* versus *"Haava-alue punainen, kudosnestettä erittyy paljon/Wound area red, tissue fluid is being excreted in large quantities"*.

The students were keen to learn more about the differences between pressure ulcers and other, similar looking wounds – clearly they would like to know how to tell the two apart in order to proceed accordingly. They also suggested that more research should be done in order to find out the reasons behind pressure ulcer formation, as the etiology is not yet entirely known. The students would also like to see more pictures about the different stages of pressure ulcers as well as get material about the pressure ulcer treatment and information about the regional occurrence of pressure ulcers.

Due to past experience and clinical trainings the authors of this thesis also feel that students do benefit from field specific information, especially when it is provided in advance as the first weeks of clinical training can be quite hectic. Surprisingly often the students do not know what is expected from them, in their studies, or during clinical training, so getting sufficient guidance on achieving goals and improving necessary clinical skills is crucial. The language aspect and communication all round between students and their mentors/colleagues is naturally also something that can never be emphasized enough as it can hinder professional development.

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APPENDICES

APPENDIX I: Introductory guide

|

PRESSURE ULCER

Prevention and early detection

CONTENT

Pressure ulcers

Pressure ulcers (PU) are a very common form of tissue damage - they can develop when an area of skin and tissues is being exposed to pressure; either a large amount of pressure over a short period of time or a small amount of pressure over a longer time period. **The bony areas of the body are at a particular risk**.

PUs:

- are painful.
- cause suffering.
- increase the patient's' vulnerability to infections.
- reduce the quality of life.
- are difficult and expensive to treat (up to 530 million euros expense in Finland annually, prevention would cost 10 % of that amount!)
- expose patients to sepsis.
- increase the risk of death.

The importance of pressure ulcer **prevention and early detection** **cannot be overemphasized.**

Risk assessment and evaluating the patient's overall situation is part of **basic care**.

Risk assessment needs to be done:

- Within 8 hours of admission.
- According to an individual care plan.
- When discharged or transferred.
- Using a validated risk assessment tool (e.g. Braden Scale) as it is more accurate than an assessment that is only based on clinical evaluation.
- Clinical evaluation is also **always** necessary.

Up to **60%** of all PUs go unnoticed **until a proper examination is performed** and sometimes other wounds, caused by e.g. incontinence, are mistaken for PUs.

Preventing PUs requires **recognizing the patients at risk** and **removing/minimizing the pressure and stretching forces** on the bony areas of the body.

Etiology

The pathophysiology of PUs is not yet entirely understood - what is known is that pressure affects the tissues in complex ways. PUs are caused by either pressure alone or pressure combined with friction and/or stretching/shearing forces.

Without efficient interventions:

→ the blood flow of the skin and underlying tissues gets disturbed.

→ the tissues are deprived of oxygen and nutrients they begin to break down.

→ the breakdown of tissue leads to ulcer formation.

→ ischemia (lack of oxygen) provokes pain, swelling and inflammation on the surrounding tissues.

Remember that

- The skin can endure more pressure than muscle and fat tissues and that is why the actual damage that has already occurred in the tissues under the skin may not be immediately visible to the naked eye.
- **The first visible sign of a PU is often a redness** on the skin that doesn't fade.

Common pressure ulcer locations

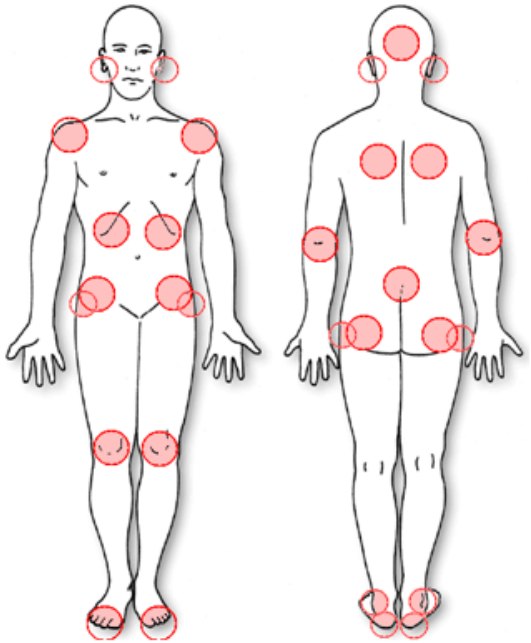
PUs generally occur in areas of bony prominence.

•Pelvic area: sacrum, ischium (sitting bones), hip bones and greater trochanter of femur (the top part of the thigh bone).

•Lower limbs: malleolus (on both sides of the ankle), heels and shin bone (tibia)

•Head: earlobes and the back of the head (occiput)

•Torso: the tips of the shoulder blades, spine and elbows



Remember that patients can lie on their stomachs for long periods of time thus exposing areas such as the face, chest, knees, toes and genitalia to PUs.

Most common risk factors

Age: 70% of patients with PUs are **over 70 years old**. Reasons include decreased skin elasticity, increased comorbidity, mobility and the ability to take care of oneself (incontinence, skin care, nutrition etc.)

Decreased mobility and comorbidity: Compromised mobility (e.g. bed patients, patients in wheelchairs), a hard base (e.g. a hard mattress or a chair) and friction are risk factors.

Note that decreased mobility and comorbidity (peripheral vascular disease, reduced mental alertness etc.) is **not only linked to age** - other linked conditions are e.g. neurological conditions, malnutrition, dementia, depression, heart/kidney failure, immunodeficiency and stroke.

Skin: compromised skin integrity can increase the risk of PUs and may cause the wounds to heal slowly. Risks:

- Dry or constantly moist skin (due to incontinence of urine/feces, sweat, wound secretion).
- Skin that has lost its elasticity.
- Smoking.
- Numbness linked to neuropathies induced by e.g. diabetes.
- Long-term use of some medication e.g. cortisone.
- Previous pressure ulcers.

The **origin of pain should be inspected** instead of just administering pain medication as local pain is often the first symptom of a forming PU.

Malnutrition: an imbalance of protein, energy and other nutrients cause detectable changes in body/tissue structures and in their function which can lead to impaired/prolonged wound healing.

Medical conditions: acute conditions and surgical operations increase PU risk: changes in body temperature, possible casts etc. and immobilization (a PU can form in a matter of hours, e.g. during surgery or unconsciousness due to substance abuse).

Medical devices: e.g. as neck collars, backboards, endotracheal tubes, oxygen and nutrition delivery masks and tubes and other monitoring devices that have wires etc. can cause straight pressure in the area they are in contact with.

Individual factors: e.g. the ability to endure pressure created by different types and hardness's of material skin comes into contact with when lying down. Also how the tissues react to the stress caused by the pressure (the amount, type and duration of the mechanical load).

Medication: e.g. the long term use of cortisone that is used as anti-inflammatory and anti-allergy agents (e.g. brand names Prednison, Prednisolon and Dexamethason etc.) can affect skin properties and thus also expose for PUs. Strong pain medication and/or sedatives can affect the patient's sense of feeling → if the patient does not feel the numbness and/or bad position they won't change the position as often as needed.

PRESSURE ULCER PREVENTION AND EARLY DETECTION

- Acknowledge and treat the potential first signs of tissue damage - pain and possible local swelling/burning sensation.
- Remember that that **pain manifests itself in different forms** and that a patient may not be able to communicate it in other ways besides expressions or general anxiety - medicating the patient with only painkillers and/or sedatives can lead to exacerbation of the tissue damage.
- Individuals at risk of developing pressure ulcers should be accurately identified and provided with necessary mattresses and sufficient positioning in order to prevent ulcer formation as the **ulcers can develop in as little time as 2 to 6 hours.**
- Remember that **well-made care plans and pressure relieving mattresses alone do not prevent PUs** - PUs that could be avoided, can also form if and when staff members do not implement care properly.

Learn how to use the Braden Scale **before your training starts!**

Braden scale

- Is a tool used for assessing patients at risk of getting PUs and towards whom nursing interventions must be made.
- Has been proven to be a better predictor of PUs than mere nursing judgment.
- Consists of six different components; sensory perception, moisture, activity, mobility, nutrition as well as friction and shear.
- Minimum score on the chart is 6, whilst maximum is 23.

→ **The smaller the score, the greater the risk** is; 9 points or less represents an extremely high risk.

Remember that **all patients** should be assessed on arrival as well as when their situations possibly change (e.g. when a mobile person becomes bedridden during their hospital stay).

Note that certain risk groups have specialized risk assessment tools and recommendations.

!! Two versions of Braden Scale - one in English, one in Finnish - are attached at the end.

Skin assessment and skin care

Skin is the largest organ of the body. It protects the body from other risk factors such as microbes, chemicals and temperature changes → aim to maintain skin intactness.

Aging skin goes through many changes: the epidermis thins and there is a 20% reduction of dermis, and a reduced amount of blood vessels, nerve endings, elastin fibers and collagen → these changes impair wound healing and predispose patients to developing chronic wounds.

Regular assessment reveals any risk areas - **first visible signs of PUs are skin and tissue changes**. Also remember to assess the pain.

Redness:

- Indicates that the skin has not had time to recover from trauma - avoid pressure on these areas.
- May indicate a non-blanchable erythema that is an indicator of a PU; to check for it, press the red area for three (3) seconds to see whether the redness fades.

Assess the affected skin areas **at least twice a day** and also whenever changing the diapers - be careful not to stretch the moist skin when changing diapers etc. Possible dents from the diaper and/or its adhesives should be acknowledged as well.

Stage I PUs are poorly recognized!!

Remember that the use of protective materials and dressings **does not eliminate the need for thorough and regular assessment of the skin**; other preventive methods will still have to be taken!

Good hygiene enhances skin intactness - creaming can nurture dry skin as well as protect it from excess moisture. Thin wound care foams, transparent skin foil or thin hydrocolloid- or polyurethane foams can be used to protect red skin areas.

Maintain optimum skin moisture and protect the skin against excess moisture. Moisture caused e.g. by incontinence or frequent bowel movements increases the risk for PUs; use incontinence protection or diapers, consider e.g. a urinary catheter if the skin has been exposed to prolonged moisture and has a friction injury. Use protective skin products.

Correctly sized medical devices/equipment (oxygen masks, monitors etc.) are important and should also always be used only for as long as necessary - adhesive tapes and moisture building up underneath the equipment increase the risk of PUs.

Patient positioning

Reposition bed patients once in every two hours - repositioning is also rehabilitation, patients should thus be encouraged to shift their own position.

Reposition patients using the 30 degree angle - as it seems to effectively prevent PU incidents.

Select mattresses according to pressure ulcer risk - remember that patients on pressure relieving mattresses still need to be repositioned. Keep the amount of sheets, diapers and lifting straps to a minimum between the patient and a pressure relieving mattress.

Use different aids (lifter, carryover plates and -fabrics, pillows, wedges) when repositioning in order to prevent friction and stretching/abrasion. Lift instead of dragging and remove aids after repositioning unless they are meant to stay beside/under the patient.

Remember to reposition so that pressure is relieved from affected areas but also **so that it does not create new pressure**, especially directly to areas with bony prominences or existing redness that does not fade.

Make sure different aids used **do not** cause new pressure points.

Use the bedpans **only for as long as necessary** as they too put pressure on the tissues.

Heels in particular are at risk! Protect the heels with "relief slippers" ("kevennystossu") or other aids or prop the heels up but put support also under the calves. Avoid putting pressure on the Achilles heels. Pay attention to the bed settings, lower the foot of the bed to relieve pressure.

Avoid half sitting position and a 90 degree side position as they increase the pressure in the tissues.

Support the patient adequately when raising the head of the bed (to prevent friction and abrasion on the skin that is caused by sliding downwards on the bed) - the optimum angle is 30 degrees.

Sitting on a chair, position should be changed every 15 minutes. Secure an appropriate position; height must enable a position where the patient's torso can lean back and where their thighs are below horizontal level - high knees that are bent cause additional pressure on the sacrum area.

Nutrition

Remember that **malnutrition is a PU risk factor**, use screening methods such as the **MUST** (Malnutrition Universal Screening Tool) or the **MNA** (Mini Nutritional Assessment) to detect patients at risk because PU risk assessment (e.g. the Braden Scale) alone does not cover the entire nutritional status.

Nutritional issues are a considerable problem and a health risk especially with elderly and people with dementia.

Malnutrition can be caused by e.g.:

- Difficulty chewing or swallowing food
- Reduced sense of taste/smell
- Cardiac failure
- Respiratory problems
- Inflammatory illnesses
- Medication

A sufficient amount of energy, protein and certain vitamins are needed **to prevent and treat PUs**. Wound healing consists of the formation of granulation tissue at the bottom of the wound and the contraction of the wound, both of which require protein and energy.

Malnutrition can

- Effects on an individual's' health.
- Disturb organ function and thus reduce the body's oxygen supply.
- Disturb collagen synthesis making the healing wounds more frail (collagen synthesis is vital in wound healing as it helps. the skin become stronger against pulling forces through cross-linking with other. collagen and protein molecules).
- Increase the risk of infection through impaired immune function.
- Increase damage caused by free radicals by disrupting the antioxidant activity.

An individual nutritional plan should always **documented** and **implemented** on the patients at risk.

Energy:

- The energy required for wound healing is largely used on collagen synthesis.
- The energy intake of high risk patients should be 30-35 kcal/kg/day.
- Patients who have an infection, fever, trauma or an operation have a 10-30% increased demand of energy.

Fat is a source of energy but it is also plays a part in cell membrane synthesis and other cell processes.

Protein:

- Is an essential part of tissue synthesis and repair and thus a particularly important nutrient when it comes to wound healing.
- Is lost through wound secretion - this also causes collagen development to decrease and in fact delays wound healing altogether.
- Recommended protein intake is 1.25-1.5 g/kg/day → up to 2 g/kg/day.

Other important vitamins and essential minerals in skin and tissue well-being are: A-, C-, E-, D-vitamin, copper, manganese, zinc, iron, calcium and vitamin K. Selenium and vitamins A, C and E can help neutralize the free radicals (unstable molecules that can damage healthy tissue).

Fluids:

- Help maintain blood flow (also to the wound).
- Help protect the skin whereas dehydration disrupts cell metabolism and hence also affects wound healing.
- May be lost through wound secretion and also due to bedding material/mattresses covered in plastic.
- Recommendation in a normal situation is 30-35 ml/kg/day fluid intake in a normal situation.

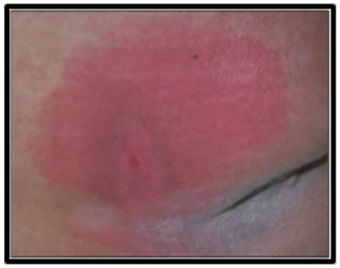
Carbohydrates can be used as a source of energy after it is broken down to form glucose.

Signs for dehydration:

- High blood sodium concentration.
- Changes in weight.
- Fever.
- Vomiting and other fluid loss.

Give nutritional supplements to high risk patients!

Pressure ulcer categories and nursing actions



Stage I, "Nonblanchable Erythema", **indicates that there is a risk of a pressure ulcer - the skin is still intact but there is visible superficial redness** (erythema) **that does not fade.** Affected areas can be painful and they might be warmer or cooler than their surrounding areas.

Alleviate the pressure and avoid rubbing motion and friction. Consult an authorized wound care nurse and use necessary products to protect the skin.

Stage II, superficial skin damage that is often referred to as "Partial Thickness Skin Loss" or "Partial Thickness Loss of Dermis" **indicates more advanced damage on the dermis;** dermis is the thick layer of tissue under the outer layer of the skin (epidermis) that contains structures such as blood capillaries and nerve endings. **Stage II pressure ulcers are normally shallow wounds or intact/ruptured blistering that do not secrete heavily and are not bruised**. (Bruising indicates an injury deeper in the tissue.)

Distinguish the difference between a Stage II pressure ulcer and other damages on the skin such as tears, burns caused by adhesive tape, dermatitis linked with incontinence and maceration. Consult an authorized wound care nurse, alleviate the pressure and protect the skin from abrasion, moisture and infection.

Stage III is commonly known as "Full Thickness Skin/Tissue loss". Stage III refers to a situation where **the protective layer of skin is penetrated and the underlying, or subcutaneous, fat may also be visible** - at this stage there is **no tendon, muscle or bone exposure** despite of pocket-like cavities and tunneling. The depth of the wound should be detectable despite possible wound secretion.

Consult a doctor. Alleviate the pressure and protect the skin from abrasion, moisture and infection.

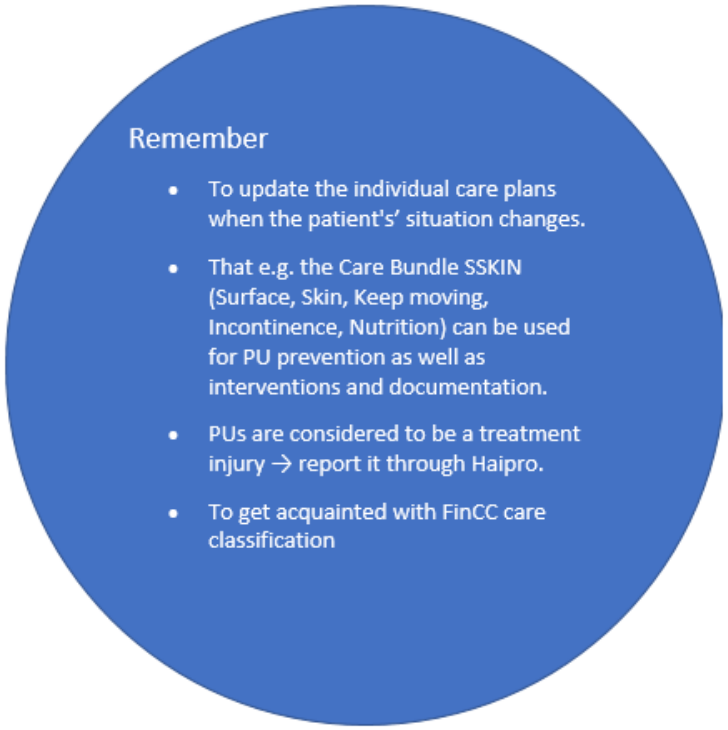
Stage IV, or "Full Thickness Tissue Loss" is the severest form pressure ulcers characterized by **tissue loss that leaves tendons, muscles or even bone exposed** - the ulcers can also affect the surrounding support structures (fascia, muscle etc.) hence exposing the patient to severe infection such as osteomyelitis (bone infection). The depth may vary according to anatomical location and the amount of adipose tissue. Secretion and even tissue necrosis, or eschar (dry, dark scab) may also be present.

Consult a doctor. Alleviate the pressure and protect the skin from abrasion, moisture and infection.

Documentation

Structured documentation helps:

- Improve the monitoring of the patient's situation.
- Monitoring the effectiveness of the treatment.
- To prevent PUs altogether.



When completing a care plan and on doing daily documentation **remember to include**:

- **Risk assessment**, along with a thorough skin assessment and clinical evaluation + next assessment date.
- **Care plan** that is based on the clinical assessment.
- **Support surfaces** and the use of additional equipment/staff; e.g. the need of a pressure relieving mattress or other aids.
- **Repositioning**: when and how it was done (general recommendation is every two hours), other notifications concerning the repositioning e.g. pain.
- **Pain assessment** and pain medication, **especially** if the patient has trouble communicating by speech. The effects of medication should also be assessed and documented.
- **Skin**: care and observations about skin condition should be documented at least once a day or when repositioned or diapers/bandages are changed (more often if the skin is in contact with medical devices) e.g. any changes compared to the last time it was checked, color, hardness, swelling, temperature; the ulcers should also be photographed to follow-up with the progress.
- **Nutritional status**; a malnourishment risk assessment, using e.g. the MNA, should be made to every patient and the results should be taken into account. An individual nutritional plan is a part of an inclusive care plan.

VOCABULARY

Abrasion - Hankaus, hiertyminen, hiertymä

Acute wound - Akuutti haava

Aid – Apuväline

Bedridden patient - Vuodepotilas

Bleeding has stopped - Vuoto on tyrehtynyt

Bleeding wound - Vuotava haava

Chronic wound - Krooninen haava

Colonized wound - Kolonisoitunut haava

Contaminated wound - Kontaminoitunut/likainen haava

Deep wound - Syvä haava

Dermis - Verinahka, dermis

Debridement – Vieraan aineen/kuolleen kudoksen poistaminen haavasta

Documentation - Kirjaaminen

Earlobe - Korvanipukka

Elbow - Kyynärpää

Epidermis - Orvaskesi

Friction - Hankaus, kitka

Gangrene, necrosis – Kuolio (lit. dead), nekroosi

Gauze - Sideharso

Granulation tissue - Granulaatiokudos

Group at risk – Riskiryhmä

Heel - Kantapää

Hip Bone - Lonkkaluu

Infection - Tulehdus

Ischium - Istuinluu

Maceration – Maseroitunut

Malleolus - Kehräsluu

NaCl 0,9% - Keittosuolaliuos

Negative pressure wound therapy - Alipaineimuhoito

Nutrition - Ravitsemus

Pink - Vaaleanpunainen

Pressure – Paine

Pressure ulcer - Painehaava

Pressure relieving mattress – Vaihtuvapaineinen patja (lit. painetta lievittävä patja)

Prevention – Ehkäisy

Red - Punainen

Repositioning - Asentohoito

Revision - Revidointi

Risk assessment – Riskiarvio

Running water - Juokseva vesi

Sacrum - Ristiluu

Secretion - Erite

Shallow wound - Pinnallinen haava

Shin bone (Tibia) - Sääriluu

Shoulder blades - Lapaluu

Skin - Iho

Spine - Selkäranka

Sterilized water - Steriili vesi, aqua

Subcutaneous tissue - Ihonalainen kudos

Support surface - Alusta

Supplement – Lisäravinne

The back of the head (Occiput) - Takaraivo

Tissue damage - Kudosvaurio

Treatment - Hoito

Wheelchair – Pyörätuoli

White - Valkoinen

Wound dressing - Haavasidos

Yellow - Keltainen

COMMON PHRASES used in documenting

A red area the size of a palm in the sacrum area. - Sacrumin alueella kämmenen kokoinen punoittava alue.

The reddness can't be pressed away. - Punoitus ei ole painettavissa pois.

Mepilex border sacrum dressing placed to protect the sacrum. - Sacrumin suojaksi laitettu Mepilex border sacrum haavasidos.

Heel's wound area clean, no secretion. - Kantapään haava-alue siisti, ei eritystä.

Wound secretes heavily (blood/tissue fluid), wound cleaned with..., sucking dressings changed and bandaged. - Haava erittää runsaasti (verta/kudosnestettä), haava putsattu..., imevät taitokset vaihdettu ja sidottu.

A blister/beginning skin tear on the heel. - Kantapäässä rakkula/alkava ihorikko.

Left hip has a 5cm long infected wound, wound surrounding red and is warm, patient feverish (lit. has heat). - Vasemmassa lonkassa 5cm pitkä tulehtunut haava, haavan ympärys punoittaa ja on lämmin, potilaalla lämpöä.

The wound has tissue debris/secretes heavily. - Haava on katteinen/erittää runsaasti.

Wound debris cleaned mechanically. - Haavakate puhdistettu mekaanisesti.

Wound cleaned with saline, dressings changed. - Haava puhdistettu keittosuolalla, sidokset vaihdettu.

Left heel/sacrum area extremely sore. - Vasen kantapää/sacrumin alue erittäin kipeä.

Both heels painful and sensitive to touch. - Molemmat kantapäät kipeät ja kosketusarat.

Dents on the back/back dents easily. - Selässä painaumia/selkä painuu herkästi.

Granulation tissue at the bottom of the wound bed. - Haavapohjassa granulaatiokudosta.

Wound area (has) turned necrotic. - Haava-alue mennyt kuolioon.

Skin creamed/oiled entirely. - Iho rasvattu/öljytty kauttaaltaan.

Position changed on left/right side. - Asentoa vaihdettu vasemmalle/oikealle kyljelle.

Nutritional status poor, eats assisted. - Ravitsemustila heikko, syö avustettuna.

(The patient) moved from the bed to the wheelchair with the nurses help. - Hoitajan avustamana siirtynyt sängystä pyörätuoliin.

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LAHTI

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APPENDIX II: Cover letter

COVER LETTER

We are making an introductory guide in English as part of our thesis. The guide is about pressure ulcer prevention to ward 32 in Lahti City Hospital and we would like to get some feedback about it.

The thesis' aim is to promote pressure ulcer prevention and to provide English language material for international students who can use it in their clinical trainings. The introductory guide can also be used by international staff who are in need of support in their language skills and pressure wound prevention methods.

The main idea is to get the gist about what are pressure ulcers, its risk factors, prevention methods etc. and with a small vocabulary to support the learning in clinical training.

We'd like you to have a look at a sample of our introductory guide in advance and provide your opinion - compliments and criticisms and all in Siikaniemi, where you will be provided with a proper answer form.

Thank you! :)

Best regards Jenni & Heidi, NUR13

APPENDIX III Enqyiry form template and consent form

YOUR OPINION OF THE PRESSURE ULCER PREVENTION INTRODUCTORY GUIDE

1. What do you think about the content of the introductory guide?

2. How would this introductory guide help you with your clinical training?

3. How would you improve the introductory guide?

AGREEMENT
I understand that my participation is voluntary, I have the right to deny to take apart to this questionnaire. All the gathered data is confidential and access to the data are only with the persons making this thesis. I have got, read and understood the briefing given in advance. I hereby approve the use of these answers as a part of the aforementioned thesis.

Date:
Place:
Signature:
Print name