NSG 1204 Professional Studies 2: Law and Ethics: Assessment 3: PART B of programmatic assessment with NSG1201

| Criteria | HIGH DISTINCTION 80-100 | DISTINCTION 70-79 | CREDIT 60-69 | PASS 50-59 | FAIL <50 | GRADE |
|---|---|---|---|---|---|---|
| **Identify the legal responsibilities and obligations of the Registered Nurse relevant to the case study.**<br>**Learning outcomes (LO) 2** | Detailed and comprehensive identification and description of the legal responsibilities and obligations relevant to the scenario. Evidence-based literature seamlessly incorporated into discussion.<br>8-10 | Clear and accurate identification and description of the legal responsibilities and obligations relevant to the scenario. Evidence-based literature supports discussion<br>7 | Mostly clear identification and description of the legal responsibilities and obligations relevant to the scenario.<br>Most of the discussion supported with evidence-based literature.<br>6 | Basic identification and description of the legal responsibilities and obligations relevant to the scenario. Some of discussion supported with evidence-based literature but omission noticeable.<br>5 | No identification and description of the legal responsibilities and obligations relevant to the scenario. No evidence-based literature incorporated into discussion.<br><5 | /10 |
| **Predict the possible legal outcomes of nursing actions relevant to the scenario.**<br>**LO 2, 3** | Demonstrates an excellent understanding of the possible legal outcomes related to different nursing actions. Evidence-based literature seamlessly incorporated into discussion.<br>8-10 | Demonstrates a clear understanding of the legal outcome related to different nursing actions. Evidence-based literature supports discussion.<br>7 | Demonstrates a general understanding of the possible legal outcome related to different nursing actions. Most of the discussion supported with evidence-based literature.<br>6 | Demonstrates a basic understanding of the possible legal outcome related to different nursing actions but needs further clarity. Some of discussion supported with evidence-based literature but omission noticeable.<br>5 | Inadequate understanding or prediction of legal outcome related to different nursing actions. No evidence-based literature incorporated into discussion.<br><5 | /10 |
| **Determine the ethical considerations and obligations of the registered nurse (RN) and how these differ from legal responsibilities, related to the case study**<br>**LO 4, 5, 6** | Demonstrates a detailed and comprehensive understanding of ethical concepts and principles. Insightful discussion of ethical considerations and obligations of the RN. Evidence-based literature seamlessly incorporated into discussion<br>8-10 | Demonstrates a clear understanding of ethical concepts and principles. Ethical considerations and obligations of the RN clearly discussed. Evidence-based literature supports discussion<br>7 | Ethical concepts and principles discussed demonstrating some understanding. Ethical considerations and obligations of the RN discussed however further depth would benefit. Most of discussion supported with evidence-based literature.<br>6 | Ethical concepts and principles discussed but needs further clarification or writing not succinct. Ethical considerations and obligations of the RN discussed but needs further clarification Some of discussion supported with evidence-based literature but omission noticeable.<br>5 | There is little or no discussion of ethical concepts and principles. Ethical considerations and obligations of the RN not discussed, or discussions unsupported by literature<br><5 | /10 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Reflect on how personal and professional values and beliefs might influence their nursing practice in relation to the case study**<br>**LO 6, 7** | Excellent and insightful reflection on personal and professional values, as relevant to nursing practice.<br>5 | Clear reflection on personal and professional values, as related to nursing practice.<br>4 | Reflection on personal and professional values as related to nursing practice is discussed at basic level.<br>3 | Reflection on personal and professional values needs further clarification or writing not succinct, or poorly related to nursing practice.<br>2.5 | There is little or no reflection on personal and professional values or reflection(s) not linked to nursing practice.<br><2.5 | /5 |
| **Academic writing**<br>**Expected standard of literacy: Essay formatted using size 12 Arial font and submitted in word document. Word count is 1000words +/- 10%**<br>**Correct spelling, grammar and syntax.**<br>**Minimum of 7 references used that are current (within 7 years). Cited using APA 7th Ed. Guidelines.** | High standard of academic literacy. No issues with syntax or grammar. Work is the required length. Comprehensively cites all data obtained from current evidence-based resources. APA 7th style is utilised both in text & reference list – no errors evident.<br>5 | Writing is consistent with academic writing. Minor issues with syntax & grammar Work is the required length. Clearly cites from current evidence-based resources using APA 7th style. Minimal omissions are noted in-text or reference list.<br>4 | Submission mostly well presented. There are minor spelling and/ or grammatical errors. Work is either slightly long or brief.<br>Cites data obtained from evidence-based resources, references are current and referenced in APA 7th style, but omissions are noticeable in-text or in the reference list.<br>3 | Paper adequately presented although a substantial number of syntax & grammatical errors. Work is noticeably too long or too brief.<br>Data inadequately cited. Some sources are unclear & not referenced in. APA 7th style. Some references are outdated or inappropriate.<br>Suggest seeking support from learning skills centre.<br>2.5 | Data not cited, sources unclear, references outdated & not referenced in APA 7th style.<br>It is strongly advised to seek support from Learning Skills Centre.<br><2.5 | /5 |
| | | | | | | **Total**<br>/40 |

# Rehabilitation Nursing in the Elderly with Mobility Deficit Due to Fracture of the Femur

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# Rehabilitation Nursing in the elderly with mobility deficit due to fracture of the femur

Maria João Soares[1], Rogério Ferrinho Ferreira[2][0000-0001-5180-2036], Alexandra Alcobia[1], João Vitor Vieira[2][0000-0002-3905-4802], César Fonseca[3][000-0002-5528-3154]

[1] Centro Hospitalar de Setúbal, Setúbal, Portugal
[2]Instituto Politécnico de Beja, Beja, Portugal
[3] Universidade de Évora, Évora, Portugal

**Abstract:** The Portuguese population is becoming increasingly aged, so all the changes concerning this process led to an increase of the risk of falling. The reduced mobility after undergoing a surgical process led to the development and implementation of a rehabilitation nursing programme especially directed to the elderly suffering from femur fracture. The specialist nurse's skills were developed through the implementation and evaluation of a plan of intervention using evaluation instruments depending on the identified focus and diagnosis. The intervention programme had as a result a functional improvement of the elderly people lives concerning mobility, balance, muscular strength and range of movement, allowing them to become more independent on their daily life activities as well. Through a specialized intervention, the rehabilitation nurse helps elderly patients to achieve health gains after having suffered from reduced mobility due to a femur fracture.

**Keywords:** Rehabilitation Nursing, Elderly; Femur fracture

## Introduction

For the United Nations Population Fund (UNFPA), population aging has a major and far-reaching implication in all areas of society and is a significant 21st century trend. It is a growing phenomenon that cannot be ignored. The increasing trend in the number of elderly people has been aggravated, and by 2050 the population over 60 is expected to reach 20% [1]. According to the World Health Organization (WHO), the population over 60 years old increases faster than any age group [2]. Portugal, like the other countries of the European Union, has witnessed striking demographic changes in society, with the rapid and sharp increase in the elderly population associated with longevity in which the birth rate cannot keep up with this increase in the aging population. In 2015, the population aged 65 and over represented over one fifth of the Portuguese population [3].

Aging is associated with a complex set of changes. Biological and physiological changes lead to an increased risk of developing pathologies, as well as a general decline in their physical and intellectual abilities. Aging is considered a dynamic and progressive process characterized by morphological, functional, biochemical and psychological changes that determine the gradual loss of adaptability to the environment. Hence, there is a greater vulnerability and higher incidence of pathological processes, with decreased functional capacity. Functional capacity decreases and dependence gradually increases as one

gets older. These are some of the biggest aging-related health adversities. These lead to restriction / loss of ability or difficulty / inability to perform daily life activities [4]. Diseases arising from the aging process, such as changes in vision, hearing, movement, neurological diseases associated with poly-medication, can alter the balance leading to falls, as well as risky behaviors inside / outside the house [5].

In Europe, approximately 105,000 people die each year from accidents of which 85,000 are unintentional, with falls being the leading cause of injury or even death in people over 65. One in twenty falls results in fractures, the most frequent being fractures of the femoral neck, wrist, humerus or pelvis [5]. Bone fractures interfere or may interfere with mobility in various ways [6]. Deficit in physical mobility related to the disease / trauma or as a result of the aging process has consequences on human physiology at the level of the various organ systems, the musculoskeletal system being the most affected due to decreased muscle contraction, loss of strength and muscle mass, contractures and osteoporosis [7].

Rehabilitation is aimed at restoring functionality in the shortest possible time and is conceptualized as a multidisciplinary process consisting of specific procedures and knowledge that help people with disabilities or their sequelae to maximize their functional potential and independence, and therefore the Rehabilitation Nursing Specialist Nurse (EEER) designs, implements and monitors rehabilitation nursing plans based on people's problems in order to promote health, prevent complications, treat and rehabilitate, maximizing their potential [8][9].

Therapeutic interventions for mobility and self-care are the fundamental core of rehabilitation nursing practice [10] and, therefore, the foundations of intervention in elderly patients with mobility deficit due to femur fracture and / or undergoing femoral fracture surgery are mobility and self-care. The EEER has a major role in the rehabilitation of the elderly with this problem, considering its intervention as fundamental in the preoperative, postoperative periods and in the continuity of the rehabilitation program at home. The EEER intervention is based on the rehabilitation of these people, maximizing their potential through the implementation of functional rehabilitation programs and self-care training, where teaching and training are evident. Respiratory Functional Reeducation and Motor Functional Reeducation programs are fundamental to help restore the functional capacity of the elderly prior to the fracture, in order to obtain health gain [11].

Preoperative and postoperative respiratory functional rehabilitation of the elderly undergoing surgery aims to prevent and correct postural changes and ventilatory defects that may result from surgery, maintain airway permeability, and re-educate the person on exertion [12], depending on its effectiveness from the early institution of the program and the person's adherence. Motor functional reeducation is based on therapeutic exercises. The therapeutic exercise consists in the planned and systematic accomplishment of body and postural movements, aiming to prevent / reduce deficits, risk factors, improving functional limitations. There are several therapeutic exercises aimed at reducing deficit and predominantly improving range of motion, strength and balance [13][14].

The mobility deficit due to the surgical process led to the development and implementation of a rehabilitation nursing intervention program aimed at the elderly with femur fracture. The preoperative program or the first 24 postoperative hours involves the following:

1. Evaluation activities: assessment of MMSE (Mini-Mental State Examination), muscle strength (Lower Scale), joint amplitudes (Goniometry), balance (Berg Scale), functional independence (Barthel Index) and of pain.
2. Teaching and training of respiratory functional rehabilitation exercises (awareness of breathing and dissociation of breathing times, diaphragmatic abdominal breathing and cough).
3. Teaching and training of motor functional rehabilitation exercises (Table 1)

Table 1. Preoperative motor functional rehabilitation program

| | |
|---|---|
| **Isometric Exercises** | • Isometric contraction of the abdominal, gluteus and quadriceps muscles (10 repetitions, 5-10 seconds each repetition, twice a day); |
| **Isotonic Exercises** | • Upper limbs and unaffected lower limb: free / assisted / resisted active mobilization of unaffected limbs;<br>• If, fractured lower limb: active-assisted or passive mobilization of the tibia-tarsal joint with dorsiflexion and plantar flexion (5 repetitions twice a day);<br>• If, operated limb: active-assisted or passive mobilization of the tibia-tarsal joint with dorsiflexion and plantar flexion, active-assisted mobilization of flexion / extension of the hip joint with flexion / extension of the knee and abduction / adduction of the hip joint to the midline of the hip. body (5 repetitions twice a day); |
| **Teaching of:** | • Positions in the bed / sit in the chair / sit in the toilet (movements and positions to avoid in the total hip prosthesis);<br>• Transfer bed / wheelchair, wheelchair / bed;<br>• Walking with a walker and crutches;<br>• Wheelchair care and fall prevention in a hospital setting. |

The postoperative rehabilitation nursing program involves the following activities:

1. Assessment of muscle strength (Lower Scale), joint amplitudes (Goniometry), balance (Berg Scale), functional independence (Barthel Index) and pain.
2. Strengthening and training of respiratory functional rehabilitation exercises, involving breathing awareness and dissociation of breathing times, diaphragmatic abdominal breathing and cough.
3. Reinforcement and training of motor functional rehabilitation exercises, as defined in Table.

Table 2. Postoperative motor functional rehabilitation program

| | |
|---|---|
| **Isometric Exercises** | • Isometric contraction of the abdominal, gluteus and quadriceps muscles (10 repetitions, 5-10 seconds each repetition, twice a day); |
| **Isotonic Exercises** | • Upper limbs and unaffected lower limb: free / resisted active mobilization of unaffected limbs;<br>• Affected / operated limb: free active mobilization of the tibia-tarsal joint with dorsiflexion and plantar flexion, passive or active assisted |

| | |
|---|---|
| | mobilization of flexion / extension of the hip joint with flexion / extension of the knee and abduction / adduction of the hip joint to the midline of the body (5 repetitions twice a day);<br>• Trapezius lumbopelvic extension (5 repetitions twice a day). |
| **Reinforcement and/or teaching of:** | • Bed positions;<br>• Lift technique: the first lift should take into account the specifics of the surgery, in addition to concerns with the stockings, hemodynamic stability and balance;<br>• Transfer bed / wheelchair, wheelchair / bed;<br>• Walker and crutch walking (taking into account balance, strength, type of load);<br>• Daily Life Activities (AVD's) [transfer, clothing (dressing / undressing), chocking, bathing (washing / drying), getting in and out of the bathtub, positioning, getting in / out of the car, going up / down stairs];<br>• Guidelines for the discharge to the person and family / caregiver about ADLs, assistive products according to the specific needs and housing conditions of the household, as well as prevention of falling at home. |

In view of the above and assuming that femoral fractures in the elderly cause high mobility deficits, with repercussions on their functional independence and that the nurse specialist in rehabilitation nursing can play a decisive role in the rehabilitation of the person, through an evaluation process and reeducation, which involves a set of therapeutic rehabilitation exercises for the person, we defined as the central question for this study: "What are the gains of providing rehabilitation nursing care to the elderly with mobility deficit due to femur fracture?".

We believe that the results of this study, which aims to identify the gains of nursing care for people with mobility deficits, resulting from the implementation of a rehabilitation nursing program, constitute an important contribution to the reflection on this issue and the relevance of the intervention. Rehabilitation Nursing, aiming at the implementation of interventions adjusted to the care needs of each person.

## Methodology

This pilot study has a descriptive and cross-sectional approach. It was conducted between September and November 2018 and involved elderly people with mobility deficit due to femur fracture, admitted to the orthopedics service of a hospital in southern Portugal.

The inclusion criteria defined for sample selection were: people over 65 years old and diagnosed with femur fracture. An accidental sample consisting of ten people who met the inclusion criteria in a target population involving a total of 45 patients was used.

The exclusion criterion used was the Mini-Mental State Examination (MMSE), to assess cognitive status. Of the 45 people to whom the scale was applied, 35 people were excluded because they had cognitive impairment, and the final sample consisted of ten people. The selected sample was exposed to the purpose of the study and given informed consent. This was duly signed in compliance with ethical principles for research.

The observation and application of the previously defined measurement scales took into consideration the study variables. The measurement instruments used in the study were: Mini-Mental State Examination (MMSE), Berg Balance Scale (BSE), Lower Scale, Goniometry and Barthel Index. Figure 1 represents the flowchart of the relationship between the foci and the measurement instruments used in the study.

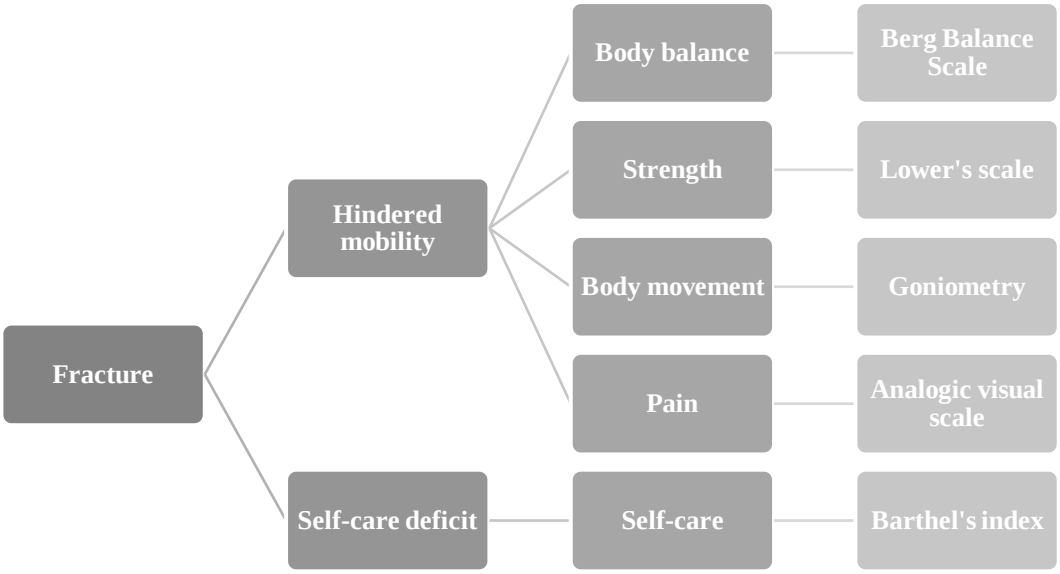


Figure 1. Flowchart of relationship between foci and measuring instruments

## Results

In order to respond to the proposed objectives, we will initially present the characterization data of the subjects and then the results that allow us to identify the gains of rehabilitation nursing care for people with mobility deficits. In these, the two evaluation moments are taken into account, the first evaluation (T0) corresponding to the first lift and the second assessment (T1) corresponding to the discharge of patients operated for femoral fracture.

The ten (10) elderly people who participated in the sample underwent femoral fracture surgery and will be identified by the letters: A, B, C, D, E, F, G, H, I and J.

Sample Characterization

Table 3 allows us to verify that the sample is mainly composed of elderly women (60%), with an average age of 79.1 years and in which 70.0% are 75 years old or over, having the majority of people (60%) only the 1st cycle of schooling. Most people (60%) had only the first cycle of education. Most of the subjects suffered femoral neck fracture (40%) and trochanteric fracture (40%) and underwent surgery with pin placement (50%) and total hip prosthesis (30%).

The dependence of these people before the fall was provided by themselves and according to them it was concluded that 20% were dependent on caregivers and the remaining 80% were independent. The 20% who were dependent lived in the Home and used walking aids (cane and walker or wheelchair). Of the 80% independent, 10% used walking aids (walking stick). At discharge, 90% returned to their initial residence with a difference of 10% to the institution defined by their families. Of the most common personal history, 60% had hypertension, 30% had stroke, 20% had vertigo syndrome, and 10% had Parkinson's disease. All patients presented as a reason for fracture the fall in which 90% happened inside the homes and 10% abroad.

Table 3. Sample Characterization

| | |
|---|---|
| **Gender** | Male: 4 (40.0 %)<br>Female: 6 (60.0 %) |
| **Age** | 65-69 years: 3 (30.0 %)<br>70-74 years: 0 (0.0 %)<br>75-79 years: 3 (30.0 %)<br>≥ 80 years: 4 (40.0%) |
| **Schooling** | 1º Cycle: 6 (60.0 %)<br>2º Cycle: 2 (20.0 %)<br>3º Cycle: 2 (20.0 %) |
| **Fracture** | Femoral neck: 4 (40.0 %)<br>Trochanteric: 4 (40.0 %)<br>Sub-trochanteric: 1 (10.0 %)<br>Femoral condyle: 1 (10.0 %) |
| **Surgery** | Total Hip Prosthesis: 3 (30.0 %)<br>Hip Partial Prosthesis:1 (10.0 %)<br>Peg: 5 (50.0 %)<br>DHS: 0 (0 %)<br>Screws: 1 (10.0 %) |
| **Walking aid** | Walking stick: 2 (20.0%)<br>Walker / Wheelchair: 1 (10.0%) |

| | |
|---|---|
| | Without walking aid: 7 (70,0%) |
| **Place of residence prior to hospitalization** | Institution: 2 (20.0%)<br>Home: 8 (80.0%) |
| **Place of Residence after hospitalization** | Institution: 3 (30.0%)<br>Home: 7 (70.0%) |
| **Dependence before hospitalization** | Dependent: 2 (20.0%)<br>Independent: 8 (80.0%) |
| **Common priors** | HTA: 6 (60.0%)<br>CVA: 3 (30.0%)<br>Vertiginous Syndrome: 2 (20.0%)<br>Parkinson's disease: 1 (10.0%) |
| **Reason of Fracture** | Fall: 10 (100.0%) |
| **Fall location** | Inside the house: 9 (90.0%)<br>Outside the house: 1 (10.0%) |

**Hindered mobility**

Regarding pain, at T0, all patients had “average pain” and at T1 all patients had “mild pain”.

The average assessment of lower limb muscle strength operated at T0 is 3/5 and the average assessment at T1 is 4/5. The muscle strength of a patient's operated limb (“H”) was not evaluated because the patient had cruro-podalic plaster splint on the limb.

The flexing hip joint amplitude (ROM) was evaluated with the flexing knee with a minimum of 0 degrees and a maximum of 125 degrees. At T0 assessment, ROM ranges from 75 to 90 degrees with an average of 83 and at T1 assessment, ROM ranges from 90 to 105 with an average of 93. One patient's ROM (“H”) was not assessed because knee joint flexion due to presence of cruro-podalic plaster splint in the operated limb.

Regarding balance and risk of falling, in the T0 assessment the total BSE values range from 1 to 12 values, with an average of 4.9. At T1 evaluation the final BSE values range from 10 to 35 values with an average of 21.4.

Using Barthel’s Index, mobility was assessed at two moments and it was found that at T0 evaluation, 1 of the patients was assessed as immobile and the remaining 9 as wheelchair independent with an average of 4.5. At T1 evaluation, 5 of the patients were dependent on verbal or physical walking aid and the remaining 5 independent on walking, and the use of walking aids was possible, with an average of 12.5.

**Self-care deficit**

In order to verify the EEER care gains, the results of functional independence of the elderly operated on the femur fracture are presented using Barthel's Index in Table 4. In the T0 evaluation, 8 of the patients are moderately dependent on the performance of the ADLs. if 2 are severely dependent. The average value of the final Barthel's Index at T0 is 42.5 and the standard deviation 6.02. At T1 evaluation, 2 of the patients are moderately dependent and 8 are slightly dependent. The average final value of the Barthel's Index is 73.5 and the standard deviation 15.10.

Table 4. Functional independence values of elderly operated on femoral fracture

| Functional independence of the elderly (Barthel's index) | T0 | | T1 | |
|---|---|---|---|---|
| | n.º | % | n.º | % |
| Fully dependent (< 20) | 0 | 0 | 0 | 0 |
| Severely dependent (20-35) | 2 | 20 | 0 | 0 |
| Moderately dependent (40-55) | 8 | 80 | 2 | 20 |
| Slightly dependent (60-90) | 0 | 0 | 8 | 80 |
| Independent (> 90-100) | 0 | 0 | 0 | 0 |

## Discussion

The aging process associated with chronic diseases and environmental factors contribute to the occurrence of falls in the elderly, predisposing them to musculoskeletal disorders, such as lower limb trauma [15]. The most prevalent chronic disease in this sample is hypertension [15]. Similar to other studies, the cause for the largest number of hospitalizations in the elderly is the fall, with less than 1 meter in height (91.9%) and of the patients admitted by fall, 50.6% had femoral fracture [16]. The fall is the main reason for femur fracture [17].

This data corroborates the findings of other studies [15] [16], and it was found that of the elderly who underwent surgery for lower limb trauma, there was a higher prevalence of women and an average age greater than 75 years. The type of fracture in this study did not differ from other studies [16] [17], with upper femoral fractures (80%) being more frequent than sub-trochanteric fractures (10%).

Regarding the mobility focus, there was an improvement in the balancing ability expressed in the increase of the average between evaluations and a gain of 16.5 points in the Berg equilibrium scale (BSE). Considering a score below 45 in BSE with higher risk of falling, the value evident in T0 indicates risk of falling, and despite its increase in T1, it remains below the cutoff point 45. There was an improvement in balance and decreased risk. However, this risk is still present at the clinical discharge of the participants in this study, similar to the study by Asplin and colleagues [18], who found in their comparison study between a group that received rehabilitation intervention and a group of In the control group that received conventional intervention, most patients in both groups had BSE values below the cut-off point at fall, which decreased after one month. Although these ten participants maintained risk and

balance deficit with values below the cutoff point stipulated in T1, the performance of the rehabilitation nursing expert improved and improved health for the patient in these factors.

The findings of this study in relation to body balance are in line with those of other studies [18] [19], where it was found that the intervention groups, which received rehabilitation care, had fewer falls compared to the control group. (conventional intervention) and comparing the two groups, it was found that the intervention groups had a lower risk of falling than the control groups, decreasing in both [18], with improved balance in the intervention group compared with the control group [19]. It should be noted that in a systematic literature review study [20] on the effectiveness of balance training in people with femoral fracture, it was found that balance training leads to an improvement in overall physical function, to an increase in lower limb strength and improved performance of ADLs. In several studies, improved mobility is associated with improved balance [19], lower risk of falling [18], fewer falls [18] [19] and improved walking / walking [18][21].

Regarding pain intensity in the postoperative period of femur fracture, there was an improvement in T0 for T1, with pain relief, where in T0 pain intensity is considered as “moderate pain” and in T1 as “mild pain”. ”, Similarly to other studies [22], the specialized rehabilitation nursing intervention involving the active and assisted mobilization of the operated limb hip joint were decisive in reducing pain and improving muscle strength [23].

In this study, mobility was also assessed using Barthel’s Index presenting an average of 4.5 in T0 and 12.5 in T1. This increase in the average from T0 to T1 evaluation indicated an improvement in mobility. Specialized nursing rehabilitation care was crucial for this improvement in mobility, control and gait efficiency [24], with repercussions on its functional independence.

The results obtained in the evaluation of the participants' functional independence showed that in the T0 evaluation, 80% of the participants are moderately dependent on the performance of ADLs and the remaining 20% severely dependent. After implementation of the EEER intervention plan, most of the elderly were discharged with slight dependence (80%) and the remaining 20% with moderate dependence. At discharge, participants are dependent on performing ADLs, but there is a substantial improvement in their dependence on performing ADLs, as demonstrated by the interpretation of mean values at T0 and T1. The average at T0 is 42.5 which correspond to a moderate dependence and at T1 of 73.5 which corresponds to a slight dependence. The 20% of participants with moderate dependence corresponded to institutionalized patients, who according to their own presented this level of dependence before the fall. The remaining 80% were, according to their own independents, in performing the ADLs. Most of these independent pre-fracture people achieve the same level of post-fracture independence [21].

It should be noted that the data from this study are corroborated by other studies [25], which highlight a decrease in Barthel’s index, comparing the pre-fall index with the post-fall index. The average Barthel’s Index score is found to be moderately dependent and therefore a high percentage of postoperative persons are dependent on caregivers.

The compromise of mobility and disability in self-care are interrelated. Similar to another study [26], which compares the existence of mobility limitations (balance and gait speed) with disability in the elderly population, it is found that balance limitations are associated with a higher probability of developing deficit or inability to perform ADLs.

## Conclusion

The early intervention of the rehabilitation nurse is an important foundation in empowering patients' autonomy in the face of their biopsychosocial changes, as well as their family / caregiver. Considering the central objective of this study, the functional independence of the elderly with mobility deficit due to femur fracture was improved and instruments that allowed the evaluation of the rehabilitation nurse's interventions were used for its implementation. The results obtained from this evaluation confirm that the care provided by this specialist nurse contributes to health gains with a clear improvement in the functional independence of elderly people with mobility deficit due to femur fracture.

The consistency of the results obtained is considered insufficient due to the small number of study participants and the type of study, with limitation of the time period, as well as the high vulnerability of the patients.

The importance of conducting further studies on this subject over a longer period of time is confirmed, as well as the need for a larger sample, in order to evaluate and validate the intervention of the rehabilitation nurse in improving the care provided to the elderly patient with mobility deficit due to femur fracture, in a hospital context and also in a community context. It is essential that after hospitalization, there is a scenario of care for the elderly with mobility deficit due to femur fracture and / or undergoing orthopedic surgery, in their community context that allows them to ensure a properly structured rehabilitation process. This implies the need for an organized health system for the health needs of the elderly and their families, capable of responding to the multiple situations of illness and problems and ensuring a continuum of organized, integrated and articulated care between themselves. . In this process of transition from person to community, we assume that the rehabilitation nurse is a structuring element in the recovery and integration of health care. We also consider that in this process of continuity of care, the skills of this specialist are crucial in the management of elderly care with this issue and in supporting informal caregivers and other professionals involved in elderly care in their social context.

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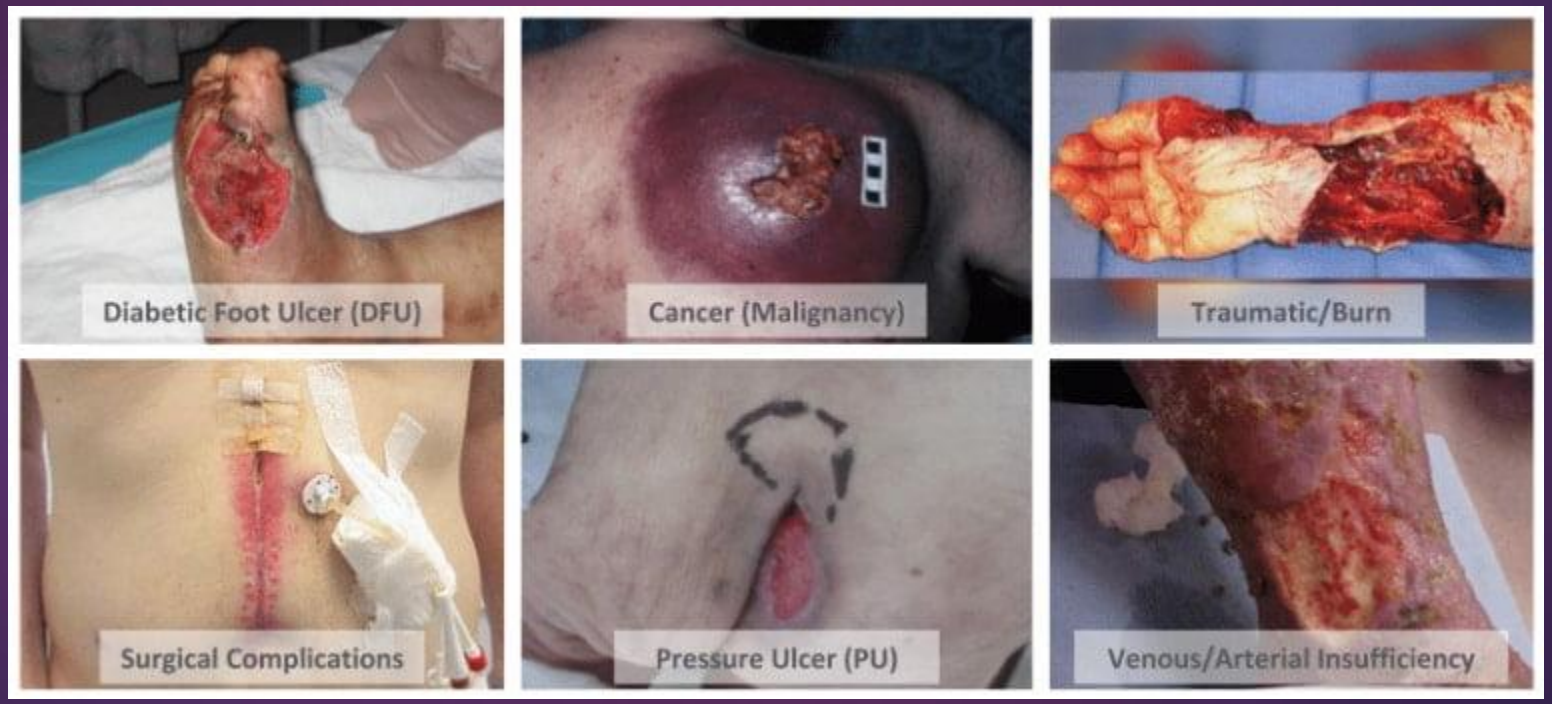
# NSG1201 Foundations of care

## Wounds(Part 2) – Acute v chronic

CHRISTINE STANDLEY

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# Acute Wounds

## Healing Time

- Usually within 7-14 days as they generally follow the normal wound-healing trajectory without complications. Can take up to 6 weeks.

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## Acute

Traumatic wounds

- Burns; chemical, electrical, radiation, thermal
- Laceration/skin tear
- Penetrating trauma; explosion, bites , gunshot wound, puncture
- Surgical cuts; deep/superficial
- Blunt trauma; contusion, avulsion, traction, crush

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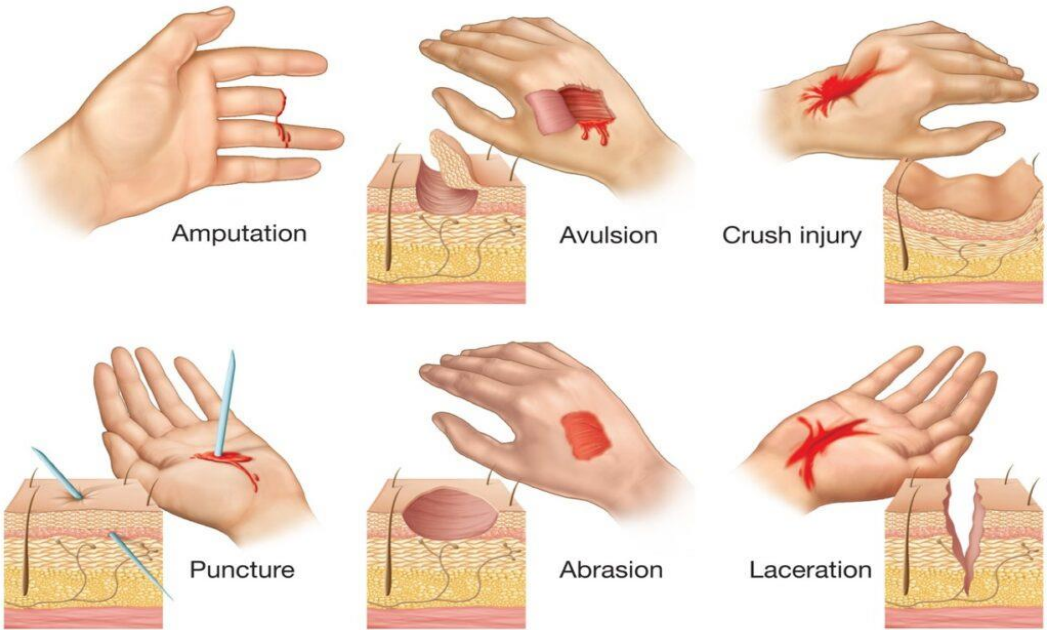


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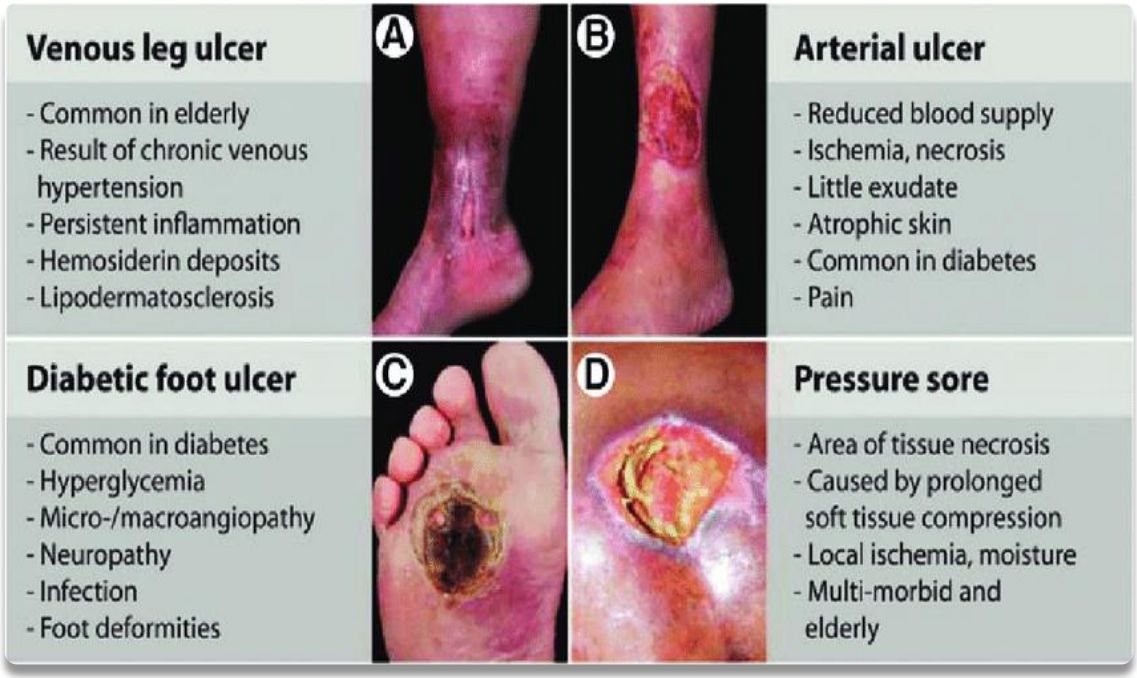
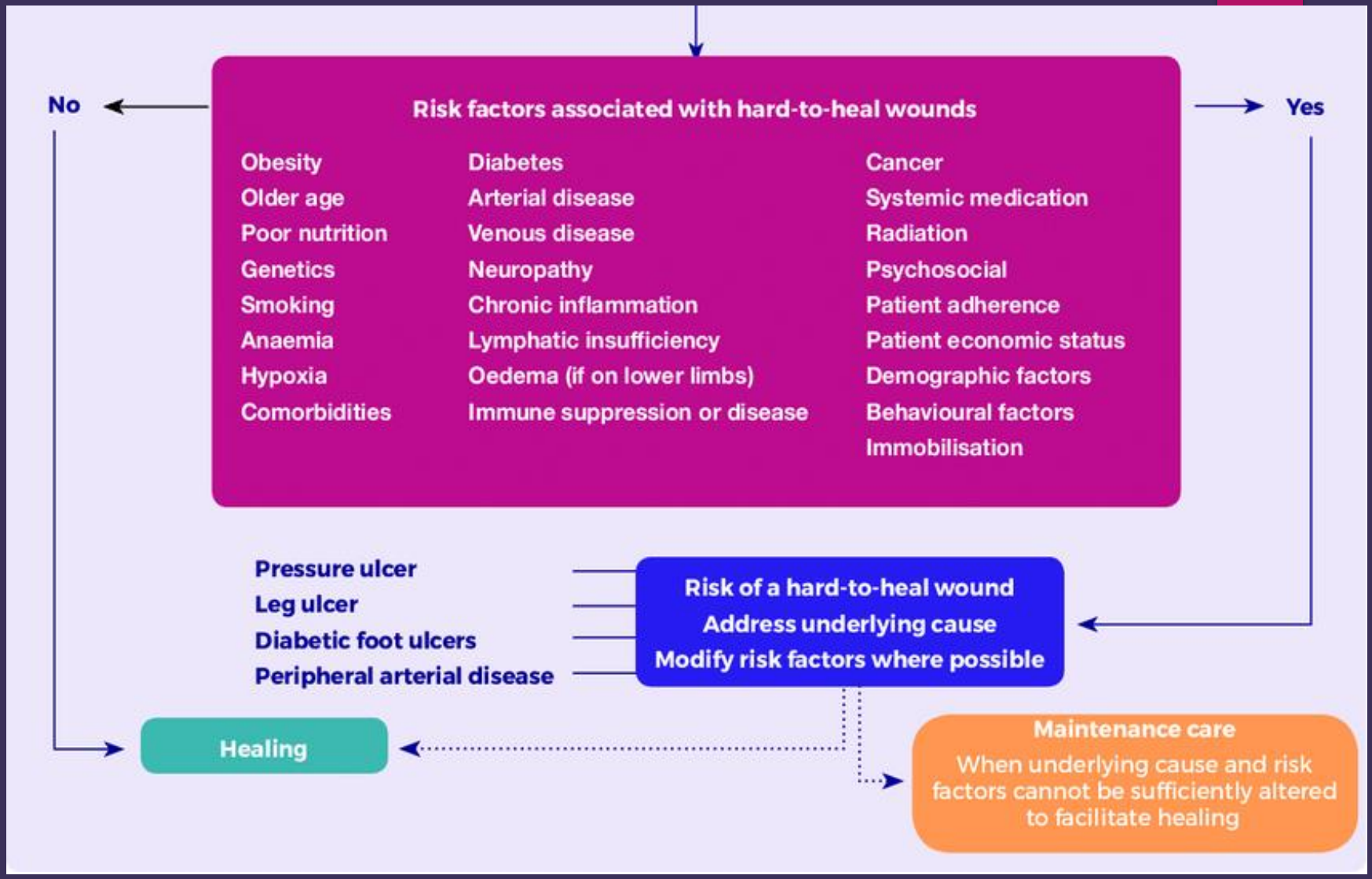
# CHRONIC WOUNDS

Healing Time

- Classified as chronic if wound hasn't healed w/in 4-6 weeks
- Chronic wounds are often established due to bacterial load, lack of blood supply, infection or the incorrect management.



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## Causes of Chronic Wounds

| Common Causes | Uncommon Causes |
|---|---|
| Diabetes mellitus infection | Collagen disorders |
| Inflammation | Dermatological conditions (eg, pyoderma gangrenosum) |
| Malignancy | |
| Medications | |
| Peripheral vascular disease | Hypothyroidism |
| Poor mobility | Iatrogenic radiation/ cytotoxic therapy |
| Presence of a foreign body | Liver, renal, and heart failure |
| Pressure | Malnutrition |
| Venous hypertension | Vasculitis |


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# Arterial Ulcers

- Occur due to arterial insufficiency & local ischaemia
- Common on the feet, toes, heels, & outer sides of the ankles
- "punched out" appearance
- Deep wound, red, yellow , black sores
- Surrounding skin is tight & often hairless
- Painful especially at night – due to elevation on bed
- No bleeding
- Affected area cool to touch – minimal blood circulation
- Leg reddens when hanging & turns pale when elevated

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# Venous Ulcers

- Caused by pooling of blood in the lower extremity due to venous valve incompetency
- Hemosiderin staining may occur, causing brown or yellow patches underneath the skin
- Dark red or purple skin changes due to blood leaking into surrounding tissue
- Shallow & large with irregular margins typically on the lower 1/3 of the leg or ankle
- The base of the ulcer is typically red with significant exudate depending on the level of infection, and will ooze venous blood when manipulated
- Relatively painless - any pain likely to from

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https://www.woundsource.com/sites/default/files/patient-condition/bariatric_venous_ulcer.jpg

# Neuropathic /diabetic Ulcers

A debilitating complication of diabetes mellitus is which leads to increased overall morbidity

Preventable, as the inciting factor is most often minor trauma. Early identification can lead to improved outcomes and decreased the risk of progression.

Patients with diabetes mellitus (type 1 or 2) have a total lifetime risk as high as 25%.

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## Comparison of characteristics of Arterial & Venous Disorders

| | Arterial Disease | Venous Disease |
|---|---|---|
| Skin | cool or cold, hairless, dry, shiny, pallor on elevation, rubor on dangling | warm, though, thickened, mottled, pigmented areas |
| Pain | sharp, stabbing, worsens w/ activity and walking, lowering feet may relieve pain | aching, cramping, activity and walking sometimes help, elevating the feet relieves pain |
| Ulcers | severely painful, pale, gray base, found on heel, toes, dorsum of foot | moderately painful, pink base, found on medial aspect of the ankle |
| Pulse | often absent or diminished | usually present |
| Edema | infrequent | frequent, esp. at the end of the day and in |

# Skin Tears


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A skin tear is a wound caused by shear, friction &/or blunt force resulting in separation of skin layers. They can be partial thickness (separation of the epidermis from dermis) or full thickness (separation of both the epidermis and dermis from underlying structures).

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# STAR SKIN TEAR CLASSIFICATION SYSTEM GUIDELINES:

**S** — Stop or control bleeding and clean the wound according to protocol.

**T** — Tissue realignment (if possible) of any skin or flap.

**A** — Complete holistic health assessment. Inspect surrounding skin. Categorise using STAR classification. Draw arrow on top of dressing indicating skin flap direction

**R** — If skin or flap colour is pale, dusky or darkened reassess in 24-48 hours or at the first dressing change. Remove dressing in direction of arrow.

# PRODUCT SOLUTION:

**HAEMOSTASIS:**
**Calcium alginate**
Assists in controlling the bleeding

**SECURE FLAP OR SKIN:**
**Wound Closure Strips**
Secures edges of large skin Flaps

**PROTECTION:**
**Wound Contact Layers**
Facilitate flap security and non-traumatic removal

**No-sting Barrier Film Products**
Help dressings to stay in place and protectssurrounding skin.

**DRESSINGS:**
**Silicone Foam Dressings**
Assist with exudate management and provides protection

**Antimicrobial Dressings**
Aids with infection control

# STAR CLASSIFICATION SYSTEM:

**CATEGORY 1a**
A skin tear where the edges can be realigned to the normal anatomical position (without undue stretching) and the skin or flap colour is not pale, dusky or darkened.

**CATEGORY 1b**
A skin tear where the edges can be realigned to the normal anatomical po-sition (without undue stretching) and the skin or flap colour is pale, dusky or darkened.

**CATEGORY 2a**
A skin tear where the edges cannot be realigned to the normal anatomical position and the skin or flap colour is not pale, dusky or darkened.

**CATEGORY 2b**
A skin tear where the edges cannot be realigned to the normal anatomical position and the skin or flap colour is pale, dusky or darkened.

**CATEGORY 3**
A skin tear where the skin flap is completely absent.

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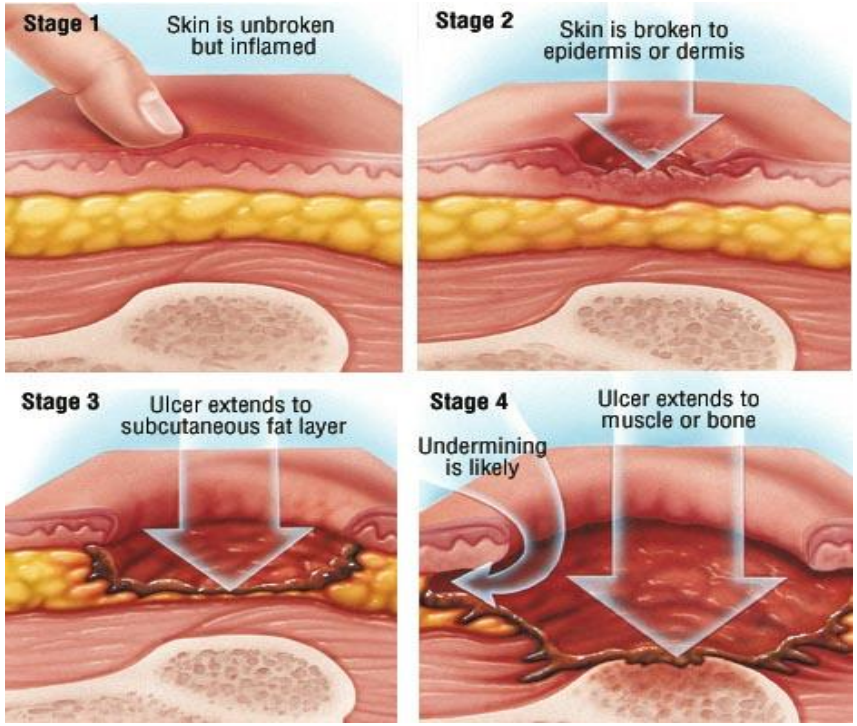
# Pressure Injuries in the Victorian Health System




Around 4,300 hospital-acquired pressure injuries occur each year in Australian hospitals (ACQSHC, 2018)

Patients in critical, rehabilitative, palliative care are at greatest risk

Only 53% of patients surveyed had a pressure risk assessment completed

Of those who assessed to be at high risk, 28% did not have any pressure relieving device insitu

Figure 3 – This is a stage IV pressure ulcer; full-thickness tissue loss extends beyond the fascia.

*(Courtesy of Brian L. Patterson, MD.)*

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# Decubitus/pressure ulcer

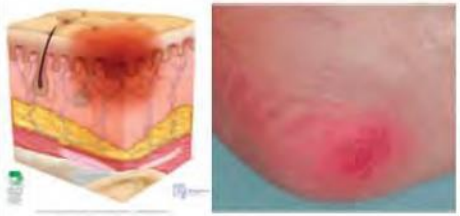
an inflammatory sore or ulcer in the skin over a bony prominence.

Pressure injuries develop as a result of ischemic hypoxia caused by an impaired blood circulation.

Major factors that are likely to interrupt local capillary supply are pressure and shearing forces.

# Pressure injury classification in stages

**Stage I:** non-blanchable erythema



- **Intact** skin with non-blanchable redness of a localised area usually over a bony prominence.
- Darkly pigmented skin may not have visible blanching; its colour may differ from the surrounding area.
- The area may be painful, firm, soft, warmer or cooler compared to adjacent tissue.
- May be difficult to detect in individuals with dark skin tones.
- May indicate "at risk" persons (a heralding sign of risk).

**Stage II:** partial thickness skin loss

- Partial thickness loss of dermis presenting as a **shallow**, open wound with a red-pink wound bed, without slough.
- May also present as an intact or open/ruptured serum-filled blister.
- Presents as a shiny or dry, shallow injury without slough or bruising.
- Stage II Pressure Injury (PI) should not be used to describe skin tears, tape burns, perineal dermatitis, maceration or excoriation.

**Stage III:** full thickness skin loss

- Full thickness tissue loss. **Subcutaneous fat** may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunnelling.
- The depth of a stage III PI varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and stage III PIs can be shallow. In contrast, areas of significant adiposity can develop extremely deep stage III PIs. Bone or tendon is not visible or directly palpable.

**Stage IV:** full thickness tissue loss

- Full thickness tissue loss with exposed **bone**, tendon or muscle. Slough or eschar may be present on some parts of the wound bed.
- The depth of a stage IV PI varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and these PIs can be shallow. Stage IV PIs can extend into muscle and/or supporting structures (e.g. fascia, tendon or joint capsule) making osteomyelitis possible. Exposed bone or tendon is visible or directly palpable.

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# Pressure injury classification in stages

**Unstageable: depth unknown**

- Full thickness tissue loss in which the base of the PI is **covered** by slough (yellow, tan, grey, green or brown) and/or eschar (tan, brown or black) in the PI bed.
- Until enough slough/eschar is removed to expose the base of the PI, the true depth, and therefore the stage, cannot be determined.

**Suspected Deep Tissue Injury: depth unknown**

- **Purple** or maroon localised area or discoloured, intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.
- Deep tissue injury may be difficult to detect in individuals with dark skin tone.
- Evolution may include a thin blister over a dark wound bed. The PI may further evolve and become covered by thin eschar. Evolution may be rapid, exposing additional layers of tissue even with optimal treatment.

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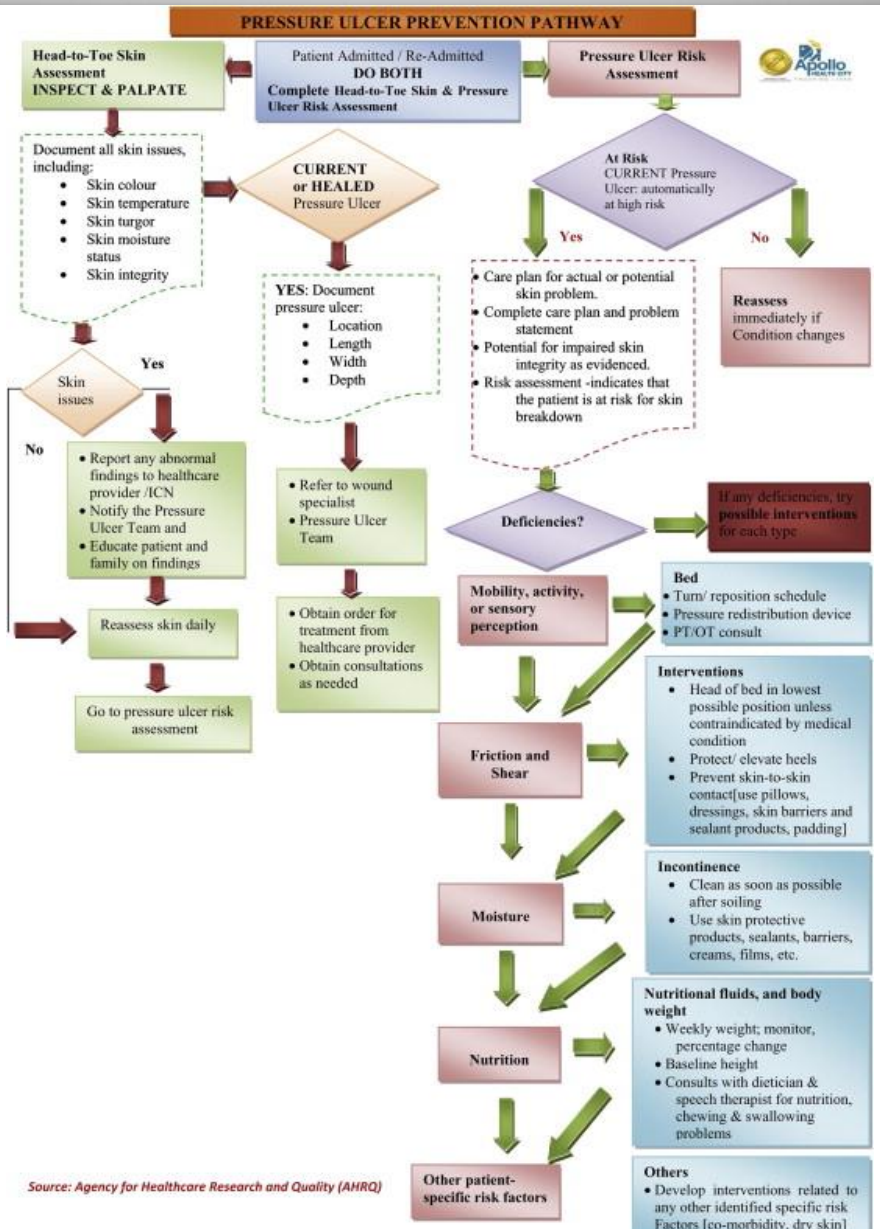
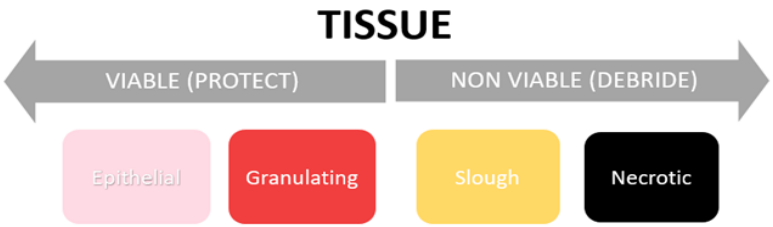

PRESSURE ULCER PREVENTION PATHWAY
Head-to-Toe Skin Assessment INSPECT & PALPATE
Patient Admitted / Re-Admitted
DO BOTH
Complete Head-to-Toe Skin & Pressure Ulcer Risk Assessment
Pressure Ulcer Risk Assessment
Document all skin issues, including:
Skin colour
Skin temperature
Skin turgor
Skin moisture status
Skin integrity
CURRENT or HEALED Pressure Ulcer
At Risk
CURRENT Pressure Ulcer: automatically at high risk
Yes
No
YES: Document pressure ulcer:
Location
Length
Width
Depth
Care plan for actual or potential skin problem.
Complete care plan and problem statement
Potential for impaired skin integrity as evidenced.
Risk assessment -indicates that the patient is at risk for skin breakdown
Reassess immediately if Condition changes
Skin issues
Yes
No
Report any abnormal findings to healthcare provider /ICN
Notify the Pressure Ulcer Team and
Educate patient and family on findings
Refer to wound specialist
Pressure Ulcer Team
Obtain order for treatment from healthcare provider
Obtain consultations as needed
Reassess skin daily
Go to pressure ulcer risk assessment
Deficiencies?
If any deficiencies, try possible interventions for each type
Mobility, activity, or sensory perception
Bed
Turn/ reposition schedule
Pressure redistribution device
PT/OT consult
Friction and Shear
Interventions
Head of bed in lowest possible position unless contraindicated by medical condition
Protect/ elevate heels
Prevent skin-to-skin contact[use pillows, dressings, skin barriers and sealant products, padding]
Moisture
Incontinence
Clean as soon as possible after soiling
Use skin protective products, sealants, barriers, creams, films, etc.
Nutrition
Nutritional fluids, and body weight
Weekly weight; monitor, percentage change
Baseline height
Consults with dietician & speech therapist for nutrition, chewing & swallowing problems
Other patient-specific risk factors
Others
Develop interventions related to any other identified specific risk Factors [co-morbidity, dry skin]
Source: Agency for Healthcare Research and Quality (AHRQ)

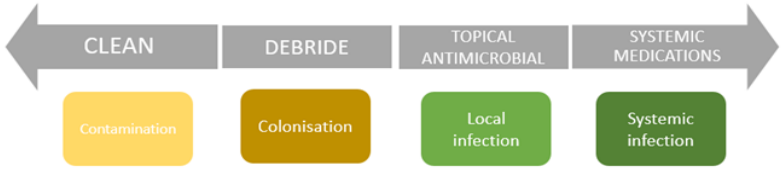
**TIME** is An acronym or clinical decision tool to provide systematic assessment and documentation of wounds. It stands for Tissue, Infection or Inflammation, Moisture balance and Edges of the wound or Epithelial advancement.




Tissue is usually described by colour.

**Epithelial tissue:** Appears pink or pearly white and wrinkles when touched. Occurs in the final stage of healing when the wound is covered by healthy epithelium.
**Granulating tissue:** Appears red and moist. Occurs when healthy tissue is formed in the remodelling phase that is well vascularised and bleeds easily.
**Slough tissue:** Appears yellow, brown or grey. Slough is devitalised tissue made of dead cells or debris.
**Necrotic tissue:** Appears hard, dry and black. Necrotic tissue is dead tissue that prevents wound healing.
**Hyper granulating tissue**: Appears red, uneven or granular. Occurs in the proliferative phase when tissue is overgrown.

## INFECTION/ INFLAMMATION




**Contamination:** The presence of m/orgs that are contained; do not multiply; does not provoke a host response; healing is not impaired; Abs are not indicated.

**Colonisation:** M/orgs multiply; do not provoke host response; infection is contained; wound healing may be delayed; antimicrobials are not indicated.

**Local infection:** Invasion by an agent which multiplies and produces injurious effects and invokes a host response. Healing is impaired and can lead to wound breakdown. Topical Abs are indicated.

**Spreading and systemic infection:** M/orgs spread from wound through vascular &/or lymphatic systems involving part of the body (spreading) or the whole body (systemic). Healing is impaired. Abs are used to prevent sepsis.

**Biofilms**: represent a survival mechanism of m/orgs and are complex, slime-encased communities of microbes often seen as slime layers. The degree of bioburden in the wound from the m/orgs is indicated by a poor response to antimicrobial treatment, delayed wound healing or increase in exudate or inflammation.

**ODOUR** can be a sign of infection. It can be described as:

No odour

Slight malodour: odour when the dressing is removed

Moderate malodour: odour upon entering the room when the dressing is removed

Strong malodour: odour upon entering the room when dressing is intact

If any of the above clinical indicators are present (incl. fever, pain, discharge or cellulitis) a medical review should be initiated and a Microscopy, Culture and Sensitivity (MCS) Wound Swab ordered.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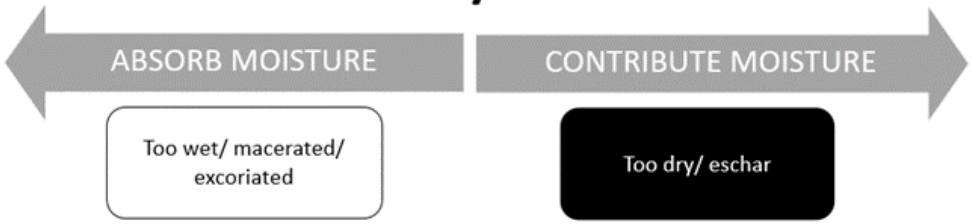
# MOISTURE/ EXUDATE




Exudate description:

**Serous:** appears clear to yellow. Normal, typical in the inflammatory phase. Serous drainage is clear, thin, and watery.

**Haemoserous:** appears clear to yellow with a pink tinge. Typical in the inflammatory or proliferative phase.

**Sanguineous:** common exudate blood. Can be associated with hyper granulation.

**Purulent:** containing pus milky, typically thicker in consistency, grey, green or yellow. This indicates infection.

**Haemopurulent:** blood and pus. Often due to an established infection.

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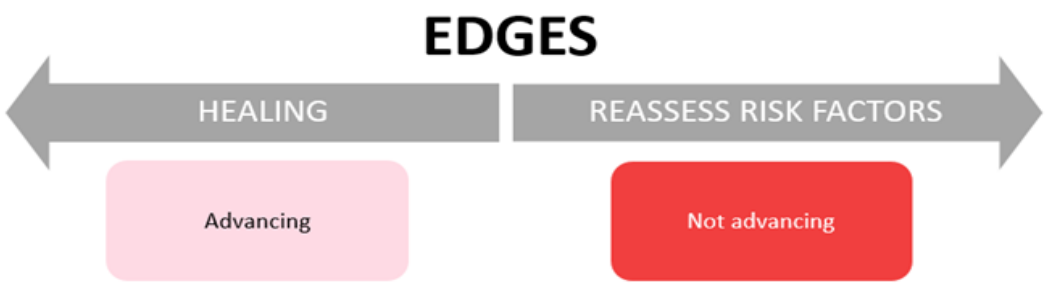



Advancing of edges can be assessed by measuring the depth (cavity/sinus), length and width of the wound using a paper tape measure.

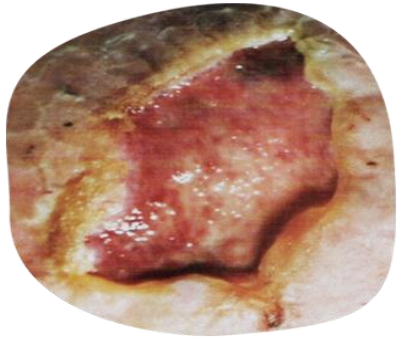
**Advancing:** edges are pink. Healing is taking place.

**Non-advancing:** edges are raised, rolled, red or dusky. Go back to stages of wound healing and goals of wound management and consider factors affecting wound healing (see below). Is there something that is not being addressed?

**Surrounding skin**

Assess the surrounding skin (peri wound) for the following:

- Cellulitis: redness, swelling, pain or infection
- Oedema: swelling
- Macerated: soft, broken skin caused by increased moisture



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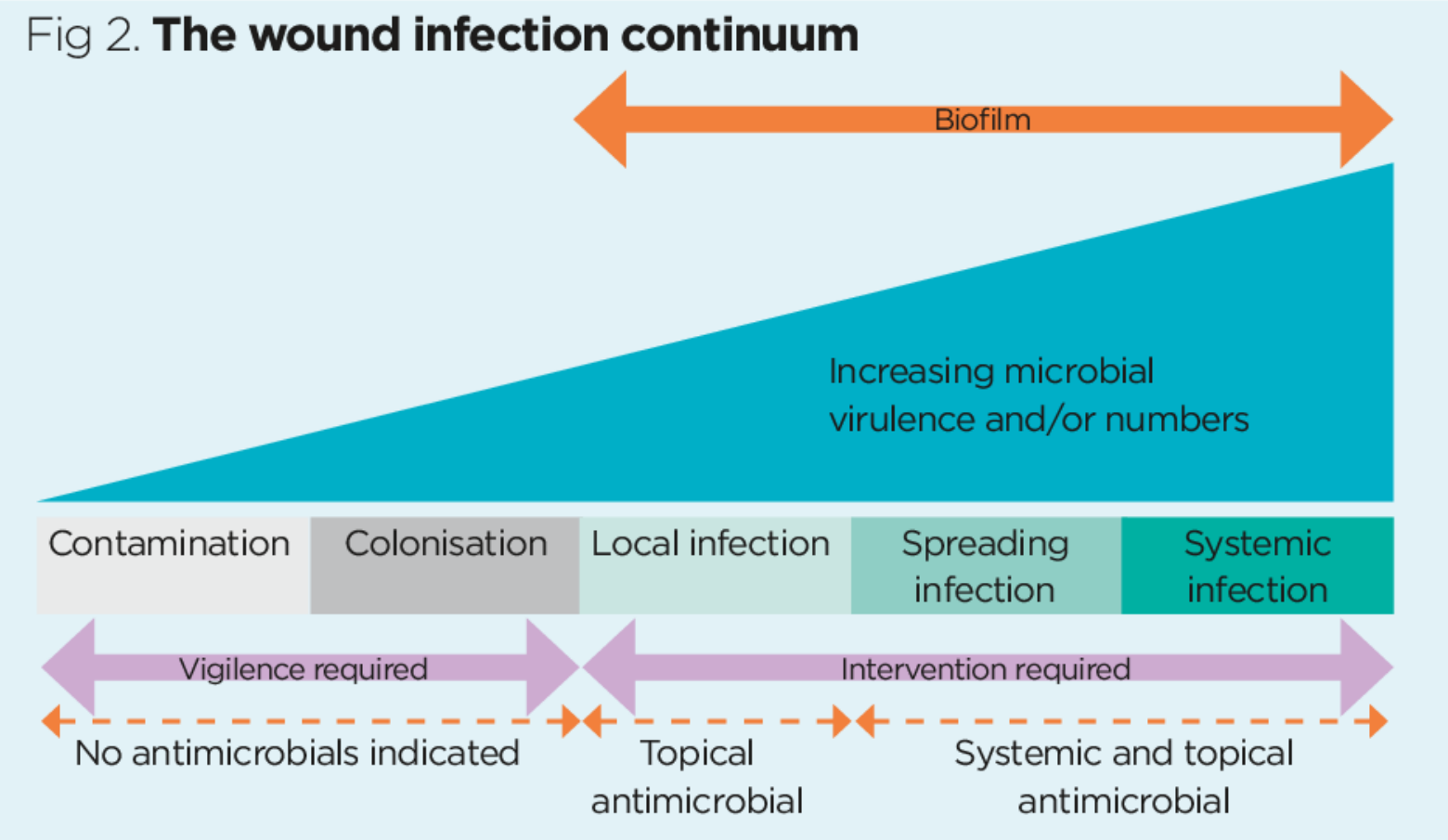



https://d3i71xaburhd42.cloudfront.net/8083b04290205523b4c2da8a8be0a81381c0e3d7/2-Figure2-1.png

# Measuring wound size

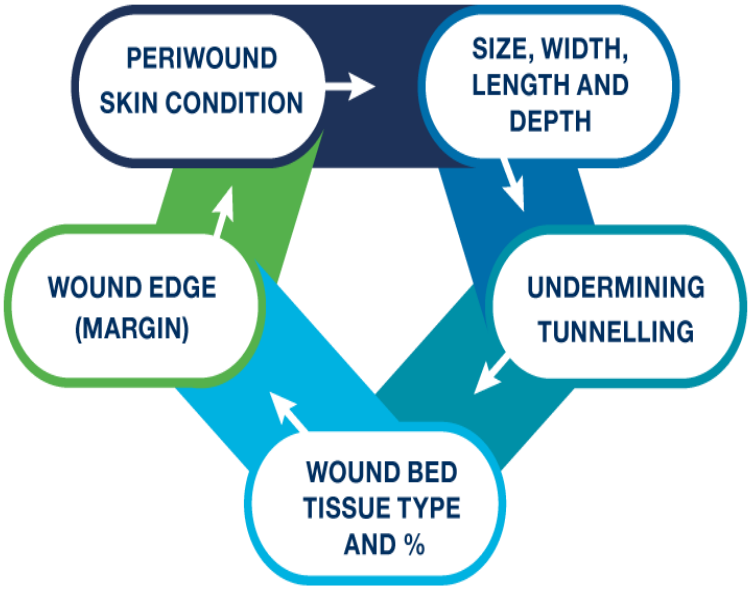


- At the time the wound occurs
- Wound measurement should be a routine part of wound assessment
- Measure most wounds on a weekly basis
- Chronic wounds should be measured at lease monthly, or if there are significant changes to healing
- Measurement can indicate progression or deterioration in wounds
- Linear measurements with a ruler are the easiest to perform
- Length should be recorded as the measurement in a head-to-toe direction and width as the longest measurement at a 90° angle to the length
- +/- Trace wounds onto a custom-made acetate grid and counting the squares

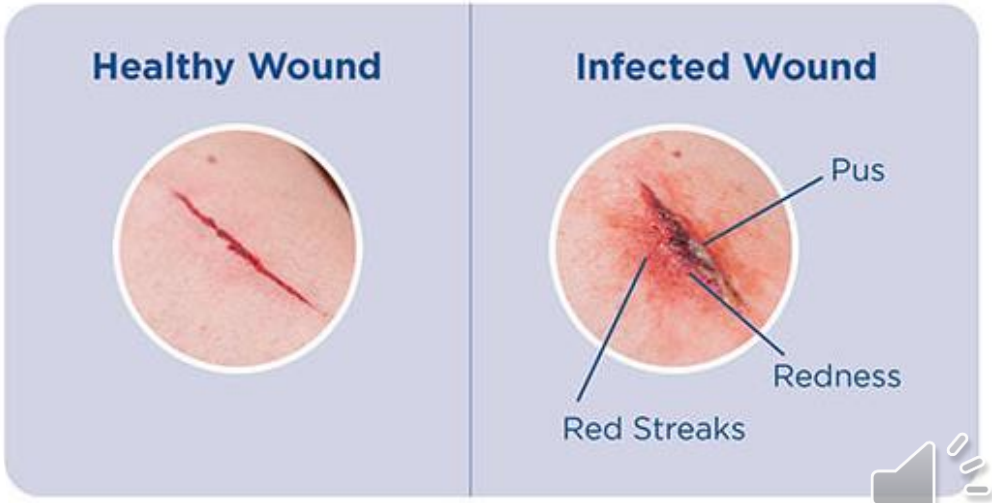
# 5 PRINCIPLES OF WOUND CARE

## Assessment of the Wound

The initial and most important step in the management of the wound is a comprehensive and detailed assessment of the characteristics of the wound and patient factors. Wound assessment can incorporate the TIME principle involving the assessment of wound tissue, presence of infection, moisture, and edge of the wound.



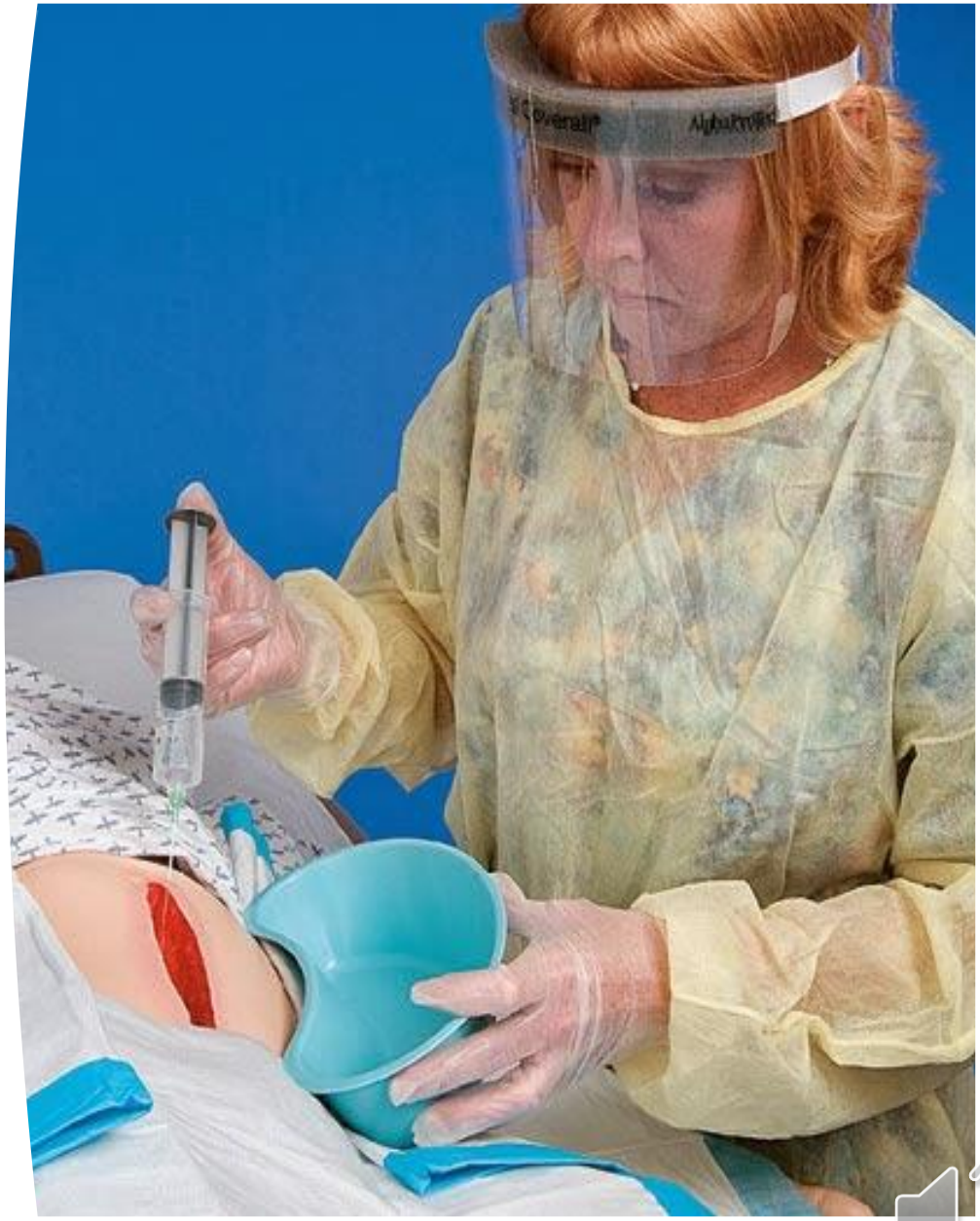

https://academy.activheal.com/wp-content/uploads/2018/02/wound-assess-web-01.png




https://www.bandaid.ca/sites/bandaid_ca/files/compare_health_infected_r_0.jpg

## Cleaning of the Wound

Wound cleansing helps to reduce bacterial load, decreases wound infection rates, optimise the pH and remove external contaminants and wound debris. Wound cleansing or irrigation of the wound with normal saline should be carried out at each dressing change. Normal saline is an isotonic solution and does not interfere with normal, healthy granulation tissue.



https://3.bp.blogspot.com/-6RrhAI0qsnI/UsJT0aOK0rI/AAAAAAAAATs/JnTZDsCeWo8/s1600/Performing-a-sterile-wound-irrigation-using-a-syringe.jpg

## Regular Dressing Change

Timely dressing changes allow wound inspection. All contaminated or soiled dressings need to be changed which can be painful thus require pre-procedural analgesics. Soaking the dressings can also aid in the removal of dressing and adhesives.  To protect the periwound skin, improve the adherence of the dressing and minimise skin trauma during dressing removal, barrier films can be used.

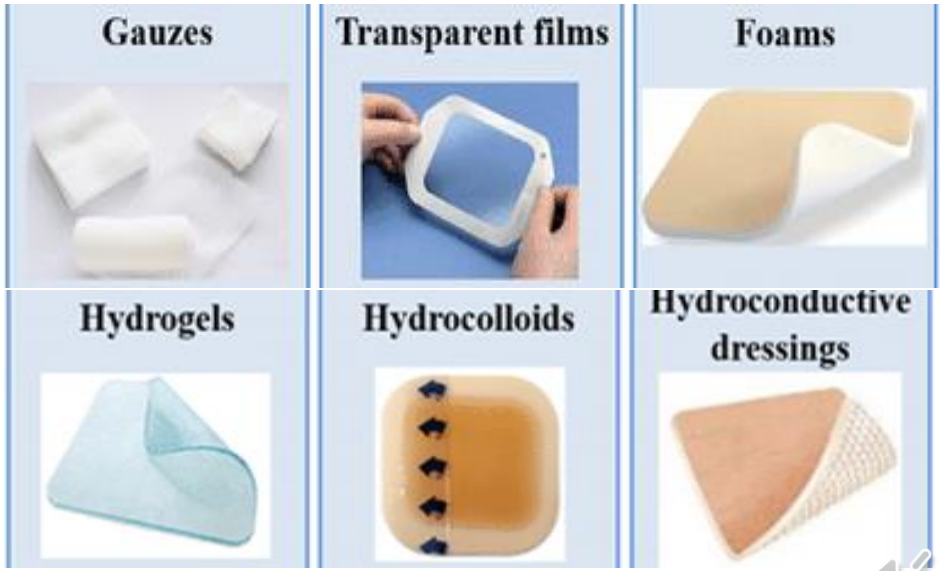
https://st.focusedcollection.com/14026668/i/1800/focused_179051032-stock-photo-nurse-dressing-wound-patients-hand.jpg

https://www.woundsource.com/sites/default/files/styles/large/public/blogs/bandaged_leg.jpg?itok=1aTarw58

# Selection of Appropriate Wound Dressing

A wide-range of dressing materials can complicate the selection of appropriate wound dressing. Knowing the characteristics of a dressing can help in the selection. An ideal dressing is non-toxic, hypoallergenic, easy to use, cheap and readily available. It should cause minimal discomfort and pain during dressing removal.


https://www.exmed.net/images/thumbs/0011220_wound-dressings.jpeg

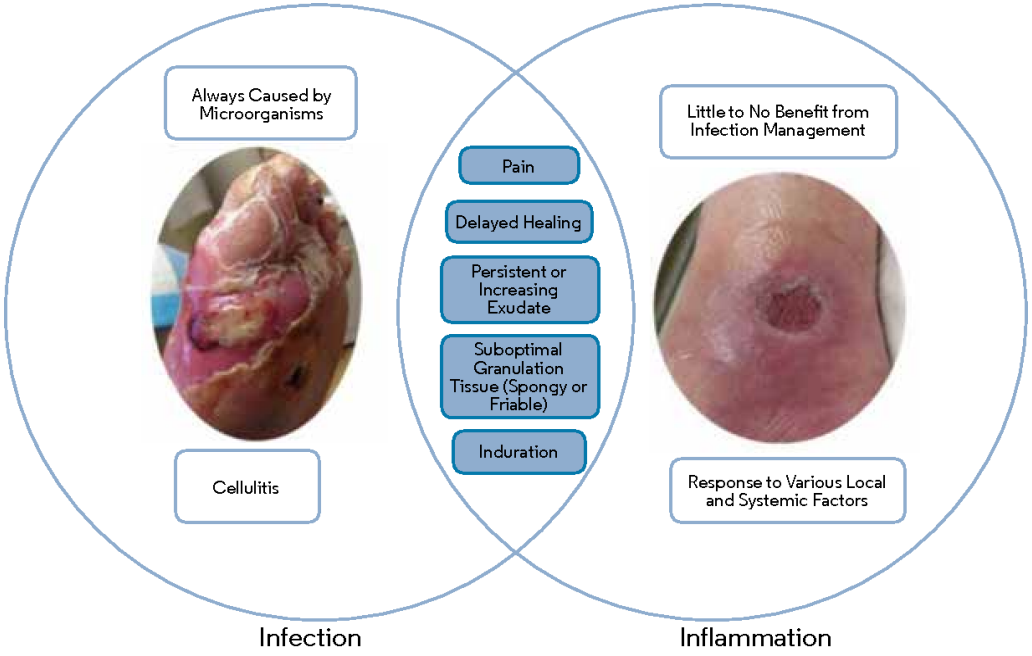



https://www.researchgate.net/profile/Rossella-Laurano/publication/360208094/figure/fig2/AS:1156324532457472@1652700660603/Traditional-wound-dressings-gauzes-transparent-films-foam-dressings-hydrogels.ppm

# Antibiotic Use

It is important to carefully assess the signs and symptoms of wound infection before an antibiotic is prescribed. The clinical signs and symptoms include fever, increased wound exudation, odour, and erythema.

Antibiotics should not be used for a long period and should be targeted towards the likely bacterial cause of infection. For chronic wounds with biofilms, irrigation with an antimicrobial is recommended.




https://d3i71xaburhd42.cloudfront.net/7c7dea686959b2a1057faa04690806fcab3cfac1/14-Figure2-1.png


https://www.coloplastprofessional.co.uk/globalassets/hcp/coloplast-professional/wound-care-pages/biofilm-in-an-inflammatory-state-514x386.png

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