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- The recommendation for protein foods in the Healthy U.S.-Style Eating Pattern at the 2,000-calorie level is 5½ ounce equivalents of protein foods per day.
- In addition to specific types of meat, foods such as eggs, nuts, seeds, and vegetables contain protein.
- When selecting protein foods, nuts and seeds should be unsalted, and meats and poultry should be consumed in lean forms.
- The inclusion of protein foods from plants allows vegetarian options to be accommodated.
- The dairy group contributes many nutrients, including calcium, phosphorus, vitamin A, vitamin D (in products fortified with vitamin D), riboflavin, vitamin B12, protein, potassium, zinc, choline, magnesium, and selenium.
- The recommended amounts of dairy in the Healthy U.S.-Style Pattern are based on age rather than calorie level.
- The recommended amounts of dairy for adults is 3 cup-equivalents per day.
- Individuals who are lactose intolerant can choose low-lactose and lactose-free dairy products.
- Most individuals in the United States would benefit by increasing dairy intake in fat-free or low-fat forms, whether from milk (including lactose-free milk), yogurt, and cheese or from fortified soy beverages (soymilk). Strategies to increase dairy intake include drinking fat-free or low-fat milk (or a fortified soy beverage) with meals, choosing yogurt as a snack, or using yogurt as an ingredient in prepared dishes such as salad dressings or spreads. Strategies for choosing dairy products in nutrient-dense forms include choosing lower-fat versions of milk, yogurt, and cheese in place of whole milk products and regular cheese.
- Patient menus should include offering more vegetables, fruits, whole grains, low-fat and fat-free dairy, and a greater variety of protein foods that are nutrient-dense, while also reducing sodium and added sugars, reducing saturated fats and replacing them with unsaturated fats, and reducing added refined starches.
- Those individuals responsible for developing patient menus should consider the range of offerings both within and across food groups and other dietary components



to determine whether the healthy options offered reflect the proportions in healthy eating patterns.

- To promote adequate nutrition and hydration among older adult patient populations within specific health care facilities such as assisted living facilities and nursing homes, health care administrators should: review residents' complaints and/or suggestions regarding food; ask residents how the offered food meets their preferences, allergies, intolerances, and/or medical needs; ensure menus offer diverse meal options; ensure regular mealtimes are offered; observe and evaluate their facilities' food safety methods; observe and determine whether relevant staff competently assists residents who use assistive devices; evaluate resident nutritional status and hydration; determine if relevant staff are effectively identifying concerns regarding a patient's/resident's nutritional/hydration status.

### ***Adequate Personal Hygiene***

Another essential element to addressing and managing impaired skin integrity in older adult patient populations is adequate personal hygiene. Personal hygiene, as it relates to impaired skin integrity, may refer to a series of practices that sustain the body's cleanliness in order to maintain healthy skin integrity as well as overall health and well-being. Health care professionals should note that adequate personal hygiene can help prevent the spread of diseases among older adult patients. Important aspects of adequate personal hygiene, as it relates to impaired skin integrity, include the following: bathing regularly, water use, skin cleansing product use, and drying. Specific information regarding the aforementioned important aspects of adequate personal hygiene may be found below.

- ***Bathing regularly*** - bathing regularly can help prevent the spread of infections and diseases among adult patients. It can also have a positive psychological impact on older adult patients. Bathing regularly can help older adult patients: feel better about themselves, improve upon their self-esteem, improve self-image, feel more relaxed, maintain their dignity, and feel like they have a semblance of control over their health and well-being. With that last point in mind, health care professionals and health care administrators should note the following: patient bathing education, schedules, and routines should be kept at manageable levels to help older adults maintain their own personal hygiene, when applicable, in order to allow older adult patients a sense of personal independence.
- ***Water use*** - the use of water is a fundamental aspect of adequate personal hygiene. It has been argued that without the effective use of water there can be no adequate personal hygiene. With that said, effective water use in personal hygiene occurs

when water is used to clean the skin in a manner that does not jeopardize skin integrity and/or lead to or cause further impaired skin integrity. To ensure older adult patients are effectively using water when engaging in personal hygiene, health care professionals should encourage and educate patients to follow the three simple rules of effective water use. The three simple rules of effective water use may be found below.

- **Rule 1 of effective water use** - use warm water when engaging in personal hygiene rather than hot water or extremely hot water to reduce the risk of dehydrating the skin.
- **Rule 2 of effective water use** - do not bathe or shower for long periods of time to reduce the risk of dehydrating the skin and compromising skin integrity.
- **Rule 3 of effective water use** - do not over-clean. Over-cleaning the skin (e.g., bathing and/or showering too frequently and/or for excessive periods of time) may lead to itching, dryness, and compromised skin integrity. Health care professionals should note the following: itching and/or extensive itching can be detrimental to patient care as it relates to impaired skin integrity; itching and/or extensive itching can lead to excessive patient scratching, which in turn possess the potential to further skin irritation, damage, disruption, and loss of functionality; excessive skin scratching by a patient could open up wounds and or lead to infection(s); health care professionals should observe patients for signs of itching (e.g., scratch or nail marks on a patient's skin; skin irritation; localized skin irritation).
- ***Skin cleansing product use*** - the use of a skin cleansing product is another fundamental aspect of adequate personal hygiene. The term skin cleansing product may refer to any product designed to clean the human body while removing dirt, bacteria, dead skin cells, and/or other substances from the skin. Often soap-based products or plain soaps are used as skin cleansing products for personal hygiene (the term plain soap may refer to detergents that contain no added antimicrobial agents or may contain these solely as preservatives). Soap-based products and plain soaps clean the human body while removing dirt, bacteria, dead skin cells and/or other substances from the skin, however, they also possess the potential to disrupt the pH balance of the skin, cause further breakdown of the skin barrier, cause dryness, and lead to irritation. Thus, due to the potential of soap-based products and plain soaps to disrupt the pH balance of the skin, cause further breakdown of the skin barrier, cause dryness, and lead to irritation, they may not be the best choice for older adults suffering from impaired skin integrity or for older adults simply trying to

maintain their skin integrity. With that in mind, emollient-based soap substitutes and/or bath emollients may serve as an alternative to soap-based products and plain soaps.

Emollient-based soap substitutes and bath emollients are, typically, designed to remove dirt, bacteria, dead skin cells, and/or other substances from the skin, while avoiding skin barrier breakdown, dryness, and irritation. In other words, emollient-based soap substitutes and bath emollients are designed to promote skin integrity. Therefore, health care professionals and health care administrators should consider encouraging older adult patients to use emollient-based soap substitutes and/or bath emollients, when applicable. Health care professionals and health care administrators should note the following: it is important to consider patient preferences when selecting or determining which emollient-based soap substitutes and/or bath emollients may be used within health care facilities.

- **Drying** - drying, as it relates to skin integrity, may refer to the act of removing moisture and/or water from the body/skin after a personal hygiene routine, including water and a skin cleansing product, is completed (e.g., a traditional bath or shower). The act of drying the body and skin is essential to skin integrity because it can help individuals prevent and avoid maceration. Maceration, as it relates to impaired skin integrity, may refer to skin breakdown resulting from prolonged moisture. Health care professionals should note the following: older adult patients should be encouraged to pat or "gently" rub their skin when engaging in drying to help prevent related irritation and skin damage; older adult patients should be encouraged to use soft cloths to dry their skin in order to help prevent related irritation and skin damage. Health care administrators should consider providing soft cloths to older adult patients.

### ***Skin Moisturizers***

Skin moisturizers may also be used to address and manage impaired skin integrity. A skin moisturizer may refer to a product designed to act as a barrier on the surface of the skin to help trap water and prevent water loss. Essentially, skin moisturizers help prevent skin drying and subsequent skin damage. Health care professionals should note that skin moisturizers may be available as an ointment, cream, or lotion. Health care professionals should also note the following: individuals may apply skin moisturizers after completing their personal hygiene routine.

## ***Positioning and Mobilization***

Positioning and mobilization may be an option when addressing and managing pressure injuries. As previously mentioned, a pressure injury, also referred to as a pressure ulcer and/or bedsore, may refer to localized damage to the skin and/or underlying soft tissue, usually over a bony prominence. Pressure injuries typically result from intense and/or prolonged pressure due to immobility. Thus, patient positioning and mobilization may be used by health care professionals to help limit the damage associated with pressure injuries and/or to help prevent the occurrence of pressure injuries in high-risk patient populations (e.g., older adult patients). The key elements of positioning and mobilization include the following: repositioning at-risk patients, if not contraindicated; scheduling and planning patient repositioning, when applicable; the use of pressure-relieving devices (the term pressure-relieving device may refer to an appliance, which may be used to reduce pressure points caused by a patient's body weight when seated, bedridden or immobile); considerations regarding patient body size, level of immobility, exposure to shear, skin moisture and perfusion when choosing a support surface. Health care professionals should consider the aforementioned key elements when applying positioning and mobilization to patients at-risk or suffering from pressure injuries.

## ***Antibiotics***

Some patients may require antibiotics to help address and manage their impaired skin integrity and/or any infections that may result from impaired skin integrity. Some of the more common antibiotics that may be used to address and manage impaired skin integrity and/or any infections that may result from impaired skin integrity include: amoxicillin/clavulanate, cephalexin, clindamycin, levofloxacin, doxycycline, Bactrim and vancomycin. Specific information regarding the aforementioned antibiotics may be found below.

### **Amoxicillin/clavulanate**

***Medication notes*** - amoxicillin/clavulanate is an oral antibacterial combination consisting of the antibiotic amoxicillin and the  $\beta$ -lactamase inhibitor, clavulanate potassium. Amoxicillin/clavulanate may be used in the treatment of skin and skin structure infections caused by  $\beta$ -lactamase-producing strains of *S. aureus*, *E. coli*, and *Klebsiella* spp. Potential side effects of Amoxicillin/clavulanate include: nausea, vomiting, and diarrhea. Health care professionals should note the following: using amoxicillin/clavulanate in the absence of a proven or strongly suspected bacterial infection or a prophylactic indication is unlikely to provide benefit to the patient and increases the risk of the development of drug-resistant bacteria.

*Safety notes* - amoxicillin/clavulanate is contraindicated in patients with a history of allergic reactions to any penicillin. Amoxicillin/clavulanate is also contraindicated in patients with a previous history of cholestatic jaundice/hepatic dysfunction associated with amoxicillin/clavulanate. Warnings and precautions associated with amoxicillin/clavulanate include: serious and fatal hypersensitivity reactions have been reported, caution is advised; if an allergic reaction occurs, discontinue the medication; pseudomembranous colitis has been reported with nearly all antibacterial agents, including amoxicillin/clavulanate, and has ranged in severity from mild to life-threatening, therefore, it is important to consider this diagnosis in patients who present with diarrhea subsequent to the administration of antibacterial agents; treatment with antibacterial agents alters the normal flora of the colon and may permit overgrowth of clostridia; studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of “antibiotic-associated colitis;” after the diagnosis of pseudomembranous colitis has been established, appropriate therapeutic measures should be initiated; mild cases of pseudomembranous colitis usually respond to drug discontinuation alone; in moderate to severe cases, consideration should be given to management with fluids and electrolytes, protein supplementation, and treatment with an antibacterial drug clinically effective against *C. difficile* colitis.

*Considerations for special patient populations* - amoxicillin/clavulanate should be used with caution in patients with evidence of hepatic dysfunction.

## **Cephalexin**

*Medication notes* - cephalexin is a cephalosporin antibiotic. Cephalexin may be used to treat skin and skin structure infections caused by *Staphylococcus aureus* and/or *Streptococcus pyogenes* as well as bone infections caused by *Staphylococcus aureus* and/or *Proteus mirabilis*. Cephalexin is administered orally. The typical adult dosage ranges from 1 to 4 g daily in divided doses. Side effects of cephalexin may include: nausea, vomiting, and diarrhea. Health care professionals should note that patient-related culture and susceptibility tests should be initiated prior to and during cephalexin therapy.

*Safety notes* - cephalexin is contraindicated in patients with a known allergy to the cephalosporin group of antibiotics. Warnings and precautions associated with cephalexin include: serious and fatal hypersensitivity reactions have been reported, caution is advised; any patient who has demonstrated some form of allergy, particularly to drugs, should receive antibiotics cautiously; if an allergic reaction occurs, discontinue the medication; Stevens-Johnson syndrome has been observed; pseudomembranous colitis has been reported with nearly all antibacterial agents, including cephalexin, and may range from mild to life-threatening, therefore, it is

important to consider this diagnosis in patients who present with diarrhea subsequent to the administration of antibacterial agents; treatment with antibacterial agents alters the normal flora of the colon and may permit overgrowth of clostridia; prolonged use of cephalexin may result in the overgrowth of nonsusceptible organisms; cephalosporins may be associated with a fall in prothrombin activity.

Considerations for special patient populations - cephalexin is known to be substantially excreted by the kidney, and the risk of toxic reactions to cephalexin may be greater in patients with impaired renal function such as older adult patients; older adult patients and/or older adult patients with impaired renal function should be monitored appropriately, when applicable.

## Clindamycin

Medication notes - clindamycin is an antibiotic that has activity against Gram-positive aerobes and anaerobes as well as -some Gram-negative anaerobes. Clindamycin is indicated in the treatment of serious infections caused by susceptible anaerobic bacteria. Clindamycin is also indicated in the treatment of serious infections due to susceptible strains of streptococci, pneumococci, and staphylococci. The typical adult dosage ranges from 150 - 450 mg every 6 hours. Specific dosages may depend on the seriousness of the infection. Potential side effects of clindamycin include: abdominal pain, pseudomembranous colitis, esophagitis, nausea, vomiting, and diarrhea.

Safety notes - clindamycin is contraindicated in patients with a history of hypersensitivity to preparations containing clindamycin or lincomycin. Warnings and precautions associated with clindamycin include: Clostridium difficile associated diarrhea (CDAD) has been reported with use of nearly all antibacterial agents, including clindamycin, and may range in severity from mild diarrhea to fatal colitis; treatment with antibacterial agents alters the normal flora of the colon, leading to overgrowth of C. difficile; clindamycin should not be used in patients with nonbacterial infections such as most upper respiratory tract infections; C. difficile produces toxins A and B, which contribute to the development of CDAD; hypotoxin producing strains of C. difficile cause increased morbidity and mortality, as these infections can be refractory to antimicrobial therapy and may require colectomy; CDAD must be considered in all patients who present with diarrhea following antibiotic use; careful medical history is necessary since CDAD has been reported to occur over two months after the administration of antibacterial agents; if CDAD is suspected or confirmed, ongoing antibiotic use not directed against C. difficile may need to be discontinued. Appropriate fluid and electrolyte management, protein supplementation, antibiotic treatment of C. difficile, and surgical evaluation should be instituted as clinically indicated.

Considerations for special patient populations - older adult patients with associated severe illness may not tolerate clindamycin-related diarrhea as well as other patient populations. Clindamycin should be used with caution in individuals with a history of gastrointestinal disease, particularly colitis.

## **Levofloxacin**

Medication notes - levofloxacin is a fluoroquinolone antibacterial indicated in adults ( $\geq 18$  years of age) with infections caused by designated, susceptible bacteria. Levofloxacin may be used to treat complicated and uncomplicated skin and skin structure infections. Potential side effects of levofloxacin include: nausea, headache, diarrhea, constipation, and dizziness. Health care professionals should note the following: To reduce the development of drug-resistant bacteria and maintain the effectiveness of levofloxacin and other antibacterial drugs, levofloxacin should be used only to treat or prevent infections that are proven or strongly suspected to be caused by bacteria.

Safety notes - levofloxacin is contraindicated in patients with a history of hypersensitivity to levofloxacin. Warnings and precautions associated with levofloxacin include: risk of tendinitis and tendon rupture is increased; the aforementioned risk is further increased in older patients usually over 60 years of age, in patients taking corticosteroids, and in patients with kidney, heart or lung transplants; discontinue if pain or inflammation in a tendon occurs; anaphylactic reactions and allergic skin reactions, serious, occasionally fatal, may occur after first dose; hematologic (including agranulocytosis, thrombocytopenia), and renal toxicities may occur after multiple doses; severe, and sometimes fatal, hepatotoxicity has been reported; discontinue immediately if signs and symptoms of hepatitis occur; central nervous system effects, including convulsions, anxiety, confusion, depression, and insomnia may occur after the first dose; use with caution in patients with known or suspected disorders that may predispose them to seizures or lower the seizure threshold; Clostridium difficile-associated colitis may occur; evaluate if diarrhea occurs; discontinue if peripheral neuropathy symptoms occur in order to prevent irreversibility; prolongation of the QT interval and isolated cases of torsade de pointes have been reported; avoid use in patients with known prolongation, those with hypokalemia, and with other drugs that prolong the QT interval.

Considerations for special patient populations - severe hepatotoxicity has been reported with levofloxacin; the majority of reports describe patients 65 years of age or older; older adults may have increased risk of tendinopathy (including rupture), especially with concomitant corticosteroid use; older adults may be more susceptible to prolongation of the QT interval.

## **Doxycycline**

Medication notes - doxycycline is an antibiotic that belongs to the medication class referred to as tetracycline antibiotics. The usual dose of oral doxycycline is 200 mg on the first day of treatment (administered 100 mg every 12 hours) followed by a maintenance dose of 100 mg/day. In the management of more severe infections, 100 mg every 12 hours may be recommended. Potential side effects of doxycycline include anorexia, nausea, vomiting, diarrhea, rash, photosensitivity, urticaria, and hemolytic anemia. Health care professionals should note the following: To reduce the development of drug-resistant bacteria and maintain the effectiveness of doxycycline, and other antibacterial drugs, should be used only to treat or prevent infections that are proven or strongly suspected to be caused by bacteria.

Safety notes - doxycycline is contraindicated in individuals who have shown hypersensitivity to any of the tetracyclines. Warnings and precautions associated with doxycycline include the following: Clostridium difficile-associated diarrhea may occur; evaluate patients if diarrhea occurs; photosensitivity manifested by an exaggerated sunburn reaction has been observed in some individuals taking tetracyclines; limit sun exposure; overgrowth of non-susceptible organisms, including fungi, may occur; reevaluate therapy if superinfection occurs.

Considerations for special patient populations - administration of doxycycline at the usual recommended dose does not result in excessive accumulation in patients with renal impairment. Dosage adjustment may not be necessary in patients with renal impairment.

## **Sulfamethoxazole and trimethoprim (Bactrim)**

Medication notes - Bactrim is a combination of sulfamethoxazole, a sulfonamide antimicrobial, and trimethoprim, a dihydrofolate reductase inhibitor antibacterial, indicated for infections caused by designated, susceptible bacteria. Potential side effects of Bactrim include: anorexia, nausea, and vomiting. Health care professionals should note the following: To reduce the development of drug-resistant bacteria and maintain the effectiveness of Bactrim and other antibacterial drugs, Bactrim should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria.

Safety notes - Bactrim is contraindicated in individuals with: a known hypersensitivity to trimethoprim or sulfonamides; a history of drug-induced immune thrombocytopenia with use of trimethoprim and/or sulfonamides; documented megaloblastic anemia due to folate deficiency; marked hepatic damage; severe renal insufficiency when renal function status cannot be monitored. Bactrim is also contraindicated with



concomitant administration with dofetilide. Warnings and precautions associated with Bactrim include: discontinue at the first appearance of skin rash or any sign of adverse reaction; monitor for hematologic toxicity; do not use for the treatment of group A beta-hemolytic streptococcal infections; Clostridium difficile associated diarrhea may occur; evaluate if diarrhea occurs; may cause allergic-type reactions.

Considerations for special patient populations - a reduced dosage of Bactrim should be used for patients with impaired renal function.

## Vancomycin

Medication notes - vancomycin is an antibiotic indicated for the treatment of serious or severe infections caused by susceptible strains of methicillin-resistant ( $\beta$ -lactam-resistant) staphylococci; penicillin-allergic patients; patients who cannot receive or who have failed to respond to other drugs, including the penicillins or cephalosporins, and for infections caused by vancomycin-susceptible organisms that are resistant to other antimicrobial drugs. Vancomycin is effective in the treatment of staphylococcal endocarditis; other infections due to staphylococci, including bone infections as well as skin and skin structure infections. Health care professionals should note the following: To reduce the development of drug-resistant bacteria and maintain the effectiveness of vancomycin and other antibacterial drugs, vancomycin should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria; when culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy; in the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy. Health care professionals should note the following: infusion-related events are related to both the concentration and the rate of administration of vancomycin; concentrations of no more than 5 mg/mL and rates of no more than 10 mg/min, are recommended in adults; in selected patients in need of fluid restriction, a concentration up to 10 mg/mL may be used; use of such higher concentrations may increase the risk of infusion-related events; an infusion rate of 10 mg/min or less is associated with fewer infusion-related events. Health care professionals should also note the following: the usual daily intravenous dose is 2 g divided either as 500 mg every 6 hours or 1 g every 12 hours; each dose should be administered at no more than 10 mg/min or over a period of at least 60 minutes, whichever is longer; patient factors, such as age or obesity, may call for modification of the usual intravenous daily dose.

Safety notes - vancomycin is contraindicated in patients with a known hypersensitivity to vancomycin. Warnings and precautions associated with vancomycin include: rapid bolus administration (e.g., over several minutes) may be associated with exaggerated hypotension, including shock and rarely cardiac arrest; vancomycin for injection should

be administered in a diluted solution over a period of not less than 60 minutes to avoid rapid-infusion-related reactions; stopping a vancomycin infusion may result in prompt cessation of the aforementioned reactions; systemic vancomycin exposure may result in acute kidney injury; the risk of acute kidney injury increases as systemic exposure/serum levels increase; monitor renal function in all patients, especially patients with underlying renal impairment, patients with co-morbidities that predispose to renal impairment, and patients receiving concomitant therapy with a drug known to be nephrotoxic; ototoxicity has occurred in patients receiving vancomycin for injection; ototoxicity may be transient or permanent; ototoxicity has been reported mostly in patients who have been given excessive doses, who have an underlying hearing loss, or who are receiving concomitant therapy with another ototoxic agent, such as an aminoglycoside; vancomycin should be used with caution in patients with renal insufficiency because the risk of toxicity is appreciably increased by high, prolonged blood concentrations; dosage of vancomycin for injection must be adjusted for patients with renal dysfunction; Clostridium difficile associated diarrhea has been reported with use of nearly all antibacterial agents, including vancomycin hydrochloride for injection, and may range in severity from mild diarrhea to fatal colitis; treatment with antibacterial agents alters the normal flora of the colon leading to overgrowth of C. difficile; if Clostridium difficile associated diarrhea is suspected or confirmed, ongoing antibiotic use not directed against C. difficile may need to be discontinued; appropriate fluid and electrolyte management, protein supplementation, antibiotic treatment of C. difficile, and surgical evaluation should be instituted as clinically indicated; reversible neutropenia has been reported in patients receiving vancomycin for injection; patients who will undergo prolonged therapy with vancomycin for injection or those who are receiving concomitant drugs which may cause neutropenia should have periodic monitoring of the leukocyte count; vancomycin for injection is irritating to tissue and must be given by a secure IV route of administration; pain, tenderness, and necrosis occur with intramuscular (IM) injection of vancomycin for injection or with inadvertent extravasation; thrombophlebitis may occur, the frequency and severity of which can be minimized by administering the drug slowly as a dilute solution (2.5 to 5 g/L) and by rotation of venous access sites; measurement of vancomycin serum concentrations can be helpful in optimizing therapy, especially in seriously ill patients with changing renal function. Vancomycin serum concentrations can be determined by the use of microbiologic assay, radioimmunoassay, fluorescence polarization immunoassay, fluorescence immunoassay, or high-pressure liquid chromatography; Vancomycin-related monitoring should occur with patients.

Considerations for special patient populations - vancomycin dosage adjustment must be made in patients with impaired renal function; older adult patients may require greater dosage reductions than expected due to decreased renal function.

## Section 2 Summary

The following therapeutic options may be used to address and manage impaired skin integrity: adequate nutrition and hydration, adequate personal hygiene, skin moisturizers, positioning and mobilization and antibiotics. Health care professionals should be familiar with the aforementioned options to best serve older adult patients suffering from impaired skin integrity.

## Section 2 Key Concepts

- One of the most essential elements to addressing and managing impaired skin integrity in older adult patient populations is adequate nutrition and hydration.
- Adequate personal hygiene is essential to managing impaired skin integrity; important aspects of adequate personal hygiene, as it relates to impaired skin integrity, include the following: bathing regularly, water use, skin cleansing product use, and drying.
- Skin moisturizers may be used to address and manage impaired skin integrity.
- Positioning and mobilization may be an option when addressing and managing pressure injuries; the key elements of positioning and mobilization include the following: repositioning at-risk patients, if not contraindicated; scheduling and planning patient repositioning, when applicable; the use of pressure-relieving devices; considerations regarding patient body size, level of immobility, exposure to shear, skin moisture and perfusion when choosing a support surface.
- Some patients may require antibiotics to help address and manage their impaired skin integrity and/or any infections that may result from impaired skin integrity; antibiotics that may be used to address and manage impaired skin integrity and/or any infections that may result from impaired skin integrity include: amoxicillin/clavulanate, cephalexin, clindamycin, levofloxacin, doxycycline, Bactrim and vancomycin.

## Section 2 Key Terms

**Eating pattern** - the combination of foods and beverages that constitute an individual's complete dietary intake over time; a customary way of eating or a combination of foods recommended for consumption

**Calorie balance** - the balance between the calories taken in from foods and the calories expended from metabolic processes and physical activity

**Personal hygiene (as it relates to impaired skin integrity)** - a series of practices that sustain the body's cleanliness in order to maintain healthy skin integrity as well as overall health and well-being

**Skin cleansing product** - any product designed to clean the human body while removing dirt, bacteria, dead skin cells and/or other substances from the skin

**Plain soap** - detergents that contain no added antimicrobial agents or may contain these solely as preservatives

**Emollient-based soap substitutes/bath emollients** - products designed to remove dirt, bacteria, dead skin cells and/or other substances from the skin, while avoiding skin barrier breakdown, dryness, and irritation

**Drying (as it relates to skin integrity)** - the act of removing moisture and/or water from the body/skin after a personal hygiene routine, including water and a skin cleansing product, is completed

**Maceration (as it relates to impaired skin integrity)** - skin breakdown resulting from prolonged moisture

**Skin moisturizer** - a product designed to act as a barrier on the surface of the skin to help trap water and prevent water loss

**Pressure-relieving device** - an appliance, which may be used to reduce pressure points caused by a patient's body weight when seated, bedridden or immobile

## **Section 2 Personal Reflection Question**

What therapeutic options may be used to address and manage impaired skin integrity?

### **Case Study: Impaired Skin Integrity**

Impaired skin integrity-related case study is presented below to review the concepts found in this course. A case study review will follow the case study. The case study review includes the types of questions health care professionals should ask themselves when considering impaired skin integrity and how it relates to the administration of health care. Additionally, reflection questions will be posted, within the case study review, to encourage further internal debate and consideration regarding the presented case study and impaired skin integrity. The information found within the case study and case study review was derived from materials provided by the CDC, the Joint Commission, the National Council on Aging, the WHO, the U.S. Department of Health and Human Services and the FDA (CDC, 2020; Joint Commission, 2016;

National Council on Aging, 2020; WHO, 2020; U.S. Department of Health and Human Services, 2015; FDA, 2020).

## Case Study

An 86-year-old male patient is admitted to a long-term care facility. The patient has no known drug allergies and has a history of cardiovascular disease and depression. Upon examination, a health care professional observes, what appears to be, an area of irritated, reddish skin over the patient's tailbone. The aforementioned area of skin is intact, however, when the superficial reddening of the skin is pressed, it does not turn white. Upon further examination, the patient reveals that he is not experiencing an itching sensation and that he is, currently, "not in any more pain than usual." A Wong/Baker faces rating scale is used to determine that the patient's level/intensity of overall pain is a 4 out of 10. Additional patient questioning reveals that the patient has not been eating his "usual amount of food" and that he has not been "drinking a lot." The patient also reveals that he has been spending "a lot of time in bed lately" and that he has not been "bathing every day." The aforementioned, relevant, patient information is documented and the patient is brought to his room.

## Case Study Review

### What patient details may be relevant to impaired skin integrity?

The following patient details may be relevant to impaired skin integrity: the patient is 86 years old; the patient has no known drug allergies; the patient has a history of cardiovascular disease and depression; a health care professional observes, what appears to be, an area of irritated, reddish skin over the patient's tailbone; the aforementioned area of skin is intact, however, when the superficial reddening of the skin is pressed, it does not turn white; the patient reveals that he is not experiencing an itching sensation; the patient reveals that he is, currently, "not in any more pain than usual;" a Wong/Baker faces rating scale is used to determine that the patient's level/intensity of overall pain is a 4 out of 10; patient questioning, reveals that the patient has not been eating his "usual amount of food" and that he has not been "drinking a lot;" the patient reveals that he has been spending "a lot of time in bed lately;" the patient reveals that he has not been "bathing every day;" relevant, patient information is documented.

*Are there any other patient details that may be relevant to impaired skin integrity; if so, what are they?*

### How are each of the aforementioned patient details relevant to impaired skin integrity?

Each of the previously highlighted patient details may be potentially relevant to impaired skin integrity. The potential relevance of each patient detail may be found below.

The patient is 86 years old - the patient's age may be relevant because age is a potential risk factor for impaired skin integrity. Health care professionals should note the following: health care professionals should work to identify risk factors for impaired skin integrity when examining older adult patients. Health care professionals should also note the following risk factors for impaired skin integrity: pressure, trauma, moisture, an injury involving the skin, immobility, poor nutrition, poor hydration, inadequate hygiene, impaired mental status, and age.

The patient has no known drug allergies - the previous patient detail may be relevant to health care professionals when they are working to address and manage possible impaired skin integrity, especially if antibiotics are required.

The patient has a history of cardiovascular disease and depression - the previous patient detail may be relevant because it provides context for the patient's possible impaired skin integrity. Furthermore, the patient's history of depression may provide insight into the patient's reported, recent eating/hydrating habits. The patient's history of depression may also provide insight into why the patient has been spending "a lot of time in bed lately." Health care professionals should note the following information regarding cardiovascular disease: chronic diseases, such as cardiovascular disease, reduce the skin's ability to repair damage.

A health care professional observes, what appears to be, an area of irritated, reddish skin over the patient's tailbone - the aforementioned patient detail may be relevant because it may be an indication of impaired skin integrity - specifically, it may indicate the presence of a pressure injury. Health care professionals should note the following: a pressure injury, also referred to as a pressure ulcer or bedsore, may refer to localized damage to the skin and/or underlying soft tissue, usually over a bony prominence; pressure injuries typically result from intense and/or prolonged pressure; a pressure injury can present as intact skin or an open ulcer; pressure injuries typically affect high-risk patient populations such as older adults.

The aforementioned area of skin is intact, however, when the superficial reddening of the skin is pressed, it does not turn white - the aforementioned patient detail may be relevant because it may provide further indication of impaired skin integrity/ it may indicate the presence of a pressure injury. The aforementioned patient detail may also be relevant because it may help health care professionals identify the stage or type of pressure injury. Health care professionals should note the following: Stage 1 pressure injuries are characterized by intact skin with a localized area of non-

blanchable erythema (i.e., stage 1 pressure injuries are characterized by a superficial reddening of the skin that, when pressed, does not turn white); Stage 2 pressure injuries are characterized by partial-thickness skin loss with exposed dermis; a Stage 2 pressure injury wound bed is typically viable, pink or red, moist, and may represent as an intact or ruptured serum-filled blister; adipose (fat) is not visible and deeper tissues are not visible; granulation tissue, slough and eschar are not present; Stage 3 pressure injuries are characterized by full-thickness loss of skin, in which adipose (fat) is visible in the ulcer and granulation tissue and epibole are often present; slough and/or eschar may be visible; the depth of tissue damage varies by anatomical locations; areas of significant adiposity can develop deep wounds; undermining and tunneling may occur; fascia, muscle, tendon, ligament, cartilage and/or bone are not exposed; Stage 4 pressure injuries are characterized by full-thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage or bone in the ulcer; slough and/or eschar maybe visible; epibole, undermining and/or tunneling often occur; depth varies by anatomical location.

The patient reveals that he is not experiencing an itching sensation - the previous patient detail is relevant to a patient assessment regarding impaired skin integrity. Health care professionals should note the following: health care professionals should observe patients for signs of itching when conducting patient assessments (e.g., scratch or nail marks on a patients skin; skin irritation; localized skin irritation); itching and/or extensive itching can be detrimental to patient care as it relates to impaired skin integrity; itching and/or extensive itching can lead to excessive patient scratching, which in turn possess the potential to further skin irritation, damage, disruption, and loss of functionality; excessive skin scratching by a patient could open up wounds and or lead to infection(s); those patients who are experiencing itching and/or extensive itching should be counseled on the detrimental effects of excessive scratching; those patients should also be observed and routinely monitored.

The patient reveals that he is, currently, "not in any more pain than usual" - the previous patient detail is also relevant to a patient assessment regarding impaired skin integrity. Health care professionals should note the following: health care professionals should evaluate a patient's level of pain and discomfort when conducting patient assessments related to impaired skin integrity; pain is often associated with impaired skin integrity.

A Wong/Baker faces rating scale is used to determine that the patient's level/intensity of overall pain is a 4 out of 10 - the aforementioned patient detail may be relevant because it provides insight into the patient's level/intensity of overall pain. Health care professionals should note the following: health care professionals may evaluate a patient's pain and related discomfort by using a variety of pain assessment tools which

include: a simple numerical pain intensity scale, the WILDA approach assessment guide, the Wong/Baker faces rating scale, the Critical-Care Pain Observation Tool (CPOT), and the Pain Assessment in Advanced Dementia (PAINAD) scale; health care professionals should select a pain assessment tool based on individual patient needs and characteristics.

Patient questioning reveals that the patient has not been eating his "usual amount of food" and that he has not been "drinking a lot" - the previous patient details may be relevant because poor nutrition and poor hydration are potential risk factors for impaired skin integrity.

The patient reveals that he has been spending "a lot of time in bed lately" - the previous patient detail may be relevant because immobility is a potential risk factor for impaired skin integrity - specifically, immobility is a potential risk factor for pressure injuries.

The patient reveals that he has not been "bathing every day" - the previous patient detail may be relevant because inadequate hygiene is a potential risk factor for impaired skin integrity.

The patient information is documented - the previous detail is relevant because health care documentation is an essential element of adequate patient assessments regarding impaired skin integrity. Health care professionals should note the following: health care professionals should complete health care documentation when assessing patient-related impaired skin integrity; when completing health care documentation centered around patient impaired skin integrity, health care professionals should include information relevant to the patient, patient's impaired skin integrity, and relevant information related to essential elements of an adequate impaired skin integrity patient assessment, which include: etiology determination, nutritional and hydration status determination, mobility determination, impaired tissue integrity/ condition, wound characteristics, recognition of high-risk areas, pressure injury evaluation, signs of itching, patient pain and discomfort, patient vital signs, patient management goals; health care documentation may be vital to addressing impaired skin integrity.

*What other ways, if any, are the previous patient details relevant to impaired skin integrity?*

**Is the patient in the above case study suffering from impaired skin integrity?**

Based on the information presented in the case study, it does appear that the patient is suffering from impaired skin integrity - specifically, it appears the patient is suffering from a Stage 1 pressure injury?



*How can health care professionals differentiate the stages or types of pressure injuries?*

**What management goals, regarding impaired skin integrity, should be set for the patient?**

The team of health care professionals caring for the patient should set both short-term goals and long-term goals for the patient. Specific patient management goals, regarding impaired skin integrity, may include the following: continue to assess patient-related impaired skin integrity; continue to assess high-risk areas such as areas of the skin that cover the shoulders, elbows, knees, as well as the tailbone and hip bones; observe, monitor and evaluate pressure injuries; assess the overall condition of the patient's skin; observe and monitor patient signs of itching such as scratch or nail marks on the patients skin, skin irritation and/or localized skin irritation; observe and monitor patient pain and discomfort; observe and monitor patient vital signs; observe and monitor the site of impaired skin integrity at least once daily for color changes, redness, swelling, pain, or other signs of infection; observe and monitor the skin around the area of impaired skin integrity; address the impaired skin integrity as needed; improve and/or maintain adequate patient nutrition; improve and/or maintain adequate patient hydration; improve and/or maintain adequate patient personal hygiene; address patient mobility or lack of mobility; ensure patient skin remains in tack; educate the patient regarding adequate skin care; educate the patient regarding adequate hydration and nutrition; educate the patient regarding adequate personal hygiene; work to prevent further and/or additional patient-related impaired skin integrity.

*Are there any other management goals that should be set for the patient; if so, what are they?*

**What professional skills/tools should health care professionals employ while addressing the patient's impaired skin integrity?**

The following professional skills/tools should be employed by health care professionals while addressing the patient's impaired skin integrity: observation/ patient monitoring, health care documentation, effective hand hygiene, personal protective equipment (PPE), aseptic dressing techniques, when applicable, fall precautions, and health care organization policies and procedures.

*Are there any other professional skills/tools that should be employed while addressing the patient's impaired skin integrity; if so, what are they?*

### **How should health care professionals address/manage the patient's impaired skin integrity?**

To effectively address/manage the patient's impaired skin integrity, the health care professionals involved in the patient's care should utilize relevant therapeutic options such as adequate nutrition and hydration, adequate personal hygiene, skin moisturizers, positioning, and mobilization, and antibiotics, when applicable.

*Are there any other therapeutic options available to effectively address/manage the patient's impaired skin integrity; if so, what are they?*

### **How may health care professionals utilize each of the aforementioned therapeutic options to address/manage the patient's impaired skin integrity?**

Health care professionals may utilize the aforementioned therapeutic options in a variety of ways to address/manage patients' impaired skin integrity. Examples of how health care professionals may utilize each of the aforementioned therapeutic options to address/manage the patient's impaired skin integrity, from the case study, may be found below.

Adequate nutrition and hydration - health care professionals can ensure the patient receives adequate nutrition/hydration per day (e.g., 2 - 2.5 liters of fluid per day, unless the patient becomes medically restricted; 2,000 calories per day, unless the patient requires additional calories due to activity).

Adequate personal hygiene - health care professionals can ensure the patient engages in adequate personal hygiene (e.g., bathes regularly; use warm water when engaging in personal hygiene rather than hot water or extremely hot water; does not over-clean; uses emollient-based soap substitutes and/or bath emollients; uses soft cloths to dry).

Skin moisturizers - health care professionals can ensure the patient applies skin moisturizers, when applicable, to help prevent dry skin.

Positioning and mobilization - health care professionals can employ the key elements of positioning and mobilization, which include the following: repositioning at-risk patients, if not contraindicated; scheduling and planning patient repositioning, when applicable; the use of pressure-relieving devices (the term pressure-relieving device may refer to an appliance, which may be used to reduce pressure points caused by a patient's body weight when seated, bedridden or immobile); considerations regarding patient body size, level of immobility, exposure to shear, skin moisture and perfusion when choosing a support surface.

Antibiotics - health care professionals can assess the need for antibiotics. Health care professionals should note the following antibiotics may be used to help address and manage impaired skin integrity and/or any infections that may result from impaired skin integrity: amoxicillin/clavulanate, cephalexin, clindamycin, levofloxacin, doxycycline, Bactrim and vancomycin. Health care professionals should be familiar with the aforementioned antibiotics.

*How can health care professionals evaluate the effectiveness of each therapeutic option utilized to address/manage impaired skin integrity?*

## Conclusion

Impaired skin integrity may refer to relatively unhealthy skin that can show damage, disruption, loss of functionality, and/or may not be intact. Impaired skin integrity may lead to infection, impaired mobility, loss of functionality, loss of limb(s) as well as decreased health, overall well-being, quality of life, and even death. Thus, the presence of impaired skin integrity is a major concern for older adult patients. With that said, health care professionals should adequately identify, evaluate, and assess older adult patients suffering from impaired skin integrity by conducting an adequate patient assessment. An adequate patient assessment, as it relates to the presence of impaired skin integrity, is one that safely and effectively identifies impaired skin integrity, while attempting to determine the potential cause, type, intensity, pain and related complications associated with impaired skin integrity. Health care professionals should note that impaired skin integrity-related patient assessments may occur at any point in the health care process and may be used to both identify and monitor impaired skin integrity. Health care professionals should also note that an adequate patient assessment regarding impaired skin integrity may include the following elements: etiology determination, nutritional and hydration status determination, mobility determination, impaired tissue integrity/condition, wound characteristics, recognition of high-risk areas, pressure injury evaluation, signs of itching, patient pain, patient vital signs, patient management goals, and health care documentation.

An adequate patient assessment is essential to addressing and managing impaired skin integrity. The professional skills and tools health care professionals should employ while addressing impaired skin integrity include: observation/patient monitoring, health care documentation, effective hand hygiene, personal protective equipment (PPE), aseptic dressing techniques, fall precautions, and health care organization

policies and procedures. Health care professionals should note that the following therapeutic options may be used to address and manage impaired skin integrity: adequate nutrition and hydration, adequate personal hygiene, skin moisturizers, positioning and mobilization, and antibiotics. Finally, health care professionals should be familiar with the aforementioned therapeutic options to best serve older adult patients in need.

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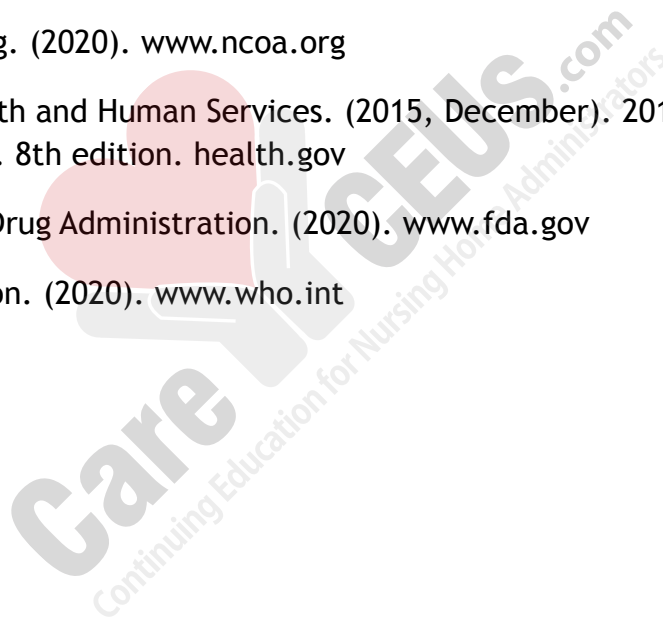
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