WOC Complex Plan of Care

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Pertinent Medical/Nursing History	Pertinent lab/diagnostic test results
JD is a 55 year-old male with history of Type 2 DM, HTN, HLD, OSA, CKD with AKI leading to ESRD and need for hemodialysis. He was originally admitted to an outside community hospital for respiratory failure and AKI. He was discharged from there to an LTAC facility where he was noted to have a Stage 4 sacral pressure injury. Pressure injury was being managed by an outpt wound clinic with dressing changes between visits being performed by LTAC staff. Wound care included Santyl with NS moist dressing and several debridements. JD became hemodynamically unstable and was admitted to a level 1 trauma center. He was septic on admission with wound cultures positive for Pseudomonas and Enterococcus Fecalis. Placed on IV Zosyn, Linezolid and Daptomycin. Pt went into septic shock and was placed on a Levophed gtt and intubated. Pt noted to have bloody stools. Sigmoidoscopy performed. Noted to have large rectal ulcers with moderate bleeding draining into the pelvis with additional enterocutaneous fistulas communicating with the Stage 4 sacral pressure injury. Patient transfused over next 10 days receiving a total of 4 u PRBC. Loop Sigmoid Colostomy performed. WOC nursing consulted for ostomy and wound care. Pt intubated. Arouses to voice and follows commands. Agreeable to visit, ostomy and wound care. Abdomen noted to be rotund/obese, soft and tender to palpation. Loop colostomy in LLQ. Appliance system removed. No rod in place. Documentation indicates rod was removed on POD #2, per protocol. Stoma completely retracted below skin level with circumferential mucocutaneous junction separation. Stoma is not visible in opening. Depth measures 7 cm with fat exposed. Peristomal plane is flat. Denuded at 7 o'clock with superficial, weepy breakdown. Colorectal surgeon aware of clinical findings. Peristomal plane cleansed with soap and water. Patted dry. Ostomy opening measures 2 inches by 1 ¾ inches. Peristomal irritation crusted utilizing stomahesive powder followed by skin barrier wipe. Three layers applied. Paste applied around opening. Coloplast Sensura Mio Flex Convex Light skin barrier wafer applied. High volume	February 14, 2020 WBC 14.52 HGB 7.9 HCT 23.3 Platelets 143 Neutrophils 78% Bands 0 Sodium 142 Potassium 4.6 Chloride 99 CO2 26 Protein 5.3 Albumin 2.2 Calcium 7.9 Alkaline Phosphatase 158 Glucose 173 BUN 23 Creatinine 0.94 Lactate 1.2 PT/PTT not drawn Prealbumin not drawn HgbA1C not obtained Wound Culture: Pseudomonas and Enterococcus Fecalis sensitive to Vancomycin & Meropenem

output pouch attached to barrier. Oozed liquid stool on turning to side. Stage 4 pressure injury noted to sacral/buttock area. Dakin's solution 0.125% moistened gauze dressing removed. Noted to have moderate amount of serosanguinous drainage on dressing. Site cleansed with NS. Wound measures 15 cm x 21.5 cm x 8 cm. Wound edges noted to be macerated, white in color. Wound bed with 80% slough, 10 % exposed bone and 10 % exposed muscle. Zinc oxide moisture barrier applied to periwound. Wound lightly packed with 0.125% Dakin's moistened gauze. Covered with foam. Perianal area cleansed using soft cloth. Noted to have red rash with satellite lesions and superficial open area. Antifungal zinc barrier applied. Indwelling foley catheter to gravity drainage with amber colored urine in moderate amount noted in drainage bag. No sediment. BLE with pitting edema up to the knees. RLE measures 39 cm at calf with reference point of 12 cm, 22 cm at ankle with reference point 2 cm and 19 cm at dorsum of foot. LLE measures 41cm at calf, 13 cm at ankle and 20 cm at dorsum of foot with same reference points. Mepilex foam dressing noted to BLE heels. Dressings removed. Unstageable pressure injury noted to right lateral heel measuring 3 cm x 4 cm x 0.1 cm. Eschar moist and detached at edges. Mild peri-wound erythema without induration. Site cleansed with NS. Foam dressing reapplied. No evidence of breakdown noted to left heel. Heels elevated off bed. Pt tolerated visit and care provided. No evidence of discomfort; grimacing, pulling away. Current Medications: Potassium 40 meq per feeding tube q 2 hr and prn Magnesiuim Sulfate 4-6 g IV prn Sodium phosphate 45 mmol IV prn Dextrose 50% 12.5-25 g IV prn Vancomycin 2 gm IV q 24 hr Meropenem 500 mg IV BID Sodium Thiosulfaate 25 g IV q 24 hr Pantoprozole 40 mg per feeding tube q 24 hours Chlorhexidine Rinse 15 ml orally with suction q 6 hrs IV GTTS: Heparin 10,000/250 ml @ 0.5 ml/hr TPN 62.5 ml/hr Fat Emulsion 20 ml/hr	Blood Culture: Negative CT Abdomen Pelvis: Moderate subcutaneous emphysema in right gluteal fold. Enterocutaneous fistula from Rectum to Stage 4 sacral pressure ulcer. Severe rectal wall thickening. Suspicion for osteomyelitis of sacrum. No evidence of drainable fluid. Stool Culture: C Diff Positive

Insulin (regular) gtt. 0.5-30 u/hr Fentanyl 50 mcg/hr Propofol 25 mcg/kg/min Levophed 12 mcg/min CVVHD Intake: 3263.3 Output: 918 WOC Recommendations: Loop Colostomy: Coloplast Sensura Mio Flex Convex Light skin barrier wafer with high volume output pouch. Pressure Injury to coccyx/sacral area: 0.125% Dakin's Solution moistened gauze Pressure injury to right heel: foam dressing Perianal care: antifungal zinc barrier Maintain indwelling catheter WOC nursing service will continue to follow at intervals.	

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Assessment	Plan/Interventions/Alternatives	Evaluation	Rationale
Impaired skin integrity related to prolonged pressure and frequent moisture as evidenced by full-thickness skin loss <u>Braden scale</u> Sensory perception: 2 - Very limited Moisture: 2 - Often moist Activity: 1 - Bedfast Mobility: 2 - Very limited Nutrition: 3 - Adequate Friction and shear: 1 - Problem Score: 11 - The patient is at high risk for pressure injury. The sacral pressure injury has a moderate amount of serosanguinous drainage and evidence of periwound maceration. The wound measures 15 x 21.5 x 8 cm and is stage 4 due to the exposed bone (10% of wound bed) and muscle. The wound bed is covered with 80% slough, 10 % bone and 10 % muscle. Sacral wound culture positive for *Pseudomonas* and *Enterococcus*. The perianal area shows signs of incontinence-associated dermatitis (IAD) with candidiasis as evidenced by red, irritated, denuded skin with satellite lesions. The right heel pressure injury	<u>Sacral stage 4 pressure injury:</u> Cleanse the wound with normal saline. Apply Coloplast Baza Protect zinc oxide moisture barrier cream to the periwound skin (alternative: Cavilon No Sting liquid barrier film). Pack the wound lightly with gauze moistened with 0.125% Dakin's solution (if not available, use normal saline to moisten the gauze). Cover with Medline Optifoam Gentle Sacrum foam dressing (if not available, use gauze and tape). Change wound dressing BID. <u>Perianal incontinence-associated dermatitis with candidiasis:</u> Cleanse the perianal area using Vitality Sensi-Care no-rinse perineal skin cleanser and a soft non-linting cloth (alternative: Sage Comfort Shield barrier cream wipes). Apply Coloplast Baza moisture barrier antifungal cream (alternative: apply prescription Nystatin powder then seal with Cavilon No Sting liquid barrier then cover with Coloplast Baza Protect zinc oxide moisture barrier cream). Perform perineal care BID and PRN after each episode of rectal discharge. <u>Right heel unstageable pressure injury:</u> Cleanse the right heel with normal saline and pat dry. Apply Mepilex Border Heel foam dressing to bilateral heels. Offload bilateral heels using Stryker Sage Prevalon heel protector boots (alternative: pillows placed under the lower legs to elevate the heels). Maintain the patient on MedPlus PressurePlus T-Zone pressure-	The sacral pressure injury shows improvement with a reduction in size and a decrease in the amount of wound exudate. Perianal IAD and candidiasis resolve, and perianal skin integrity is maintained. Nurses' notes indicate heels are offloaded with boots or pillows and that the patient is repositioned Q2hr. The patient does not develop any additional pressure injuries.	The periwound area is at high risk of maceration due to the moderate amount of wound exudate. A zinc-based barrier cream or non-alcoholic liquid barrier can protect the periwound skin from moisture from the exudate and the dressing (Ermer-Seltun & Rolstad, 2022, p. 150). Dakin's-soaked gauze addresses the wound infection as an antimicrobial agent and as chemical debridement to loosen the slough (Ramundo, 2022, p. 178). The foam dressing absorbs the excess wound exudate and promotes autolytic debridement (Jaszarowski & Murphree, 2022, p. 164). The patient is at risk of IAD as their distal colon is still connected to the rectum, so there may be incontinent leakage of mucous from the rectum (Stricker et al., 2022, p. 134). Perineal care should be performed as needed to prevent prolonged skin exposure to the leakage. Using a pH-balanced cleanser and a soft non-linting cloth prevents skin irritation and damage during cleansing by minimizing friction and disruption of the skin barrier (Thayer & Nix, 2022, p. 361). Barrier cream wipes that combine a cleanser, moisturizer, and barrier are also appropriate (Borchert, 2022, p. 412). A barrier cream containing antifungal properties treats the candidiasis coexisting with IAD (Thayer & Nix, 2022, p. 365). The right heel eschar should not be removed given the patient has ineffective peripheral tissue perfusion as evidenced by BLE edema, and debridement will increase the risk of infection without promoting wound healing (Ramundo, 2022, p. 173). Offloading the heels can prevent the worsening of the right heel pressure injury and the development of a pressure injury on the left heel. The patient is at increased risk of pressure injuries due to their impaired ability to communicate pressure-related discomfort, constant moisture from wound exudate and incontinence, and limited mobility due to their critical condition. Repositioning the patient every 2 hours and using a pressure-redistributing mattress will prevent further pressure injuries. Low air loss mattresses provide microclimate control with continuous airflow to the skin (Mackey & Watts, 2022, p. 434). Draw sheets allow staff to lift the patient when repositioning, thereby reducing friction and shear forces against the skin. Keeping the head of the bed at 30 degrees at most will minimize shear forces from the patient sliding down in the bed (Borchert, 2022, p. 411).

measures 3 x 4 x 0.1 cm and is unstageable due to the presence of eschar.	redistributing mattress (alternative: Stryker Air II low air loss mattress). Turn the patient every 2 hours. Utilize a draw sheet and positioning wedges to reposition the patient. Avoid elevating the head of the bed greater than 30 degrees if possible.		
Alteration in bowel function related to extensive rectal ulcers resulting in loop sigmoid colostomy and current *C. difficile* infection Loop colostomy present in LLQ. Stoma has no rod and is retracted below skin level with mucocutaneous junction separation. Stool culture positive for *C. difficile*. **Impaired peristomal skin integrity related to improper pouch fit and stoma retraction** There is evidence of peristomal irritant dermatitis with denuded peristomal skin at 7 o'clock.	Change the colostomy pouching system every 3 days or PRN for irritation or leakage. Remove the old pouch gently using the push-pull method. Cleanse the stoma gently with warm water and gauze; pat dry. Utilize Coloplast Brava adhesive remover wipes if needed. On the damaged peristomal skin, utilize the crusting technique: dust Stomahesive stoma powder on damaged peristomal skin; brush off excess powder. Apply Cavilon skin barrier wipe on top of the powdered area. Repeat to achieve three layers of powder and barrier wipe (alternative: apply Hollister Adapt Barrier Extenders thin hydrocolloid strip to the denuded skin). Discontinue crusting if peristomal skin irritation resolves. Measure the stoma opening using the stoma measuring guide; the measurement should be 1/8" larger than the opening. Cut the skin barrier wafer to the corresponding size. Apply Coloplast Brava alcohol-free ostomy paste around the stoma opening while also filling in the area of mucocutaneous separation (alternative: fill with Stomahesive stoma powder). Apply Coloplast Sensura Mio Flex Convex Light skin barrier wafer then attach Coloplast Sensura Mio high output pouch (alternative: Hollister New Image soft	Notes indicate no signs of leakage between pouch changes. Peristomal skin shows improvement in peristomal irritant dermatitis (decrease in skin damage or resolution) at the next pouch change.	A 2-piece pouching system is appropriate for this patient because the large volume of liquid output necessitates frequent pouch changes that can be performed without removing the skin barrier wafer (Colwell & Hudson, 2022, p. 183). The patient is at high risk of peristomal irritant dermatitis due to *C. difficile* infection resulting in large volume liquid stool and stoma retraction. The crusting technique is used to treat peristomal irritant dermatitis with stoma powder which absorbs moisture, allowing the skin barrier wafer to adhere to the skin (Salvadalena & Hanchett, 2022, p. 253). Measuring the stoma opening with each pouch change ensures a proper fit and the use of ostomy paste to caulk around the opening can fill in any creases and protect the exposed peristomal skin (Colwell & Hudson, 2022, pp. 178-180). The circumferential mucocutaneous junction separation should be filled with the ostomy paste as well to prevent fecal contamination and infection (Pittman, 2022, p. 272). A convex skin barrier wafer is required to protrude the retracted stoma to protect the peristomal skin from the effluent. Stoma retraction is a common complication of loop ostomies and the rod placed perioperatively may not have been able to prevent the retraction (Gialamas et al., 2021). Given the patient's abdomen is soft with a flat peristomal plane, a flexible convex barrier is appropriate (Colwell & Hudson, 2022, p. 176). The WOC nurse should be notified if any changes may be needed to the pouching system due to persistent leakage. Pain may indicate stoma complications. If the patient continues to have complications despite interventions, surgery may be required for stoma revision (Pittman, 2022, p. 274). A dark or pale color of the stoma may indicate inadequate perfusion,

	convex CeraPlus skin barrier wafer with Hollister New Image two-piece high output drainable pouch). Notify the WOC nurse if needing to change the skin barrier wafer daily or if there is increased irritation at the colostomy site or signs of peristomal pain. Notify the surgeon if the color of the stoma changes to very dark or pale, or if there is redness, swelling, pain, or bleeding.		which may lead to stoma necrosis, a common early stoma complication (Pittman, 2022, p. 273).
Alteration in genitourinary function related to the indwelling urinary catheter placed for measurement of urine output in the ICU	Maintain indwelling urinary catheter. Secure catheter tubing with a stabilization device applied to the upper thigh (alternative: secure with medical tape). Keep the drainage bag below the level of the bladder. Avoid kinks and dependent loops in the tubing. Empty the drainage bag when it is approximately 400 ml full. Perform urinary catheter care BID by cleansing urethral meatus and groin using Provon SureStep Foley care wipes (alternative: cleanse with Vitality Sensi-Care no-rinse perineal skin cleanser and a soft non-linting cloth). Monitor for signs and symptoms of catheter-associated urinary tract infection (CAUTI) such as confusion, fever, pain associated with the catheter, etc. Notify MD if any are noted. Assess and then document the indication for indwelling urinary catheter use daily.	The patient does not develop a symptomatic UTI. Notes indicate the urinary catheter is draining freely and remains free from blockage and catheter bypassing.	Measurement of urine output in critically ill patients is an indication for appropriate indwelling urinary catheter use per the Centers for Disease Control and Prevention (CDC) (Newman, 2022, p. 415). The patient is at higher risk of UTI due to their critical condition, comorbidities, and indwelling urinary catheter (Newman, 2022, p. 411). Prevention of CAUTI and catheter-related complications include using a stabilization device to reduce tube tension (which can cause urethral trauma) and positioning the tubing and drainage bag to prevent urinary stasis and buildup of pressure in the tubing (Newman, 2022, pp. 415-419). Per Newman (2022), odor and pyuria are not reliable indicators of CAUTI because all patients with urinary catheters have urine colonized by bacteria (p. 413). The CDC's criteria for CAUTI diagnosis include fever, suprapubic tenderness, or costovertebral angle tenderness (Newman, 2022, p. 411). A daily review of urinary catheter indications has been shown to be effective in encouraging the appropriate use of indwelling urinary catheters (Newman, 2022, p. 418).
Pain associated with dressing change for the sacral pressure injury, IAD, and colostomy pouching system	Assess pain using the Behavioral Pain Scale (BPS) or the Critical Care Pain Observation Tool (CPOT). Administer additional pain medication as needed per	The patient's pain level shows improvement with a decrease	Administering pain medication in a timely manner is important to ensure adequate pain control; pain is associated with poor wound healing (Ermer-Seltun & Rolstad, 2022, p. 149). Non-pharmacological pain interventions can be a beneficial adjunct to pharmacological therapy.

	orders prior to dressing change. Utilize non-pharmacological pain interventions such as distraction.	in their pain score after pouch or dressing changes.	Given the patient is non-verbal due to intubation, a validated pain scale that uses physical indicators of pain such as the BPS or CPOT should be used to assess the patient's pain level (Pandharipande, 2023).
Imbalanced nutrition: less than body requirements related to loss from diarrhea and enterocutaneous fistulae (ECF) Hemoglobin 7.9 (low) Albumin 2.2 (low) Protein 5.3 (low) Calcium 7.9 (low) Glucose 173 (high)	Administer TPN and lipid infusions per orders and per pharmacist and dietitian recommendations. Monitor lab results daily for electrolyte imbalances and notify MD. Monitor and document patient weight daily. Continue glucose monitoring and insulin administration per orders.	Notes indicate that the patient is receiving 1,500–2,000 calories per day and 1.5–2.0 g/kg of protein per day. Lab results indicate the patient's electrolytes and glucose levels remain stable.	Although the patient's fistulae may be low output due to their distal location (Nix & Bryant, 2022, p. 286), the patient is still at risk of fluid and electrolyte imbalances through loss from the fistulae and through *C. difficile* diarrhea. Nutritional management with TPN allows bowel rest and supports spontaneous closure of the fistulae (Nix & Bryant, 2022, p. 287). Per Tang et al. (2020), TPN "reverses the catabolic state of ECF patients". Moreover, if surgery is required to close the fistulae, TPN may be indicated to restore nutritional status prior to surgery (Nix & Bryant, 2022, p. 298). Adequate nutrition is also necessary to maintain skin integrity and support wound healing (Friedrich et al., 2022, p. 117). The American Society of Parenteral and Enteral Nutrition (ASPEN) recommends protein intake of 1.5-2.0 g/kg/day for ECF patients and 1,500–2,000 calories per day has been associated with higher rates of fistula closure (Tang et al., 2020). TPN has complications of hyperglycemia, infection, liver disease, and refeeding syndrome (Tang et al., 2020). Refeeding syndrome can result in severe fluid and electrolyte imbalances, solidifying the importance of monitoring labs and daily weight (Tang et al., 2020). Diabetes management is integral as uncontrolled glucose levels impair wound healing (Friedrich et al., 2022, p. 131) and increase the risk of UTI (Nelles & Ermer-Seltun, 2022, p. 386).
Infection WBC 14.52 (high) Neutrophils 78% (high) Stool culture positive for *C. difficile*. Sacral wound culture positive for *Pseudomonas* and *Enterococcus*.	Continue IV antibiotics per orders. Maintain contact precautions. Utilize bleach wipes to disinfect hard surfaces that have been in contact with the patient. Dispose of stool-contaminated supplies per facility protocol.	Notes indicate a decrease in the volume of liquid stool. Labs show WBC in the normal range and vital signs are stable. The patient remains afebrile.	Antibiotic therapy should target the identified organisms to minimize antibiotic resistance. Contact precautions must be maintained to prevent transmission of *C. difficile* to other patients. Bleach wipes should be used because other antiseptic wipes are not effective against *C. difficile* spores (McDonald & Kutty, 2023).

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