

## MODULE 5

### Other sampling techniques

Urinary catheterization is the insertion of a catheter through the urethra into the bladder. The purpose of catheterization is urine withdraw, as well as:

- Relieving urinary retention
- Obtaining from a woman a sterile urine specimen
- Measuring the residual urine quantity in the bladder
- Obtaining a urine test when a specimen cannot be satisfactory secured by other means
- Emptying the bladder before and during surgery and prior to such medical tests.

Catheters are graded according to the size of the lumen on the French scale. No. 14 and No. 16 French catheters are usually used for female adults. Generally, small catheters are not necessary and lumen size is also so small that it increases the length of time needed to empty the bladder. Larger catheter distends the urethra and tends to increase procedure discomfort. Typically, French catheters No.18 and No. 20 are used for male adults (1).

### Procedure

1. To check for balloon patency, inflate the balloon with the pre-filled syringe before inserting the catheter. When it is determined that the balloon is clear, aspirate the fluid back into the syringe.
2. Once the catheter is in the bladder and urine has started to drain from the bladder, hold the catheter with one hand and inflate the balloon according to the manufacturer's instructions. 5 ml to 10 ml of sterile water is normally used.
3. Allow it to empty and replace the catheter with another one if the patient complains of pain after the balloon is inflated. The balloon is probably located in the urethra and causes discomfort due to urethra distension.
4. After the balloon is inflated, exert light tension on the catheter to ensure proper placement in the bladder.
5. If not already attached, connect the catheter to the drainage tubing and drainage bag.
6. For a female patient, tape the catheter along the anterior aspect of the thigh. When it is taped to the patient, make sure there is no stress on the catheter.
7. Hold the drainage bag below the level of the bladder on the bed frame (2).

#### Venipuncture Procedure:

1. The first step in the collection is to identify the patient positively through two forms of identification; ask the patient to state and spell his or her name and give you his or her date of birth. Check these against the (paper or electronic) request.
2. For requested tests, check the request form, other patient information and any special drawing requirements. Gather the tubes and supplies for the drawing that you will need.
3. Place the patient in a chair or sitting on a bed or lying on it.
4. Have your hands washed.
5. Select an appropriate venipuncture site by placing the tourniquet on the patient 3 to 4 inches above the selected puncture site.
6. Do not put the tourniquet on too tightly or leave it on for more than 1 minute for the patient.
7. Put on non-latex gloves next, and tap for a vein.
8. Cleanse the area in a circular motion when a vein is selected, beginning at the site and working outward. Allow the area to dry with air. It should not be touched or palpated again after the area is cleansed. If you find it necessary to reassess the site by palpation, before the venipuncture is performed, the area needs to be re-cleaned.
9. Ask the patient to make a fist; avoid "pumping the fist." To draw the skin taut and anchor the vein, firmly grasp the patient's arm using your thumb. Insert the needle swiftly into the lumen of the vein through the skin. A 15-30 degree angle to the arm surface should be formed by the needle. Avoid probing excessively.
10. When the last tube is filling, remove the tourniquet.
11. Using a rapid backward motion, remove the needle from the patient's arm.
12. Place gauze on the site of the puncture immediately. To avoid the formation of a hematoma, apply and retain adequate pressure. Tape a fresh piece of gauze or Band-Aid to the puncture site after maintaining pressure for 1-2 minutes.
13. Dispose, in designated containers, of contaminated materials / supplies (3).

#### Swab specimen

In order to avoid false negatives and false positives in a wound culture, it is vital to use the proper technique to obtain a swab specimen, which can result in either overtreatment or antimicrobial treatment. The Z technique is no longer recommended (rotating the swab in a zigzag fashion covering the entire injured area across the wound, without touching the wound

edges) (4). Current best practice calls for the Levine technique. To obtain a sample with the Levine technique, follow these steps (5):

1. If possible, obtain the sample before the patient begins antimicrobial therapy that interferes with the growth of the microorganism.
2. Assemble all the equipment: unsterile gloves, 0.9 % sodium chloride prefilled 10-mL syringe, sterile gauze pads, culture swab, sterile swab container, and suitable wound dressing.
3. After hand hygiene and unsterile gloves have been put on, the wound is irrigated with 0.9 % sodium chloride and gently wiped with the gauze pad.
4. Use 0.9% sodium chloride to moisten the swab (a moist swab provides more accurate data than a dry swab).
5. Identify and rotate the swab on a small area (1 cm<sup>2</sup>) of clean, viable tissue, avoiding any necrotic tissue. Try to express as much nonpurulent wound fluid as possible with the application of pressure. As pus or necrotic tissue will not provide an accurate profile of the microflora contained within the tissue, a wound culture must be taken from clean tissue.
6. Insert the sterile container with a swab.
7. Redress and perform hand hygiene on the wound.
8. Complete the laboratory slip and/or electronic document, including the site of the wound, the time the specimen was gathered, and any antimicrobials received by the patient.
9. To keep the specimen stable, send the specimen to the laboratory immediately (within 1 hour) (6).

### Sputum samples

Sputum samples can be collected using a non-invasive or invasive method and should ideally be collected prior to the initiation of antibiotics. It is important to note that when collecting sputum specimens, droplets and aerosols can be generated, so health professionals should use personal protective equipment as set out in local policies (including gloves, aprons and face masks) (7). Procedure:

1. Decontaminate hands.

2. Place the patient in an upright position in a chair, on the edge of the bed or well-supported in bed by pillows (high position of Fowler) as this will guarantee maximum lung expansion.
3. Before the sample is collected, the patient's mouth should be rinsed with water, to avoid contaminating the sample with food residue. Removing dentures can also be helpful.
4. Give a prescribed 0.9 % nebuliser of sodium chloride to help loose secretions if they are dense and hard to expectorate.
5. If you are likely to come into contact with bodily fluids, decontaminate your hands and put on an apron, non-sterile gloves and a facemask. This reduces the risk of the specimen being contaminated and the risk of cross-infection.
6. If you have concerns about splash damage, wear eye protection.
7. Ask the patient to take several deep breaths to help loosen secretions by breathing in through the nose and exhaling through the mouth.
8. Ask the patient to force a deep cough to ensure that the lower respiratory tract obtains a sample.
9. In order to prevent contamination, the patient should sputter into the specimen pot and secure the lid. Ensure that the specimen is sputum rather than saliva, as it is hard to interpret samples contaminated with oropharyngeal secretions and saliva and can be misleading.
10. To reduce the risk of cross-infection, remove the gloves, apron and facemask and decontaminate the hands.
11. Label and complete microbiology forms for the sample.
12. Send the sample as soon as possible (within four hours) to the laboratory.
13. Document your procedure in the notes of the patient.

### **The role of nurse in the assessment of the wound**

A wound is damaged or skin disrupted and the exact cause, location, and type of wound must be evaluated before treatment in order to provide adequate treatment (8). For the wound to heal, each of the potential underlying causes must be addressed. It is important to determine what type of wound the patient has before determining the underlying cause (9).

#### Types of Wounds

##### *Acute*

It is important to determine the length of time after injury (days or hours), the involvement of neurovascular supply, muscle, tendon, ligament, and bony involvement, and the probability of contaminants in the wound for all acute types of wounds. It is also important when the patient has had their last shot of tetanus. If the wound is severely contaminated or if it has been more than 3 hours since the injury, clinicians should prescribe antibiotics.

The most used classification in open fracture cases is Gustillo-Anderson (10):

- Type 1: Clean wound, less than one cm with minimal damage to soft tissue, sufficient bone coverage of soft tissue and no periosteal stripping
- Type 2: Wound with moderate contamination, with moderate soft tissue damage greater than one cm, adequate bone soft tissue coverage, and no periosteal stripping
- Type 3A: Wound with significant contamination, significant damage to soft tissue, sufficient bone coverage of soft tissue, and periosteal stripping is present.
- Type 3B: Wound with major contamination, with significant damage to soft tissue, unable to cover soft tissue bone (requiring graft) and periosteal stripping
- Type 3C: closely related to type A or B, but with arterial damage that requires repair.

### *Chronic*

In the normal stages of inflammation and wound healing, if a wound is arrested in progression and remains open, then this becomes a chronic wound (11).

There are a limited number of reasons why a wound becomes chronic, but the wound resumes its natural course of healing once these reasons are rectified.

Irrigation and debridement are warranted for local treatment of infected wounds, and if abscess is concerned, incision and drainage are necessary to remove any infectious nests. Although there are many factors to consider when approaching a wound, it will lead to successful evaluation and treatment of the wound to understand the nature of the wound and the underlying factors causing the wound in question.

In general, ongoing nursing and clinician evaluations and wound monitoring are similar:

- Identify the wound's location
- Determination of the cause of the wound
- Determine the stage of the injury
  - Stage I: Superficial that only includes the epidermal layer

- Stage II: The epidermis is affected by partial-thickness and may extend into the dermis.
- Stage III: Full-thickness extends into the adipose tissues through the dermis and
- Stage IV: Full-thickness extends through the dermis and muscle or bone exposure to adipose.
- Evaluate and measure wound depth, length, and width
- Measure the amount of tunneling and undermining
- Evaluate the bed of the wound
- Evaluation of presents, type and quantity of exudates:
  - Serous, serosanguineous, sanguineous, or purulent
  - Minimal, moderate, light, or heavy
- Access to skin tissue surrounding
- Evaluate wound margins for tunneling, rolling, undermining, fibrotic modifications, and unattached
- Evaluate the signs and symptoms of infection: warmth, pain, smell, delayed healing
- Assess pain (12).

### **About social distancing in hospital and community**

Social distancing, also referred to as "physical distancing," means maintaining a safe space between yourself and other individuals who are not from your family. Stay at least 2 meters from other people who are not from your household in both indoor and outdoor areas to practice social or physical distancing. In order to reduce the spread of COVID-19, social distancing should be practiced in combination with other daily preventive actions, including wearing masks, avoiding touching your face with unwashed hands, and frequently washing your hands for at least 20 seconds with soap and water.

It is important to stay at least 2 meters away from other people when going out in public and wear a mask to slow the spread of COVID-19. When you decide to go out, consider the following tips to practice social distancing:

- Know Before You Go: Know and follow the guidance of local public health authorities where you live before going out.
- Prepare for transportation: consider options for social distance to travel safely when running errands or traveling to and from work, whether walking, cycling, rolling in

wheelchairs, or using public transit, rideshares, or taxis. Try to stay at least 2 meters away from other passengers or transit operators when using public transit, such as waiting at a bus station or selecting seats on a bus or train. Avoid pooled rides where multiple passengers are picked up when using rideshares or taxis, and sit in the back seat in larger vehicles.

- **Limit Contact When Running Errands:** Visit shops selling household essentials in person only when you absolutely need to. To limit face-to-face contact with others, use drive-thru, curbside pick-up, or delivery services if possible. During exchanges, maintain a physical distance between yourself and supply service providers and wear a mask.
- **Choose Safe Social Activities:** By calling, using video chat, or staying connected through social media, it is possible to stay socially connected with friends and family who do not live in your home.
- **Keep distance at events and gatherings:** It is safest to avoid crowded places and gatherings where staying at least 2 meters away from others who are not from your household can be difficult. Try to keep 2 meters of space between yourself and others at all times if you are in a crowded space, and wear a mask. In times when physical distancing is difficult, masks are particularly significant. Pay attention to any physical guides, such as tape markings on floors or signs on walls, directing participants in lines or at other times to remain at least 2 meters apart from each other. Allow other people 2 meters of space in both indoor and outdoor settings when you pass by them.
- **Stay Distant While Being Active:** Consider walking, cycling, or wheelchair rolling in your neighborhood or in another safe place where you can keep at least 2 meters between yourself and other cyclists and pedestrians. Check for closures or restrictions first if you decide to visit a nearby park, trail, or recreational facility. If open, consider how many other individuals there may be and choose a place where you can keep at least 2 meters of space between yourself and other individuals who are not from your household.

Hospitalists serve as frontline healthcare professionals who care for the growing number of patients with COVID-19. As has been reported in several other countries, the safety of hospitalists and other frontline health workers is paramount in preventing elevated nosocomial transmission. To date, much effort has correctly focused on ensuring that healthcare workers have adequate personal protective equipment (PPE) given the known increased risk to healthcare workers of nosocomial infection. However, the implementation of "social

distancing," or the avoidance of close contact with others, is another important strategy to prevent nosocomial transmission. While this approach has received significant press with regard to community, social, or physical implementation, distancing in the hospital is also a critical way of preventing nosocomial transmission and ensuring our workforce's health and welfare to meet the challenge (13).

The transition to virtual meetings is necessary for educational conferences and administrative meetings. While broadcasting a conference instead of meeting in a conference room may be easy, it is critical that hospital clinicians do not "huddle close together" in front of a computer, which would defeat the objective of physical distance (13).

Maybe the biggest challenge is how many clinical workrooms are crowded with computers next to each other in hospitals today. Also, ventilation can be poor, making conditions more risky. This makes it extremely difficult, but also critical, to implement social distancing, given how much time hospital-based clinicians spend on computers and in their workrooms. The first step is to take an inventory of how many people work there and to get a log of the number of computers to achieve social distance in the workroom. Consider whether it is possible to rearrange existing computers with the objective of keeping people 2 meters apart. This may require assigning computer spaces to nurses across a floor or several floors, using computers on a unit, or using mobile computers to limit the number of people in the workroom at a time for particularly cramped workrooms. Since coronavirus can survive for several hours on surfaces, it is also important to frequently store workrooms with disinfectants to clean surfaces such as keyboards and desktops. One other important thing to consider is whether computers can be assigned to specific teams or individuals to limit multiple people's use of a computer (14).

Perhaps one of the most fundamental physical distance hardships is how routine clinical care such as rounds, sign-out or multidisciplinary rounds can be performed. Given the amount of people, rounds on teaching services are especially challenging. Medical students are no longer on clinical rotations at many teaching institutions, which immediately reduces the number of individuals on teaching teams. How rounds are performed is the other thing to be considered. Allocate one person from the team as the liaison for the patient, as opposed to a large team walking together, which also has the added benefit of preserving precious PPE. Virtual rounding allows clinicians to work together without first crowding into a patient room, including residents and attendants, to decide the plan for the day. Perhaps this is the most significant cultural hurdle one may face (15).

Since multidisciplinary rounds typically take place either at the bedside or in a conference room, ensuring that they happen virtually whenever possible is essential. One option is to, whenever possible, use conference calls or video chat (eg, Zoom) for multidisciplinary rounds. It is possible to use calendar invites or paging reminders to prompt the team when calling in to discuss patients. Since multiple individuals enter a virtual room at once, it is essential to create an order or have a leader orchestra who is next. In addition, it is equally important for those who speak to always announce who they are and their role (e.g. social worker, case manager, physical therapist) because it may not be possible to recognize the voices of people alone, given the importance of multiple people contributing to the discussion. Visual recognition can be helpful here through the use of institutional video conferencing that allows someone to be heard and seen.

Call rooms can be especially challenging in hospitals if they are shared. The use of cots or the reallocation of patient rooms may require the finding of additional call rooms. In order not to share call rooms, it is also possible for hospitalists to consider air mattresses in their offices or other private areas. To avoid many people sharing one room, consider assigning the same call room to the same few individuals over the course of a rotation or period. In order to accommodate new teams, it may be necessary to reallocate call rooms if a hospital is converting units to group patients under investigation or those who are COVID-19 positive. Finally, to ensure that all call rooms are equipped with cleaning supplies and hand sanitizer and are cleaned daily to prevent nosocomial transmission, it is essential to communicate proactively with environmental services staff (13).

## **Literature**

1. Vallverdú Vidal M, Barcenilla Gaité F. Antiseptic urinary catheterization and maintenance of the bladder catheter. *Med Intensiva*. 2019;43:48–52.
2. Vera M. Urinary Catheterization Nursing Procedure & Management. *Nurseslabs*. 2013. Available from: <https://nurseslabs.com/urinary-catheterization-nursing-procedure-management/>
3. Blood Specimen Collection and Processing. Available from: [https://www.geisingermedicallabs.com/catalog/blood\\_specimens.shtml](https://www.geisingermedicallabs.com/catalog/blood_specimens.shtml)
4. Rondas AALM, Schols JMGA, Halfens RJG, Stobberingh EE. Swab versus biopsy for the diagnosis of chronic infected wounds. *Adv Skin Wound Care*. 2013;26:211–219.

5. Acute and Chronic Wounds - 4th Edition. Available from:  
<https://www.elsevier.com/books/acute-and-chronic-wounds/.../978-0-323-06943-4?aaref=https%3A%2F%2Fwww.google.com%2F>
6. Cross HH. Obtaining a wound swab culture specimen. *Nursing* 2020. 2014;44:68–69.
7. Contributor NT. Specimen collection 4: procedure for obtaining a sputum specimen. *Nursing Times*. 2017. Available from: <https://www.nursingtimes.net/clinical-archive/assessment-skills/specimen-collection-4-procedure-for-obtaining-a-sputum-specimen-11-09-2017/>
8. Subrata SA, Phuphaibul R, Kanogsunthornrat N, Siripitayakunkit A. ADIE - Nursing Interventions of Diabetic Foot Ulcer: An Integrative Review of the Literature. *Curr Diabetes Rev*. 2019;16:40–51.
9. Dowsett C. T.I.M.E. to improve patient outcomes: use of a clinical decision support tool to optimise wound care. *Br J Community Nurs*. 2019;24:6–11.
10. Kim PH, Leopold SS. Gustilo-Anderson Classification. *Clin Orthop Relat Res*. 2012 ;470:3270–3274.
11. Wiegand C, Abel M, Hipler U-C, Elsner P, Zieger M, Kurz J. Hemostatic wound dressings: Predicting their effects by in vitro tests. *J Biomater Appl*. 2019;33:1285–1297.
12. Nagle SM, Waheed A, Wilbraham SC. Wound Assessment. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; 2020.
13. Arora VM, Chivu M, Schram A, Meltzer D. Implementing Physical Distancing in the Hospital: A Key Strategy to Prevent Nosocomial Transmission of COVID-19. *J Hosp Med*. 2020;15:290–291.
14. Doshi A, Platt Y, Dressen JR, Mathews BK, Siy JC. Keep Calm and Log On: Telemedicine for COVID-19 Pandemic Response. *J Hosp Med*. 2020;15:302–304.
15. Stephenson CR, Wang AT, Szostek JH, Bonnes SL, Ratelle JT, Mahapatra S. Flipping the Continuing Medical Education Classroom: Validating a Measure of Attendees' Perceptions. *J Contin Educ Health Prof*. 2016;36:256–262.

