



ADULT CRITICAL CARE PROTOCOL

Title:

Extension of Infusion Pump to Hallway for Critically Ill COVID19+ patient and PUI Patients

PURPOSE

The purpose of this protocol is to provide guidelines for the utilization of extension tubing to place the infusion pump outside of patient rooms, to conserve personal protective equipment (PPE) and decrease unnecessary time in room for associates. The appropriateness of placing an infusion pump outside a patient's room should be evaluated on a case by case basis and according to patient needs and clinical workflow. Although this policy is intended to be used in the care of critically ill patients, the protocol can be replicated in non-critical-care settings when appropriate.

DEFINITIONS:

Clean nurse- a Registered Nurse (RN) that stays outside the patient room to assist with the set-up of the infusion pump for intravenous medication infusions and the patient identification process.

Isolation nurse- a Registered Nurse (RN) that dons appropriate PPE and enters the patient room to complete the patient identification process, connect the IV tubing to the patient's access site, and ensure the intravenous medications are infusing appropriately.

PATIENT INDICATIONS

COVID-19 positive and PUI patients.

CONTRAINDICATIONS

- Patient is not on isolation precautions
- Patient is uncooperative with care
- Patient requires Patient Controlled Analgesia (PCA)
- Extension tubing prevents the ability to maintain negative pressure in the Airborne Infection Isolation Room (AIIR).
- Limited power access prevents the ability to power the infusion pump and/or modules outside the patient room.

EXPECTED OUTCOMES

Successful integration of the extension tubing is expected to decrease PPE utilization, minimize entry into room for associates, increase response time for IV medication adjustments, and allow for uninterrupted medication delivery via the intravenous route.

POTENTIAL COMPLICATIONS

- Dislodgement of lines
- Infection risk
- Disruption of negative pressure
- IV Infiltration
- Loss of IV patency due to blood backup in extension set
- Trip hazards
- Misidentification of pump to patient in cohorted rooms
- Alarm management procedures
- Securement of opioid and sedative medications

EQUIPMENT

- Infusion pump and appropriate modules
- Primary tubing for infusion pump
- Extension tubing (See Appendix A: Baxter Extension Set Guidance Document)
- Curoc caps, 3M hooks (2), Stat-Lock (2), or other securement devices as needed to secure tubing to ensure it does not touch the floor

PROCEDURE FOR SET-UP OF AN INFUSION PUMP OUTSIDE OF A PATIENT ROOM WITH A WINDOW OR A GLASS DOOR

1. Identify nurses involved in the procedure. One nurse will stay outside the patient room (CLEAN nurse), one nurse will don PPE and complete set-up in the patient room (ISOLATION nurse).
2. Assess appropriateness of the patient, the environment, and the indications for addition of extension tubing and placing the infusion pump outside the patient's room.
 - a. Utilize the minimum number of extension sets feasible.
 - b. Do not use extension sets with filters unless the IV solution requires.
3. Obtain supplies.
4. Print a second patient arm-band to be used in the patient identification process.
5. Prior to setting up the equipment, the CLEAN nurse and the ISOLATION nurse validate the information printed on the second arm band against the patient information in MedConnect or against the printed unit census. Both the Clean nurse and the ISOLATION nurse initial the second armband.
6. CLEAN nurse plugs in the infusion pump and powers on.

7. CLEAN nurse spikes and hangs IV medication, attaches extension tubing and primes according to current practice.
8. CLEAN nurse dates, times, and initials the medication as per current policy.
9. CLEAN nurse places a label on the extension tubing (where it connects to the patient peripheral or central intravenous access device) identifying the medication in the tubing.
10. CLEAN nurse adds disinfection caps to all infusion ports.
11. ISOLATION nurse dons appropriate PPE and enters the patient's room with the second armband.
12. The ISOLATION nurse confirms that the information on the patient's attached armband matches the information on the duplicate arm band printed earlier.
13. The second armband is then taped to the glass door facing outward.
14. The ISOLATION nurse connects the primed tubing to the patient's access device.
15. The ISOLATION nurse scans the patient's attached wrist band (in the room) and the medication and the infusion pump (through the glass door) while the CLEAN nurse assists in positioning the pump outside the room to allow for scanning.
16. The CLEAN nurse reviews the medication and pump settings with the ISOLATION nurse through the glass door.
17. When pump settings have been confirmed, the CLEAN nurse starts the infusion.
18. Prior to leaving the room, the ISOLATION nurse verifies the medication is infusing appropriately.
19. The ISOLATION nurse, following PPE doffing procedures and exiting the room, ensures the tubing is not occluded in the door frame and the medications are infusing correctly.
20. The CLEAN nurse locks the pump to ensure that medications are secured.
21. Tubing is secured on the door frame using stat-locks or other securement devices.
22. Nurses can then use the duplicate armband taped to the glass window for PPID when changing medication bags or fluids.
23. Follow the pump set-up process above (e.g. ISOLATION nurse scans the patient armband in the room, and CLEAN nurse assists in scanning medication and pump through the glass window/door) when starting any new medication.

PROCEDURE FOR SET-UP OF AN INFUSION PUMP OUTSIDE OF A ROOM WITHOUT A WINDOW OR GLASS DOOR

1. Identify nurses involved in the procedure. One nurse will stay outside the patient room (CLEAN nurse), one nurse will don PPE and complete set-up in the patient room (ISOLATION nurse).
2. Assess appropriateness of patient, the environment, and the indications for addition of extension tubing and placing the Alaris pump outside the patient's room.
3. Obtain supplies.
4. Print a second patient arm-band to be used in the patient identification process.
5. CLEAN nurse plugs in pump and powers on.

6. CLEAN nurse spikes and hangs IV medication, attaches extension tubing and primes according to current practices.
7. CLEAN nurse dates, times, and initials the medication as per current policy.
8. CLEAN nurse places a label on the extension tubing (where it connects to the patient peripheral or central intravenous access device) identifying the medication in the tubing.
9. CLEAN nurse adds disinfection caps to all infusion ports.
10. ISOLATION nurse dons appropriate PPE and enters the patient's room.
11. The ISOLATION nurse verifies the patient ID and communicates the information to the clean nurse outside the patient room via phone or other communication device.
12. The CLEAN nurse applies the patient ID band to the pole outside the patient room.
13. The CLEAN nurse logs into MedConnect, scans the duplicate patient wrist band applied to the pump, then scans the medication, and the pump.
14. The CLEAN nurse reviews the medication order in the patient record to ensure appropriate programming.
15. Following confirmation, the CLEAN nurse starts the infusion.
16. Prior to leaving the room, the ISOLATION nurse verifies the medication is infusing appropriately.
17. The ISOLATION nurse, following PPE doffing procedures and exiting the room, ensures the tubing is not occluded in the door frame and the medications are infusing correctly.
18. The CLEAN nurse and ISOLATION nurse review the medication, pump settings, and medication order to ensure accuracy.
19. The CLEAN nurse locks the pump to ensure that medications are secured.
20. Tubing is secured on the door frame using stat-locks or other securement devices.

DOUBLE OCCUPANCY ROOM

1. If cohorting patients in a double occupancy room, the following items are addressed:
 - a. Clearly label the pumps correlating to each bed.
 - b. Clearly separate the pump areas outside the room to eliminate confusion
 - c. Create a separation between patient tubing and label the cluster of tubing on the door frame with the patient's ID (bed A or B).

ADDRESSING ALARMS

1. For rooms in which there is no glass door or window to assess the patient, a nurse must don PPE and enter the room to address alarms.
 - a. Air-in-line
 - i. Assess line from medication to patient to find and flush out air.
Requires an ISOLATION nurse to don PPE and enter the room and a CLEAN nurse outside the patient room to flush the line.

- b. Patient side occlusion
 - i. Ensure the tubing is not pinched in the doorframe.
 - ii. Don PPE enter room to assess patient and address the alarm.
 - c. Proximal occlusion
 - i. Ensure the tubing is not pinched in the doorframe.
 - ii. Ensure roller clamps and other tubing clamps are unclamped.
 - iii. Don PPE and enter room to assess patient and address the alarm.
2. For rooms in which there is a glass door or window to assess the patient, address the alarms according to the following procedure:
- a. Air-in-line
 - i. Assess line from medication to patient to find and flush out air. Requires an ISOLATION nurse to don PPE and enter the room and a CLEAN nurse outside the patient room to flush the line.
 - b. Patient side occlusion
 - i. Ensure the tubing is not pinched in the doorframe.
 - ii. Assess the patient through the glass door and communicate with the patient to address the alarm (e.g. instruct the patient to straighten arm for peripheral IV).
 - iii. If unable to successfully resolve the alarm from the hallway, the ISOLATION nurse will don PPE and enter the room to assess the patient and address the alarm.
 - iv. An alarm that is initially addressed via patient communication but alarms a second time, requires the ISOLATION nurse to don PPE and enter the room to assess patient and address the alarm.
 - c. Proximal occlusion
 - iv. Ensure the tubing is not pinched in the doorframe.
 - v. Ensure roller clamps and other tubing clamps are unclamped.
 - vi. Don PPE and enter the room to assess patient and address alarm.

SECONDARY INFUSIONS

1. The residual drug remaining in the tubing below the pump infuse at the primary rate when the secondary infusion completes. Consider the impact of the extension tubing on small volume secondary infusions.

IV SITE ASSESSMENT:

1. IV sites assessments are to be completed per hospital policy.

PATIENT IDENTIFICATION PROCESS

1. Oncoming and off-going nurse will validate patient's second ID band against MedConnect information or printed unit census at each change of shift. Trace all lines from the pump to the patient.

VALIDATE NEGATIVE PRESSURE

1. Collaborate with clinical engineering/biomedical and facilities departments to verify and maintain negative pressure.

DISCONTINUATION

1. When the patient no longer needs IV medications via infusion pump.
2. When the patient is no longer on isolation.

REFERENCES

- BD. (2020). *Clinical considerations for using the BD Alaris Pump Module and Alaris syringe module with extra-long extension sets* [Customer Memo]. <https://www.bd.com/a/78041>
- ECRI. (2020). *Large-volume infusion pumps-Considerations when used with long extension sets outside patient rooms to help reduce staff PPE use* (Medical device special report- Published 4/1/20). <https://assests.ecri.org/PDF/COVID-19-Resource-Center?COVID-19-Clinical-Care/COVID-Alert-Infusion-Pump-Disruptions.pdf>
- ISMP. (2020). *Clinical experiences keeping infusion pumps outside the room for COVID-19 patients* (April 3, 2020) [Featured Article]. <https://ismp.org/resources/clinical-experiences-keeping-infusion-pumps-outside-room-covid-19-patients>