1.07 · Strategies to Minimize Personal Protective Equipment (PPE) usage by Health Care Professionals in Critical Care During the COVID-19 Pandemic · V1

March 2020

Personal protective equipment (PPE) is essential for ICU health care professionals caring for patients with COVID-19 but is in short supply. The purpose of this document is to explore strategies to minimize the frequency of health care practitioners entering patient rooms and using PPE.

Strategies proposed here are suggestions for consideration and may not always represent best practices under ideal conditions. Local implementation will require consultation from users (i.e., front line staff, pharmacy, administrators) where risks, benefits and logistics are considered. Proposed strategies may not be appropriate for all institutions.

Proposed Strategy	Comments
Consolidating medication administration times (with other activities)	• Ensuring timing of medication administration coincides for as many medications and activities as possible to reduce room entries. For example, the nurse could time all morning enteral medications to be given at 8am when bloodwork is collected, blood glucose is checked, assessments are due, and an IV medication is hung or changed. • Allowing the nurse to adjust medication administration times or widening the windows for drug administration (I.e. 4 hours instead of 2 hours) may allow the nurse to organize administration times • In some hospitals where multiple patients are in the same room or in COVID "areas" the timing of medication administration or other procedures could coincide for multiple or all patients.
Minimize the frequency and consolidate the timing of sample collection for analysis	• When possible the frequency of lab can be reduced (from multiple times daily to once daily or from once daily to every other day) • Daily chest X-rays may be appropriately changed to less frequent intervals • Consolidate blood work and sample collection so multiple tasks can be done at the same time (i.e., routine blood work, therapeutic drug monitoring, blood gasses, dressing changes could be timed so the nurse only enters the room once for all tasks) • Don't order diagnostic tests, medication levels and bloodwork routinely, but rather in response to specific clinical questions

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Discontinue unnecessary drugs	• Daily review of medication lists to ensure that unnecessary medications are promptly discontinued • Do not restart non-acute home medications if temporary interruption will not harm patient (e.g., bisphosphonates, vitamins without a diagnosed deficiency, antihistamines/prn nasal sprays)
Consider moving IV pumps outside the room	• Many centers in the US have successfully used extension IV tubing to allow the IV pumps to be moved outside rooms so the nurse can hang, remove, titrate medications without entering.
Consider reduced frequency dosing of medications when appropriate	• Once daily LMWH for DVT prophylaxis instead of twice or three times daily heparin. LMWH for DVT/PE treatment requires less monitoring and no titration compared with heparin infusions • Amlodipine can be administered once daily for hypertension while hydralazine would be typically administered 4 times daily • Ribavirin while typically dosed 400 mg three times daily can be given twice or even once daily instead • Consider long acting enteral dosing forms for patients able to swallow whole medications to reduce administrations in stable patients (e.g., metformin ER 1000 mg daily vs 500 mg bid) • Consult your pharmacist for other medications that can be adjusted for less frequent dosing
Consider alternative drug delivery methods that reduce the frequency of administration	• In patients with functioning gastrointestinal tracts enteral medication administration should be preferred over IV administration (with IV administration the nurse would have to enter the room to hang the bag, take it down and address any alarming pumps). • Nitroglycerin patches instead of nitroglycerin infusion or three times daily isosorbide dinitrate • Fentanyl patches instead of fentanyl infusions of intermittent regular dosing of other narcotics • Insulin infusions that often require hourly glucose monitoring can be changed to intermittently

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	administered long acting insulin (i.e., Lantus or NPH) with intermittent sliding scale insulin • For appropriately selected patients, self-administration of medications may be feasible (e.g., inhalers, creams, eye drops)
Consider patient controlled analgesia (and potentially sedation) in appropriately selected patients	• Some patients may be alert and competent enough to use PCAs • Small trials suggest that even patient-controlled sedation is feasible and effective in highly selected patients
For continuously infused and titrated medications (i.e., vasopressors, inotropes, narcotics and sedatives) consider using larger volumes and higher concentrations	• Higher concentrations and larger bags require less frequent bag changes
Consider alternative communication strategies	• For selected alert patients: in addition to call bells encourage 2-way (preferably verbal) communication tools with patients in room when possible (e.g., intercom, 'baby' monitor, in-room phone, whiteboard) for assessments and questions. • 'virtual' (e.g., video conference) or non-bedside rounds as possible to facilitate staff social distancing guidelines.

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