

**NYC Health + Hospitals High Value Care Council:
Choosing Wisely COVID-19 Recommendations**

- 1. Do not perform tracheal intubation based solely on oxygen requirement, consider trajectory of deterioration and candidacy for a trial of High Flow Nasal Cannula (HFNC), Non-Invasive Ventilation (NIV), and proning.**

In the beginning of the coronavirus-2019 (COVID-19) pandemic, it was recommended to avoid HFNC and NIV due to concerns over risk of exposure from aerosolization and to not delay intubation. With growing evidence, the use of airborne precautions and a negative pressure room for patients on for HFNC and NIV is considered safe. Additionally, there is evidence to suggest similar aerosolization rates of HFNC compared to nasal cannula.

We now understand that those patients with COVID-19 who end up requiring intubation have high rates of mortality. HFNC has been shown in past studies to improve 90-day mortality in hypoxemic respiratory failure when compared to NIV and standard oxygen therapy. Additionally, there is evidence to suggest improved survival for patients with COVID-19 using HFNC compared to invasive or non-invasive ventilation. One study showed approximately 30% of patients were able to avoid invasive mechanical ventilation after trial of HFNC. NIV is preferred for patients with a history of COPD or pulmonary edema. Awake prone positioning involves a patient laying on their side or abdomen in an effort to improve atelectasis at the base of the lungs. Although data is limited, there is some evidence of suggest improved oxygenation and delay in intubation using awake proning.

The decision to intubate a patient is a complex one. Delay of intubation has been associated with increased mortality in ARDS, however, there is also evidence that intubation can be avoided all together with the use of non-invasive measures.

References:

Hernandez-Romieu AC, Adelman MW, Hockstein MA, et al. Timing of Intubation and Mortality Among Critically Ill Coronavirus Disease 2019 Patients: A Single-Center Cohort Study. *Crit Care Med.* 2020;48(11):e1045-e1053. doi:10.1097/CCM.0000000000004600

Lyons C, Callaghan M. The use of high-flow nasal oxygen in COVID-19. *Anaesthesia.* 2020 Jul;75(7):843-847. doi: 10.1111/anae.15073. Epub 2020 Apr 20.

Raouf S, Nava S, Carpati C, Hill NS. High-Flow, Noninvasive Ventilation and Awake (Nonintubation) Proning in Patients With Coronavirus Disease 2019 With Respiratory Failure. *Chest*. 2020;158(5):1992-2002. doi:10.1016/j.chest.2020.07.013

Navas-Blanco JR, Dudaryk R. Management of Respiratory Distress Syndrome due to COVID-19 infection. *BMC Anesthesiol*. 2020;20(1):177. Published 2020 Jul 20.

Panadero C, Abad-Fernández A, Rio-Ramirez MT, et al. High-flow nasal cannula for Acute Respiratory Distress Syndrome (ARDS) due to COVID-19. *Multidiscip Respir Med*. 2020;15(1):693. Published 2020 Sep 16. doi:10.4081/mrm.2020.693

- 2. Do not routinely place central lines as an alternative to peripheral venous access. If a central line is required avoid the femoral site when possible, maintain sterility for the duration of the line, and remove when no longer indicated.**

Femoral line insertion site has been associated with more infectious complications, catheter colonization and thrombotic complications when compared to internal jugular and subclavian central line insertions.

The COVID-19 pandemic brought unique challenges to the maintenance of central lines and prevention of central line associated blood stream infections (CLABSI). Although we cannot accurately quantify the increase in CLABSI, as CMS waived reporting until June 2020, we can hypothesize a widespread increase in line infections. Common practices included IV poles outside of patient rooms, which may have left tubing on the floor and required multiple connections. Proning of patients leads to difficulty evaluating lines and judging the integrity of dressings. Moreover, central lines days largely increased due to the severity of illness of patients with coronavirus. Despite these challenges, it is important to adhere to best practices and CLABSI bundles.

References:

Stifter J, Sermersheim E, Ellsworth M, et al. COVID-19 and Nurse-Sensitive Indicators: Using Performance Improvement Teams to Address Quality Indicators During a Pandemic [published online ahead of print, 2020 Oct 19]. *J Nurs Care Qual*. 2020;10.1097/NCQ.0000000000000523. doi:10.1097/NCQ.0000000000000523

Pitiriga V, Kanellopoulos P, Bakalis I, et al. Central venous catheter-related bloodstream infection and colonization: the impact of insertion site and distribution of multidrug-resistant pathogens. *Antimicrob Resist Infect Control*. 2020;9(1):189. Published 2020 Dec 1. doi:10.1186/s13756-020-00851-1

Merrer J, De Jonghe B, Golliot F, et al. Complications of Femoral and Subclavian Venous Catheterization in Critically Ill Patients: A Randomized Controlled Trial. *JAMA*. 2001;286(6):700–707. doi:10.1001/jama.286.6.700

McMullen KM, Smith BA, Rebmann T. Impact of SARS-CoV-2 on hospital acquired infection rates in the United States: Predictions and early results. *Am J Infect Control*. 2020;48(11):1409-1411. doi:10.1016/j.ajic.2020.06.209

3. Do not order routine daily laboratory testing in the face of clinical and lab stability. Do not obtain nonurgent labs in separate blood draws if they can be batched together.

A similar recommendation was originally made by the Society of Hospital Medicine Choosing Wisely campaign in 2013. This recommendation was on the basis of increase in hospital-acquired anemia from frequent blood draws and pain, discomfort for patients. Additionally, unnecessary blood draws disrupts patient sleep and may lead to additional treatments.

Now with the COVID-19 pandemic, an additional risk must be considered: that of health-care workers (HCWs) exposure. Nurses, phlebotomists and other clinicians that perform blood work risk another exposure every time a blood test is ordered. The risk extends to those in the laboratory who process the bloodwork.

In addition to decreasing the number of labs ordered, focus must be placed on reducing the number of blood-draws in total. It is our recommendation to batch nonurgent labs together to effectively reduce unnecessary blood-draws and exposure. This practice benefits patients by reducing discomfort and pain of multiple blood-draws, but also benefits HCWs as well.

References:

Eaton KP, Levy K, Soong C, et al. Evidence-Based Guidelines to Eliminate Repetitive Laboratory Testing. *JAMA Intern Med*. 2017;177(12):1833-1839. doi:10.1001/jamainternmed.2017.5152

Sadowski, B. W., Lane, A. B., Wood, S. M., Robinson, S. L., & Kim, C. H. (2017). High-Value, Cost-Conscious Care: Iterative Systems-Based Interventions to Reduce Unnecessary Laboratory Testing. *The American Journal of Medicine*, 130(9). doi:10.1016/j.amjmed.2017.02.029

Wheeler, D., Marcus, P., Nguyen, J., Kwong, A., Khaki, A. R., Valencia, V., & Moriates, C. (2016). Evaluation of a Resident-Led Project to Decrease Phlebotomy Rates in the Hospital: Think Twice, Stick Once. *JAMA internal medicine*, 176(5), 708–710. <https://doi.org/10.1001/jamainternmed.2016.0549>

Hyung J Cho, MD, Leonard S Feldman, MD, Sara Keller, MD, MPH, MSHP, Ari Hoffman, MD, Amit K Pahwa, MD, Mona Krouss, MD, Choosing Wisely in the COVID-19 Era: Preventing Harm to Healthcare Workers. *J. Hosp. Med* 2020;6;360-362. Published Online First May 21, 2020. doi:10.12788/jhm.3457

4. Do not order routine daily chest x-rays in patients with COVID-19.

In 2013, the American College of Radiology Appropriateness Criteria recommended against routine, daily chest x-rays in patients in the intensive care unit, unless if clinical worsening. Since that time, several studies have focused on decreasing the routine ordering of chest x-rays, without an increase in adverse events.

Chest x-ray for diagnosis of coronavirus has been shown to have a sensitivity and specificity of 56% and 60%, respectively. The degree of abnormality of a chest x-ray has correlated with severity of disease, including lower oxygen saturation and higher inflammatory markers. Thus, a repeat chest x-ray can be ordered with clinical deterioration, but is not necessary every day.

The additional consideration of exposure to HCWs must be taken into account for this recommendation. Daily chest x-rays lead to unnecessary exposure of x-ray technicians, and additional radiation to patients.

References:

Amorosa JK, Bramwit MP, Mohammed TL, et al. ACR appropriateness criteria routine chest radiographs in intensive care unit patients. *J Am Coll Radiol*. 2013;10(3):170-174. doi:10.1016/j.jacr.2012.11.013

Keveson B, Clouser RD, Hamlin MP, Stevens P MSN, RN, Stinnett-Donnelly JM, Allen GB. Adding value to daily chest X-rays in the ICU through education,

restricted daily orders and indication-based prompting. *BMJ Open Qual.* 2017;6(2):e000072.

Borakati A, Perera A, Johnson J, Sood T. Diagnostic accuracy of X-ray versus CT in COVID-19: a propensity-matched database study. *BMJ Open.* 2020;10(11):e042946. Published 2020 Nov 6. doi:10.1136/bmjopen-2020-042946

5. Do not use bronchodilators unless there is active obstructive airway disease.

The Centers for Disease Control and Prevention (CDC) advise that nebulizer treatments are a high-risk exposure for HCWs. Due to the risk of aerosolization of bronchodilator treatment, it is our recommendation to only use with COVID-19 patients with active obstructive airway disease. Furthermore, metered dose inhalers (MDIs) are preferred over the use of nebulizer treatments. In past studies, MDIs have similar outcomes when compared to nebulizer treatments.

Bronchodilator therapy poses an exposure risk to respiratory technicians and nurses who administer the nebulizer, as well as other HCWs who enter the room during or after administration.

References:

Respiratory care committee of Chinese Thoracic Society. [Expert consensus on preventing nosocomial transmission during respiratory care for critically ill patients infected by 2019 novel coronavirus pneumonia]. *Zhonghua Jie He He Hu Xi Za Zhi.* 2020;17(0):E020. <https://doi.org/10.3760/cma.j.issn.1001-0939.2020.0020>.

Moriates C, Feldman L. Nebulized bronchodilators instead of metered-dose inhalers for obstructive pulmonary symptoms. *J Hosp Med.* 2015;10(10):691-693. <https://doi.org/10.1002/jhm.2386>.

Centers for Disease Control and Prevention. Interim US Guidance for Risk Assessment and Public Health Management of Healthcare Personnel with Potential Exposure in a Healthcare Setting to Patients with Coronavirus Disease 2019 (COVID-19). April 15, 2020. <https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hc...> Accessed May 3, 2020.