



COVID-19 Guidance for Regional Anesthesia Neuraxial Anesthesia and Peripheral Nerve Blocks



@ASRA_Society



@ESRA_Society



Regional Anesthesia (RA) is preferred over General Anesthesia (GA) for patients with COVID-19 to reduce the risk of transmission.

Source: Practice Recommendations on Neuraxial Anesthesia and Peripheral Blocks during the COVID-19 Pandemic, Uppal V, Sondekoppam RV, Lobo CA, Kolli S, Kalagara HKP. www.asra.com/covid-19/guidance



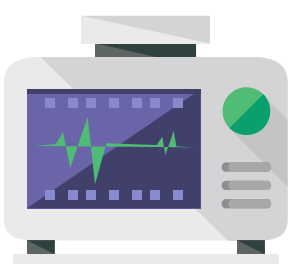
USE SAFE PRACTICES

- Don appropriate PPE before doing the procedure, take extra time to doff, and use an observer.
- RA procedures are not considered aerosol-generating:
 - The use of N95 (FFP3) masks or similar powered air-purifying respirators (PAPRs) generally are not considered necessary.
 - The use of N95 (FFP3) masks should be considered for surgical procedures with a significant risk of conversion to GA.
- All patients should wear a surgical mask to restrict droplet spread.
- Ensure the use of plastic covers to protect ultrasound equipment.



CHOOSE THE RIGHT PROCEDURES

- The use of RA is not contraindicated for COVID-19 positive patients.
- RA is preferred for providing anesthesia care wherever possible.
- Prepare and pack the required drugs in a plastic bag.
- Use blocks that reduce respiratory interference such as axillary or infraclavicular brachial plexus block.
- Risk-benefit should be considered for perineural adjuvants and continuous perineural catheters.
- Currently, no dose adjustment for RA is recommended.
- Use ultrasound guidance for peripheral nerve blocks.



BE VIGILANT

- RA should be thoroughly tested before proceeding with surgery to minimize the need for conversion to GA.
- Use minimal supplemental oxygen needed to maintain saturation.
- Rule out thrombocytopenia before neuraxial procedures.
- Watch and be prepared for hypotension after neuraxial anesthesia.
- Postpone epidural blood patch if possible until recovery from acute infection.



COVID-19 Guidance for Regional Anesthesia Neuraxial Anesthesia and Peripheral Nerve Blocks



@ASRA_Society



@ESRA_Society



Regional Anesthesia (RA) is preferred over General Anesthesia (GA) for patients with COVID-19 to reduce the risk of transmission.

Source: Practice Recommendations on Neuraxial Anesthesia and Peripheral Blocks during the COVID-19 Pandemic, Uppal V, Sondekoppam RV, Lobo CA, Kolli S, Kalagara HKP. www.asra.com/covid-19/guidance

USE SAFE PRACTICES



- Don appropriate PPE before doing the procedure, take extra time to doff, and use an observer.
- RA procedures are not considered aerosol-generating:
 - The use of N95 (FFP3) masks or similar powered air-purifying respirators (PAPRs) generally are not considered necessary.
 - The use of N95 (FFP3) masks should be considered for surgical procedures with a significant risk of conversion to GA.
- All patients should wear a surgical mask to restrict droplet spread.
- Ensure the use of plastic covers to protect ultrasound equipment.

CHOOSE THE RIGHT PROCEDURES



- The use of RA is not contraindicated for COVID-19 positive patients.
- RA is preferred for providing anesthesia care wherever possible.
- Prepare and pack the required drugs in a plastic bag.
- Use blocks that reduce respiratory interference such as axillary or infraclavicular brachial plexus block.
- Risk-benefit should be considered for perineural adjuvants and continuous perineural catheters.
- Currently, no dose adjustment for RA is recommended.
- Use ultrasound guidance for peripheral nerve blocks.

BE VIGILANT



- RA should be thoroughly tested before proceeding with surgery to minimize the need for conversion to GA.
- Use minimal supplemental oxygen needed to maintain saturation.
- Rule out thrombocytopenia before neuraxial procedures.
- Watch and be prepared for hypotension after neuraxial anesthesia.
- Postpone epidural blood patch if possible until recovery from acute infection.



COVID-19 Guidance for Chronic Pain Patients

@ASRA_Society



@ESRA_Society



- Chronic pain patients may be more susceptible to COVID-19.
- Elderly patients and those with multiple comorbidities are particularly susceptible.
- Chronic opioid therapy may cause immune suppression in some patients.
- Use of steroids in interventional pain procedures may induce immune suppression.

Source: Recommendations on Chronic Pain Practice during the COVID-19 Pandemic, Shanthanna H, Cohen SP, Strand N, Lobo CA, Eldabe S, Bhatia A, Narouze S. www.asra.com/covid-19/cpguidance



URGENT PROCEDURES

- Suspend elective procedures, use telemedicine if possible
- Determine elective or urgent procedures on a case-by-case basis.
- **URGENT PROCEDURES:**
 - ITP refills and malfunction
 - Device infection; deep infection -> explant



SEMI-URGENT PROCEDURES

- Evaluate other cases on individual basis, shared decision making.
- Goal: avoid deterioration of function, reliance on opioids, or emergency room (ER) visits, which increase risk of exposure.

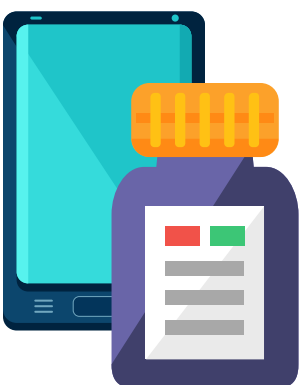
Procedural scenarios include, but not limited to, the following:

1. Intractable cancer pain
2. Acute herpes zoster or subacute, intractable post-herpetic neuralgia
3. Acute herniated disc and/or worsening lumbar radiculopathy
4. Intractable trigeminal neuralgia
5. Early complex regional pain syndrome
6. Acute cluster headaches and other intractable headache conditions
7. Other intractable, medically resistant pain syndromes



OPIOIDS

- Use telemedicine to evaluate and continue opioid Rx
- Ensure existing Rx to avoid withdrawal
- Provide naloxone education and Rx for high-risk patients
- DEA-registered practitioners can issue Rx for pts without in-person evaluation if
 - 1) legitimate medical purpose
 - 2) audio/ visual, real-time, two-way interactive communication system
 - 3) in accordance with applicable federal and state laws.



STERIODS

- Steroids increase potential for adrenal insufficiency and altered immune response.
- Joints corticosteroid injection shown to be associated with higher risk of influenza.
- Duration of immune suppression could be less with the use of dexamethasone and betamethasone.
- Consider evaluating risks/benefits of steroid injections and use a decreased dose, especially in high-risk patient populations.



Practice Recommendations on Neuraxial Anesthesia and Peripheral Nerve Blocks during the COVID-19 Pandemic

A Joint Statement by the American Society of Regional Anesthesia and Pain Medicine (ASRA) and European Society of Regional Anesthesia and Pain Therapy (ESRA)

Authors: Vishal Uppal, MBBS, FRCA, MSc (Clinical Trials);
Rakesh V. Sondekoppam, MD; Clara A Lobo, MD; Sree Kolli, MD;
and Hari K.P. Kalagara, MD, FCARCSI, EDRA

Note: The following represent current recommendations based on the best available evidence and expert opinion. These are not guidelines. Recommendations may change as the situation continues to evolve. This document was last updated on March 31, 2020.

- The document assumes that anesthesia care will be needed only on urgent and emergent surgeries or surgeries that are lifesaving (such as cancer surgeries).
- All elective surgeries should be postponed to reduce the risk of exposure to COVID-19 and to conserve the capacity of the healthcare system, personnel, and resources for a possible increase in demand.

Background

General anesthesia (GA) with airway intervention leads to aerosol generation, which exposes the health care team to risk of transmission of COVID-19 both during intubation and extubation.¹ The odds of transmission of acute respiratory infection during tracheal intubation to a health care professional is known to be 6.6 times compared to those who are not exposed to tracheal intubation.²

The tracheal intubation for a COVID-19 positive patient is ideally performed in a negative pressure room, which may not be available in all places or situations.³

Avoiding GA is also beneficial for patients as regional anesthesia lowers the risk of postoperative complications, and this becomes more important in the context of ongoing respiratory infection.^{4,5} Regional anesthesia should be preferred for providing anesthesia care wherever possible.

Careful consideration should be given to allow the surgery to be performed entirely under regional anesthesia. An unplanned need for intraoperative conversion to GA is least desirable. If the duration or complexity of surgery means a high probability of conversion to GA, it is better to start with GA. This requires good communication between the anesthesia and surgical teams.

Preparation and Planning

- The first step in the planning of anesthesia for a patient during the COVID-19 pandemic is to ascertain if the patient is COVID-19 negative, COVID-19 positive, or suspected to be positive (PUI- patient under investigation).⁶



COVID-19 negative patient

- If the patient is not COVID-19 positive, not suspected to be positive, or not PUI, then regional anesthesia can be provided following usual local institutional guidelines as before the pandemic.
- Once the community spread of COVID-19 is significant, all cases may be presumed to be COVID-19 positive.

COVID-19 Positive or PUI

- Both neuraxial anesthesia and peripheral nerve blocks are not considered aerosol-generating procedures; therefore, dealing with a COVID-19 positive or PUI requires regular contact and droplet precautions.⁷ This includes the use of a surgical mask, eye protection, surgical gown, and double glove for personnel involved in performing these procedures.
- The use of N95 (FFP3) masks or similar powered air-purifying respirator (PAPR) is not generally needed but may be considered for prolonged close contact with a positive patient in a closed setting.⁸ Given the shortage of respirator masks, the N95 or FFP3 mask should be conserved for aerosol-generating procedures such as tracheal intubation and extubation.^{9; 10}
- Importantly, all patients should wear a surgical mask to restrict the droplet spread.¹¹
- Avoid high-flow oxygen using nasal prongs as this can lead to the dispersion of droplets and possible aerosol generation.¹²
- If the patient needs supplemental oxygen, an oxygen mask should be preferred over the nasal prongs.
- The flow of supplemental oxygen should be kept to the minimum needed to maintain oxygen saturation, to reduce the risk of aerosolization.
- The surgical mask can be used over the oxygen mask to limit the dispersion of droplets.
- The regional anesthesia procedure for a COVID-19 or PUI patient should be performed in the operating room or labor room for an obstetric patient. The use of common areas, such as a block room or a holding area, should be avoided as it may lead to cross-infection.
- The most experienced person should perform the regional anesthesia technique. The donning of personal protective equipment should occur before entering the room.

Equipment

- The required equipment and drugs should be prepared and packed in a plastic bag before the procedure.
- The ultrasound equipment, including an ultrasound transducer, should be protected from contamination using plastic covers. Bringing a cart or trolley with drugs and equipment to the procedure room should be discouraged.
- The number of personnel present during the performance of the procedure should be minimized, but help should be readily available.

Spinal Anesthesia and Epidural Analgesia

- Although there is limited evidence, the use of spinal anesthesia is not contraindicated for a COVID-19 positive or PUI.¹³ The routine indications and contraindications for spinal anesthesia apply when dealing with PUI or COVID-19 positive patients.
- Caution should be exercised when attempting to reduce the duration of the spinal anesthetic by using short-acting spinal anesthetics or reducing the dose of the spinal anesthetic agent as conversion to GA is least desirable.
- It is advisable to rule out thrombocytopenia as there is preliminary evidence to suggest that it might occur in patients with severe COVID-19 disease.¹⁴



- The routine asepsis technique should be followed. A laboratory study indicated that COVID-19 virus particles are viable for longer on plastic than cardboard; the change in practice to sterile paper drapes instead of plastic ones may be considered only if available.¹⁵
- As the virus has been isolated from cerebrospinal fluid (CSF) in patients who suffered from COVID-19 encephalitis, an attempt should be made to reduce contamination by not allowing the CSF to drip freely after lumbar puncture.¹⁶
- Currently, no dose adjustment of spinal anesthesia or adjuvant opioids is recommended. However, a change to the epidural infusion regimen may be needed to reduce the need for additional top-up doses that require frequent patient contact.
- Although we have not observed the susceptibility of COVID-19 positive parturient to hypotension following neuraxial technique, a single, small case series suggests the possibility of excessive intraoperative hypotension when prophylactic vasopressors were not used.¹⁷
- The anesthesia provider should be prepared with the strategies to deal with hypotension following neuraxial procedures.¹⁸
- If resources enable, care of COVID-19 positive patients should be provided in a negative pressure room.
- All the charting and electronic recordings should be accessible to do from outside the room if possible.
- The disposal of consumables used after the procedure should be carefully done to avoid any risk of transmission.

Management of PDPH

- There is currently no guidance available for the management of post-dural puncture headache (PDPH) in a patient with COVID-19. Conservative measures should be tried first.
- Nasal sphenopalatine ganglion block is likely an aerosol-generating procedure as it involves an injection/insertion into the nasal cavity and increases the risk of COVID-19 transmission to health care professionals. Therefore, it should be avoided in COVID-19 positive patients.
- There is obvious concern about injecting viremic blood in epidural space if an epidural blood patch is needed, especially during an active illness. It might be preferable to postpone the blood patch until recovery from the infection. However, if the headache is severe and debilitating, the epidural blood patch could be performed, balancing the risk of neurological complications associated with severe untreated headache against the theoretical risk of injecting viremic blood in the epidural space.

Peripheral Nerve Block

- The preparation and asepsis should be similar to that followed for the neuraxial procedure. If possible, attempts should be made to choose the block that is least likely to interfere with respiratory function. In other words, axillary or infraclavicular brachial plexus block should be chosen over supraclavicular brachial plexus block, and superior trunk block or other alternatives are preferred over interscalene block.
- The pre-procedural sedation dose may need to be reduced to avoid any respiratory compromise requiring supplemental oxygen.
- A safe dose of local anesthetics (LA) should be calculated and used; the blocks should be performed with ultrasound guidance to reduce the risk of local anesthetic systemic toxicity (LAST).¹⁹
- The benefit of perineural adjuvants must be balanced against the risks of possible immunosuppression (dexamethasone), sedation, bradycardia and hypotension (clonidine and dexmedetomidine), drug errors, and drug contamination.
- The decision to insert and maintain perineural catheters needs to be made on a case-by-case basis. While continuous catheter techniques can be labor and resource intensive and may require frequent patient contact, the opioid-sparing effect of regional anesthesia can be

beneficial to a patient with respiratory morbidity. Hence, the use of inpatient perineural catheters should be evaluated based on patient needs and available resources. Ambulatory perineural catheters may still be utilized with clear patient instructions.

- Similarly, the risk-benefit of analgesic peripheral nerve blocks and fascial plane blocks also should be evaluated on a case-by-case basis. If the block is performed under GA and requires repositioning of the patient, there is a risk of tracheal tube disconnection or dislodgement. Therefore, it may be advisable to choose a block that does not require patient repositioning (e.g. TAP blocks) over those that require repositioning (eg, erector spinae block), if appropriate.
- In general, any additional analgesic block procedures should be avoided if adequate analgesia can be achieved using alternate regimens such as systemic analgesia.

Monitoring and Conduct

- Both neuraxial anesthesia and peripheral nerve block should be thoroughly tested for block success before proceeding with surgery to minimize the need for conversion to GA. In the case of peripheral nerve block, extra onset time should be allowed to reduce the risk of conversion. If intraoperative conversion to GA is required, the emergency airway procedure should be followed, as described in the literature.²⁰
- Excessive or deep sedation should be avoided to reduce the need for any airway manipulation or interventions.
- The patient should wear a surgical mask at all times throughout the procedure.

End of Case

- The patient should be monitored in the operating room until safe and before transfer to a COVID-19-designated area of the hospital, as per local guidelines.
- It has been shown that the risk of transmission is highest during the doffing of personal protective equipment (PPE). Extra time should be allowed for donning and doffing.
- The presence of an observer during the donning and doffing procedure is highly recommended. Simulation sessions should be conducted for training staff in donning and doffing of PPE.⁶
- Any reusable equipment utilized during the procedure should be disinfected as per institutional guidelines.

References

1. World Health Organization. *Infection prevention and control of epidemic-and pandemic-prone acute respiratory diseases in health care*. Geneva: WHO; 2014.
2. Tran K, Cimon K, Severn M, Pessoa-Silva CL, Conly J. Aerosol generating procedures and risk of transmission of acute respiratory infections to healthcare workers: A systematic review. *PLoS One*. 2012;7:e35797. doi: 10.1371/journal.pone.0035797
3. Wax RS, Christian MD. Practical recommendations for critical care and anesthesiology teams caring for novel coronavirus (2019-ncov) patients. *Can J Anaesth*. 2020; Feb 12. doi: 10.1007/s12630-020-01591-x. [Epub ahead of print].
4. Warren J, Sundaram K, Anis H et al. Spinal anesthesia is associated with decreased complications after total knee and hip arthroplasty. *J Am Acad Orthop Surg*. 2020;28:e213-e221. doi: 10.5435/JAAOS-D-19-00156.
5. von Ungern-Sternberg BS, Boda K, Chambers NA et al. Risk assessment for respiratory complications in paediatric anaesthesia: A prospective cohort study. *Lancet*. 2010;376:773-83. doi: 10.1016/S0140-6736(10)61193-2.
6. Wong J, Goh QY, Tan Z et al. Preparing for a covid-19 pandemic: A review of operating room outbreak response measures in a large tertiary hospital in singapore. *Can J Anaesth*. 2020;Mar 11. doi: 10.1007/s12630-020-01620-9. [Epub ahead of print].



7. Faculty of Intensive Care Medicine, Intensive Care Society, Association of Anaesthetists, The Royal College of Anaesthetists. Personal protective equipment (ppe) for clinicians. 2020;March 27. Available at: <https://icmanaesthesiacovid-19.org/personal-protective-equipment-ppe-for-clinicians>. Accessed March 30, 2020.
8. World Health Organization. Rational use of personal protective equipment for coronavirus disease 2019 (covid-19). 2020;Feb 27. Available at: https://apps.who.int/iris/bitstream/handle/10665/331215/WHO-2019-nCov-IPCPPE_use-2020.1-eng.pdf. Accessed March 30, 2020.
9. American Society of Anesthesiologists. UPDATE: the use of personal protective equipment by anesthesia professionals during the covid-19 pandemic. 2020;Mar 22. Available at: <https://www.asahq.org/about-asahq/newsroom/news-releases/2020/03/update-the-use-of-personal-protective-equipment-by-anesthesia-professionals-during-the-covid-19-pandemic>. Accessed March 30, 2020.
10. Centers for Disease Control and Prevention. Interim infection prevention and control recommendations for patients with suspected or confirmed coronavirus disease 2019 (covid-19) in healthcare settings. 2020; Mar19. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/infection-control/control-recommendations.html>. Accessed March 30, 2020.
11. World Health Organization. Coronavirus disease (covid-19) advice for the public: when and how to use masks. 2020. Available at: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks>. Accessed March 30, 2020.
12. Simonds AK, Hanak A, Chatwin M, et al. Evaluation of droplet dispersion during non-invasive ventilation, oxygen therapy, nebuliser treatment and chest physiotherapy in clinical practice: implications for management of pandemic influenza and other airborne infections. *Health Technol Assess*. 2010;14:131-72. doi: 10.3310/hta14460-02.
13. Society of Obstetric Anesthesia and Perinatology (SOAP). Interim considerations for obstetrical anesthesia care related to COVID19. Updated March 18, 2020. Available at <https://soap.org/education/provider-education/expert-summaries/interim-considerations-for-obstetric-anesthesia-care-related-to-covid19/>. Accessed March 31, 2020.
14. Lippi G, Plebani M, Henry BM. Thrombocytopenia is associated with severe coronavirus disease 2019 (covid-19) infections: A meta-analysis. *Clin Chim Acta*. 2020;13:145-8. doi: 10.1016/j.cca.2020.03.022. [Epub ahead of print].
15. van Doremalen N, Bushmaker T, Morris DH et al. Aerosol and surface stability of sars-cov-2 as compared with sars-cov-1. *N Engl J Med* 2020.
16. Filatov A, Sharma P, Hindi F, Espinosa PS. Neurological complications of coronavirus disease (covid-19): encephalopathy. *Cureus*. 2020;12(3): e7352. doi:10.7759/cureus.7352.
17. Chen R, Zhang Y, Huang L, Cheng BH, Xia ZY, Meng QT. Safety and efficacy of different anesthetic regimens for parturients with covid-19 undergoing cesarean delivery: a case series of 17 patients. *Can J Anaesth*. 2020; 2020 Mar 16. doi: 10.1007/s12630-020-01630-7. [Epub ahead of print].
18. Uppal V, McKeen DM. Strategies for prevention of spinal-associated hypotension during cesarean delivery: Are we paying attention? *Can J Anaesth*. 2017;64:991-6. doi: 10.1007/s12630-017-0930-0.
19. El-Boghdadly K, Pawa A, Chin KJ. Local anesthetic systemic toxicity: Current perspectives. *Local Reg Anesth*. 2018;11:35-44. doi: 10.2147/LRA.S154512.
20. Meng L, Qiu H, Wan L, et al. Intubation and ventilation amid the covid-19 outbreak: Wuhan's experience. *Anesthesiology*. 2020;Mar 26. doi: 10.1097/ALN.0000000000003296. [Epub ahead of print].



COVID-19 Guidance for Regional Anesthesia Neuraxial Anesthesia and Peripheral Nerve Blocks

@ASRA_Society



@ESRA_Society



Regional Anesthesia (RA) is preferred over General Anesthesia (GA) for patients with COVID-19 to reduce the risk of transmission.

Source: Practice Recommendations on Neuraxial Anesthesia and Peripheral Blocks during the COVID-19 Pandemic, Uppal V, Sondekoppam RV, Lobo CA, Kolli S, Kalagara HKP. www.asra.com/covid-19/guidance



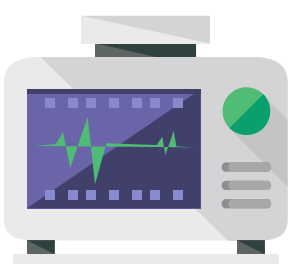
USE SAFE PRACTICES

- Don appropriate PPE before doing the procedure, take extra time to doff, and use an observer.
- RA procedures are not considered aerosol-generating:
 - The use of N95 (FFP3) masks or similar powered air-purifying respirators (PAPRs) generally are not considered necessary.
 - The use of N95 (FFP3) masks should be considered for surgical procedures with a significant risk of conversion to GA.
- All patients should wear a surgical mask to restrict droplet spread.
- Ensure the use of plastic covers to protect ultrasound equipment.



CHOOSE THE RIGHT PROCEDURES

- The use of RA is not contraindicated for COVID-19 positive patients.
- RA is preferred for providing anesthesia care wherever possible.
- Prepare and pack the required drugs in a plastic bag.
- Use blocks that reduce respiratory interference such as axillary or infraclavicular brachial plexus block.
- Risk-benefit should be considered for perineural adjuvants and continuous perineural catheters.
- Currently, no dose adjustment for RA is recommended.
- Use ultrasound guidance for peripheral nerve blocks.



BE VIGILANT

- RA should be thoroughly tested before proceeding with surgery to minimize the need for conversion to GA.
- Use minimal supplemental oxygen needed to maintain saturation.
- Rule out thrombocytopenia before neuraxial procedures.
- Watch and be prepared for hypotension after neuraxial anesthesia.
- Postpone epidural blood patch if possible until recovery from acute infection.



Visit www.asra.com/covid19
for more COVID-19 resources



State of the Art Safety Standards in RA
THE EUROPEAN SOCIETY OF REGIONAL
ANAESTHESIA & PAIN THERAPY