Masks, Gowns, and Caps for Interventional Spine Pain Procedures

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Myth: Masks are not required during spinal injection procedures.

Fact: Wearing a face mask during interventional procedures for spinal pain may decrease the risk of infection.

The Centers for Disease Control and Prevention (CDC) has investigated outbreaks of bacterial meningitis among patients undergoing various spine procedures. Some procedures that resulted in infection were performed by a healthcare provider who did not wear a face mask [1]. In several cases of meningitis, the strain of bacteria isolated from the cerebrospinal fluid of these patients was identical to the strain recovered from the oral flora of the healthcare provider who performed the procedure [2,3].

The Healthcare Infection Control Practices Advisory Committee (HICPAC) advises that there is sufficient evidence to warrant use of a face mask for the individual placing a catheter or injecting material into the spinal or epidural space [4]. In 2010, the American Society of Anesthesiologists (ASA) published "Practice Advisory for the Prevention, Diagnosis, and Management of Infectious Complications Associated with Neuraxial Techniques" and recommended that aseptic techniques should always be used during spinal procedures in addition to the use of face masks that cover both the mouth and nose [5,6].

Myth: Wearing a surgical gown during common interventional procedures for spine pain reduces risk of infection.

Fact: For most common interventional procedures for spine pain, there is inconclusive evidence that gowning confers any benefit. However, as an added but unproven precaution, gowning should be considered for advanced procedures that require lengthy access to the epidural space, such as spinal cord stimulation, or procedures that involve disc access such as disc stimulation and discography.

Gowns are intended to prevent cross-contamination by keeping infectious material from coming in contact with the clothes of healthcare providers [7]. The CDC has recommended the application of standard precautions for the care of all patients in all healthcare settings [1]. According to these recommendations, gowns should be used during procedures and patient-care activities when contact of clothing or exposed skin with blood or bodily fluids is anticipated [1]. Contact with exposed skin and clothing is not expected with common interventional procedures for spine pain. Common interventional spine pain procedures (including lumbar facet/medial branch blocks, epidural injections, radiofrequency ablation, and sacroiliac joint injections) have very low rates of infection. Large series of patients undergoing spine procedures have failed to demonstrate any cases of infection [8,9], yet clearly case reports exist [10].

Discography, which differs from most interventional spine procedures in that it involves direct access of the intervertebral disc, has a reported infection rate of close to 1% [11,12]. The infection rate may be reduced with the use of routine prophylactic antibiotics [13]. Spinal cord simulator (SCS) lead placement conveys a higher infection risk than other interventional pain procedures, with reports of 2-8% of patients developing infection [14]. Intrathecal pump placement also confers higher infection risk than common percutaneous pain procedures [15].

The evidence about effectiveness of gowns is non-existent, with no studies specifically examining their utility in preventing infections for interventional spine procedures. At this time, there is insufficient data to make definitive recommendations with regard to the routine use of gowns for most interventional spine procedures. Extra protection, such as gowning, should be considered for all procedures with higher infection rates or that involve more than brief needle access, such as discography, intrathecal pump placement, and SCS lead placement. The treating physician must weigh the risk and severity of a possible infection with the possible benefit of wearing a gown.

Myth: Caps are necessary to prevent infection during spine pain procedures.

Fact: There is no evidence that wearing caps confers any infection prevention benefit in percutaneous spine procedures. In surgical settings, there have been cases of surgical wound infections traced to group A streptococcus carried on the scalp [16]. In a 2016 statement, the American College of Surgeons (ACS) advises using caps for invasive surgical procedures [17].

There have been no cases of infection traced to scalp or hair flora in interventional spine procedures for pain. Despite the lack of evidence for wearing caps in spine procedures, providers may consider wearing caps, particularly given the fact that caps are low cost and there are no expected side effects from wearing them. Caps should be worn for advanced procedures that require lengthy access to the epidural space, such as spinal cord stimulation, intrathecal pump placement, or procedures that involve disc access such as discography.

Conclusions & Recommendations

We recommend that all providers follow applicable guidelines for caps, masks, and gowns as directed by established professional and regulatory bodies such as the CDC, the ASA, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), Healthcare Facilities Accreditation Program (HFAP), American College of Surgeons, Centers for Medicare and Medicaid Services (CMS), hospital risk management, and other local healthcare regulatory agencies. The rules may differ whether the procedure is performed in an operating room in a hospital, an ambulatory surgery center, an outpatient office, or other location.

When such guidelines do not provide sufficient clarity, decisions are best guided by published evidence. We suggest that face masks be used by healthcare providers when performing spinal injection procedures and by anyone in close proximity to the injection site or injection materials. When adhered to, this recommendation should decrease the risk for infections such as bacterial meningitis, spinal abscess, and discitis. For most common percutaneous interventional procedures for spine pain, there is inconclusive evidence that gowning confers any benefit. However, gowning should be considered for procedures that require lengthy access to the epidural space, such as spinal cord stimulation, intrathecal pump placement, or procedures that involve disc access such as discography. There is theoretical but no proven evidence-based benefit of wearing caps in interventional spine pain procedures.

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