



Nurse Advise-ERR®

Educating the healthcare community about safe medication practices

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Intrathecal injection warrants mask worn by clinicians during procedure

About seven months ago, two women who had just given birth to healthy babies developed bacterial meningitis following intrathecal injections of an anesthetic by the same anesthesiologist.¹ One of the mothers, who was only 30 years old, died within days of acquiring the infection, while the other mother recovered. Cultures identified *Streptococcus salivarius*, a common organism found in the mouth and respiratory tract, as the bacteria that caused the meningitis in both women.

The department of health in Ohio, where these incidents occurred, investigated the adverse events by collecting patient, drug, and equipment samples and by reviewing the practices associated with the delivery of spinal or epidural anesthesia during labor. According to a news report,¹ the health department identified infection control problems as well as inadequate patient monitoring post spinal anesthesia as contributory to the events. In particular, the health department determined that the events may have been linked to the anesthesiologist's failure to wear a mask during the administration of spinal medications. The health department's inspectors also found outdated medications in the labor and delivery area but did not conclude they were linked to the outbreak, as the microorganism implicated in the events is common in nasal and oropharyngeal flora.

According to the medical director at the hospital where these events occurred,¹ anesthesiology teams did not routinely wear surgical masks during spinal/epidural procedures—although they do now. Wearing a mask during these procedures seems to be a reasonable precaution, even though

bacterial meningitis or infections such as epidural abscesses are rare sequelae of spinal anesthesia.^{2,3} Yet, the issue has been widely debated, and literature on this topic can be found in support of both wearing and not wearing a mask.

Proponents of wearing a mask cite common sense and well-established evidence proving the effectiveness of universal precautions (to protect the worker and the patient) as adequate to convince anesthesiologists to wear a mask during administration of spinal/epidural anesthesia. Also, proponents point to multiple studies that link bacterial meningitis and epidural abscesses to *Streptococcus* pathogens cultured from the nose or throat of clinical staff, including anesthesiologists.⁴⁻¹² Moreover, laboratory evidence corroborates the clinical value of surgical masks in preventing the transmission of organisms from the upper airway and limiting bacterial contamination of a surface.¹³⁻¹⁵

Opponents of wearing a mask during spinal/epidural anesthesia suggest there are more case reports and studies in the literature that describe the occurrence of bacterial meningitis and epidural abscesses despite the anesthesiologist wearing a face mask than there are case reports implicating the anesthesiologist when no mask was worn.¹⁶⁻¹⁸ They acknowledge that case reports often implicate nose and throat flora of the anesthesiologist, but suggest that the studies do not prove the anesthesiologist (or other clinician) actually caused the infection. Some studies of iatrogenic bacterial meningitis and epidural abscesses also fail to mention whether a mask was worn or not during the procedure, making it dif-

Organism implicated in bacterial meningitis is common in nasal and oral flora.

safetywires

Two-component vaccine. **PENTACEL** is indicated for active immunization against diphtheria, tetanus, pertussis, poliomyelitis, and invasive disease due to *Haemophilus influenzae* type b. It is for children 6 weeks to 4 years of age and provides the convenience of multiple vaccines in one shot. However, it is a 2-vial vaccine product requiring the mixing of two components before administration (Figure 1). A medication error was reported when only one component of the vaccine product, the DTaP/IPV (diphtheria and tetanus toxoids, acellular pertussis adsorbed, inactivated poliovirus) portion, was administered, not the Hib (*Haemophilus b* conjugate) portion. The provider later continued the series and the child did not experience any harm. The error was dis-

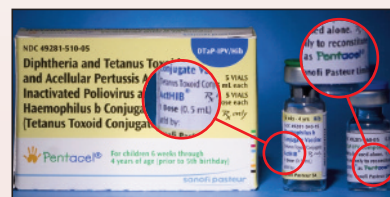


Figure 1. Each component lists a different brand name on the label.

covered during inventory. This may have happened because the DTaP/IPV component carries the brand name Pentacel while the Hib component is labeled **ActHIB**, a totally different brand name. Unless the person administering the vaccine is familiar with the product or

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Nurse Advise-ERR® funding for 2010

We are very pleased to announce that this newsletter will again be offered **FREE** to US nurses in 2010 through educational grants from **Baxter Healthcare** and **McKesson**. Please join us in thanking our 2010 supporters by sending a message to ismpinfo@ismp.org. We will forward all messages to company representatives.



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 difficult to draw accurate conclusions on the subject. While one well-cited study showed face masks decreased growth in agar plates placed 30 cm in front of anesthesiologists who talked for several minutes, the same study showed increased bacterial growth once the masks had been worn for 15 minutes when compared to wearing no mask at all.¹³ Since anesthesiologists rarely change their masks during a procedure (and may use the same mask for the entire day), the mask may increase the risk of transmitting a bacterial infection. The need to wear a mask during a spinal/epidural procedure is also questioned on the basis of evidence that masks do not actually decrease the rate of surgical wound infections.³

In 2004, the Centers for Disease Control and Prevention (CDC) investigated eight cases of post-myelography meningitis that were reported or identified through a survey.¹⁹ Blood and/or cerebrospinal fluid of all eight cases yielded *Streptococcal* species consistent with nasal and oropharyngeal flora, and there were changes in the cerebrospinal fluid indices and clinical status indicative of bacterial meningitis. Equipment and products used during these procedures (e.g., contrast media) were excluded as probable sources of contamination. Procedural details available for seven cases determined that antiseptic skin preparations and sterile gloves had been used. However, none of the clinicians wore a face mask, giving rise to the speculation that droplet transmission of nasal and oropharyngeal flora was the most likely explanation for these infections.

In October 2005, the Healthcare Infection Control Practices Advisory Committee (HICPAC) reviewed this evidence as well as cases of bacterial meningitis and epidural abscesses previously reported.^{3-18,20-21} HICPAC concluded that there is sufficient evidence to warrant the additional protection of a face mask worn by the individual

placing a catheter or injecting material into the spinal or epidural space.¹⁹ Thus, the CDC recommends wearing a mask when carrying out these procedures, including myelograms and lumbar punctures. The recommendation is categorized on the basis of existing scientific data as “1B”: *Strongly recommended for implementation and supported by some experimental, clinical, or epidemiologic studies and a strong theoretical rationale.* (A category “1A” recommendation would be based on strong support by well-designed experimental, clinical, or epidemiological studies.)

The decision by HICPAC and CDC to recommend wearing a mask was based in large part on evidence that face masks are effective in limiting the dispersal of oropharyngeal droplets¹³ and are currently recommended as an evidence-based practice for the placement of central venous catheters.^{19,22-24} Although the absence of a mask during initiation of spinal or epidural anesthesia may not necessarily cause the patient to develop an infection, most evidence points to the fact that it makes the procedure a safer one if a mask is worn. It would appear that not wearing a mask is hard to justify when identical organisms have been grown from patient cultures and nasal swabs from anesthesiologists who did not wear a mask. Anesthesiologists have also suggested to ISMP that a mask should be worn by any person within 30-60 cm of the procedure tray or injection area, such as the nurse supporting the patient during the procedure, to prevent respiratory droplets from spraying onto the injection site or needle. Finally, we recommend all people involved in the procedure discard their mask at the end of the case and put on a new one for the next case.

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Error in filing a medication list

A hospital reported an incident in which a patient's medication list was attached to the wrong patient's record in the emergency department (ED). To facilitate the reconciliation process, the list had been printed from a reliable, external computerized drug database. So while it was an accurate list of medications for the intended patient, it was an incorrect list of medications for the patient on whose record it was filed.

The patient's condition did not allow the prescriber to conduct an interview, so he relied on the medication list on the chart to prescribe the patient's admission medications. Unfortunately, it was the wrong list for this patient. The error went undetected for several hours until a pharmacist noticed that the physician had prescribed insulin. By chance, he knew the patient from the community pharmacy where he also worked part-time. He did not think the patient had a history of diabetes, so he investigated the reason for the insulin order and uncovered the misfiled medication list.

Several factors contributed to the error. In the ED, various pages of the patient's record were typically paper clipped together and sometimes piled on top of each other, making it hard to notice if a form or report was acci-

dentally misfiled on the chart. (This practice also may occur in other clinical areas such as PACU, Cath lab, and endoscopy suites, where patient stays are short.) Also, unique patient identifiers (i.e., name, birth date) on externally generated medication lists were located in a different place than on internally generated documents. As one of the follow-up actions to this incident, an audit of inpatient records was conducted. Over a 1-month period, an assortment of misfiled reports was found.

To reduce the risk of misfiling clinical reports, ISMP recommends requiring patient verification using two unique identifiers when filing new material on the patient's chart. If a document does not contain two unique identifiers, verify the unique identifiers with the patient and add them to the document before filing it. Use the same safeguards for patient verification as is required for treatment decisions. In this case, an effective reconciliation process might have detected the misfiled medication list before the patient left the ED. However, with an unresponsive patient, it may take several hours to ensure that the medication list is accurate. In this situation, involving family members may have been beneficial.

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Editors: Judy Smetzer, RN, BSN, FISMP; Ann Shastay, RN, MSN, AOCN; Michael R. Cohen, RPh, MS, ScD; Russell Jenkins, MD. **ISMP, 200 Lakeside Drive, Suite 200, Horsham, PA 19044-2321.** Tel.: 215-947-7797; Fax: 215-914-1492;
 EMAIL: nursing@ismp.org.

Report medication errors to ISMP at 1-800-FAIL-SAF(E).

► Special Announcements

ISMP Webinar: February 18: Reducing Medication Safety Risks: Closing the Gap with the ISMP Self Assessment for Automated Dispensing Cabinets. Preliminary data since the launch of the self assessment will be presented along with recommendations to further improve the safe use of ADCs. For details, go to www.ismp.org/educational/webinars/default.asp.

ISMP Employment: ISMP is seeking a pharmacist (PharmD or Master's degree) or nurse (Master's degree) with at least 5 years clinical and managerial experience for a full-time position in Horsham, PA, in our consulting division. Visit www.ismp.org/jobline/mse.asp and send your resume to ismpinfo@ismp.org.

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takes the time to read the preparation instructions, the person could easily think the vial labeled Pentacel is all that is needed. We contacted the company about this and suggested enhancing the labeling to call attention to the need to mix the two components. Staff at the clinic where the error occurred now make sure the NDC number, the lot number, and the expiration date for each component are documented in the vaccine log. This helps confirm administration of both portions of the vaccine.

FDA requires emphasized allergy warning for iron. Fatal

reactions can occur after administration of **DEXFERRUM** (iron dextran complex) injection used to treat iron deficiency in people who do not respond to oral supplements. A test dose is recommended prior to administering the full therapeutic dose. However, even when a test dose had been given without a reaction, anaphylactic-type reactions have occurred. The Food and Drug Administration (FDA) has required the manufacturer, American Regent, to emphasize the warning about the risk of a severe anaphylactic-type allergic reaction on the product prescribing information sheet. Healthcare professionals administering this drug should be knowledgeable about identifying and treating anaphylactic-type reactions and ensure that resuscitation equipment is readily available. Hospitals should develop a standardized protocol for iron dextran administration which includes a monitored test dose, administration of the full dose 1 hour later if there are no signs of an allergic reaction, and parameters for ongoing monitoring of possible allergic reactions during administration of the full dose. Please note, these types of reactions also occur with other preparations of iron dextran injection and similar precautions should be taken.

CE CREDITS

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2010 Survey on practice site distribution of the ISMP Nurse Advise-ERR®

We need the help of the individual who receives the initial copy of this newsletter at each practice site to understand how it's received and redistributed within your organization. The survey will take just a few minutes to complete and will give us the information we need to continually increase distribution of medication safety practice recommendations to even more nurses. **We would greatly appreciate just ONE RESPONSE from each hospital/facility BY ONLY THE PERSON WHO INITIALLY RECEIVES THE NEWSLETTER.** Please submit your responses by **February 26, 2010**, via our website at: www.ismp.org/survey/NurseSurvey201001.asp (or by fax to 215-914-1492 only if you do not have Internet access). Thank you!

1 As the person who receives the initial copy of the newsletter, what is your professional role and level? (check one)

- Nurse - If yes, please note level: Staff Manager Administrator Other
 Pharmacist - If yes, please note level: Staff Manager Administrator Other
 Physician - If yes, please note level: Staff Manager Administrator Other
 Educator - If yes, choose: Academic setting Patient care setting
 Administrator (other than those listed above)
 Risk/Quality Manager
 Patient/Medication Safety Officer
 Industry/Regulatory
 Other (specify) _____
 I am not sure if I receive the initial copy of the newsletter in my facility

2 Do you redistribute the newsletter after it is received? Yes ___ No ___ If no, skip to question # 6

3 As a general pattern, how do you redistribute the newsletter to others? (check one)

- Send all issues Send selected issues Send selected items from issues
 Other (specify) _____

4 Estimate how many people in each category actually receive each issue (or selected items) of the newsletter after redistribution in your facility. List the number of people who receive the newsletter after redistribution next to each applicable category.

- | | |
|--|---|
| <input type="checkbox"/> Staff nurses | <input type="checkbox"/> Educators |
| <input type="checkbox"/> Nurse managers or administrators | <input type="checkbox"/> Students |
| <input type="checkbox"/> Staff pharmacists | <input type="checkbox"/> Staff physicians |
| <input type="checkbox"/> Pharmacy managers or administrators | <input type="checkbox"/> Physician managers or administrators |
| <input type="checkbox"/> Risk management staff | <input type="checkbox"/> Respiratory therapists |
| <input type="checkbox"/> Quality management staff | <input type="checkbox"/> Others |

5 Place a checkmark next to each method used to distribute newsletter information. (check all that apply)

- Fax Email Internal intranet Internal website Bulletin board
 Sent with meeting minutes Sent through an internal newsletter
 Copied and sent to individuals/departments Other (specify) _____

6 What topics would you like to see covered in future editions of the newsletter?

7 Please describe your organization. (check all that apply)

- Hospital - please note bed size: Below 100 beds 101-200 beds 201-350 beds 351-500 beds Over 501 beds
 Outpatient/Community-based provider
 Academic setting
 Other (specify) _____

8 Next to each statement, tell us your thoughts about the newsletter by indicating the number that best describes your opinion.

Strongly disagree = 1 Disagree = 2 Neutral = 3 Agree = 4 Strongly agree = 5

- The newsletter increases understanding of the causes and prevention of medication errors.
 The recommendations for medication error prevention are practical and helpful.
 The information is relevant to my practice AND/OR relevant to whom I distribute the newsletter.
 I have used information from the newsletter to make changes in my individual practice.
 Information from the newsletter has been used to make system changes in my facility/unit.

Thank you for participating!

Please submit responses to ISMP at: www.ismp.org/survey/NurseSurvey201001.asp, or by fax (215-914-1492) by **February 26, 2010**.