

hour theoretical and practical training course that addressed the composition of the vaccine, adverse events, contraindications, postvaccination advice, conservation of vaccine, the transportation and storage of vaccine at the required cold temperature, and administration of vaccine. The organization and training of the vaccination teams, as well as the campaign itself, were conducted by the hospital's employees. A supervisor and 3 mobile teams, each composed of 4 nurses, conducted the entire campaign in the main building. The vaccine remained available to the HCWs at the Immunization Center of the hospital until the end of the season.

In the entire hospital complex, 9,024 HCWs (45% of the target population) were vaccinated against influenza in 2006. The strategy was repeated in 2007, when the vaccine was administered to 9,713 HCWs (48.5%) during the 2-week campaign. The intervention in 2006 increased the HCW influenza vaccination rate from 6% to 45%. Both the institutional commitment to improve the rates and the involvement of employees were essential. Offering the vaccine to the HCWs in their work sites during their work hours by mobile teams, which made vaccination more convenient to the target population, was crucial to the success of the effort.

The results are consistent with those of other studies showing that increasing access to vaccination is the most effective strategy to overcome barriers and to increase HCW vaccination rates.^{6,7} However, no single strategy is sufficient to vaccinate a high percentage of HCWs.⁸

Ensuring the program's longevity and guaranteeing that a high percentage of HCWs get the vaccination every year is a challenge. A survey conducted at the Hospital das Clinicas in 2004 showed that 50%-70% of employees who had been vaccinated also received vaccination the following year, whereas more than 80% of those who had not been vaccinated remained unvaccinated.³ To work in the long term, the educational campaign and vaccination program must be conducted annually to reach new employees and those who chose not to be vaccinated in the previous year.⁴ Although the intervention increased the rate of vaccination among HCWs, we do not feel the achieved rate is good enough.

Nowadays, influenza vaccination is considered an HCW's personal choice. A shift in the focus of the immunization strategy, casting the influenza vaccination of HCWs as a means of improving safety for employees and patients, should be considered.^{1,8} Beyond changing individual HCWs' attitudes, healthcare institutions should recognize that vaccination of HCWs is an important issue in infection control and healthcare quality.^{1,8}

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REFERENCES

- Centers for Disease Control and Prevention. Prevention and Control of Influenza. Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2007. *MMWR Morb Mortal Wkly Rep* 2007; 56(RR-6):1-53.
- Ministério da Saúde / Secretaria de Vigilância em Saúde / Departamento de Vigilância Epidemiológica / Coordenação Geral do Programa Nacional de Imunizações. Campanha Nacional de Vacinação do Idoso: informe técnico, 2007 [in Portuguese]. Available at: http://portal.saude.gov.br/portal/arquivos/pdf/informe_tecnico_vacina_2007_idoso.pdf. Accessed October 7, 2007.
- Takayanagi IJ, Cardoso MRA, Costa SF, Araya MES, Machado CM. Attitudes of health care workers to influenza vaccination: why are they not vaccinated? *Am J Infect Control* 2007; 35:56-61.
- Thomas RE, Jefferson TO, Demicheli V, Rivetti D. Influenza vaccination for health-care workers who work with elderly people in institutions: a systematic review. *Lancet Infect Dis* 2006; 6:273-279.
- Russell ML, Henderson EA. The measurement of influenza vaccine coverage among health care workers. *Am J Infect Control* 2003; 31:457-461.
- Burls A, Jordan R, Barton P, et al. Vaccinating healthcare workers against influenza to protect the vulnerable—is it a good use of healthcare resources? A systematic review of the evidence and an economic evaluation. *Vaccine* 2006; 24:4212-4221.
- Kimura AC, Nguyen CN, Higa JI, Hurwitz EL, Vugia DJ. The effectiveness of vaccine day and educational interventions on influenza vaccine coverage among health care workers at long-term care facilities. *Am J Public Health* 2007; 97:684-690.
- National Foundation for Infectious Diseases. Improving influenza vaccination rates in health care workers: strategies to increase protection for workers and patients, 2004. Available at: <http://www.nfid.org/pdf/publication/hcwmonograph.pdf>. Accessed September 29, 2007.

Clusters of Nosocomial Meningitis Associated With a Single Anesthesiologist

TO THE EDITOR—We read with great interest the recent article by Rubin et al.¹ reporting 6 cases of meningitis after

spinal anesthesia performed by an anesthesiologist. According to the authors, the most probable source of contamination was droplet nuclei involving commensals of the oral cavity and upper respiratory tract, since cultures of cerebrospinal fluid were positive for *Streptococcus salivarius* in 1 case, and *S. salivarius*-related DNA was detected in 2 other cases. An investigation revealed violations of standard hygiene practices during lumbar puncture, as masks were not correctly worn and the puncture site was not adequately disinfected. The authors mentioned that the cluster of cases was probably related to certain characteristics of the anesthesiologist that favored the organism's dispersal but did not provide any explanation about the mechanism and source of contamination. They mentioned in the literature review 3 articles that reported 3 different clusters of 2 cases of meningitis after myelography and spinal anesthesia.²⁻⁴ All 3 articles showed the need for anesthesiologists to wear masks correctly during anesthesia procedures involving lumbar puncture.

We reported⁵ in 2003 a similar cluster of 2 cases of meningitis due to *S. salivarius* following spinal anesthesia performed by the same anesthesiologist within a short time. We found that not only was the face mask incorrectly used, but the anesthesiologist had frequent coughs due to chronic bronchitis and stayed very close to the spinal puncture for at least 5 minutes when injecting an anesthetic product. In a British survey of the behavior of obstetric anesthesiologists regarding the wearing of face masks during spinal and epidural anesthesia, 50.6% did not wear masks.

Although meningitis after epidural and spinal anesthesia seems to be a rare event,⁶ Ruben et al.¹ conceded that these 6 cases, which occurred in the course of 5 years, with 5 of them in the course of 14 months, might be one of the largest series reported to date. Overall, these case reports emphasize the need for strict application of standard precautions during

invasive care to prevent the transmission of respiratory pathogens.

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REFERENCES

1. Rubin L, Sprecher H, Kabaha A, Weber G, Teitler N, Rishpon S. Meningitis following spinal anesthesia: 6 cases in 5 years. *Infect Control Hosp Epidemiol* 2007; 28:1187-1190.
2. Schneeberger PM, Janssen M, Voss A. Alpha-haemolytic streptococci: a major pathogen of iatrogenic meningitis following lumbar puncture. Case reports and a review of the literature. *Infection* 1996; 24:29-33.
3. DeJong J, Barrs ACM. Lumbar myelography followed by meningitis. *Infect Control Hosp Epidemiol* 1992; 13:74-75.
4. Veringa E, van Belkum A, Schellekens H. Iatrogenic meningitis by *Streptococcus salivarius* following lumbar puncture. *J Hosp Infect* 1995; 29: 316-318.
5. Couzigou C, Vuong TK, Botherel AH, Aggoune M, Astagneau P. Iatrogenic *Streptococcus salivarius* meningitis after spinal anaesthesia: need for strict application of standard precautions. *J Hosp Infect* 2003; 53:313-314.
6. Panikkar KK, Yentis SM. Wearing of masks of obstetric regional anaesthesia: a postal survey. *Anaesthesia* 1996; 51:398-400.