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Supported financially by a Wellcome Trust Vacation Scholarship (to A.O.C).

References

1. Brown DF, Edwards DI, Hawkey PM, Morrison D, Ridgway GL, Towner KJ, et al, and the Joint Working Party of the British Society for Antimicrobial Chemotherapy; Hospital Infection Society; Infection Control Nurses Association. Guidelines for the laboratory diagnosis and susceptibility testing of methicillin-resistant *Staphylococcus aureus* (MRSA). J Antimicrob Chemother 2005;56:1000-18.
2. Cohen PR. Cutaneous community-acquired methicillin-resistant *Staphylococcus aureus* infection in participants of athletic activities. South Med J 2005;98:596-602.
3. Mainous AG III, Hueston WJ, Everett CJ, Diaz VA. Nasal carriage of *Staphylococcus aureus* and methicillin-resistant *S aureus* in the United States, 2001-2002. Ann Fam Med 2006;4:132-7.
4. Abudu L, Blair I, Fraise A, Cheng KK. Methicillin-resistant *Staphylococcus aureus* (MRSA): a community-based prevalence survey. Epidemiol Infect 2001;126:351-6.
5. Tunc K, Olgun U. Microbiology of public telephones. J Infect 2006;53:140-3.
6. Brady RR, Wasson A, Stirling I, McAllister C, Damani NN. Is your phone bugged? The incidence of bacteria known to cause nosocomial infection on healthcare workers' mobile phones. J Hosp Infect 2006;62:123-5.

doi:10.1016/j.ajic.2006.09.015

Assessing vaccination rates at an emergency room

To the Editor:

Vaccination is among the most cost-effective tools to decrease childhood morbidity-mortality. Nonetheless, this effectiveness is dependent on vaccination coverage. Missed opportunities (MO) for vaccinations occur when a vaccine-eligible child does not receive the needed vaccines, and their contribution to under immunization is significant.[1]

To assess the vaccination rates among children admitted to the emergency room of a university hospital in Salvador, Brazil, between November 2001 and November 2003, a retrospective cross-sectional study was conducted. The medical records were reviewed. The patients had been evaluated by medical students supervised by the same professor (C. M. Nascimento-Carvalho). A standardized form was used, and inquiry regarding vaccine use was included in the form. The Brazilian Ministry of Health vaccine schedule was used as standard. The study was approved by the Institutional Review Board.

Out of 267 patients, 122 (45.7%) showed the vaccines card, 87 (32.6%) informed on vaccines use, and 58 (21.7%) did not provide any information; overall, 31.6% (66/209) had the vaccination schedule incomplete (42.6% with and 16.1% without card). The median age (years) was 1.7 (mean, 2.6 ± 2.6 years), and 53.9% were males. Overall, association between young age (years) with incomplete vaccination schedule was identified (1.6 ± 1.6 vs 2.7 ± 2.7 years, respectively, 95% CI mean difference, 0.6-1.8; $P = .006$). This association was also found by analyzing vaccine cardholders or vaccine-use reports separately. The median family income was US $227.30 (mean US, $276.40 ± $166.82). The family income (US $) was greater among children with complete vaccine schedule, by analyzing cardholders ($302.73 ± $167.73 vs $230.45 ± $160.00, respectively, 95% confidence interval mean difference, 8.6-127.3; $P = .02$). The frequency of delayed vaccines were MMR, 20.8%; *Haemophilus influenzae* type b first dose, 17.3%; BCG, 11.5%; hepatitis B second dose, polio first dose, HIB second dose, tetra first dose, tetra second dose, 9.6% each; and hepatitis B first dose, polio second dose, and DPT first booster, 7.7% each.

It is noteworthy that almost half (45.7%) of the patients included in this study presented the vaccines card, even looking for health care at an emergency room, and this made accurate assessment for vaccine coverage possible. Another study analyzing data from different settings has reported similar rate for incomplete vaccination schedules: 40.4%.[2] Different rates of vaccination coverage have been found by considering vaccine documentation or patients report, with a trend for underestimation for patient report,[2] as it was observed herein. The association of young age with incomplete vaccine schedule highlights how important it is to decrease MO because the younger the child the greater is morbidity-mortality, including vaccine-preventable diseases.[1] In general, the lower the vaccination coverage and the higher the burden of vaccine-preventable diseases in a population, the greater the need to improve coverage; urban, low-socioeconomic-status populations are particularly vulnerable to vaccine-preventable diseases,[3] which is in accordance with the association of lower income and incomplete vaccine schedule found in this study. Improving coverage in impoverished urban communities should be a priority.[3]

MO was one of the identified barriers that made it difficult to vaccinate fully the young children and contributed to the measles epidemics of 1989 and 1990 in the United States.[4] Specific recommendations to eliminate MO have been published in 1993 and included the use of all clinical encounters, including visits for

mild illnesses, for the provision of needed immunization.[5] In a nationwide study, there was no difference in a state preference for receiving a needed immunization during an illness visit.[6] Expanding access is strongly recommended on the basis that it improves vaccination coverage.[3] The authors propose the screening of the immunization status during health care assistance and the promotion of vaccine use during mild illnesses at emergency rooms as a strategy to reduce MO.

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References

1. Sabnis SS, Pomeranz AJ, Lye PS, Amateau MM. Do missed opportunities stay missed? A 6-month follow-up of missed vaccine opportunities in inner city Milwaukee children. Pediatrics 1998;101:E5.
2. Tugumisirize F, Tumwine JK, Mworozi EA. Missed opportunities and caretaker constraints to childhood vaccination in a rural area in Uganda. East Afr Med J 2002;79:347-54.
3. Task Force on Community Preventive Services. Recommendations regarding interventions to improve vaccination coverage in children, adolescents, and adults. Am J Prev Med 2000;18:92-6.
4. The National Vaccine Advisory Committee. The measles epidemic: the problems, barriers, and recommendations. JAMA 1991;266: 1547-52.
5. Ad Hoc Working Group for the Development of Standards of Pediatric Immunization Practices. Standards for pediatric immunization practices. JAMA 1993;269:1817-22.
6. Taylor JA, Darden PM, Brooks DA, Hendricks JW, Wasserman RC, Bocian AB. Association between parents' preferences and perceptions of barriers to vaccination and the immunization status of their children: a study from Pediatric Research in Office Setting and the National Medical Association. Pediatrics 2002;110:1110-6.

doi:10.1016/j.ajic.2006.10.008

Phlebitis associated with peripheral intravenous catheters

To the Editor:

Malach et al[1] suggest that presence of an intravenous peripheral catheter longer than 3 days is a risk factor for phlebitis. A point-prevalence research design was used in their study whereby patients with phlebitis were compared with an unmatched control group of patients who did not have phlebitis. There are significant problems with drawing strong conclusions from such a design, which the authors themselves acknowledge. Other prospective, longitudinal studies have found that it is within the first 2 days following peripheral catheter insertion that the patient is at highest risk for infection.[2,3] These authors surmise that breaching skin integrity, which occurs more frequently with 72-hour changes, may contribute to this result. We have supported their conclusions in a recent randomized controlled trial, in which the incidence of phlebitis was similar in the 3-day change group and the change when clinically indicated group.[4] Among those who had their peripheral catheter removed for phlebitis, the mean length of time that the catheter was in situ was 48.7 hours.

We believe that, if patients are not matched for risk factors that may influence outcomes, incorrect conclusions may be drawn. This could have considerable patient care and economic implications. Consequently, it is important to use the correct study design when trying to understand significant health care questions.

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References

1. Malach T, Jerassy Z, Rudensky B, Schlesinger Y, Broide E, Olsha O, et al. Prospective surveillance of phlebitis associated with peripheral intravenous catheters. Am J Infect Control 2006;34:308-12.
2. Bregenzer T, Conen D, Sakmann P, Widmer AF. Is routine replacement of peripheral intravenous catheters necessary? Arch Intern Med 1998; 158:151-6.
3. Homer LD, Holmes KR. Risks associated with 72- and 96-hour peripheral intravenous catheter dwell times. J Intraven Nurs 1998; 21:301-5.
4. Webster J, Lloyd S, Hopkins T, Osborne S, Yaxley M. Developing a Research base for intravenous peripheral cannula re-sites (DRIP trial). A randomized controlled trial of hospital in-patients. Int J Nurs Stud 2006. In press.

doi:10.1016/j.ajic.2006.09.013

In response to Webster and Osborne

To the Editor:

We appreciate the comments made by Webster and Osborne. Rather than establish the optimal duration of peripheral intravenous catheters, the purpose of our study was to determine the rate of phlebitis and associated risk factors and, through educational intervention, reduce the rate of phlebitis.[1] These aims were achieved.