

VACCINE

RESOURCE LINE

A MONTHLY SUMMARY OF PEER-REVIEWED PUBLISHED LITERATURE

Pneumococcal vaccination halves MI risk at two years

Lamontagne et al. Pneumococcal vaccination and risk of myocardial infarction. CMAJ 2008;179(8):773-7.

Madjid M. Acute infections, vaccination and prevention of cardiovascular disease. CMAJ 2008;179(8):749-50.

Pneumococcal vaccination has been shown to decrease the rate of new myocardial infarction (MI) in at-risk patients starting about two years after patients receive the vaccine, according to Quebec-based researchers.

Dr. François Lamontagne, Université de Sherbrooke, Quebec, and colleagues from there as well as from McMaster University, Hamilton, Ontario, carried out a hospital-based, case-control study of patients considered at risk for MI and who had been admitted to a tertiary care hospital. Patients were considered at risk for MI by the presence of at least one risk factor, including hypertension, diabetes or dyslipidemia in men over the age of 45 and in women over the age of 50. Cases were defined as patients with one or more cardiovascular (CV) risk factor and no previously diagnosed vascular disease who went on to experience a new MI within the study period.

Controls were defined as patients with one or more of the same CV risk factors and no previously diagnosed vascular disease who did not experience a new MI during the study period. Between 1997, when the study was initiated, and 2003, investigators matched 999 cases and 3996 controls according to age, sex and year of hospital admissions.

A comparative analysis of the two groups showed that patients who experienced a new MI were about half as likely as controls to have been vaccinated against pneumococcus (odds ratio [OR] 0.53). Importantly, “This putative protective role of the vaccine was not observed for patients

who had received the vaccine up to one year before their MI,” investigators noted.

In contrast, if patients had received the vaccine two years or more before hospital admission, the protective effect of pneumococcal vaccination against MI was even stronger at an OR of 0.33. As the authors noted, the study supports the hypothesis that antibodies directed against *Staphylococcus pneumoniae* impede the uptake of oxidized LDL by macrophages, thereby interrupting an early and critical step in the atherosclerotic disease process.

Indeed, animal experiments have shown that pneumococcal vaccination reduces the extent of atherosclerotic lesions. Others have suggested that acute pneumococcal infection, but not vaccination, increases the risk of vascular events. “If confirmed, this association should generate interest in exploring the putative mechanisms [behind the protection] and may offer another reason to promote pneumococcal vaccination,” the authors stated.

Interestingly, vaccination rates in both study cohorts were low, with only 7.1% of those who had an MI during the study interval having been vaccinated against pneumococcus compared with 11.6% for controls. In an accompanying commentary, Dr. Mohammad Madjid, Texas Heart Institute, Houston, noted that infections of the upper respiratory tract—including pneumonia and influenza—can trigger acute coronary syndromes and that prevention of these infections by vaccination may prevent CV events in high-risk patients. He also supported the need to improve pneumococcal and influenza vaccination rates as they are below optimal levels in most countries. He also urged physicians to pay special attention to symptoms and signs of cardiac events in patients at high risk for CV disease who contract an upper respiratory tract infection.

Influenza vaccine given in pregnancy substantially reduces infections in infants

Zaman et al. Effectiveness of maternal influenza immunization in mothers and infants. N Engl J Med 2008; 359(15):1555-64.

Inoculating pregnant women during their third trimester with inactivated influenza vaccine substantially reduced proven influenza infections and

FEATURING SELECTED SUMMARIES FROM:

CMAJ: www.cmaj.ca

N Engl J Med: www.nejm.org

Clin Infect Dis: www.journals.uchicago.edu

Vaccine: www.sciencedirect.com

Pediatrics: www.pediatrics.org

respiratory illness with fever in infants, according to a study carried out in Bangladesh. Rates of respiratory illness with fever among mothers were also significantly reduced.

Dr. Kamruz Zaman, International Centre for Diarrheal Disease Research, Dhaka, Bangladesh, and multicentre colleagues estimated the clinical effectiveness of maternal immunization with inactivated influenza vaccine on influenza illness in infants and mothers. “The primary outcome in infants was the first episode of laboratory-confirmed influenza before 24 weeks of age,” they noted.

Mothers were randomly assigned to receive an inactivated influenza virus vaccine as recommended by the World Health Organization (WHO) for the southern hemisphere or the 23-valent polysaccharide pneumococcal vaccine. They were also given digital thermometers and were taught to record auxiliary temperatures of their infants. A total of 340 women met the inclusion criteria. Among the 159 infants whose mothers received the influenza vaccine, only six developed laboratory-confirmed influenza, compared with 16 among 157 other infants whose mothers serviced as controls—an effectiveness of 63%, investigators observed. The influenza vaccine also reduced the rate of respiratory illness with fever in infants by 29%, the rate of infant clinic visits for respiratory illness with fever by 42% and the rate of clinicians needing to test for influenza by 49%. Mothers who received the influenza vaccine were also 36% less likely to develop respiratory illness with fever, investigators added. “Our data show that a single dose of maternal influenza vaccine provides a considerable two-for-one benefit to both mothers and their young infants,” they affirmed.

Only five pregnant women would need to be vaccinated to prevent a single case of respiratory illness with fever in a mother or infant, prompting investigators to conclude, “The clinical effectiveness of influenza vaccine against both laboratory-proven influenza and several other respiratory illnesses... is unique evidence supporting the strategy of maternal immunization to prevent influenza infection in young infants and their mothers.”

First measles dose recommended at 12 months

Dominguez et al. Large outbreak of measles in a community with high vaccination coverage: Implications for the vaccination schedule. Clin Infect Dis 2008;47(9):1143-9.

Analysis of a large outbreak of measles in a community with high vaccination rates has prompted Spanish investigators to recommend that the first dose of the measles vaccine be routinely given to infants at the age of 12 months.

Dr. Angela Domínguez, University of Barcelona, Spain, and multicentre colleagues analyzed the epidemiological and clinical characteristics of a measles outbreak that began in Catalonia at the end of 2006. During the study period, 538 suspected cases of measles were reported in the region and 381 of them were confirmed. The outbreak affected primarily the Barcelona and Tarragona health regions, where 93.2% of the 381 confirmed cases occurred in the

Barcelona health region and 19 cases in the Tarragona health region. Six cases actually occurred among residents of other health regions but all had attended hospitals in the Barcelona region where they were contacts of cases.

Of the confirmed measles cases, 89.8% occurred among indigenous subjects. Almost the same percentage occurred among nonvaccinated subjects, 55.2% of whom were under the age of 15 months at the time of infection, younger than the usual age when infants get their first dose of the measles vaccine. Another 9.4% of those who contracted measles had received only one dose of the measles-mumps-rubella (MMR) vaccine, while 1.3% had received two doses. Among the adults who contracted measles, 11 were healthcare workers, none of whom had been vaccinated with one exception, that being among an individual who received one dose of the MMR vaccine. “This outbreak of measles was the largest in Catalonia in the 20 years since the introduction of routine vaccination,” the investigators reported. The first cases were “clearly imported,” they added, but gave rise to various transmission chains in the indigenous population.

As the authors also observed, the great majority of immigrants in Catalonia come from countries with poor vaccination coverage. Even though immigrants are offered the same health care services as the indigenous population, “The rate of MMR vaccination coverage is only 93.3% among immigrants compared with 98.9% for the indigenous population,” investigators stated. “This outbreak shows that high national and regional vaccination coverage rates do not, in themselves, guarantee maintenance of elimination.”

Survey: more French favour mandatory immunization than GPs or pediatricians

Nicolay et al. Mandatory immunization: the point of view of the French general population and practitioners. Vaccine 2008; 26(43):5484-93.

More French in the general population favour mandatory vaccination than either general practitioners (GPs) or pediatricians, with those favouring the strategy tending to see immunization as an individual and collective prevention tool.

Dr. N. Nicolay, Institut de Veille Sanitaire, Saint Maurice Cedex, France, and multicentre colleagues attempted to identify both the general populations’ as well as physicians’ perception of mandatory immunization along with factors associated with opinions regarding the practice. “In the general population survey, 4112 persons from 18 to 79 years were interviewed,” researchers observed.

Among healthcare professionals, 1285 GPs and 742 pediatricians participated. The question posed to both groups was: Do you think that immunization against diseases existing in France should be mandatory? Among the general population, 56.5% of those surveyed indicated they were in favour of mandatory vaccination. Among the GPs surveyed, 42.2% indicated they support mandatory immunization, 48.8% indicated they support immunization

against specific diseases only, while 8.1% were opposed to it. “The percentage of pediatricians... in favour of mandatory immunization was identical: 42.4%,” investigators added, with 32.5% of them saying they support selective mandatory immunization against specific diseases only and 20.7% indicating they were opposed to it. As investigators pointed out, having a favourable opinion regarding mandatory immunization was associated with an awareness of the advantages and objectives of immunization as a tool to fight infectious diseases as well as being in favour of hepatitis B immunization for infants and teenagers. Those in favour of mandatory immunization also indicated a willingness to continue anti-DTP immunization if the obligation for it was withdrawn, and they tended to acknowledge the role immunization has played in the elimination of infectious diseases as well as its power as a collective prevention tool.

“In our survey, over half of the general population declared themselves in favour of all mandatory immunization, about one-third supported it for specific immunizations only and less than one-tenth of the sample was against mandatory immunization,” investigators stated. “This low percentage of responders stating that they are against the principle of mandatory immunizations is one of the main findings of our study [even though]... our results show a decrease in the adoption of the principle of mandatory immunization as the education level rises.”

Influenza mortality declines among elderly Dutch following introduction of large-scale vaccination program

Jansen et al. Decline in influenza-associated mortality among Dutch elderly following the introduction of a nationwide vaccination program. Vaccine 2008;26(44):5567-74.

There has been a decline in influenza-associated mortality among elderly residents in The Netherlands following the introduction of a large-scale influenza vaccination program in 1996, especially among those between the ages of 65 and 69 years, according to a nationally representative ecological study.

Dr. Angélique Jansen, University Medical Center Utrecht, The Netherlands, and multicentre colleagues compared influenza-attributable mortality rates among the elderly before and after the introduction of the vaccination program. “In the seasons before the introduction of routine influenza vaccination [1992 to 1996], the average annual cumulative winter excess mortality attributable to influenza was 131... and 172... deaths per 100,000 persons aged 65 years and older, compared with the peri-seasonal and summer baseline period as reference, respectively,” investigators reported.

Between 1996 and 2003, influenza-related mortality was, on average, 105 and 151 deaths per 100,000 persons compared with the peri-seasonal and summer baseline period as reference, they added. As the authors noted, the decline in influenza-associated mortality among the elderly

observed in this study might be an underestimation. At least some of the elderly persons with high-risk medical conditions were already immunized against influenza before the introduction of routine vaccination of the elderly population. More elderly people now have diabetes and heart disease compared with a decade ago and both conditions have been associated with a higher risk of influenza complications.

“Our results suggest that the youngest elderly, i.e. 65- to 69-year-olds, benefited more from vaccination than the very old,” researchers reported, “and influenza still appears to be associated with a substantial annual excess [in] mortality in the elderly despite high vaccination coverage, especially in the very old.”

Incidence of Guillain-Barre syndrome not increased during national immunization campaign against measles and rubella

Esteghamati et al. Relationship between occurrence of Guillain-Barre syndrome and mass campaign of measles and rubella immunization in Iranian 5- to 14-year-old children. Vaccine 2008;26(39):5058-61.

The number of reported cases of Guillain-Barre syndrome (GBS) during a national immunization campaign against measles and rubella did not increase compared to periods prior to the campaign or after, according to a study from Iran.

Dr. Abdoulreza Esteghamati, Center of Disease Control and Prevention, Tehran, Iran, and colleagues from the Golestan University of Medical Sciences and the WHO in Cairo investigated incidence rates of GBS among 5- to 14-year-olds who received either the measles or the rubella vaccine or both before, during and after Iran launched a mass immunization campaign in 2003. To that end, investigators assessed the national surveillance system for acute flaccid paralysis from the beginning of 2002 to the end of 2004. Over this three-year time span, the incidence of GBS was assessed at 15 10-week intervals and the number of reported and confirmed GBS cases in each time period was analyzed.

“The mean number of GBS patients identified per 10-week period was 23.8 during the study period,” the authors reported. During the time period that coincided with the national immunization campaign, 25 patients with GBS were reported, with an annualized incidence rate in children receiving the vaccines at 0.71 per 100,000, “Which is in concordance with an expected incidence rate of 0.67/100,000,” they added.

The highest rates of GBS actually occurred before the immunization campaign was initiated, the authors also pointed out. “We observed no increase in GBS occurrence in the four-week period of the national immunization campaign and the six-week period following the campaign,” investigators stated, “and the yearly incidence rate of GBS in this study was similar to other studies.”

Adolescent immunization rates lag far behind childhood rates

Lee et al. *Adolescent Immunizations: missed opportunities for prevention*. *Pediatrics* 2008;122(4):711-7.

Adolescent immunization rates lag far behind childhood rates and missed opportunities to bring their immunization status up-to-date are common, according to a US study carried out in Massachusetts.

Dr. Grace Lee, Harvard Medical School, Boston, Massachusetts, and multicentre colleagues determined immunization rates for adolescents at 10 and 13 years of age among adolescents enrolled in the Harvard Pilgrim Health Care (HPHC) and who received care at Harvard Vanguard Medical Association between 1997 and 2004. The HPHC is the largest, non-profit health maintenance organization in New England. Immunization rates for adolescents at 10 and 13 years of age in each birth cohort were evaluated for tetanus-diphtheria (Td), hepatitis B and MMR. "Our primary outcome measure included immunization rates at 13 years of age for one dose of Td, three doses of hepatitis B and two doses of MMR," investigators observed.

The group also examined missed opportunities to deliver Td immunization to the same cohort during any health care visit. A total of 23,987 adolescents were eligible for the study. Among the 13-year-olds in the most recent birth cohort, 84% were up-to-date for Td, 74% were up-to-date for hepatitis B and 67% were up-to-date for MMR.

When investigators confined their analysis to adolescents who received at least one vaccine before the age of two—a proxy measure for complete records—92% were up-to-date for Td, 82% for hepatitis B and 85% for MMR. "Missed opportunities for Td immunization occurred at 84% of all health care visits," investigators added. If adolescents did receive the vaccine, they were most likely to receive it during a preventive care outpatient visit and least likely to be vaccinated at the time of hospitalization. As the authors pointed out, immunization rates for two doses of the MMR vaccine at 67% seemed to be much

lower than expected—"especially because most children in our study population lived in Massachusetts and were subject to school entry laws, which have required two or more doses of measles-containing vaccine since 2001."

Conversely, their Td coverage rate at 13 years was much higher than national estimates of 48.3%, they added. The group's hepatitis B coverage rates at 13 years of age were also lower than recent national estimates of 88.6%.

"Our findings suggest that there is room for significant improvement in providing and documenting immunizations given to adolescents," investigators concluded. "Clearly, additional strategies are needed to increase the use of preventive services among adolescents and to enable providers to vaccinate adolescents at every opportunity." □

UPCOMING EVENTS

3rd Paris Hepatitis Conference

January 19-20, 2009 / Paris, France

Phacilitate Vaccine Forum Washington 2009

January 26-28, 2009 / Washington, DC

16th Conference on Retroviruses and Opportunistic Infections (CROI)

February 8-11, 2009 / Montreal, Quebec

International Meeting on Emerging Diseases and Surveillance (IMED) 2009

February 13-16, 2009 / Vienna, Austria

OFFERED AS A SERVICE TO MEDICINE BY MERCK FROSST CANADA LTD.

To view the electronic version of this publication, please visit www.mednet.ca.

© 2008 Medical Education Network Canada Inc. All rights reserved. Medical Education Network is an independent medical news reporting service. Views expressed are those of the author and do not necessarily reflect those of the publisher or sponsor. Any therapies mentioned in this report should be used in accordance with the recognized prescribing information in Canada. Support for distribution of this report was provided by Merck Frost Canada Ltd. through an educational grant without conditions and under written agreement that ensures independence. No claims or endorsements are made for any compound presently under investigation. No part of this newsletter may be reproduced in any form or distributed without written consent of the publisher. Information provided is not intended to serve as the sole basis for individual care. Our objective is to facilitate physicians' and allied health care providers' understanding of ongoing trends in medicine. Your comments are encouraged.

