83.021

Effectiveness of influenza vaccine in elderly people with chronic pulmonary and cardiovascular diseases in Argentina

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Background: Influenza immunization proved to be effective in decreasing pneumonia hospitalizations in the elderly and in patients with high-risk conditions. The purpose of this study was to assess the effectiveness of influenza vaccine in persons + 65 years with chronic pulmonary and cardiovascular diseases during four immunization campaign seasons in Argentina.

Methods: Influenza vaccines containing the strains specifically recommended by the WHO were administered free of charge in immunization campaigns from 1994 to 1999. During campaigns, demographic data and disease status of each subject who was immunized was obtained through interview before vaccine was administered. Subjects with chronic pulmonary (CPD) and cardiovascular disease (CVD) were retrospectively evaluated for hospitalization due to pneumonia during the previous influenza season (June-October;1995-1998) and vaccination status.

Results: A total of 176.778 people with CVD and 82.385 with CPD were evaluated. Annual influenza vaccine effectiveness for reduction of pneumonia hospitalization was:

	1995% (95%CI)	1996% (95%CI)	1997% (95%CI)	1998% (95%CI)
CVD	43 (33-52)	36 (28-46)	29 (18-38)	37 (26-46)
CPD	41 (32-48)	35 (27-41)	27 (19-35)	27 (18-35)

Conclusion: Influenza vaccination is associated with a significant reduction in hospitalization rates due to community acquired pneumonia in the elderly population in Argentina, particularly in those with high-risk conditions. Widespread use of influenza vaccine should be promoted.

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Development and immunogenicity of a novel polyetherimine (PETIM) dendrimer based nanoformulated DNA rabies vaccine

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Background: Rabies is a fatal but preventable. In the past decade attempts have been made to develop an effective DNA vaccine against rabies. However, the effectiveness of plasmid DNA vaccines is limited due to ineffective intracellular gene delivery. Recently, a group of compounds called dendrimers have been shown to mediate effective gene delivery. In this study we have developed a novel, polyetherimine (PETIM) dendrimer-based nano-formulated plasmid DNA rabies vaccine and evaluated its immunogenicity.

Methods: The full length glycoprotein gene of rabies virus was cloned into the expression vector pIRES and its expression verified. Fourth generation amine-terminated polyetherimine (PETIM) dendrimer was synthesized and characterized. PETIM-pDNA complexes were prepared at varying ratios and their size, shape, transfection efficiency and cytotoxicity were studied. *In vitro* transfection experiments were conducted to identify the formulation possessing maximal transfection ability. The ability of the dendrimer to protect the encapsulated DNA was studied by deoxyribonuclease protection assay. The *in vivo* efficacy of the dendrimer-DNA complexes was evaluated by studying the virus neutralizing antibody responses in Swiss albino mice immunized with these formulations, in comparison with those produced by unmodified plasmid DNA.

Results: The PETIM dendrimer was found to be non-toxic to cultured mammalian cells upto 1 mg/mL. It was also observed to protect the complexed DNA from nuclease degradation. The PETIM-DNA complexes were also observed to produce satisfactory expression of the encoded gene in transfected cells. The animals immunized intramuscularly with the dendrimeric formulations of plasmid DNA produced adequate titres of protective, rabies-virus neutralizing antibodies by 2 weeks post-vaccination, after a single dose. The mean titre of neutralizing antibody was higher (1:512) in mice immunized with the dendrimeric formulations than in the group immunized with the unmodified plasmid DNA (1:16) ($p < 0.05$).

Conclusion: The fourth generation polyetherimine dendrimer is a promising nano-carrier for plasmid DNA rabies vaccines. Its utility in immunization of larger animals and humans needs to be evaluated further.

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Factors associated with DPT 1-3 vaccine dropout in Kabarole district, western Uganda

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Background: Among the top ten causes of poor health in the district are complications due to vaccine preventable diseases notably diphtheria, pertussis and tetanus (DPT). In

2008, the DPT dropout rate in Kabarole was high (18%). This study assessed the service, community and individual factors associated with DPT1-3 dropout in Kabarole District.

Methods: A cross sectional study using cluster sampling was employed. Two clusters at parish level (rural and urban) each from a county in the district were selected by simple random sampling and all villages therein were studied. A total of 230 children (115 from either cluster) were recruited and their parent or guardian interviewed. Cross-tabulations and chi-square tests were used to determine the strength of associations between independent variables and the outcome. Binary logistic regression was done to adjust for potential confounders and identify independent predictors. Key informant interviews were held with in-charges of health units. Qualitative data was analysed manually using thematic approach and results presented in the form of text.

Results: Factors found to be associated with DPT1-3 dropout were; lack of caretaker knowledge about DPT dosage, (adj. OR = 8.2; 95% CI: 3.12, 21.53); Child's Birth Order, 6th and above (adj. OR = 3.0; 95% CI: 0.80, 11.05); Child Birth Order 2-3 (adj. OR = 2.2; 95% CI: 0.70, 6.71); Child age group 31-36 compared to 12-18 (adj. OR = 2.5; 95% CI: 0.81, 7.84). However, Rural residence (OR = 1.2; 95% CI: 0.56, 2.57); and Child without immunisation card (OR = 4.4; 95% CI: 0.35, 39.86) were not significantly associated with DPT dropout.

Conclusion: The current DPT1-3 dropout prevalence in Kabarole is still high but dropping (13.7%). DPT 1-3 dropout is associated with caretaker lack of knowledge of number of dosages a child should receive and involvement of religious leaders, long travel distance to point of accessing transport means, and convenient time for immunisation. Findings from this study can be used to improve DPT immunisation services. Specific campaigns on DPT immunisation through home visits, involving community leaders and full day immunisation can help further reduce the dropout rate.

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Antibody persistence 10 years after 1st and 2nd doses of 23-valent pneumococcal polysaccharide vaccine (PN23), and immunogenicity and safety of 2nd and 3rd doses in older adults

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Background: In a clinical trial in ambulatory older adults, 1st and 2nd PN23 doses induced significant increases in IgG antibody and were generally well tolerated. We re-enrolled trial participants to study 10-year antibody persistence following the earlier doses, and immunogenicity and safety of 2nd or 3rd PN23 doses.

Methods: Ten years after receiving a 1st or 2nd PN23 dose, 143 trial participants (age 60-93 years, median 77) were re-enrolled and revaccinated (2nd dose n = 72, 3rd dose n = 71). Sera obtained before and 30 days postvaccination were analyzed by ELISA for IgG to vaccine serotypes 3, 4, 6B, 8, 9 V, 12F, 14, and 23F. Participants recorded all adverse experiences (AEs) through 14 days postvaccination. Serious AEs were monitored through 30 days postvaccination.

Results: Ten years postvaccination, geometric mean concentrations (GMCs) in 1st- and 2nddose recipients remained higher than prevaccination GMCs in 1st-dose subjects (when they were vaccine-naive) for all but serotype 3. Second and 3rd doses induced significant increases in GMCs for 8 and 6 serotypes, respectively; GMCs for all 8 serotypes increased in participants < and ''75 years old. Frequencies of injection-site and systemic AEs were lower after the 2nd than the 3rd dose. Among 3rd-dose recipients, injection-site pain, swelling, and redness were reported by 75%, 39%, and 30%, respectively, while fatigue, body aches, and headache were reported by 38%, 34%, and 25%, respectively. Fever (oral temperature ''100 °F [37.8 °C]) occurred in 0% and 6% of 2nd- and 3rd-dose recipients, respectively; the maximum reported temperature was 100.2 °F (37.9 °C). AEs after either dose were generally mild, and > 90% resolved within 1 week. No vaccine-related serious AEs were reported.

Conclusion: Although protective levels have not been established for adults, antipneumococcal antibody is known to protect against pneumococcal disease. In ambulatory older adults, 1st and 2nd PN23 doses induced IgG antibody to vaccine serotypes which still exceeded vaccine-naive levels after 10 years. Moreover, 2nd and 3rd doses administered 10 years after the previous dose were immunogenic and generally well tolerated in those < and ''75 years old. These findings are consistent with a beneficial effect of 1st, 2nd, and 3rd PN23 doses.

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Public health approach after detection of an iVDPV case in Argentina

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Background: Argentine has been polio free since 1984 and has a sustained and active surveillance of the acute flaccid paralysis (AFP) that involves an epidemiology and laboratory approach, reaching all the PAHO indicators. In this context we describe the emergence of a case of AFP due to an VDPV in a 15-months old boy with polyclonal agammaglobulinemia.

Methods: The case was notified to the National Program, and a stool sample and a throat swab were sent to the Regional Reference Center for Polio Diagnosis. Samples were inoculated in Rd and L20B cells following the new algorithm recommended by WHO. In less than 2 days a virus was isolated in both samples which were characterized as a polio type 1. They were sequenced in the VP1 region, 5ïNCR. As a result we found a 3,7% (stool sample) and 3,5% (throat