

on Vaccine Research

ABSTRACTS OF SUBMITTED POSTER PRESENTATIONS

P9 B cell effector responses in the gastric antrum and duodenum following *Helicobacter pylori* killed whole cell vaccine (KWC) adjuvanted with LT_{R192G} in *H. pylori* seronegative (HP-) individuals. G.A. Losonsky,^{1*} K.L. Kotloff,¹ R.I. Walker.² Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, Maryland. ² AntexBiologics, Inc. Gaithersburg, Maryland.

5 HP- subjects were orally immunized with a vaccine consisting of 2.5×10^{10} KWC (AntexBiologics) plus 25 µg mL_{R192G} given at 0, 14, and 28 days. Antral and duodenal biopsies were obtained prior to the first dose and 55 and 41 days after first immunization in 4 and 1 subject(s), respectively. IgG and IgA specific WC and mL responses were determined using 2 methods: ELISA antibody detection of explant culture supernatants and ELISPOT specific B cell detection of mononuclear cells (MNC) extracted from biopsies. Results: ELISPOT B cells were detected following immunization as follows: (GM = geometric mean number)

Ab/Ag	Antrum		Duodenum	
	No resp/total	GM cells per 10 ⁶ MNCs	No resp/total	GM cells per 10 ⁶ MNCs
IgA mL	4/5	9	5/5	451
IgA WC	3/5	11	4/5	116
IgG mL	1/5	2	5/5	121
IgG WC	1/5	1	4/5	17

In contrast, few biopsies produced detectable specific antibody responses in tissue culture supernatants. Conclusions: mL and WC IgA and IgG cells were detected in the majority of immunized subjects; however, the HP WC and adjuvant responses predominated in the duodenum rather than the antrum.

P11 Invasive Pneumococcal Infections in Canadian Children, 1991-8: Implications for New Vaccination Strategies. David W. Scheifele*, Scott Halperin, James Talbot and Daniel Kertesz for Members of the Immunization Monitoring Program, Active (IMPACT), Canadian Paediatric Society and Laboratory Centre for Disease Control, Ottawa, Ontario, Canada.

Since 1991 the IMPACT hospital network has actively monitored invasive pneumococcal infections in children (< 16 years) using laboratory and hospital record searches. The network presently involves 11 centers across Canada with about 90,000 annual admissions, representing about 85% of all tertiary care pediatric beds. Cases are defined as inpatients or outpatients with *S. pneumoniae* isolated from a normally-sterile source. Available isolates are serotyped at a reference center. This report spans January 1991 to June 1998, when 2036 cases were seen. 72% occurred in the first 3 years of life so an infant-based vaccination program could rapidly reduce case totals. However, 16% of cases and 28% of deaths (11 of 39) occurred between 0-7 months of age and might not be vaccine-preventable depending on how quickly immunity develops after primary doses. 23% of cases had chronic medical conditions, which are usually excluded among vaccine trial participants. Post-marketing studies will be needed to estimate vaccine efficacy in open populations. To date 1528 isolates were serotyped: 81.3% matched the 7 serotypes included in current conjugate vaccines. Vaccine serotypes matched syndrome isolates as follows: bacteremia only, 83.4%; meningitis, 78.8%; pneumonia with bacteremia, 78.3%; and shock at presentation, 74.4%. The 7 vaccine serotypes matched 72.7% of isolates with intermediate penicillin resistance and 95.4% with high-level resistance. The proportion of conjugate vaccine serotypes among strains typed varied from year to year (range 68.6% to 86.6%) and among centers (range 71.4% to 88% for 9 centers with >100 isolates). This intrinsic variability will complicate measurement of the impact of new vaccination programs.

P10 Development of a DNA vaccine against methicillin resistant *Staphylococcus aureus* (MRSA).

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Nosocomial infections are one of the major problems of world public health, particularly those caused by methicillin resistant *Staphylococcus aureus* (MRSA). The *mecA* gene confers resistance to all β-lactam drugs, by encoding a penicillin-binding protein (PBP2a) which has a very low affinity for these drugs. The MRSA is also resistant to all other known antimicrobial agents, except vancomycin. A *mecA* gene fragment of 249 bp, encoding the PBP2a transpeptidase immunogenic domain, was amplified by PCR and subcloned into the pCINeo vector. The recombinant plasmid was injected (intramuscular) into mice and challenged with MRSA in the presence or absence of β-lactam antibiotics (oxacillin). The antibody production was evaluated by ELISA using the same gene fragment cloned into the pGEX4T-2 vector. The bacterial growth on liver and kidney from the immunized mice was determined to evaluate the protective role of the antibodies. The development of a DNA vaccine model will provide an alternative to the current antimicrobial therapy.

P12 Diphtheria and poliomyelitis immunity in the Netherlands. HE de Melker*, GAM Berbers, N Elzinga, NJD Nagelkerke, MAE Conyn-van Spaendonck, National Institute of Public Health and the Environment, Bilthoven, The Netherlands.

Objective: To obtain insight into diphtheria and poliomyelitis immunity in the Dutch general population and in orthodox reformed groups who refuse vaccination. Methods: An age-stratified sample of 380 individuals (0-79 yrs) was randomly selected from each of 40 municipalities, sampled proportionally to size. Individuals were similarly selected from 8 municipalities with low vaccine coverage to assess the immunity in orthodox reformed groups. Sera were tested with a toxin-binding inhibition assay for diphtheria and neutralisation test for poliovirus type 1, 2 and 3. Results: In the nationwide sample 12% had no (<0.01IU/ml), 30% basic (0.01-0.1IU/ml) and 58% full diphtheria protection (≥ 0.1IU/ml). The seroprevalence for poliovirus type 1, 2 and 3 (titer ≥ 1:8) was 96%, 93% and 90%. For diphtheria immunity levels decreased sharply after 44 years of age, while for poliomyelitis they remained high. For diphtheria and poliomyelitis for individuals with 6 vaccinations (DTP-IPV), the geometric mean titre decreased with age. Nevertheless, 96% had protective diphtheria antibodies and 88-100% had protection against poliovirus 1, 2 or 3 about 25 years after the 6th vaccination. Among orthodox reformed persons 40% had diphtheria protection and 59%, 69% and 65% protection against poliovirus type 1, 2 or 3. The effect of recent poliomyelitis outbreaks were visible in their seroprofiles. Conclusions: The Dutch immunisation programme induced long-term diphtheria and poliomyelitis protection. Introduction of diphtheria or poliovirus in socio-demographically clustered orthodox reformed groups may constitute a substantial danger for spread of the pathogens. While adults are very well protected against poliomyelitis, those with low diphtheria antitoxin levels, born before the introduction of routine vaccination, might benefit from (re)vaccination.