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Abstract (oral session)

Immunogenicity of polysaccharide and conjugate quadrivalent meningococcal ACYW-135 vaccines in healthy adult volunteers – a randomised clinical trial

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Background: In the absence of a serogroup B meningococcal vaccine, quadrivalent vaccines against serogroups A,C,W-135 & Y offer the broadest possible protection against disease. Both conjugate and polysaccharide quadrivalent meningococcal vaccines are licensed for use in the UK. However, polysaccharide vaccines have been associated with poor immune responses and hyporesponsiveness. Objective: To investigate polysaccharide-induced hyporesponsiveness by measuring the antibody responses to a quadrivalent meningococcal conjugate vaccine and a quadrivalent plain polysaccharide vaccine. Methods: We conducted an open-label parallel group randomised clinical trial in 150 healthy adult volunteers aged 18-70 between June 2009 and October 2010 in Oxfordshire, UK (Figure 1). Participants were randomised to receive either 2 doses of a conjugate quadrivalent ACWY vaccine 28 days apart (Group 1, n=75), or one dose of a polysaccharide quadrivalent ACWY vaccine followed by one dose of a conjugate quadrivalent ACWY vaccine 28 days later (Group 2, n=75). Between-group comparisons were made to investigate polysaccharide induced hyporesponsiveness, as assessed by serum bactericidal assays (SBA) performed at baseline, and at 7 and 28 days after each vaccination. Results: The SBA GMTs at 28 days post conjugate vaccination were higher in Group 1 participants who had not received a prior dose of polysaccharide vaccine (40.7, 107.9, 112.6 and 31.4 for serogroups A,C, W-135 and Y respectively) than in Group 2 participants who had received prior polysaccharide (15.9, 39.3, 34.0 and 13.4 respectively). The response to a conjugate booster was greater at 7 days in the conjugate primed Group 1 (35.0, 96.3, 74.6 and 27.6), than in the polysaccharide primed Group 2 (25.1, 59.0, 58.3 and 19.0), but this had lost significance by day 28 post boost. Adverse events were similar in each group. Conclusions: Prior vaccination with polysaccharide may impair the subsequent response to conjugate vaccination. This is consistent with previously described polysaccharide induced hypo-responsiveness, but might also indicate differences in the magnitude or phenotype of B cells responding to the two different vaccines. In addition, despite prior data indicating that it may act as a T-dependent antigen, the serogroup A polysaccharide component of the vaccines appears to behave in the same way as serogroup C, W-135 & Y polysaccharides. Clinicaltrials.gov identifier: NCT00901940
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	V1 Day 0	V2 Day 7	V3 Day 28	V4 Day 35	V5 Day 56
Group I 75 participants	Blood draw **MenACWY-CRM conjugate**	Blood draw	Blood draw **MenACWY-CRM conjugate**	Blood draw	Blood draw
Group II 75 participants	Blood draw **MenACWY-PS polysaccharide**	Blood draw	Blood draw **MenACWY-CRM conjugate**	Blood draw	Blood draw