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Primary and secondary responses to pneumococcal polysaccharide (PPS) vaccine

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Boosted responses have been reported after 20 immunization (imm) with PPS. To elucidate mechanisms, B6C3F1 mice were immunized IV with 11.5 µg of Pneumovax® (Pvax) and boosted 30D later. Serum specific antibody responses were measured by ELISA. Specific antibody-secreting cells (ASC) were enumerated in spleen (SP) and bone marrow (BM) by ELISPOT. After 10 imm, serum IgM response peaked at 4D and then returned to baseline. Serum IgG response peaked by 5D and remained well above baseline at 4 wks. SP IgM ASC were increased at 4-6D and SP IgG ASC at 5-6D. Both returned to baseline by 8D. In preliminary data, percentages of B1-B cells (IgM+IgDlowCD5+B220low) were increased in SP at 5D. IgM and IgG ASC were significantly increased in BM by 12D and persisted. After boosting, the magnitude of serum IgM and IgG responses were similar to those after 10 imm. However, the responses were more durable and persisted 4 wks after boosting. Levels of SP IgM and IgG ASC after boosting were less than half those achieved after 10 imm. In contrast, levels of BM IgM and IgG ASC were increased 2-3 fold. SP B1-B cell populations were unchanged after boosting. However, a precursor, short-lived plasma cell population (CD44+CD138+) was increased in BM. These data suggest an important role for the BM in 20 responses to Pvax. Support: NIOSH and NIEHS (Y1ES0001-03).