Influenza vaccine provides protection against infection with matched strains, and this protection correlates with serum antibody titres. In addition to antibodies, influenza-specific CD8+ T-lymphocyte responses are important in decreasing disease severity and facilitating viral clearance. Because this response is directed at internal, relatively conserved antigens, it affords some cross-protection within a given subtype of influenza virus. With the possibility of a broader A(H1N1) Mexico outbreak in the fall of 2009, it appeared worthwhile studying the degree of cellular immune response-mediated cross-reactivity among influenza virus isolates. The composition of the 2006–2007 influenza vaccine included the A/New Caledonia/20/1999 strain (comprising a virus that has been circulating, and was included in vaccine preparations, for 6–7 years) and two strains not previously included (Wisconsin and Malaysia). This combination afforded us the opportunity to determine the degree of cross-reactive cellular immunity after exposure to new viral strains. We analysed the antibody responses and the phenotype and function of the T cell response to vaccine components. The results obtained show that antibody responses to A/New-Caledonia were already high and vaccination did not increase antibody or cytotoxic T lymphocyte responses. These data suggest that repeated exposure to the same influenza stain results in limited boosting of humoral and cellular immune responses.