Supplementary Table I. Bivalent vaccines

Vaccine candidates	Developer	Modification	Route of delivery	Current Status	Reference
CVD 1902 with CVD 909	University of Maryland Center for Vaccine Development and Global Health (CVD) And Bharat Biotech International Limited	CVD 1902: Deletions in the guaBA and clpX regions. CVD 909: Deletion of the aroC, aroD, and htrA genes with sustained expression of the Vi polysaccharide	Oral	Pre-clinical	50, 72
SII-Typhoid Conjugate Vaccine	Serum Institute of India	Vi-TT combined with O:2-TT	Intra-muscular	Phase I ongoing	50, 72
Vi-CRM197 with O:2-CRM197	GSK Vaccines Institute for Global Health & Biological E Ltd	O antigen from *S. Paratyphi A* chemically conjugated with CRM197, alongside Vi polysaccharide also linked to CRM197	Intra-muscular	Phase I ongoing	50, 72
O:2 DT with Vi-DT	International Vaccine Institute and Lanzhou Institutes of Biological Products	O antigen from *S. Paratyphi A* chemically conjugated with diphtheria toxoid, and Vi polysaccharide also conjugated with diphtheria toxoid	Intra-muscular	Pre-Clinical	72
The multiple antigen presenting system (Vi MAPS)+ O:2 MAPS	Boston Children's Hospital	polysaccharide-protein complex combined with pneumococcal fusion protein as the carrier	Intra-muscular	Pre-clinical	69,72
Vi+ SPA OMV	University of Cambridge	Genetically modified GMMA expressing Vi-PS	Intra-muscular	Pre-clinical	70, 71

CRM, cross-reacting material 197; GMMA, generalized modules for membrane antigens; OMV, outer-membrane vesicle