## **Description of Additional Supplementary Files**

**Supplementary Data 1**: Distribution of indels within 1741 emm1 strains analyzed.

**Supplementary Data 2 :** Frequency of antibiotic resistance genes and mutations in pbp genes in 1815 emm1 strains analyzed.

**Supplementary Data 3 :** Metadata and genome accession numbers of emm1 GAS genome sequences used in this study.