

Session: P093 Bloodstream infections: epidemiology and management

**Category: 2f. Zoonotic bacterial diseases**

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## Asian food-borne outbreak of *Streptococcus agalactiae* serotype III, ST283, from 2001 to 2015

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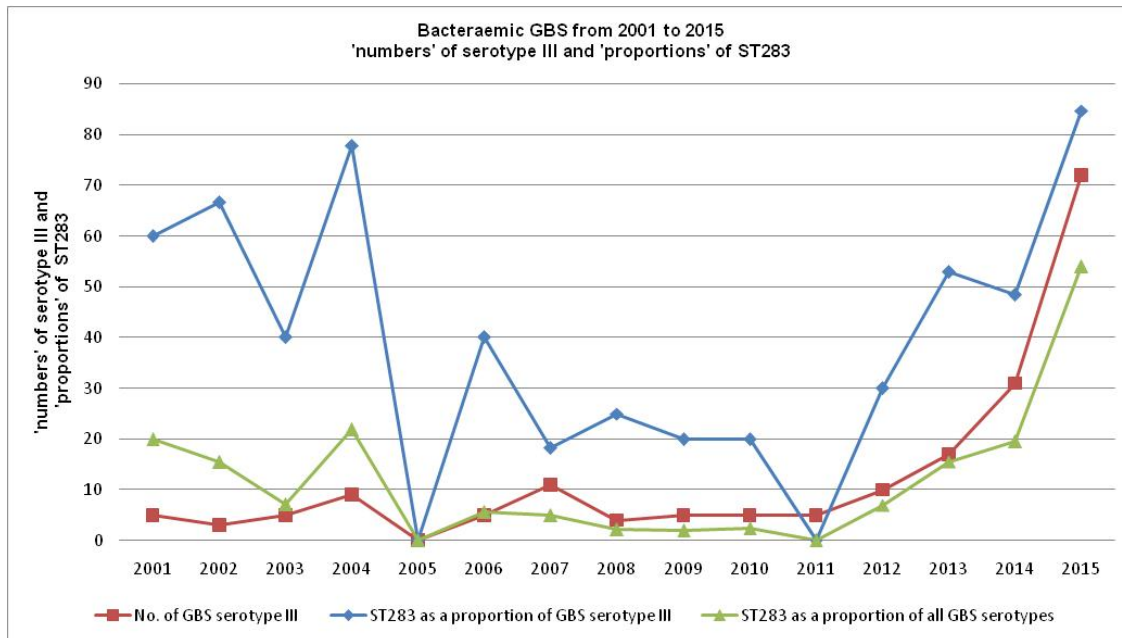
**Background:** Clinical awareness of unexpected invasive disease due to *Streptococcus agalactiae* (also known as Gp B Streptococcus, GBS) in non-pregnant adults, including bacteraemia, septic arthritis, meningitis and endophthalmitis prompted us to collate isolates and data from four public hospitals. We detected and defined a foodborne outbreak of GBS serotype III, ST283 in Singapore in 2015, as subsequently reported by our Ministry of Health. A local delicacy of raw freshwater fish was implicated. Bacteraemic cases had risen to 25 per week but promptly fell to less than 1 per week after a food advisory was issued.

GBS ST283 was previously extremely unusual in the literature, with one fish isolate and only two human reports, one each from Europe and Hong Kong; neither reported the association with freshwater fish. However, there were reports of GBS meningitis amongst non-pregnant adults in Singapore in the 1990s, so we undertook to look for ST283 amongst stored isolates to further describe the epidemiology of this novel zoonotic infection.

**Material/methods:** DNA was extracted from all adult bacteraemic GBS stored since 2001 at two hospitals after they were subcultured and their identity checked by MALDI-TOFF (Bruker). Molecular

serotyping was performed by published PCR methods. ST283 was determined with an in-house ST283 specific PCR. Tetracycline susceptibility testing followed CLSI methods.

**Results:** See the figure for numbers of bacteraemic serotype III and proportions of ST283. All ST283 isolates before 2012 were resistant to tetracycline, apart from one: all those isolated from 2012 onwards were susceptible, apart from one.



**Conclusions:** Invasive ST283 has been present at least since 2001, when routine banking of isolates began. It's scarcity in the literature probably simply reflects a combination of it being specific to Asia and the fact that Asian isolates are not well represented in typing studies. It is not clear why bacteraemic ST283 cases have increased so dramatically since 2012 but the figure also shows that ST283 accounted for a high proportion of all bacteraemic GBS serotype III in 2001 to 2004. Explanations of this bi-modal variation include climatic changes, changes in fish farming husbandry and genomic changes, specifically the exchange of genetic material between human and fish isolates. The implicated fish are imported into Singapore, largely from Malaysia, so it is difficult to follow up these leads. Tetracycline resistance is a marker of human strains: the change from resistant to susceptible phenotype in 2012, at the same time period as ST283 increased as a proportion of all GBS, begs an explanation. A genomic comparison of earlier isolates with recent isolates is in progress although it has been established that these strains lack the well known hyper-virulent GBS adhesin (HvgA).