Objective
To compare the latency from membrane rupture to delivery and neonatal outcome in twin gestations complicated by prolonged preterm premature rupture of membranes (PPROM) of Twin A (presenting sac) versus Twin B (non-presenting sac).

Methods
We identified 76 women with twin pregnancies who were diagnosed as having PPROM and a delay to delivery greater than 24 hours, over a six year period at one centre. Demographic characteristics and risk factors for preterm labour and PPROM were evaluated for all women. We compared the length of time from rupture of membranes to delivery and subsequent neonatal morbidity and mortality resulting from PPROM of twin A versus PPROM of twin B. Neonatal adverse outcomes include: sepsis, necrotizing enterocolitis (NEC), patent ductus arteriosus (PDA), retinopathy of prematurity (ROP), intraventricular hemorrhage (IVH), persistent pulmonary hypertension of the newborn (PPHN) and death.

Results
The median latency periods from PPROM to delivery were 10.7 days (N = 66) when the sac of twin A ruptured and 41.3 days (N=10) when twin B's sac ruptured (p < 0.05). Twins were more likely to be complicated by ROP (57% vs. 19%, p<0.05) but less likely to have PPHN (0% vs 25%, p<0.05) when the twin A sac ruptured in comparison to the twin B sac, respectively. Neonatal Death was significantly higher with PPROM of twin A when compared with PPROM of twin B (21.4% VS 0%, p=0.05, respectively). These differences persisted after adjusting for other factors, such as gestation, birth weights and maternal characteristics. The rates of other neonatal adverse outcomes were similar between the two groups.

Conclusion
The delay from PPROM to delivery is significantly longer if it is the non-presenting sac which has ruptured, rather than the presenting one, and there are fewer neonatal adverse outcomes. This is the most comprehensive study comparing clinical outcomes of PPROM in the presenting to that in the non-presenting twin. The etiology and mechanism for PPROM in the two sacs may be different. Patients with PPROM of the non-presenting twin might be reassured by the longer anticipated latency to delivery and decreased incidence of neonatal complications.