Background and aims If infants fail to initiate spontaneous breathing after birth, international guidelines recommend positive pressure ventilation (PPV). However, mask PPV remains challenging with leakage occurring commonly. Despite a variety of available facemasks, none has been systematically studied in newborn infants. We aimed to determine if using a Fisher and Paykel (FP) round facemask would reduce mask leak compared to using a Laerdal round facemask during mask PPV in preterm infants.

Methods From April to September 2013, at the Royal Alexandra Hospital, newborn infants.

Results Fifty-eight preterm infants (n = 29 in each group) were enrolled; mean±SD gestation 28±3 weeks; birth weight 1210±448 g, 30(52%) male, 39(67%) born by caesarean section. Apgar scores at 1 and 5 min were 5±3 and 7±2, respectively. Infants randomised to the FP facemask and Laerdal facemask had similar mask leak (37±17% vs. 33±12%, respectively, p = 0.30) and tidal volume (7.3±3.0 mL/kg vs. 6.9±2.7 mL/kg, p = 0.73) during PPV. There were no significant differences in ventilation rate, inflation time or airway pressures between groups.

Conclusions The use of either facemask during PPV in the delivery room yields similar mask leak.