Objectives
To assess if peak velocities of the ductus venosus flow velocity waveform recorded within 24 hours of birth were significantly different in early-onset fetal growth restriction (FGR) that resulted in neonatal death or severe neonatal morbidity, compared to those who survived without severe complications.

Methods
Multicenter retrospective cohort study of singleton fetuses with estimated birthweight or fetal abdominal circumference ≤ 10th centile and absent or reversed end-diastolic velocity in the umbilical artery delivered between 26+0 and 34+0 weeks’ gestation. Pulsatility index for veins, peak velocities of S-, D-, v- and a-waves, were measured within 24 hours of birth.

Results
The study population included 132 early-onset FGR fetuses. Newborns with NNM or NND had significantly lower values of v/D maximum velocity ratio MoM (0.86 vs. 0.95; p=0.006) within 24 hours of birth. The Table shows the AUCs for the prediction of neonatal survival without severe NNM. The v/D ratio remained a significant predictor of neonatal death or severe neonatal morbidity after adjusting for gestational age and birthweight (adjusted odds ratio 0.065; 95% confidence interval 0.004 to 0.957).

Conclusion
Ductus venosus Doppler analysis is an established tool in the management of early-onset FGR. Assessment of ductus venosus v/D peak velocity ratio might help to identify FGR fetuses at increased risk for neonatal death or severe neonatal morbidity even with positive a-wave velocities in the ductus venosus.