Multiple courses of antenatal corticosteroids for preterm birth (MACS): a randomised controlled trial.

BACKGROUND: One course of antenatal corticosteroids reduces the risk of respiratory distress syndrome and neonatal death. Weekly doses given to women who remain undelivered after a single course may have benefits (less respiratory morbidity) or cause harm (reduced growth in utero). We aimed to find out whether multiple courses of antenatal corticosteroids would reduce neonatal morbidity and mortality without adversely affecting fetal growth.

METHODS: 1858 women at 25-32 weeks' gestation who remained undelivered 14-21 days after an initial course of antenatal corticosteroids and continued to be at high risk of preterm birth were randomly assigned to multiple courses of antenatal corticosteroids (n=937) or placebo (n=921), every 14 days until week 33 or delivery, whichever came first. The primary outcome was a composite of perinatal or neonatal mortality, severe respiratory distress syndrome, intraventricular haemorrhage (grade III or IV), periventricular leucomalacia, bronchopulmonary dysplasia, or necrotising enterocolitis. Analysis was by intention to treat. All patients and caregivers were unaware of the treatment given. This trial is registered as number ISRCTN2654148.

FINDINGS: Infants exposed to multiple courses of antenatal
corticosteroids had similar morbidity and mortality to those exposed to placebo (150 [12.9%] vs 143 [12.5%]). Those receiving multiple doses of corticosteroids also weighed less at birth than those exposed to placebo (2216 g vs 2330 g, p=0.0026), were shorter (44.5 cm vs 45.4 cm, p<0.001), and had a smaller head circumference (31.1 cm vs 31.7 cm, p<0.001). INTERPRETATION: Multiple courses of antenatal corticosteroids, every 14 days, do not improve preterm-birth outcomes, and are associated with a decreased weight, length, and head circumference at birth. Therefore, this treatment schedule is not recommended. FUNDING: Canadian Institutes of Health Research.