Jim's prediction of the DESiGN trial results & why he won't believe 'em (#33256)

Created: 12/21/2019 07:17 AM (PT)
Public: 12/21/2019 07:20 AM (PT)

Author(s)
jim thornton (University of Nottingham) - jim.thornton@nottingham.ac.uk

1) Have any data been collected for this study already?
It's complicated. We have already collected some data but explain in Question 8 why readers may consider this a valid pre-registration nevertheless.

2) What's the main question being asked or hypothesis being tested in this study?
The DESiGN trial is ongoing. Protocol here. https://trialsjournal.biomedcentral.com/articles/10.1186/s13063-019-3242-6. It is testing the hypothesis that use of The Perinatal Institute's Growth Assessment Protocol (GAP) which includes customised charts, increases antenatal detection of small for gestational age (SGA) infants at birth.

3) Describe the key dependent variable(s) specifying how they will be measured.
The rate of antenatal ultrasound detection of infants found to be below the 10th centile birthweight on both population & customised standards. The customised standard is that of the Perinatal Institute, customised on maternal height, weight & ethnic group. It's not clear which population chart they plan to use. The reference Cole TJ et. al. (1998). Statistics in Medicine, 17(4), 407–429 includes a chart of birth weight centiles between 24 & 44 weeks but shows only the 2nd, 50th and 98th centiles.

4) How many and which conditions will participants be assigned to?
Intervention; The GAP programme of staff training, adopting or refining evidence-based protocols for SGA detection, routine monitoring of SGA and detection rates, regular audits of missed cases and ongoing support by the Perinatal Institute. It also includes use of gestation-related optimal weight (GROW) customised charts, […] with measurements plotted onto customised fundal-height charts. Estimated fetal weights from ultrasound assessment are also plotted onto customised fetal weight charts.

Control; current hospital practice. Primary screening for anomalies of fetal growth in the UK commonly includes fundal-height measurements that are either plotted onto (non-customised) antenatal growth charts or approximated to the gestational period, McDonald's rule, the number of centimetres is expected to approximately equal the gestational age in weeks (±2–3cm). The population chart for use in the standard care arm was not specified.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
The analysis described in the protocol is complicated. However, the primary analysis will be on a modified intention-to-treat basis, in which any Trusts in the intervention arm that did not contact the GAP provider to initiate training and implement the intervention in the study period due to changes in local strategy are excluded, since such changes are not considered informative concerning how GAP would have performed in the Trust.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
See above. Centres which fail to comply with the intervention will be excluded from the intervention group!

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
A minimum sample size of 12 clusters (six per arm). With 5053 mean births per cluster per year. Assuming 7.5% of total sample will be SGA by both definitions, over four months of trial outcome reporting 126 babies SGA by trial definition will be born per cluster.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
This trial will not inform the relative detection of SGA by customised & growth standard charts, for the following reasons
1. Control centres are using undefined population scan charts
2. The fundal height standard among controls, "cm = weeks ±2–3cm", corresponds to no fundal height chart ever!
3. Results will be biased in favour of intervention sites because those which fail to take up the offer of GAP training will be excluded, even from the intention to treat analysis. These are likely to be inferior sites.
4. GAP training consists of much more than using customised charts. If, as seems likely, detection of SGA babies is better in the intervention sites the cause is more likely to be the training in using the fundal height tape measure at all, using them correctly, plotting the result at all, plotting the result on a chart based on data rather than one based on the false "cm = weeks ±2–3cm" idea, and acting on the result.

I predict the results will favour the intervention centres. However the experiment is tilted so far in favour of the intervention group that I will not regard this as evidence that customisation improves SGA detection. To be fair, I will not regard better outcomes in the control groups as evidence that customisation is worse either.