Oxford Fetal Medicine Unit

Oxford University Hospitals NHS
NHS Foundation Trust

Mortality versus morbidity Issues surrounding term perinatal mortality risk reduction

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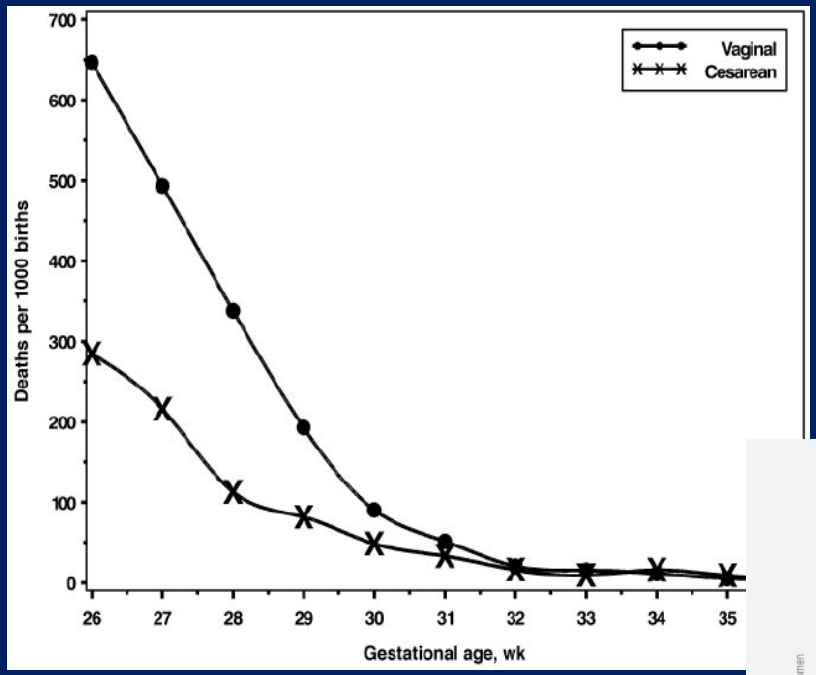
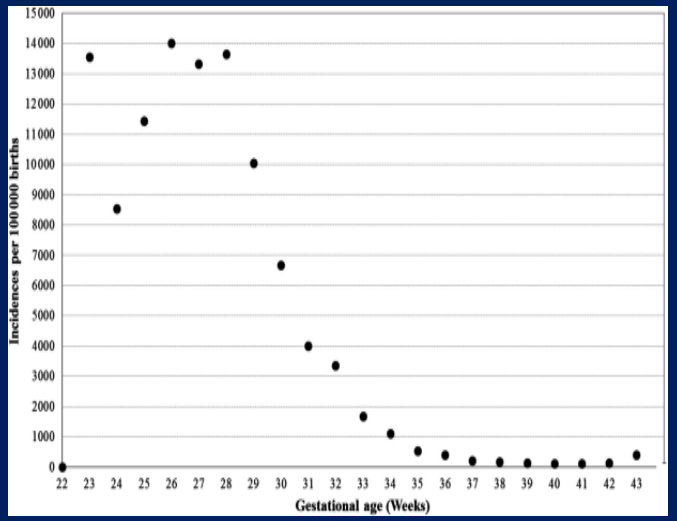
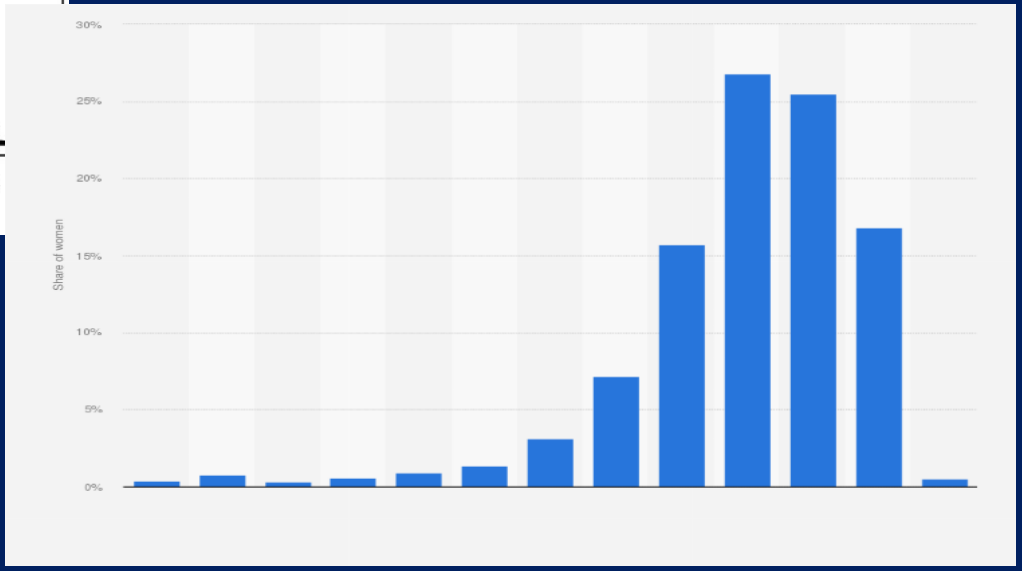
This is not about preterm birth







What can we do to prevent mortality?

Advice on lifestyle eg smoking

Aspirin

Aspirin and fragmin

Progesterone, +/- cerclage

Diet/ metformin/ insulin

Treatment for maternal illness

Fancy fetal medicine things

By expediting birth

All the scans, tests for cholestasis etc are to find the babies we think we should deliver

Delivery is our major mechanism for stillbirth/ perinatal mortality prevention

The question is who, and when (and sometimes how)

Royal College of Obstetricians & Gynaecologists

Induction of Labour at Term in Older Mothers

Scientific Impact Paper No. 34
February 2013

THE LANCET

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Articles

Induction of labour versus expectant management for large-for-date fetuses: a randomised controlled trial

Prof Michel Boulvain, MD, Prof Marie-Victoire Senat, MD, Prof Franck Perrotin, MD, Norbert Winer, MD, Gael Beucher, MD, Prof Damien Subtil, MD, Prof Florence Bretelle, MD, Elie Azria, MD, Dominique Hejaiej, MD, Françoise Vendittelli, MD, Marianne Capelle, MD, Prof Bruno Langer, MD, Richard Matis, MD, Laure Connan, MD, Philippe Gillard, MD, Christine Kirkpatrick, MD, Gilles Ceysens, MD, Gilles Faron, MD, Prof Olivier Irion, MD, Prof Patrick Rozenberg, MD for the Groupe de Recherche en Obstétrique et Gynécologie (GROG)

Published: 08 April 2015
Altmetric 64
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Article Info

BMJ

BMJ 2012;344:e2838 doi: 10.1136/bmj.e2838 (Published 10 May 2012)

RESEARCH

Outcomes of elective induction of labour compared with expectant management: population based study

OPEN ACCESS

Sarah J Stock *clinical lecturer and subspecialty trainee in maternal fetal medicine*[1], Evelyn Ferguson *consultant obstetrician*[2], Andrew Duffy *information analyst*[3], Ian Ford *professor of biostatistics*[4], James Chalmers *consultant in public health medicine*[3], Jane E Norman *professor of maternal and fetal health*[1]

[1]Tommy's Centre for Maternal and Fetal Health, MRC Centre for Reproductive Health, University of Edinburgh, Queen's Medical Research Institute, Edinburgh EH16 4SA, UK; [2]NHS Lanarkshire, Wishaw General Hospital, Wishaw, UK; [3]Information Services Division, NHS National Services Scotland, Edinburgh; [4]University of Glasgow Robertson Centre for Biostatistics, Glasgow, UK

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inbertseen.com

MIDWIVES BREW

85% SUCCESS RATE FOR SPONTANEOUS LABOR WITHIN 24 HRS

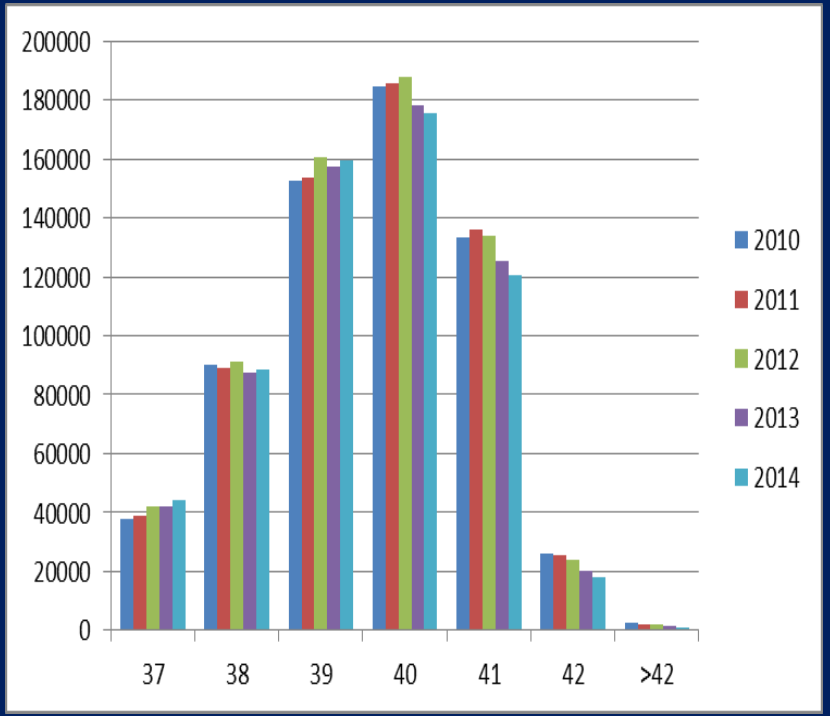
- 10 OZ APRICOT JUICE
- 8 OZ LEMON VERBENA TEA
- 2 TBS ALMOND BUTTER
- 2 TBS CASTOR OIL

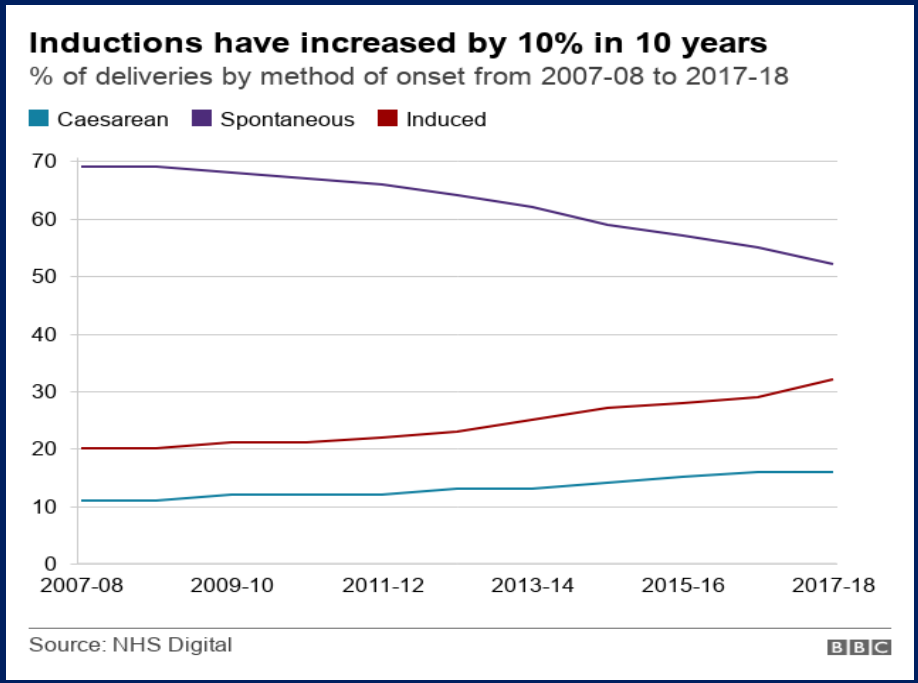
*Mix completely in a blender until smooth, and enjoy on an empty stomach (can be taken over ice).

labor should start within 24 hours!

*do not attempt until past your due date, please consult with your provider before attempting

Induction of labour





Induction prevents stillbirth

Cochrane

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Informed decisions.
Better health.

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Induction of labour in women with normal pregnancies at or beyond 37 weeks

Published:
27 August 2020

Authors:
Middleton P, Shepherd E, Morris J, Crowther CA, Gomersall JC

Primary Review Group:

Does a policy of inducing labour at or beyond 37 weeks' gestation reduce risks for babies and their mothers when compared with a policy of waiting until a later gestational age, or until there is an indication for induction of labour?

This review was originally published in 2006 and subsequently updated in 2012 and 2018.

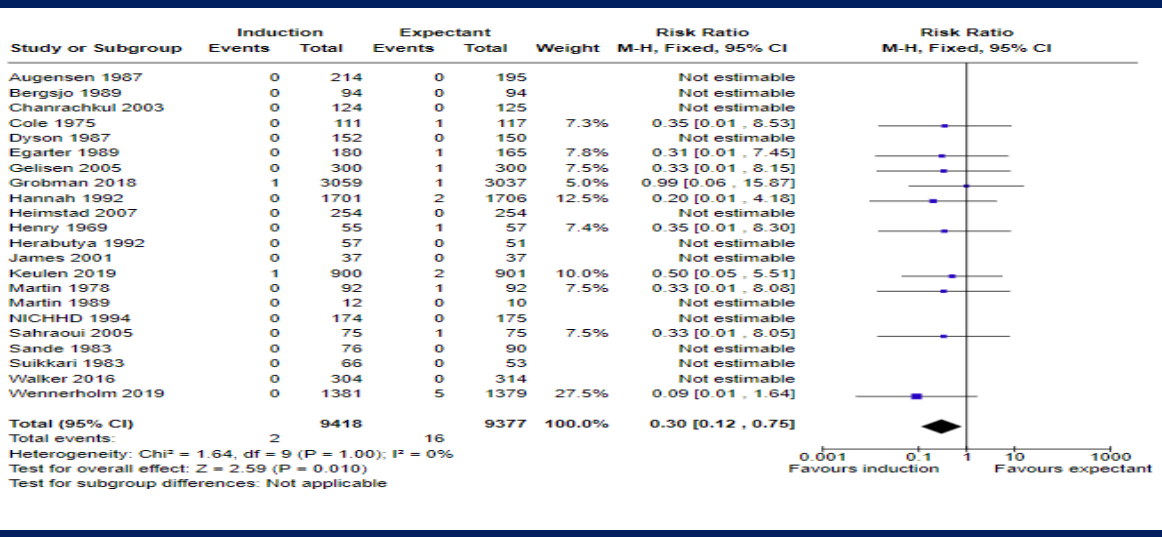
What is the issue?

Am score 97

Who is talking about this article?

Video: Systematic reviews explained

How our health



Study or Subgroup	Induction Events	Induction Total	Expectant Events	Expectant Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Augensen 1987	0	214	0	195		Not estimable
Bergsjo 1989	0	94	0	94		Not estimable
Chanrachkul 2003	0	124	0	125		Not estimable
Cole 1975	0	111	1	117	7.3%	0.35 [0.01 , 8.53]
Dyson 1987	0	152	0	150		Not estimable
Egarter 1989	0	180	1	165	7.8%	0.31 [0.01 , 7.45]
Gelisen 2005	0	300	1	300	7.5%	0.33 [0.01 , 8.15]
Grobman 2018	1	3059	1	3037	5.0%	0.99 [0.06 , 15.87]
Hannah 1992	0	1701	2	1706	12.5%	0.20 [0.01 , 4.18]
Heimstad 2007	0	254	0	254		Not estimable
Henry 1969	0	55	1	57	7.4%	0.35 [0.01 , 8.30]
Herabutya 1992	0	57	0	51		Not estimable
James 2001	0	37	0	37		Not estimable
Keulen 2019	1	900	2	901	10.0%	0.50 [0.05 , 5.51]
Martin 1978	0	92	1	92	7.5%	0.33 [0.01 , 8.08]
Martin 1989	0	12	0	10		Not estimable
NICHHD 1994	0	174	0	175		Not estimable
Sahraoui 2005	0	75	1	75	7.5%	0.33 [0.01 , 8.05]
Sande 1983	0	76	0	90		Not estimable
Suikkari 1983	0	66	0	53		Not estimable
Walker 2016	0	304	0	314		Not estimable
Wennerholm 2019	0	1381	5	1379	27.5%	0.09 [0.01 , 1.64]
Total (95% CI)		**9418**		**9377**	**100.0%**	**0.30 [0.12 , 0.75]**
Total events:	2		16			

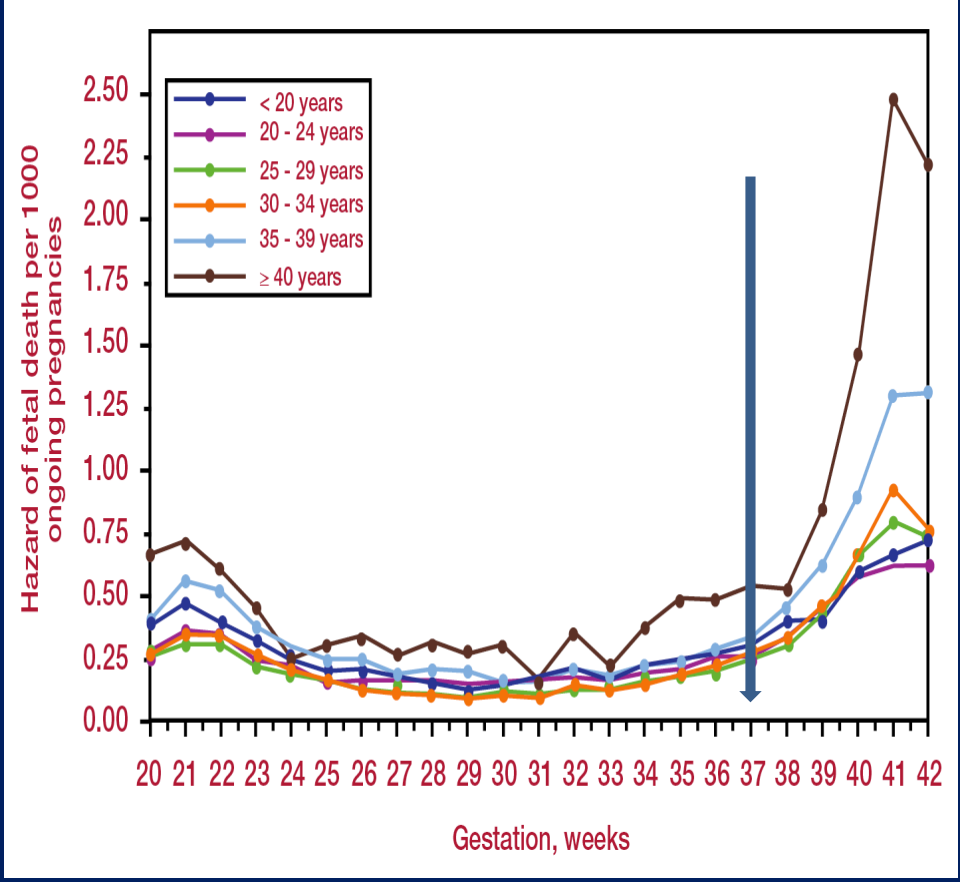
Heterogeneity: Chi² = 1.64, df = 9 (P = 1.00); I² = 0%
Test for overall effect: Z = 2.59 (P = 0.010)
Test for subgroup differences: Not applicable

Risk Ratio M-H, Fixed, 95% CI

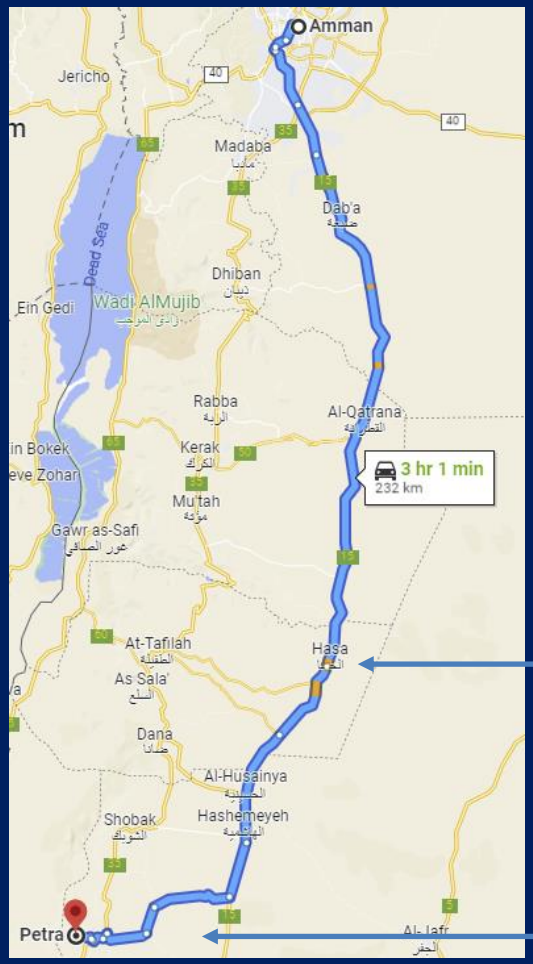
0.001 0.1 1 10 1000
Favours induction Favours expectant

Ending the pregnancy prevents stillbirth

Up to 50% of perinatal mortality occurs after 36 weeks



Shortening pregnancy



Longer journey=
more opportunity for an accident

Ending the pregnancy: considerations

Perinatal morbidity: low absolute risks, even where relative risks high

Experience of birth: Intervention rates incl caesarean section

Labour and resource and cost: this impacts other people

Infant morbidity/ mortality

And the role pf caesarean section?

Caesarean Birth

Because it avoids labour, it avoids intrapartum stillbirth or fetal injury

Because it is (usually) before 40 weeks, it has a positive effect on antepartum stillbirth

Caesarean birth rates: UK, Jordan

Chart 3 – Proportion of live births delivered by caesarean section in Scotland* and England (1989/90 to 2019/20) [7], [8]

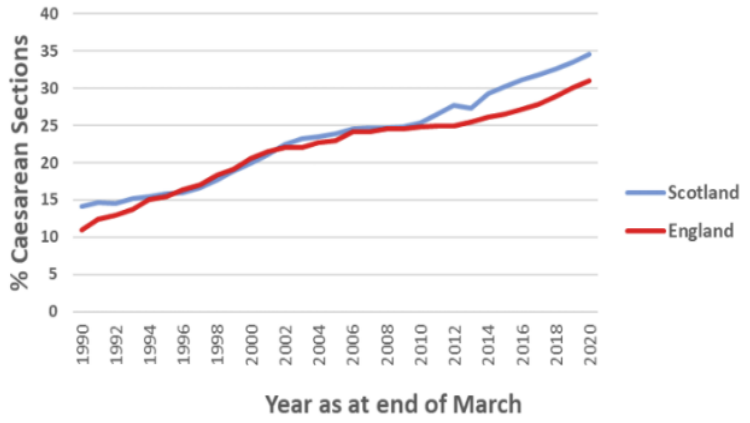


Figure 1 Caesarean section rates in Jordan compared to England, Lebanon and other countries

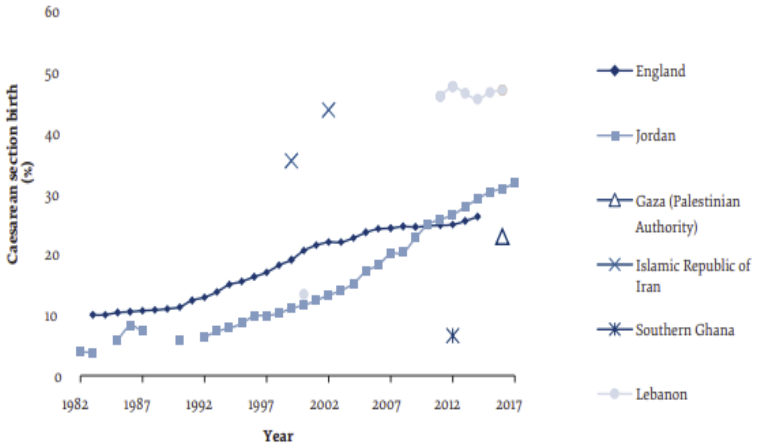
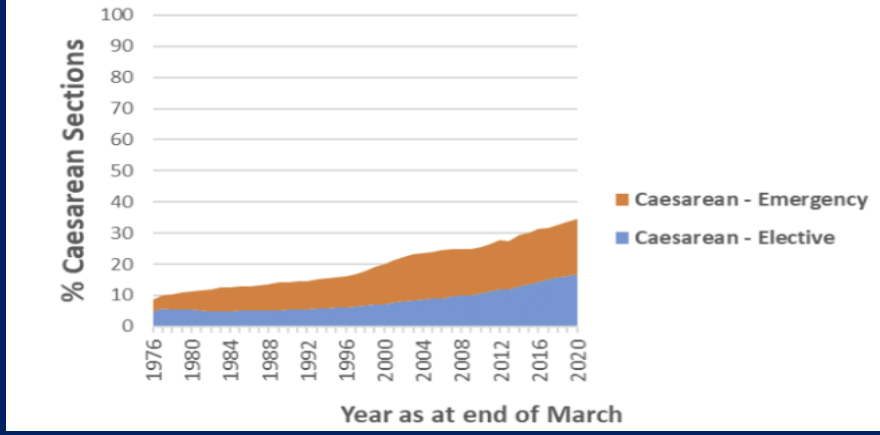
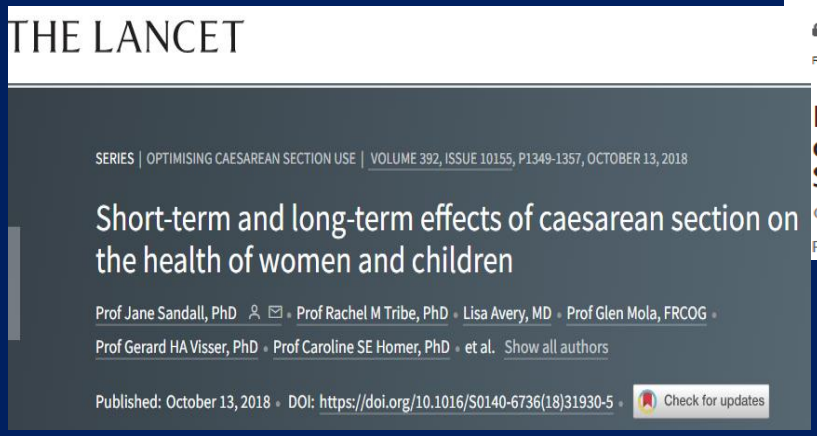


Chart 4 – Proportion of all live singleton births delivered by elective and emergency caesarean section in Scotland (1975/76 to 2019/20) [9]



Harm from caesarean birth

(Let's just forget the mother for a moment)



THE LANCET

SERIES | OPTIMISING CAESAREAN SECTION USE | VOLUME 392, ISSUE 10155, P1349-1357, OCTOBER 13, 2018

Short-term and long-term effects of caesarean section on the health of women and children

Prof Jane Sandall, PhD • Prof Rachel M Tribe, PhD • Lisa Avery, MD • Prof Glen Mola, FRCOG • Prof Gerard HA Visser, PhD • Prof Caroline SE Homer, PhD • et al. Show all authors

Published: October 13, 2018 • DOI: https://doi.org/10.1016/S0140-6736(18)31930-5 • Check for updates

PLOS MEDICINE

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Long-term risks and benefits associated with cesarean delivery for mother, baby, and subsequent pregnancies: Systematic review and meta-analysis

Oonagh E. Keag, Jane E. Norman, Sarah J. Stock

Published: January 23, 2018 • https://doi.org/10.1371/journal.pmed.1002494

appendix. The short-term risks include altered immune development, allergy, atopy, asthma, and reduced intestinal gut microbiome diversity.[56] The persistence of these early childhood effects into later life is less well investigated. Data from individual studies have highlighted an association between birth by CS and features of metabolic syndrome, including adiposity, increased blood pressure, type 1 diabetes, asthma, increased body mass, changes to liver function, immune-related conditions, neurological and stress-related problems, and autoimmune gastrointestinal disease in childhood. However, a 2018 meta-analysis[33] only identified increased risks of obesity up to age 5 years and asthma up to age 12 years in children born by CS. These divergent findings might be because myriad childhood exposures obfuscate associations; larger-scale longitudinal studies are needed to establish causality.

Whether induction or CS, human gestation is short

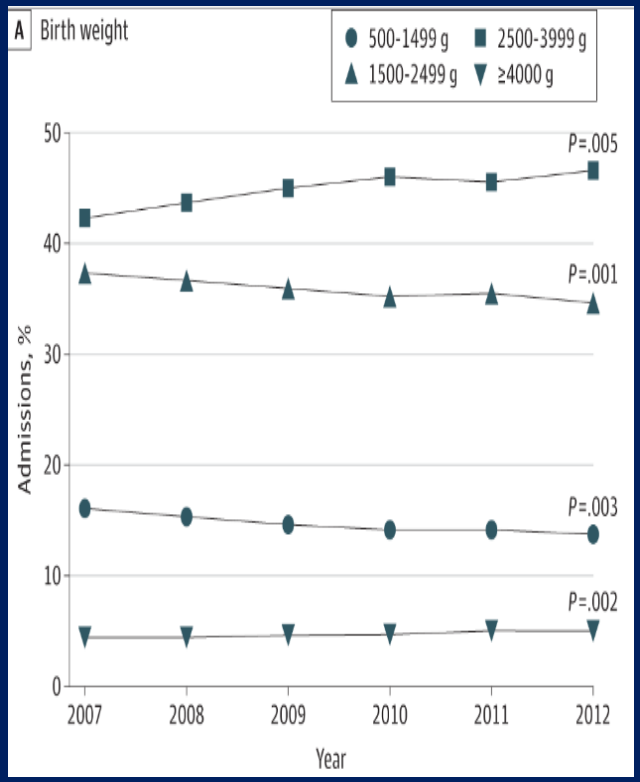
The horse
Gestation 330-345 days

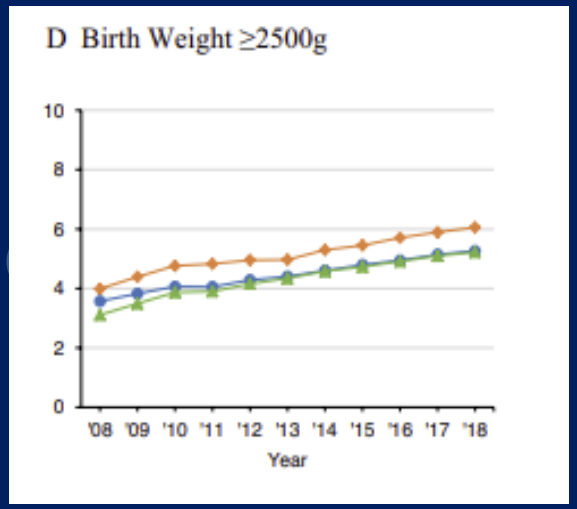
Foal sucking colostrum

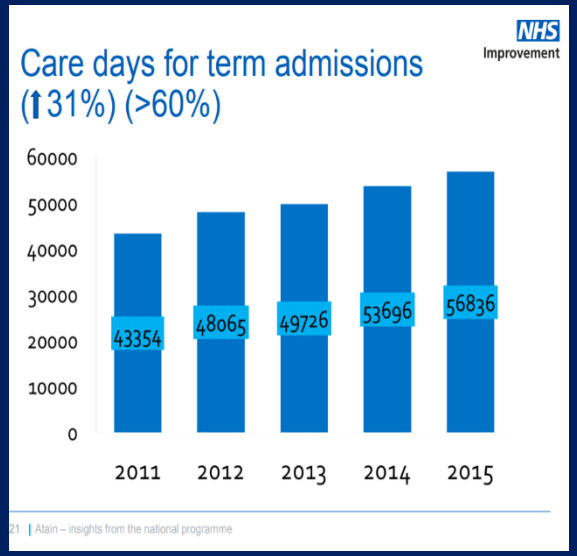
The human
Gestation 280 days

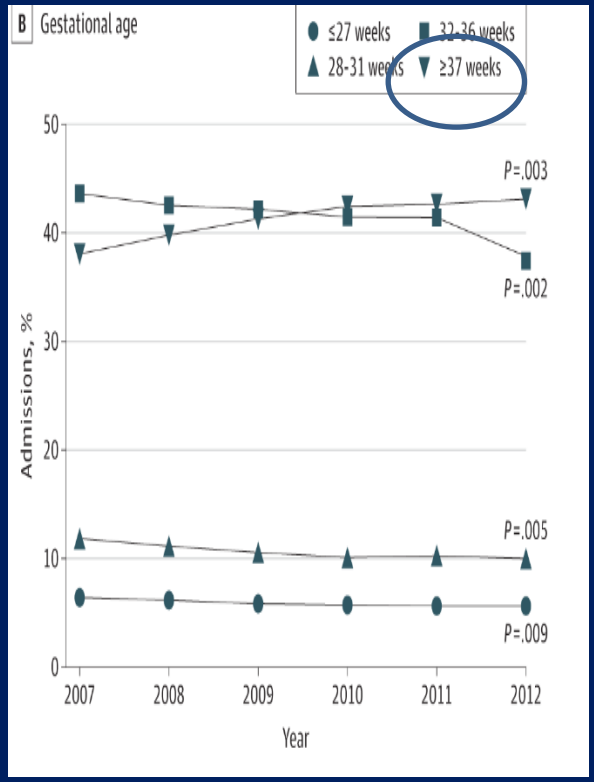
Given how immature we already are, could there be adverse consequences?

Term admission to NNU



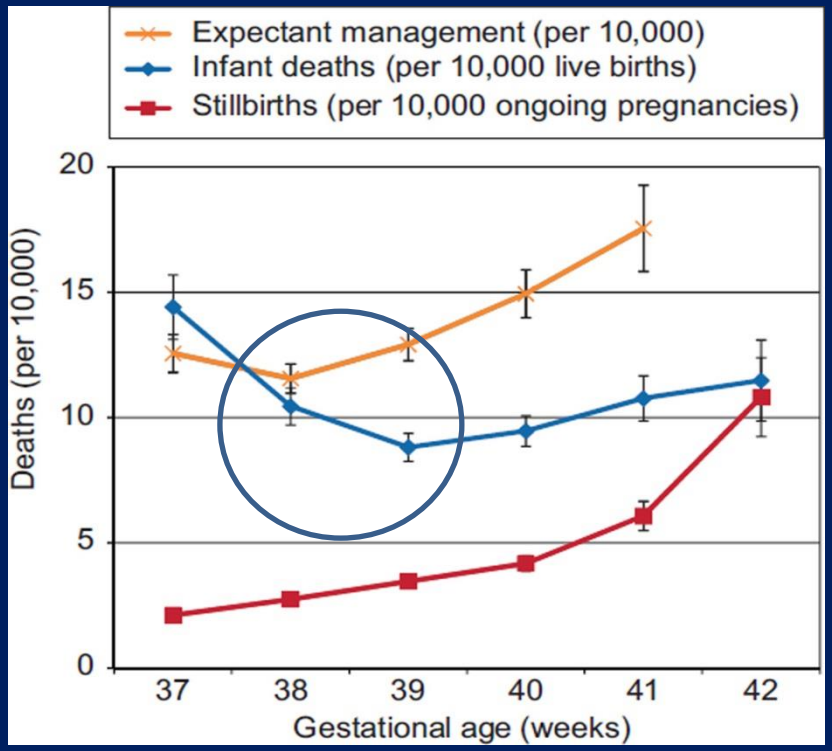




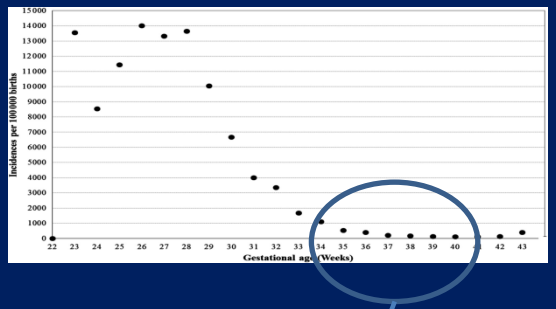


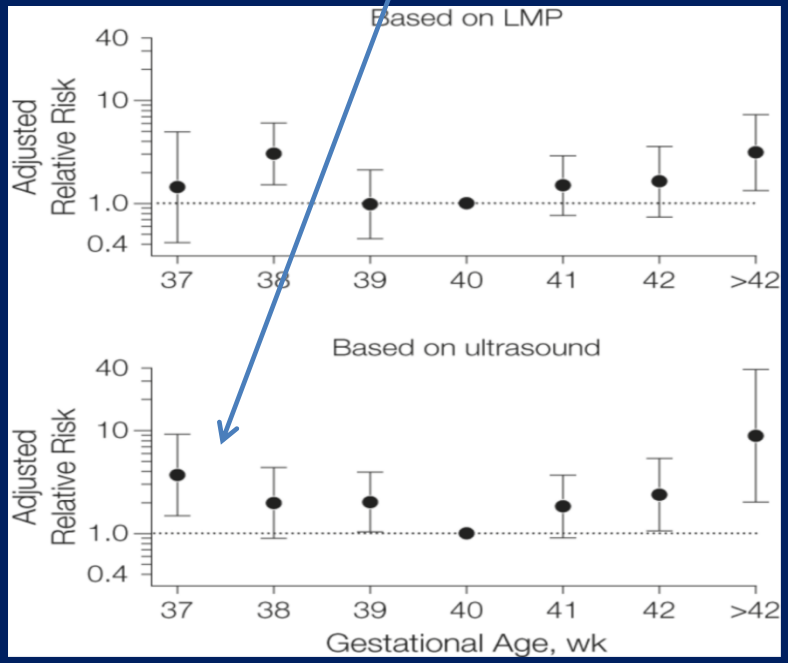
But it goes a lot further than that…

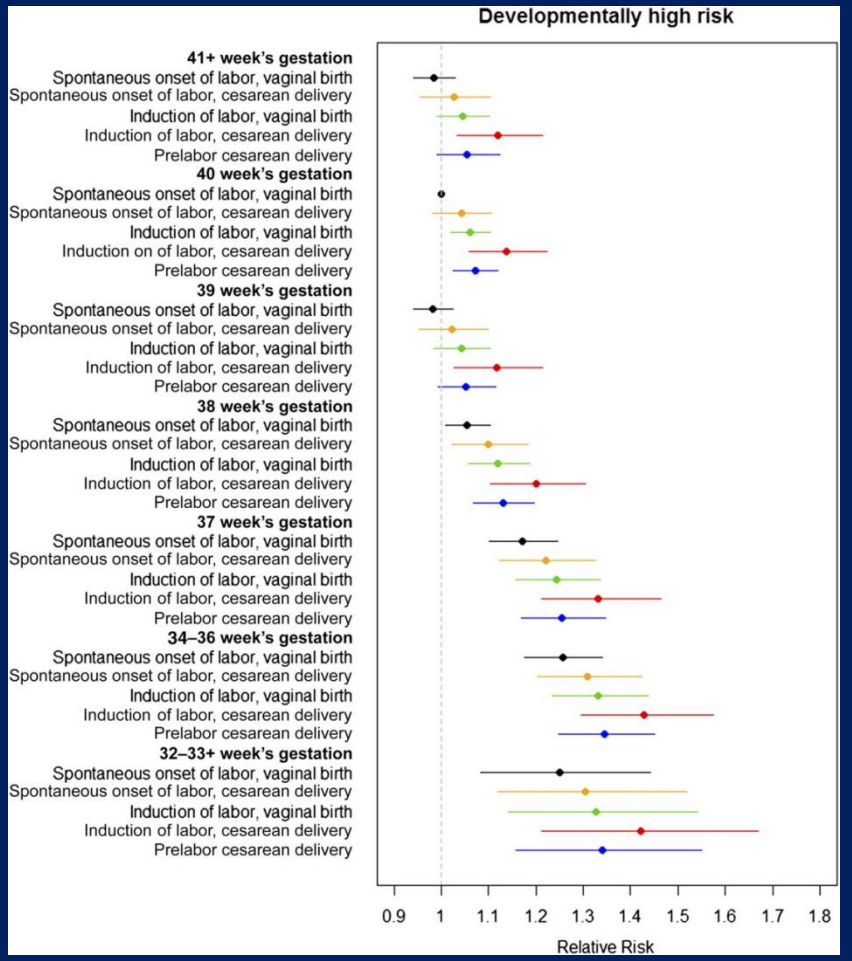
Delivery at 37 weeks is associated with a higher infant mortality



And further than that…cerebral palsy







Relative risk of cerebral palsy (adjusted)
JAMA 2010

And further than that…IQ

OXFORD JOURNALS American Journal of Epidemiology

Am J Epidemiol. 2010 Feb 15; 171(4): 399–406. PMCID: PMC3435092
Published online 2010 Jan 15. doi: 10.1093/aje/kwp413 PMID: 20080810

Variation in Child Cognitive Ability by Week of Gestation Among Healthy Term Births

Seungmi Yang,* Robert W. Platt, and Michael S. Kramer

PLOS MEDICINE

OPEN ACCESS PEER-REVIEWED
RESEARCH ARTICLE

Gestational Age at Delivery and Special Educational Need: Retrospective Cohort Study of 407,503 Schoolchildren

Daniel F. MacKay, Gordon C. S. Smith, Richard Dobbie, Jill P. Pell

Published: June 8, 2010 • https://doi.org/10.1371/journal.pmed.1000289

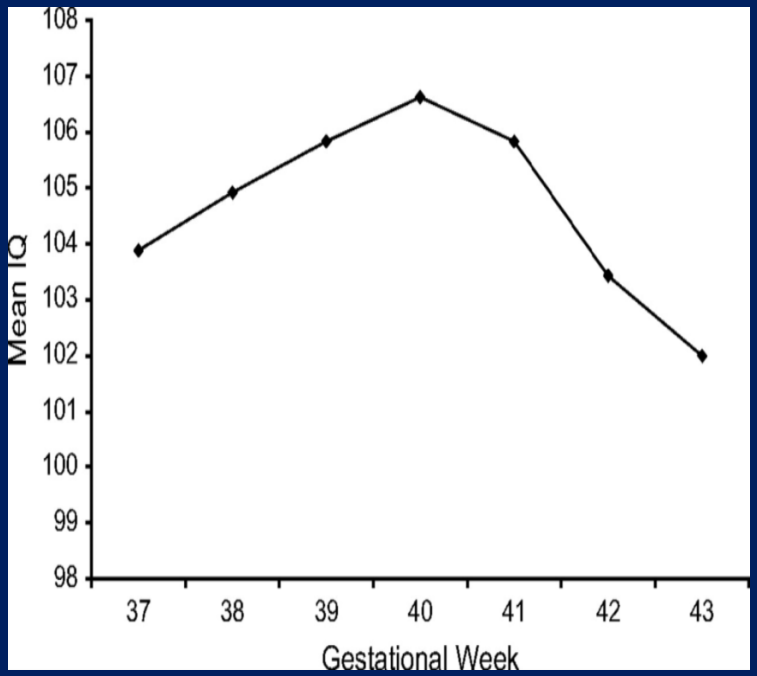
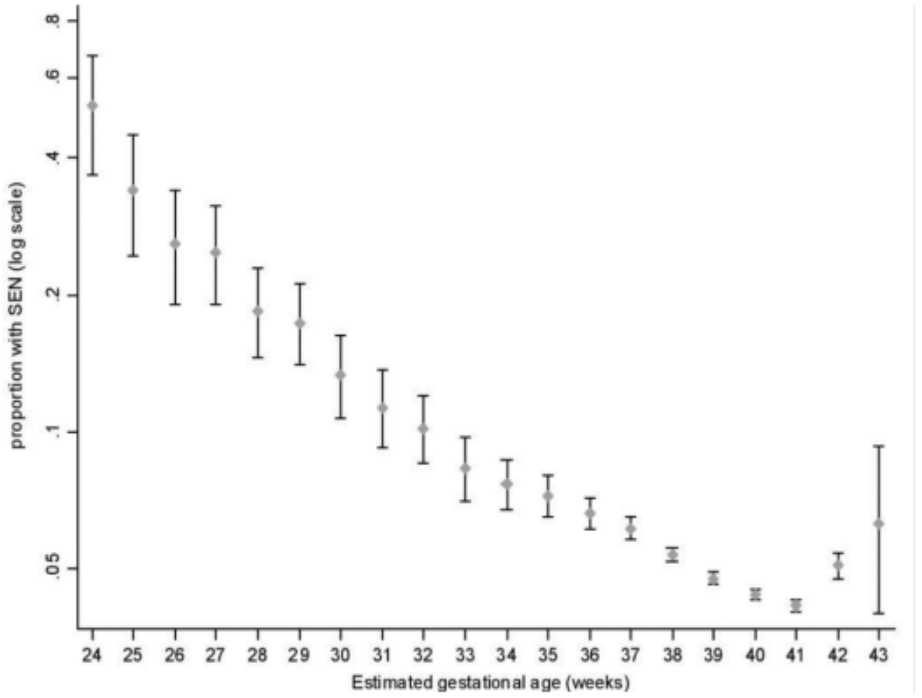


Figure 2: Prevalence of special educational needs by gestation at delivery[18].



We need to reduce stillbirth

But we risk:

Causing death later

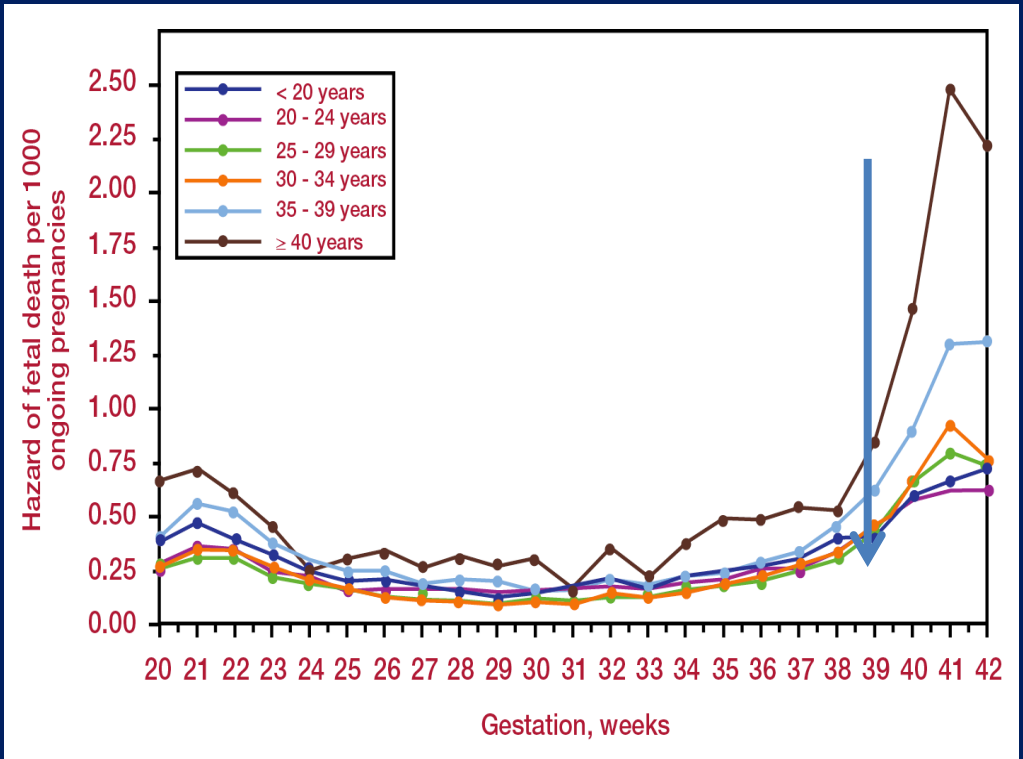
Causing disability and lower IQ later

i.e. routine induction at 37 weeks could mean lowering mean IQ of population

Overwhelming our labour wards and NNUs

So what do we do?

We have established that 39 weeks is the best time to deliver a baby



But most stillbirths occur <39 weeks

So which babies need to come earlier?

Common indications for induction/ CS

Reduced fetal movements
Cholestasis
Gestational diabetes
Big baby
Small baby
Post dates
Prolonged SROM
Maternal request

Conditions which are most associated with stillbirth

Fetal growth restriction
Post dates
Pre eclampsia
Maternal age
Maternal illness

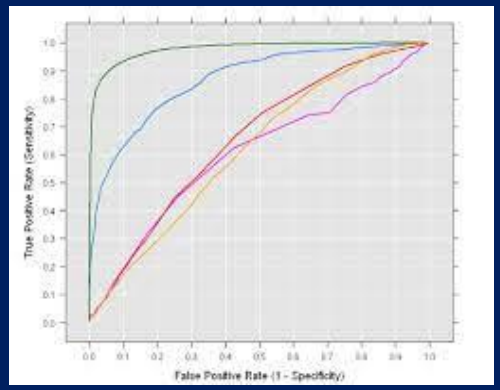
Reducing mortality with minimum morbidity

There are multiple independent risk factors for stillbirth

Given a linear relationship between degrees of risk (eg age), algorithms that rely on categorical ‘cut offs’ will work poorly

The answer is a risk prediction model, integrating *continuous* data on *independent* risks to produce an *individual* risk

..and then decide…



Thank you