

Childhood Obesity Starts in the Womb

Lucilla Poston

King's College London

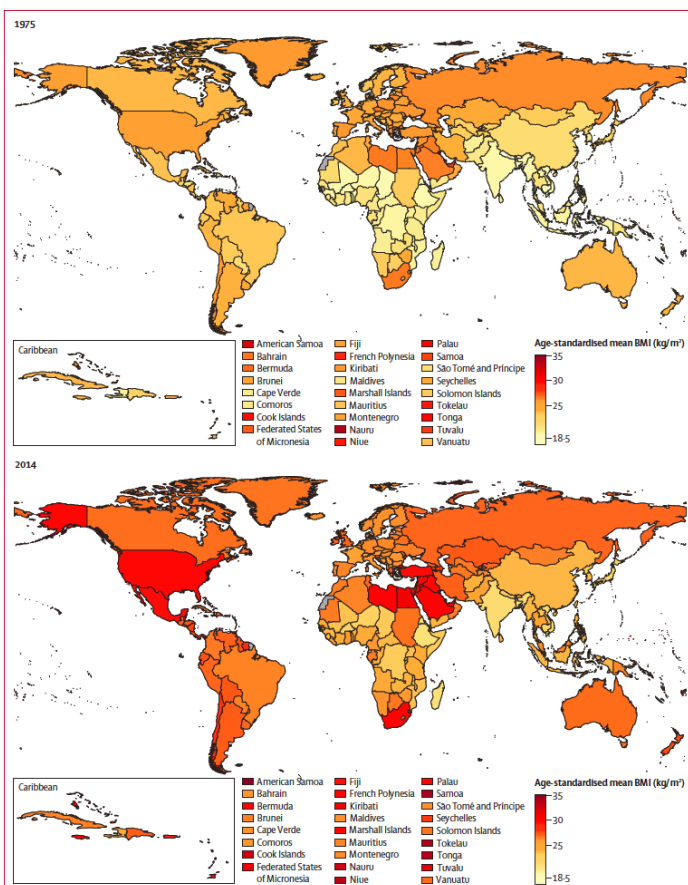


Trends in adult body-mass index in 200 countries from 1975 to 2014: a pooled analysis of 1698 population-based measurement studies with 19.2 million participants

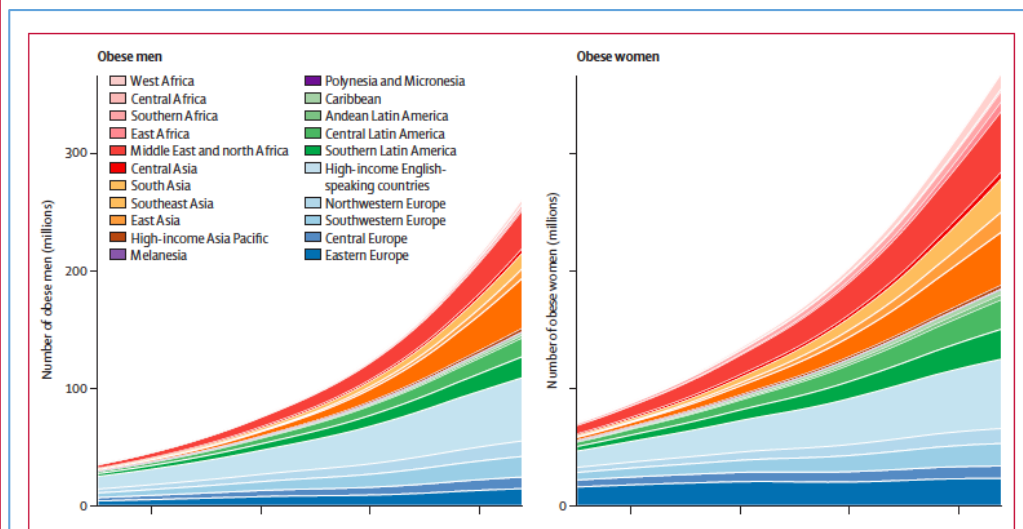


NCD Risk Factor Collaboration (NCD-RisC)*

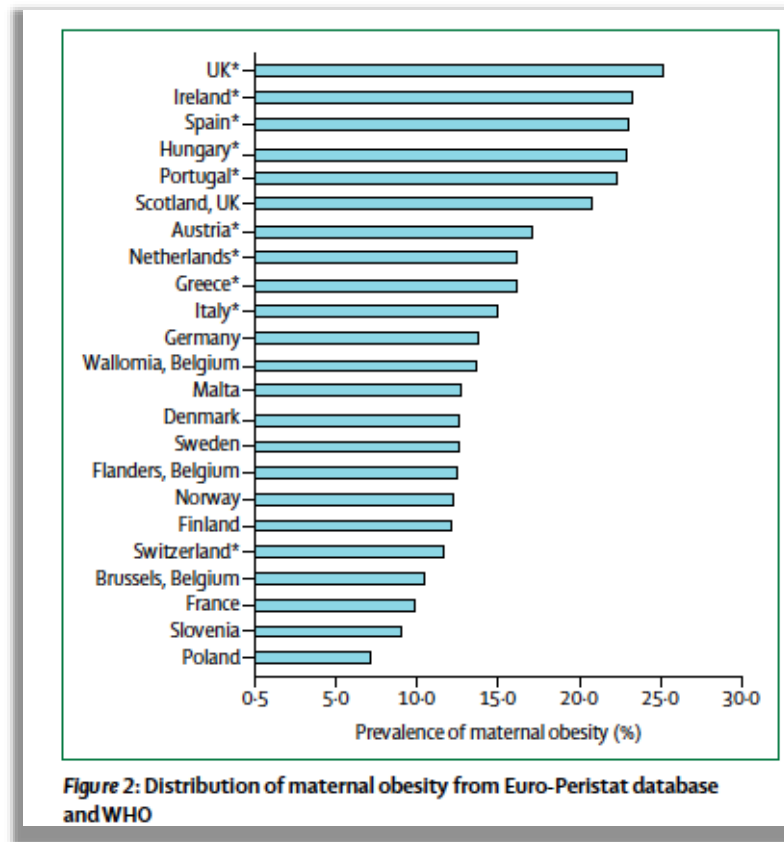
Lancet 2016; 387: 1377-96



By 2025 more than 21% of women in the world will be obese



UK; highest maternal obesity in Europe



Devlieger et al, Eur J Obstet Gynecol Reprod Biol 2016



❑ Longer time to conceive

BMI>40: 7x more likely to take >1yr to conceive than normal BMI

- Oocyte metabolic dysfunction
- Ovulatory dysfunction
- Early embryo metabolic dysfunction
- IVF; 68% fewer live births vs normal BMI

Pregnancy Loss, Fetal/ Infant Death, Congenital anomalies

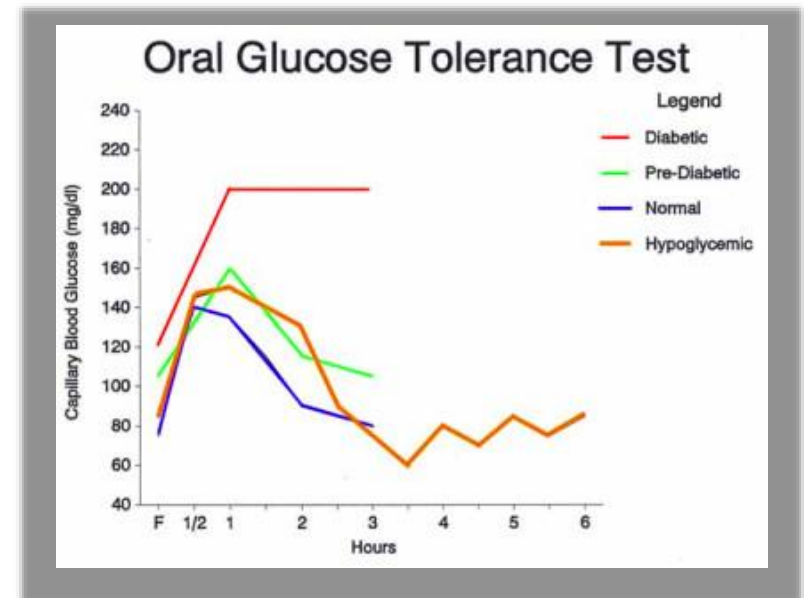
- ❑ Miscarriage 30% higher than normal BMI
- ❑ Stillbirth 19% higher
- ❑ BMI; linear relationship with neonatal death
- ❑ High and low Gestational Weight Gain related to infant death

Congenital anomalies

- ❑ Neural tube defects
- ❑ Hydrocephaly
- ❑ Cardiovascular
- ❑ Orofacial
- ❑ Limb reduction
- ❑ Anorectal malformations

Gestational Diabetes

- ❑ 4-9 x risk compared to normal weight women
- ❑ Varying diagnostic criteria hinder accurate estimate
- ❑ Global prevalence increasing eg Colorado doubled 1994-2002
- ❑ Underestimated/
underdiagnosed in LMICs



Birthweight, Labour and Delivery

- ❑ Large for Gestational Age
- ❑ Macrosomia
- ❑ Problems at delivery
 - Shoulder dystocia
 - Induction of labour
 - Caesarean section
 - Post partum haemorrhage



C sections globally 1990; 6.7%; 2014; 19.1%



Hypertensive Disease in Pregnancy

- ❑ Obesity increases risk of pre-eclampsia 3- 10 fold



Depression

During Pregnancy
OR 1.43 , 95% CI 1.27-1.61

Post Partum
OR 1.30, 95%CI 1.20-1.42



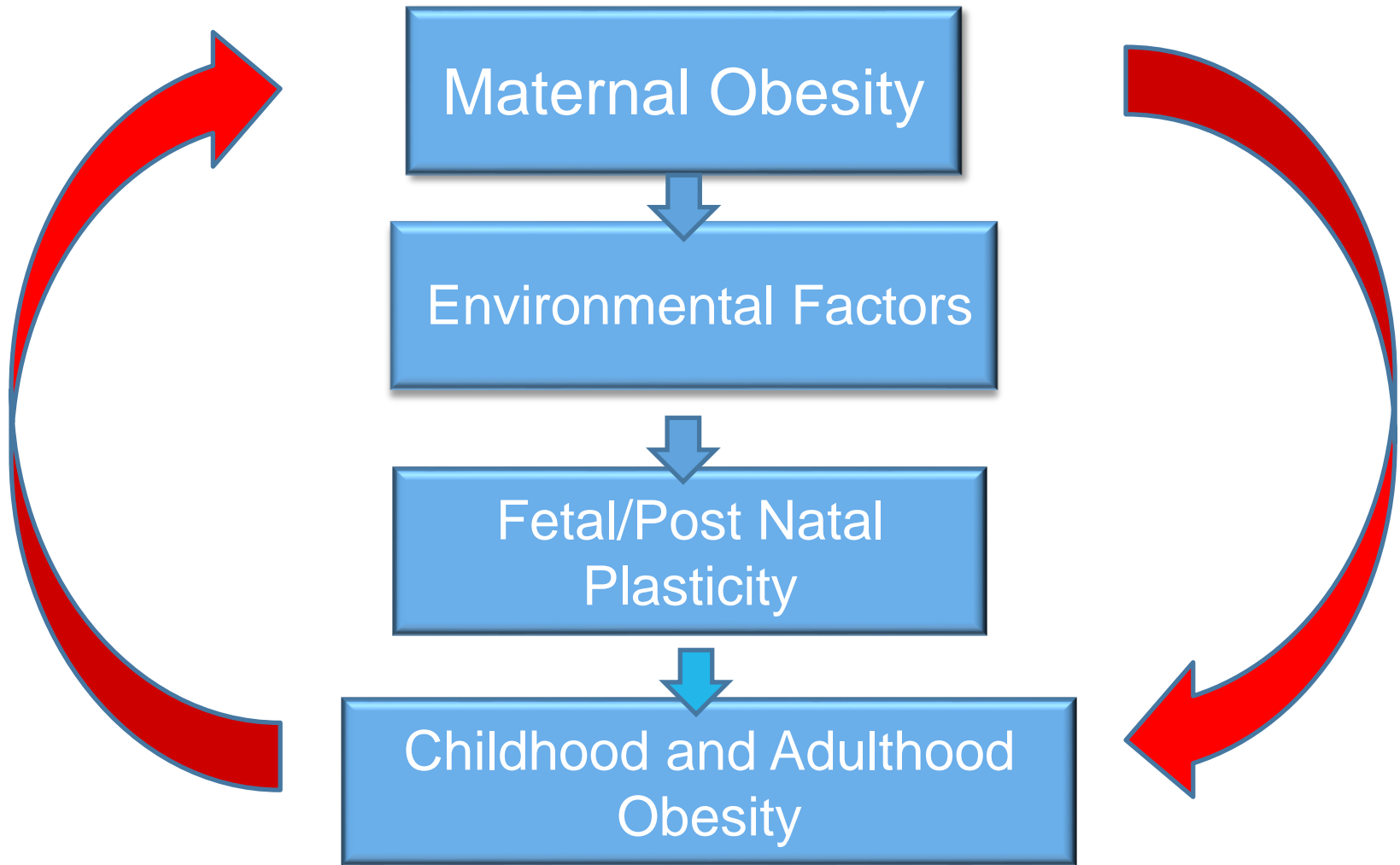
The Problems don't end at Delivery

- ❑ Failure to initiate breastfeeding
- ❑ Reduced Duration
 - Physiological
 - Psychological
 - Physical
 - Delayed onset of lactation



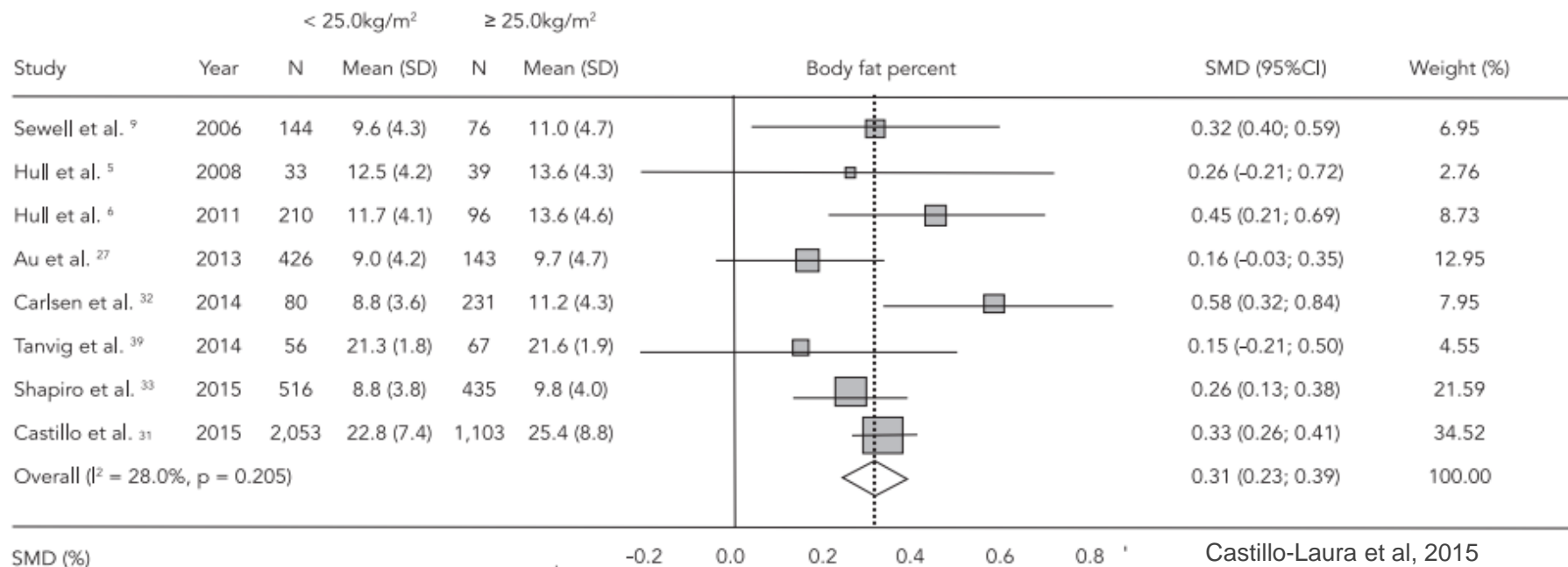
Longer Term Disease

- ☐ Obesity
- ☐ Type 2 Diabetes
- ☐ Cardiovascular Disease



Transgenerational 'Acceleration' of Obesity?

Early origins of childhood obesity; independent relationship between maternal overweight/obesity and childhood fat mass



*SMD; standardised mean difference in % body fat between children of lean and overweight/obese women.
Total difference in fat mass 0.38Kg

PUBLISHED in OCTOBER

Martens et al. *BMC Medicine* (2016) 14:168
DOI 10.1186/s12916-016-0680-0

BMC Medicine

RESEARCH ARTICLE

Open Access

Maternal pre-pregnancy body mass index and newborn telomere length



Dries S. Martens¹, Michelle Plusquin^{1,2}, Wilfried Gysels³, Immaculata De Vivo^{4,5} and Tim S. Nawrot^{1,6*}

Science

Obese mothers risk shortening lives of children by up to 17 years, study suggests



BUT WHAT CAN WE DO?

Strategies to improve pregnancy outcome in obese women

- ❑ Dietary and physical activity advice some help
- ❑but does not prevent complications or reduce number of overweight infants
- ❑ Early treatment with diabetes drugs in obese women does not work
- ❑ Screening for, and treatment of diabetes helps
- ❑ BUT NOT ADEQUATELY IMPLEMENTED-
too expensive!!

What should be done?

- ☐ Improve NHS Pregnancy Diabetes Care
- ☐ Focus on HIGH RISK women; new tests needed
- ☐ Aid post gestational weight loss
- ☐ Prevent Obesity in Young Women.

Post Partum Weight Retention; a major problem

- ❑ Encourage Breast Feeding

 - *Breast feeding leads to weight loss*

- ❑ Give dietary/physical activity advice

- ❑ AND thereby Prevent adverse outcomes in next pregnancy

Focusing on pre-conception interventions

- Young people often do not know that they may be on a risky health trajectory, even if they appear healthy
- Many young people put off adopting healthy lifestyles until some future date
- They do not realise that risk of obesity and non-communicable diseases can be transmitted to their future children
- Obesity confers a range of risks to mother and baby in pregnancy and longer-term

Focusing on pre-conception interventions....

- Many young people have poor levels of health literacy
- Whether pregnancy is planned or not, many women and their partners do not alter their lifestyles in preparation for it, or indeed during pregnancy
- Women may not access health care until late in the first trimester of pregnancy
- Schools and parents do not promote health literacy

MAKE POLICY MAKERS AWARE OF THE PROBLEM

EFFECTS OF MATERNAL OBESITY



For the Mother

- decreased fertility
- increased risk of miscarriage
- increased risk of gestational diabetes
- increased risk of perinatal complications

For the Fetus

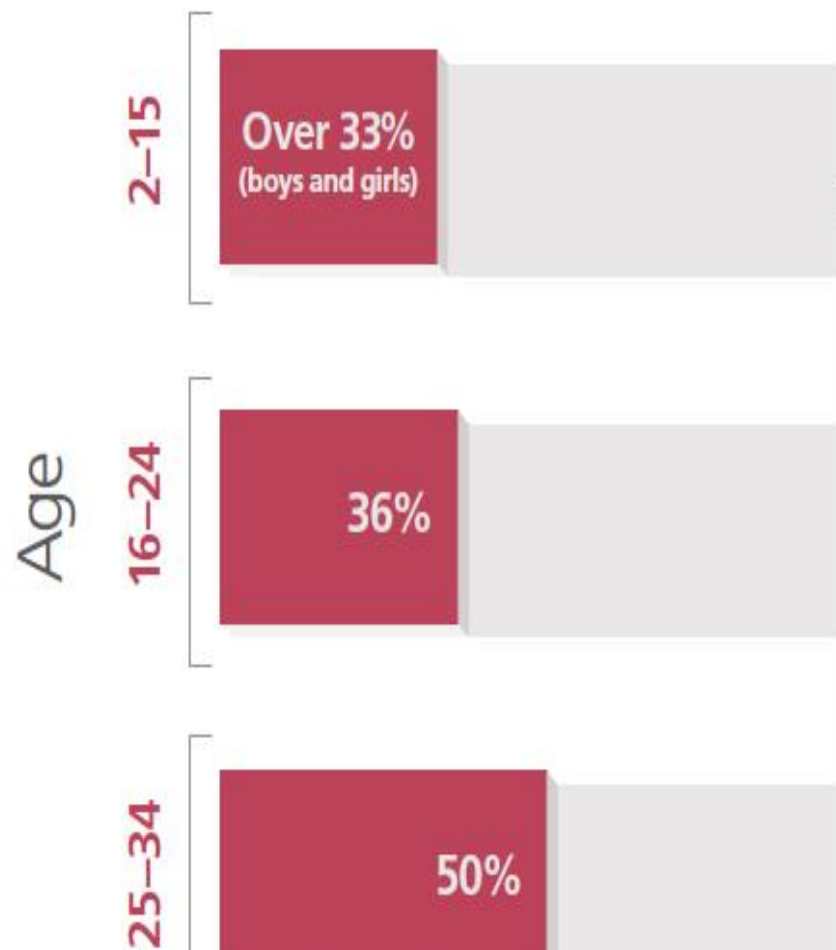
- increased risk of stillbirth
- increased risk of metabolic abnormalities
- increased risk of developmental abnormalities

For the Offspring

- increased risk of obesity
- increased risk of diabetes
- increased risk of hypertension (high blood pressure)



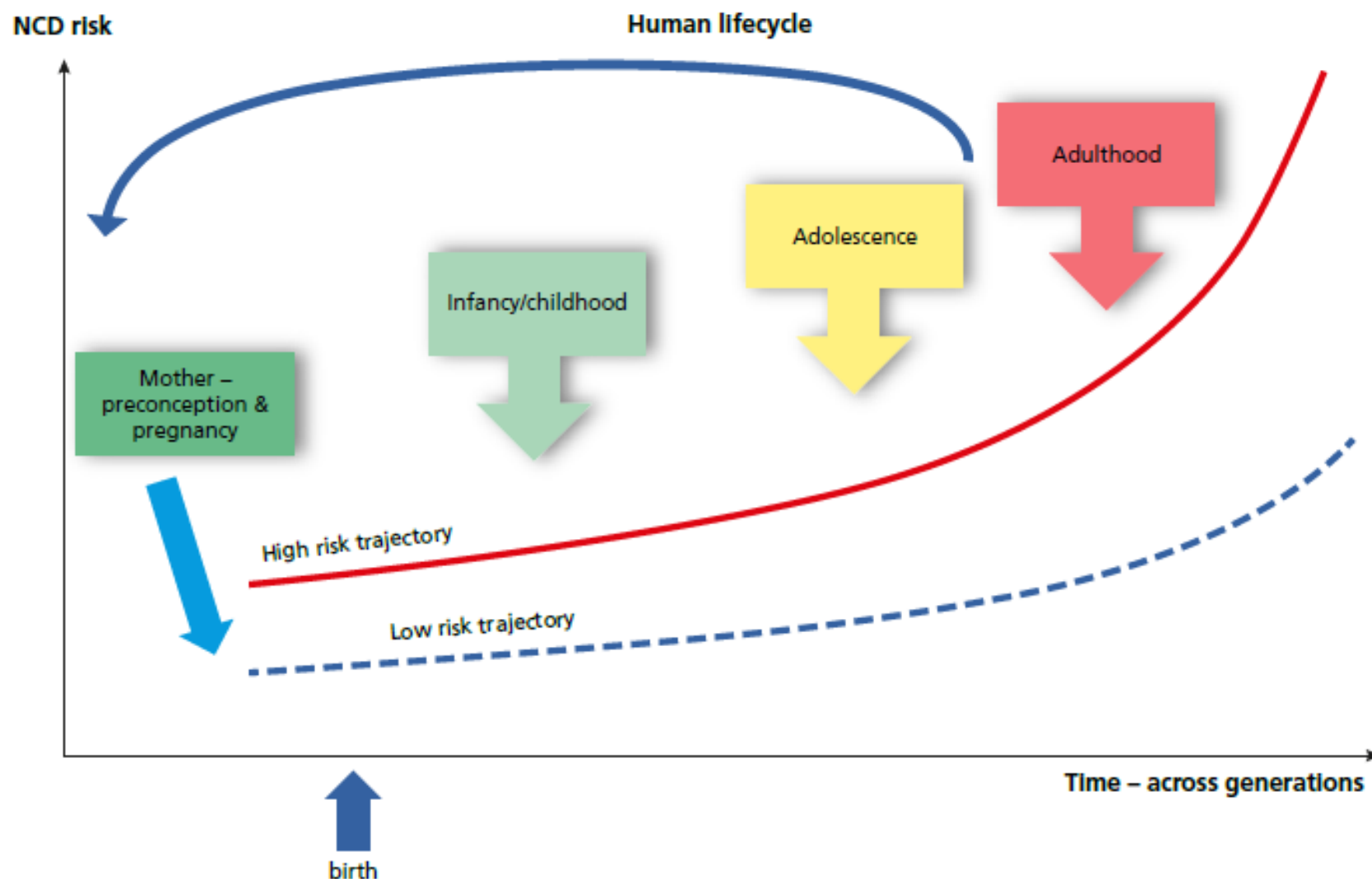
PROPORTION OF OVERWEIGHT OR OBESE WOMEN IN ENGLAND



Annual Report of the Chief Medical Officer, published Nov 2015

The Health of the 51%: Women

Figure 5.1 Life course model of Non Communicable Disease (NCD) prevention, showing the importance of intervention in adolescents and young adults

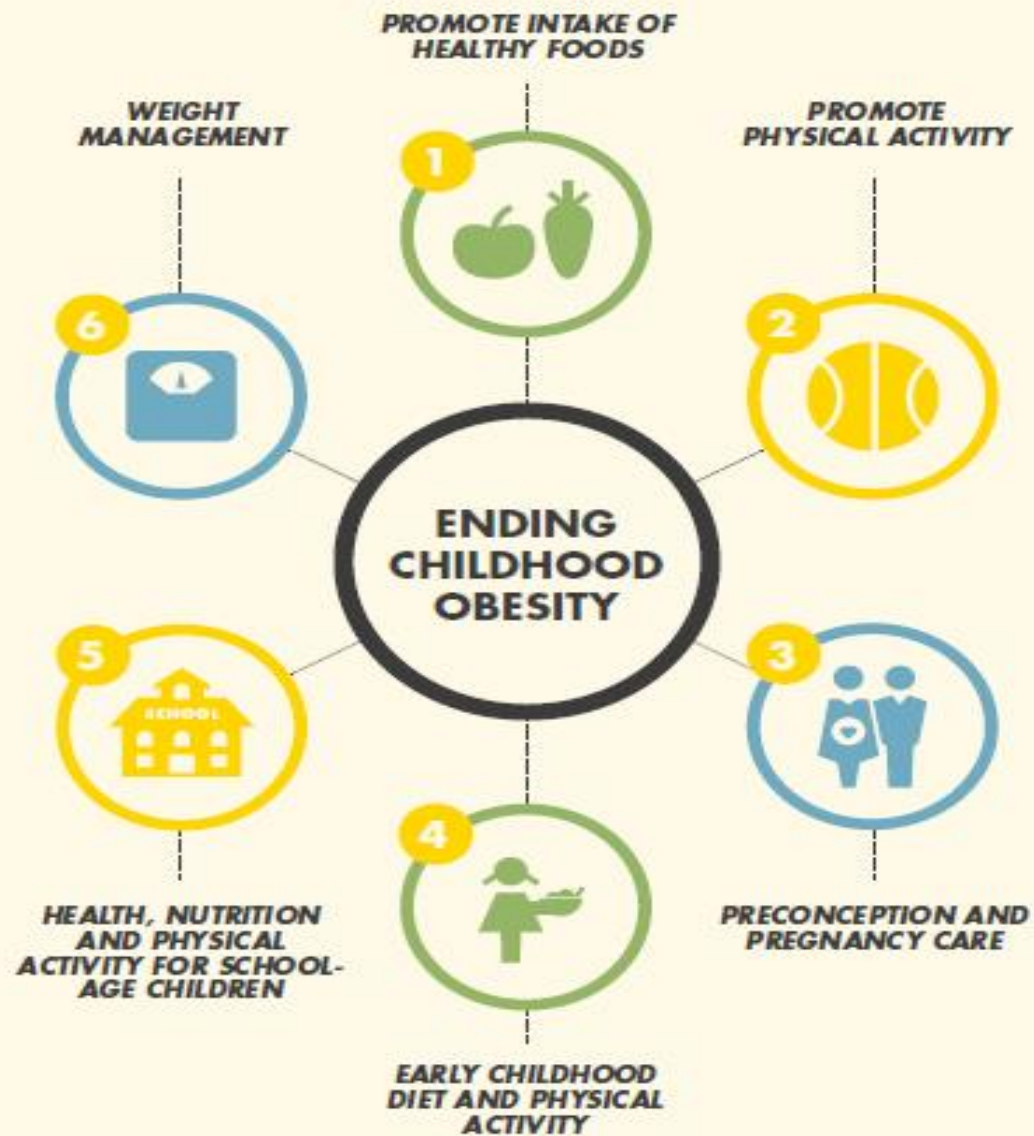


REPORT OF THE COMMISSION ON

ENDING CHILDHOOD OBESITY



Jan 2016





INTEGRATE AND STRENGTHEN GUIDANCE FOR NONCOMMUNICABLE DISEASE PREVENTION WITH CURRENT GUIDANCE FOR PRECONCEPTION AND ANTENATAL CARE, TO REDUCE THE RISK OF CHILDHOOD OBESITY.

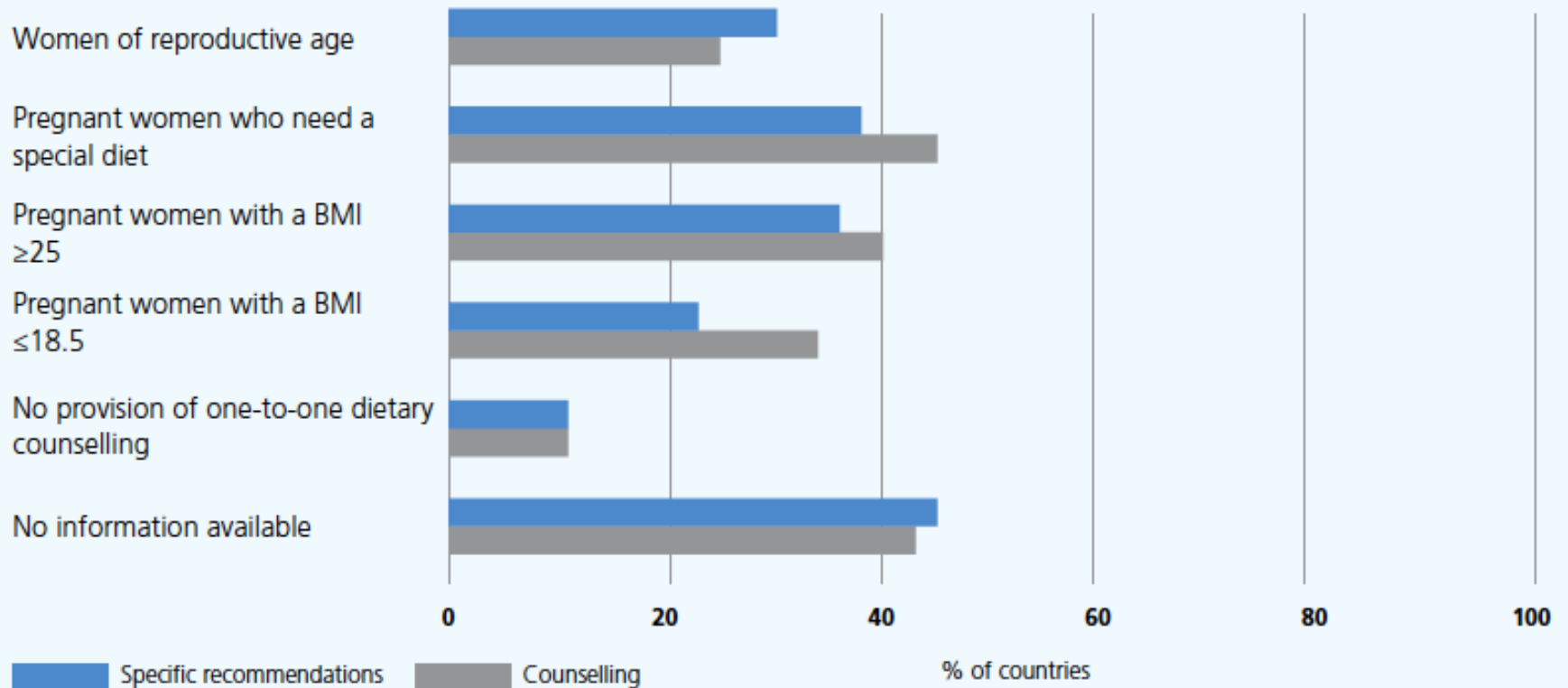
- 3.1** Diagnose and manage hyperglycaemia and gestational hypertension.
- 3.2** Monitor and manage appropriate gestational weight gain.
- 3.3** Include an additional focus on appropriate nutrition in guidance and advice for both prospective mothers and fathers before conception and during pregnancy.
- 3.4** Develop clear guidance and support for the promotion of good nutrition, healthy diets and physical activity, and for avoiding the use of and exposure to tobacco, alcohol, drugs and other toxins.

Good Maternal Nutrition The best start in life



WHO Survey of Dietary Recommendations;

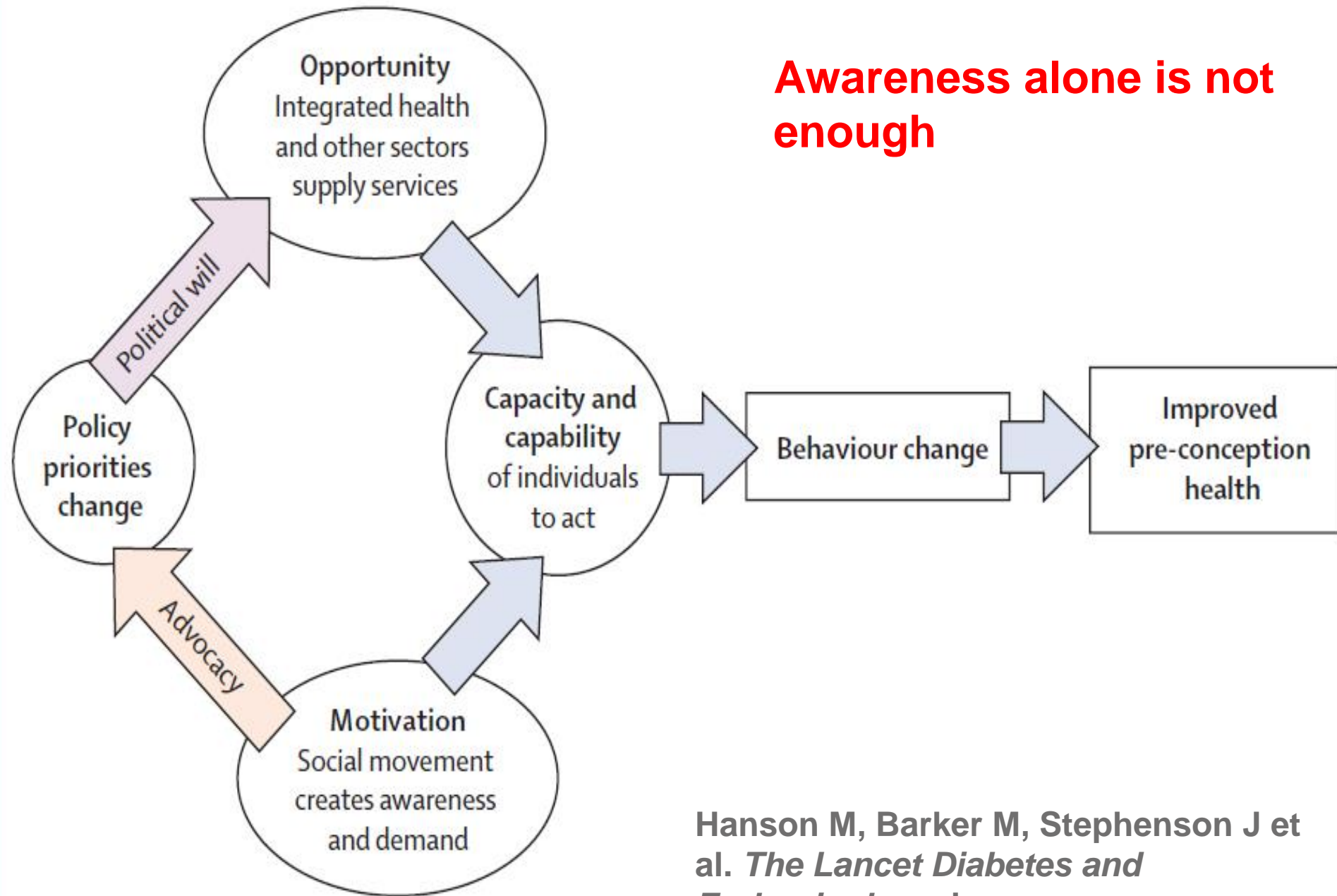
Fig. 7.3. Specific dietary recommendations and nutrition counselling for at-risk groups



Action points

- Make the pre-conception health of women of reproductive age a public health priority
- Strengthen commitment to integrating pregnancy **p**revention, pregnancy **p**lanning, pregnancy **p**reparation and preparing for **p**arenthood (the four **P**s)
- Bring key data together in one place to monitor progress towards targets
- Promote health literacy about the importance of the pre-conception period, through schools and more widely
- Engage young people in co-creating novel ways of addressing the problem

Awareness alone is not enough



Hanson M, Barker M, Stephenson J et al. *The Lancet Diabetes and Endocrinology*, in press