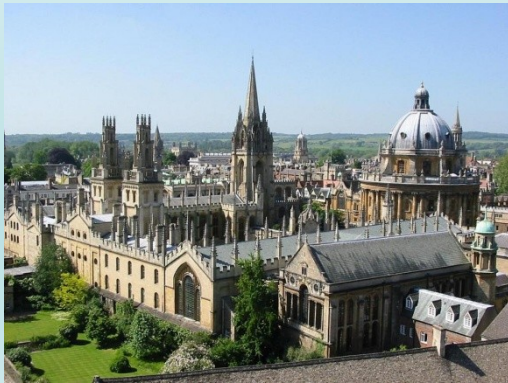


Caring for mothers who have health risks in pregnancy



Dr Lucy Mackillop

Obstetric Physician

Oxford Radcliffe Hospitals NHS Trust

Introduction

- Why do we need a high risk maternity service? What do we actually do?
- Services at the Women's Centre, JR
- Cases/Topics
- New guidelines
- Education
- Patient Information

Obstetric Medicine

- Specialist skills in medical conditions confined to pregnancy, e.g. Pre-eclampsia
- Management of medical conditions in pregnancy
 - Understanding the changes in pregnancy physiology
 - Understanding how the condition can affect pregnancy or pregnancy affects the condition

Overview of OM

- ~700,000 deliveries per year in UK
- Birth rate is rising
 - Older mothers
 - Women born outside the UK
- Hypertensive disorders complicate 10-15% of pregnancies
- Other common disorders e.g. asthma, diabetes
- Obesity epidemic
- Prevalence of medical conditions complicating pregnancy is increasing.

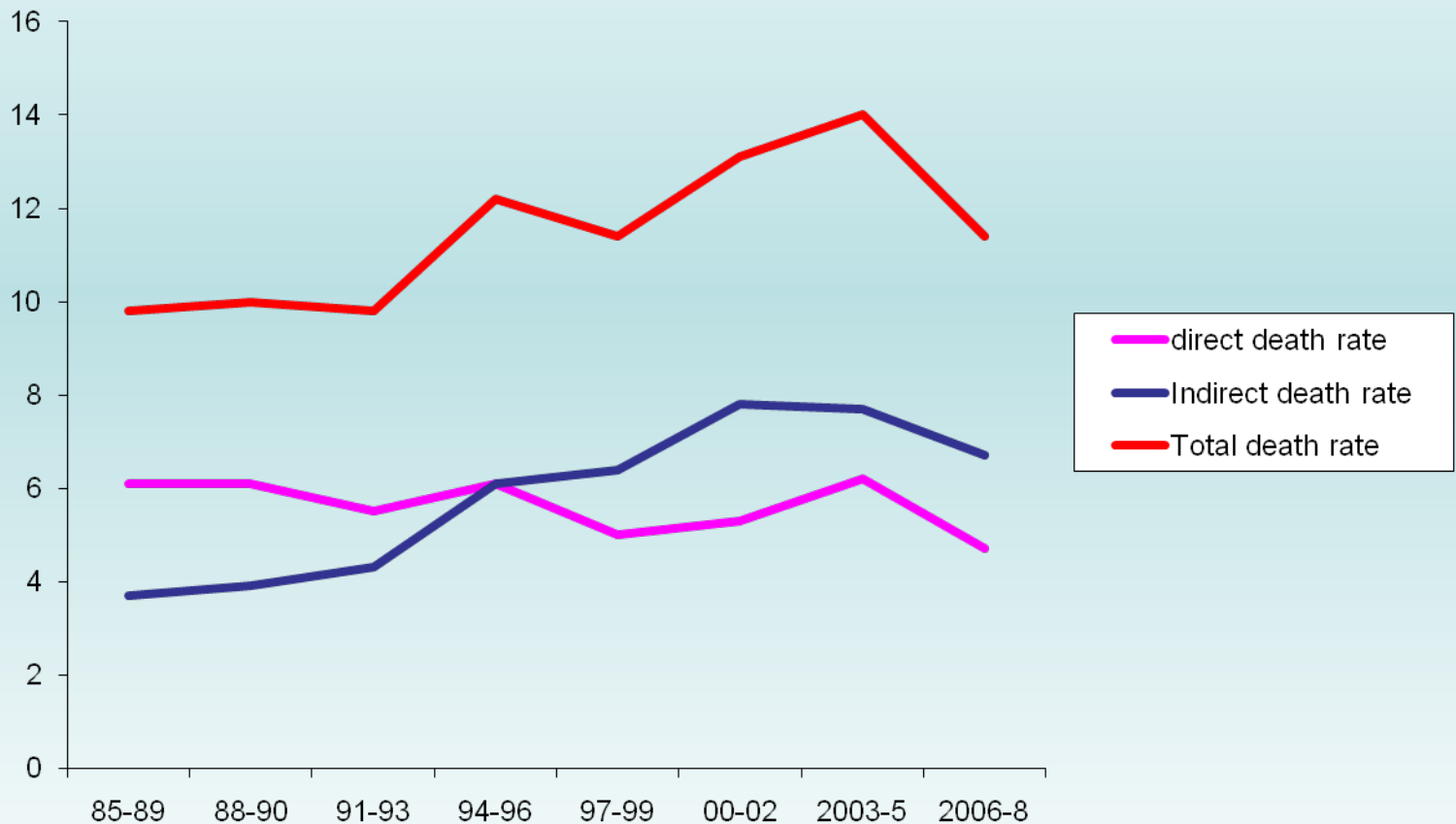
Saving Mothers' Lives

<http://www.cmace.org.uk/>

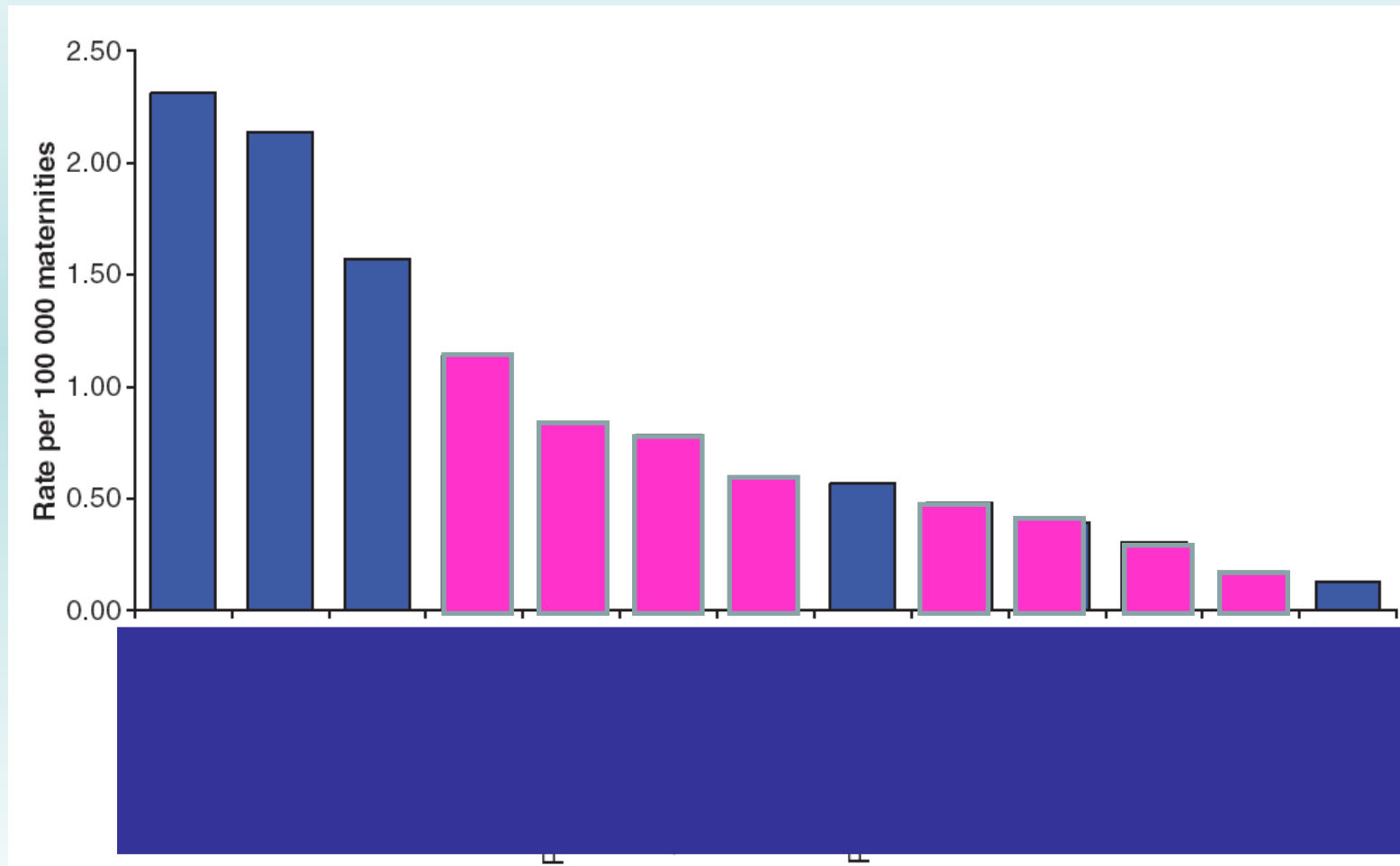
The Seventh Report of the United Kingdom Confidential Enquiries into Maternal Deaths



Direct and Indirect maternal death rates per 100,000 maternities. UK, 1985-2008

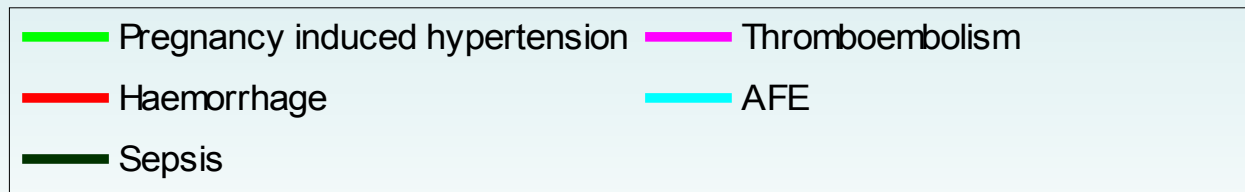
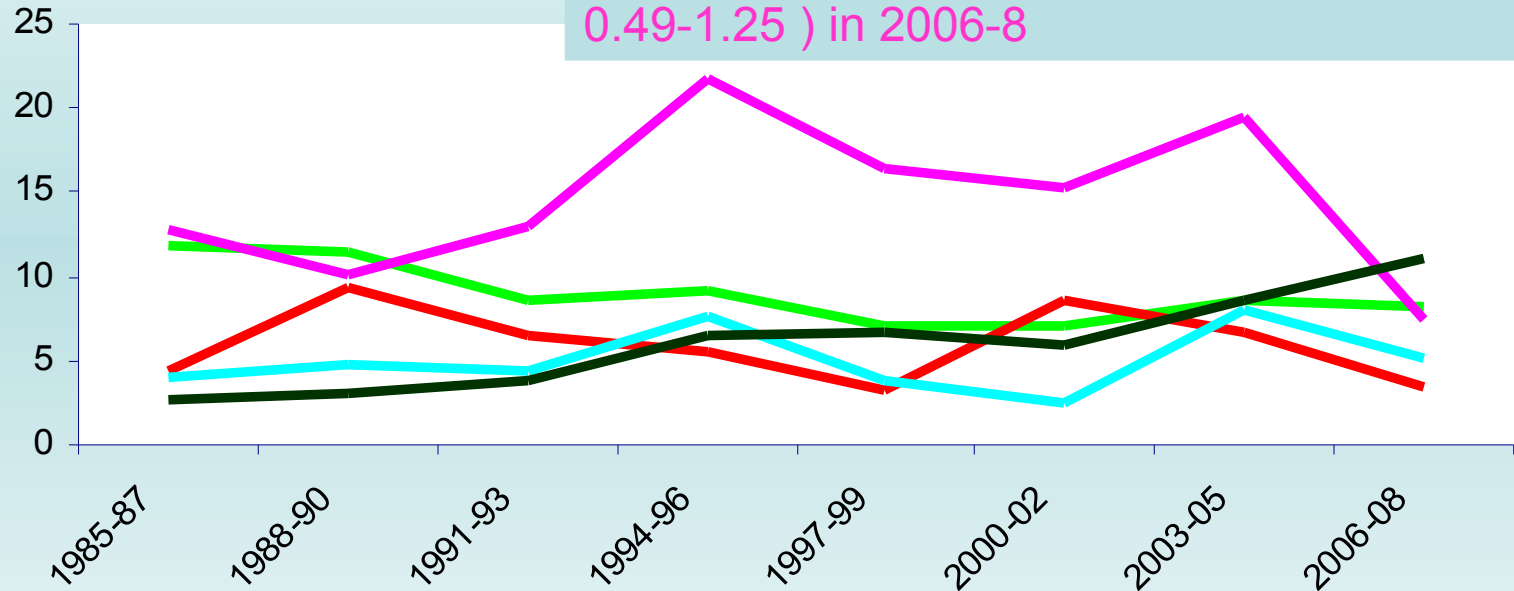


Leading causes of maternal deaths per 100,000 maternities in the UK, 2006-8



Direct deaths. Rates per million maternities by leading causes; UK 1985-2008

statistically significant fall from the mortality rate of 1.94 (1.43-2.63) in 2003-2005 to 0.79 (95% CI 0.49-1.25) in 2006-8



CMACE

- Number of indirect deaths consistently out number direct causes of death
- Non significant fall in indirect deaths (c.f significant for direct deaths)
- For indirect deaths – in 55% of cases there was a degree of substandard care and this has been increasing for the last 4 reports.



Medical Problems in Pregnancy

Pre-existing

- Asthma
- Epilepsy
- Hypertension
- Diabetes
- Thyroid
- SLE / RA
- Renal
- Cardiac

Pregnancy - specific

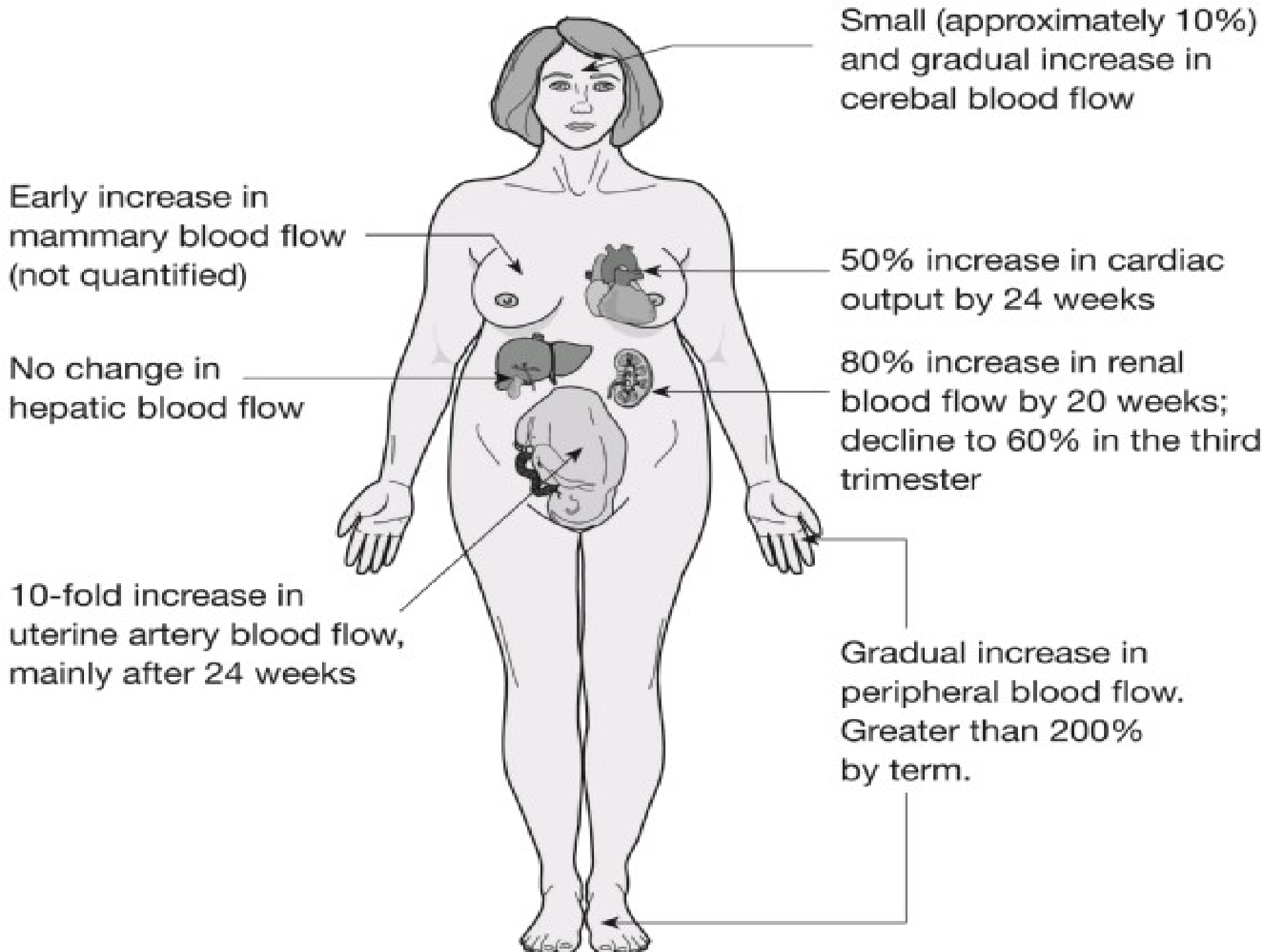
- Pre-eclampsia
- (Thromboembolism)
- Gestational Diabetes
- Obstetric cholestasis
- Hyperemesis
- Acute Fatty Liver
Pregnancy

Physiological changes in pregnancy

- Allow mother to
 - Tolerate the genetically distinct fetoplacental unit
 - Adapt to nourish and support a rapidly growing fetus
 - Prepare for the hazards of delivery

Physiological changes in pregnancy

- Consequences
 - Insulin resistant
 - Thrombophilic
 - Relatively immunocompromised
 - Hypervolaemic



Small (approximately 10%) and gradual increase in cerebral blood flow

Early increase in mammary blood flow (not quantified)

50% increase in cardiac output by 24 weeks

No change in hepatic blood flow

80% increase in renal blood flow by 20 weeks; decline to 60% in the third trimester

10-fold increase in uterine artery blood flow, mainly after 24 weeks

Gradual increase in peripheral blood flow. Greater than 200% by term.

Obstetric Medicine at Oxford

- High risk pregnancy service set up by a physician – Prof Chris Redman
- 2 MFM obstetricians and me - 500 pt/yr
- Women's centre – distinct building on John Radcliffe Hospital site – part of Oxford Radcliffe Hospitals NHS Trust
- 7700 del/year
- Tertiary referral for ~40,000 del/yr



Obstetric Medicine at Oxford

- Daily ward rounds of in-patients
- Combined antenatal clinics (MFM and me)
- Combined Diabetes clinics (obs, diabetologist and me)
- Specific obs med clinics
 - Rapid access medical clinic
 - Pre-pregnancy counselling clinic
 - Monthly obs med/cardiology clinic





High Risk Maternity Services at the John Radcliffe Hospital, Oxford

**Silver Star
Unit**

Fetal Medicine

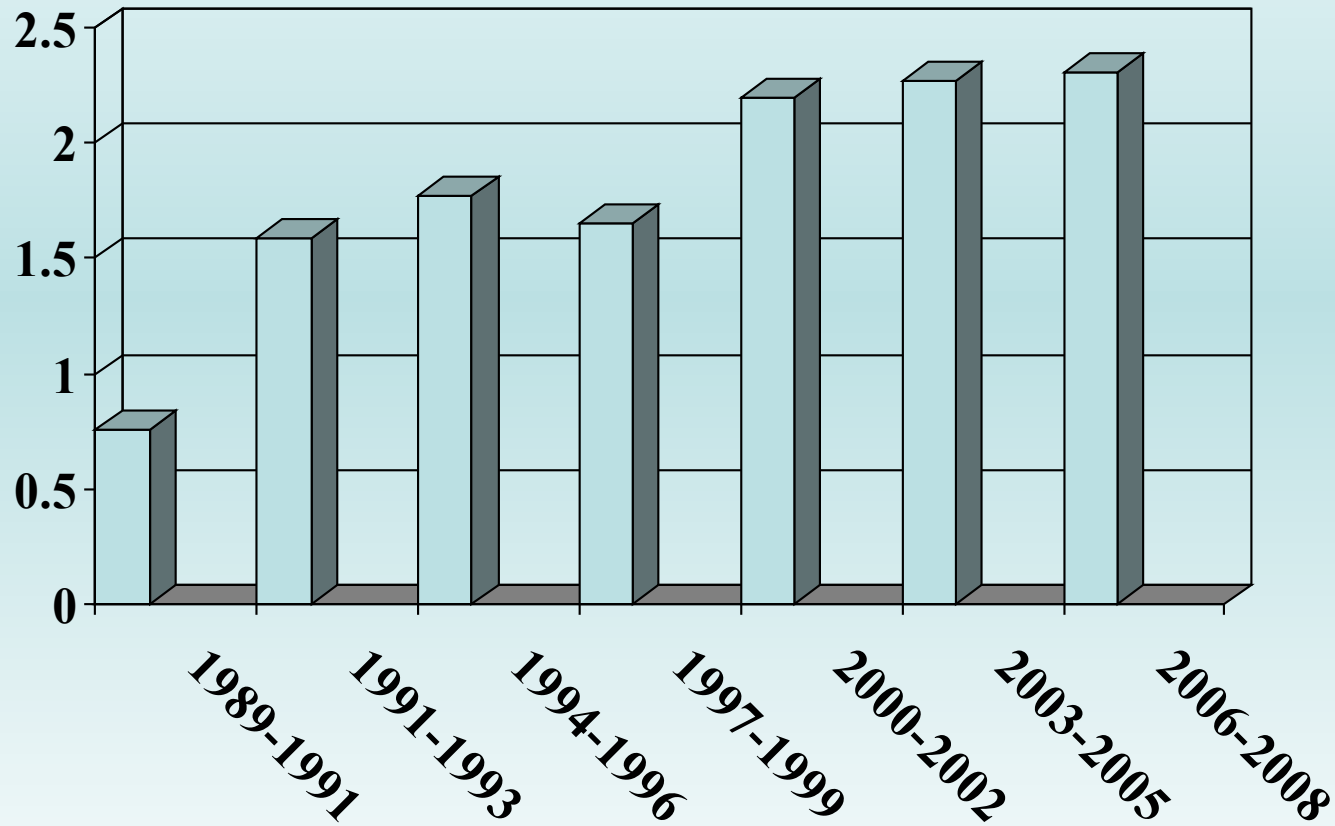
**Prenatal
Diagnosis**

Cases/Topics

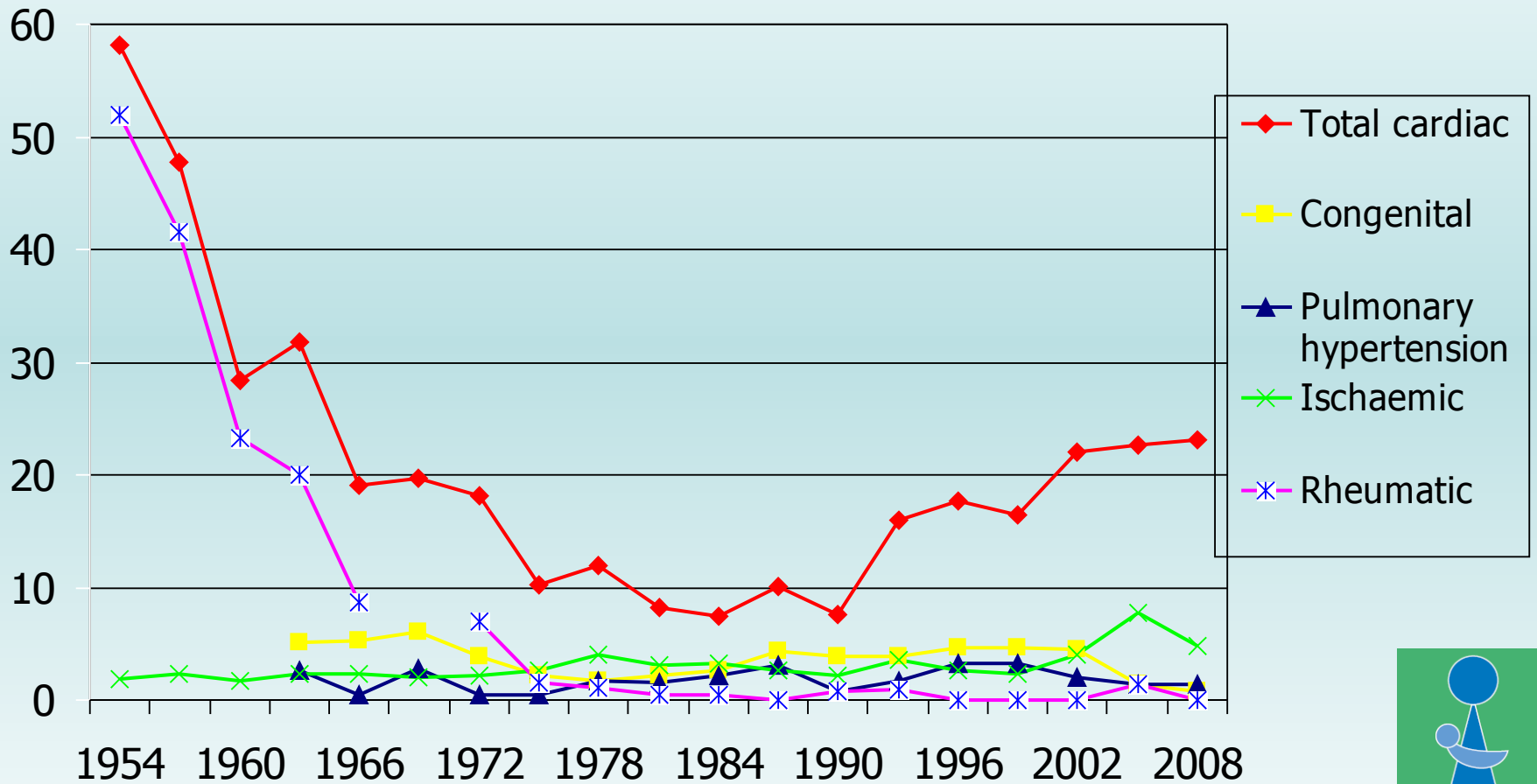
- Cardiac Disease
- Venous Thromboembolic Disease
- Hypertension
- Thyroid Disease



Cardiac maternal mortality (deaths per million maternities) 1989-2008



Cardiac causes (per million maternities) maternal mortality 1952-2008

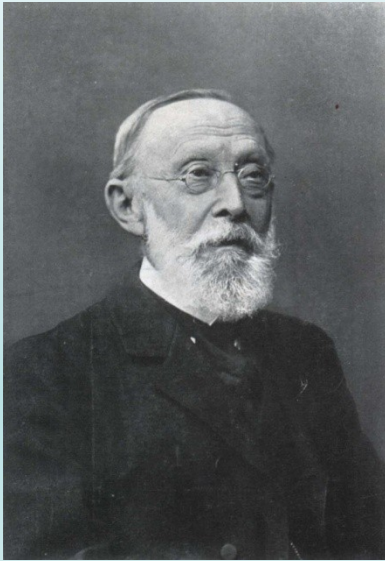


Cardiac disease in pregnancy

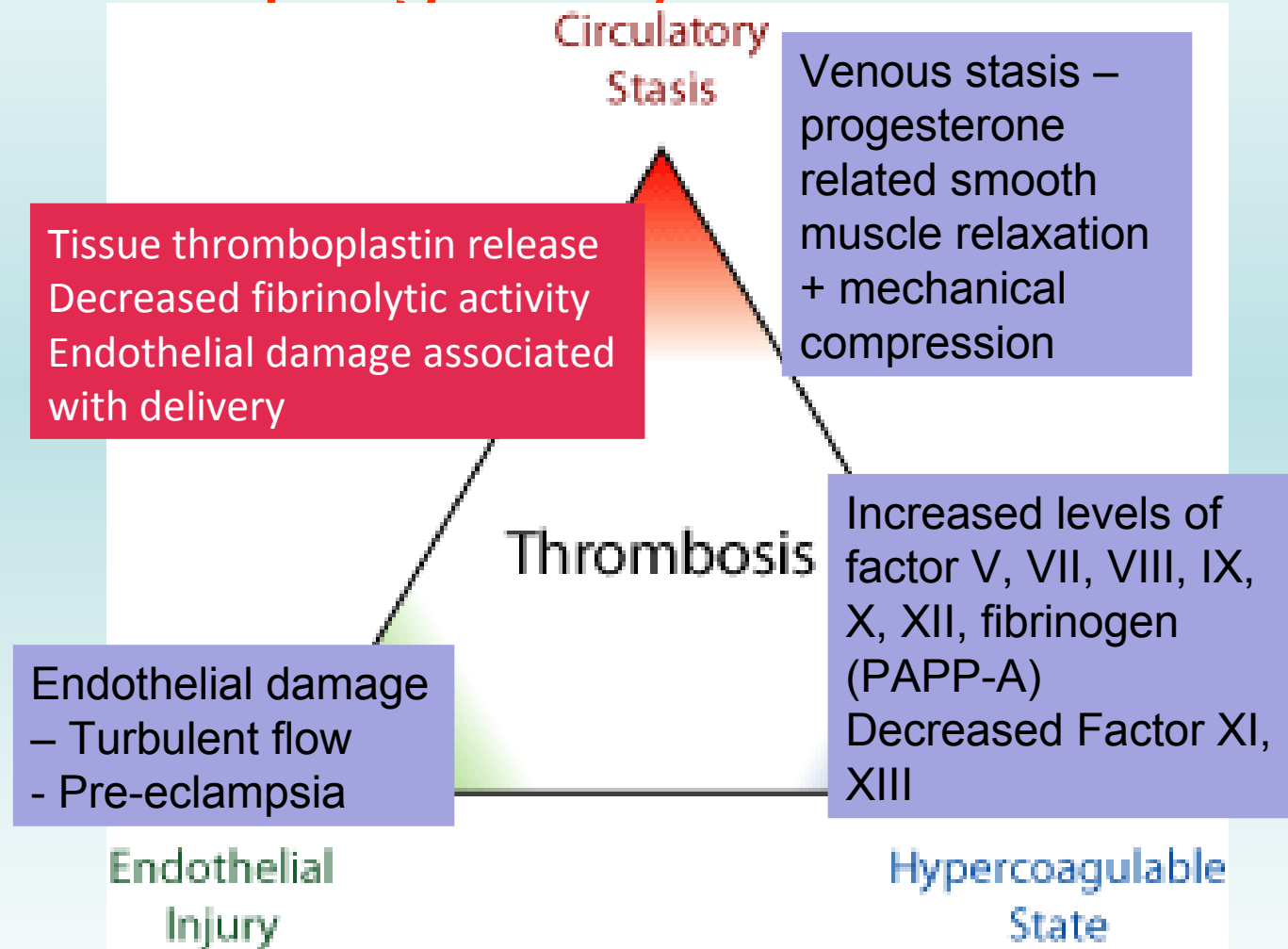
- Think of undiagnosed congenital heart disease or RhD in immigrant population
- Take severe chest pain seriously – think MI or dissection
- Generally regurgitant valve lesions are well tolerated but stenotic valves are not
- I am always happy to see women urgently through my rapid access clinic.

VTE

Haemostasis in pregnancy

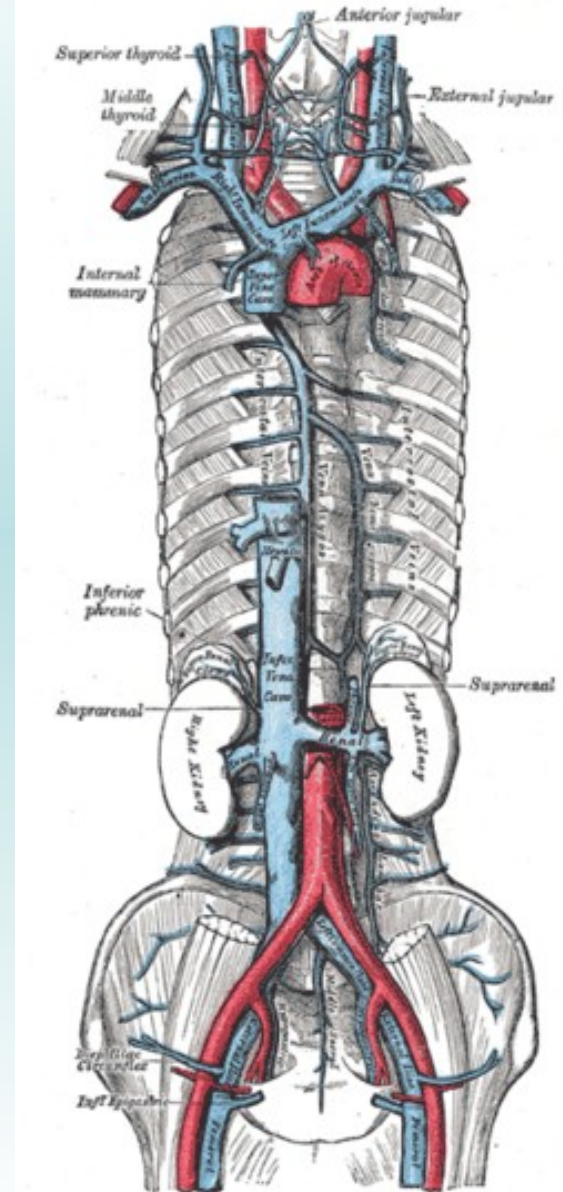


Rudolph Virchow



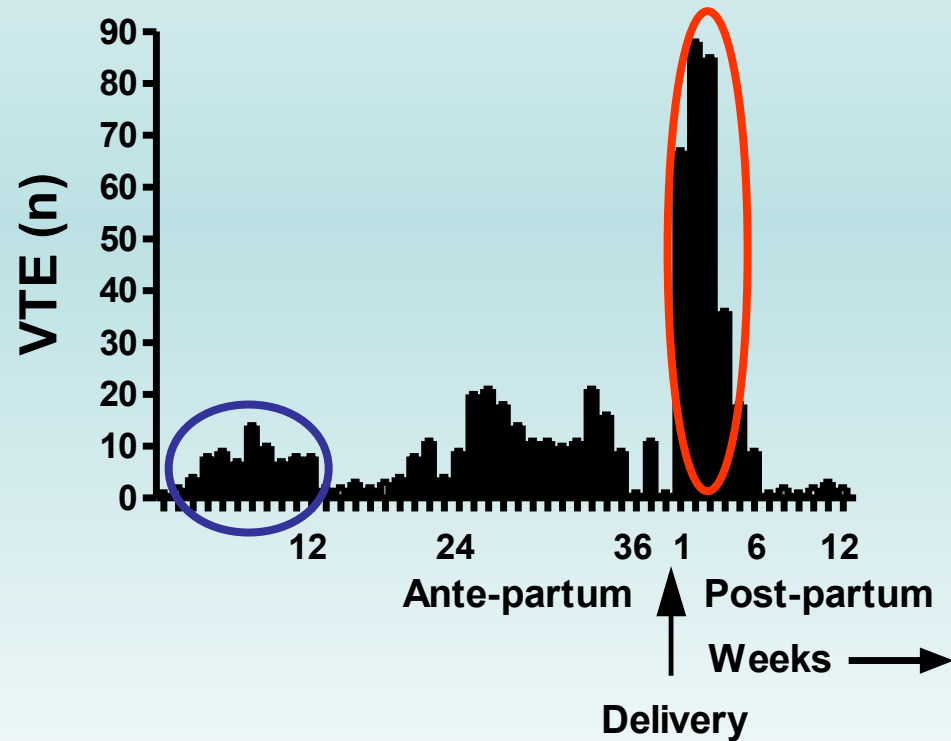
Deep Vein Thrombosis

- 85% on left
(vs. 55% in non pregnant)
- 72% ilio-femoral
(vs. 9% in non pregnant)



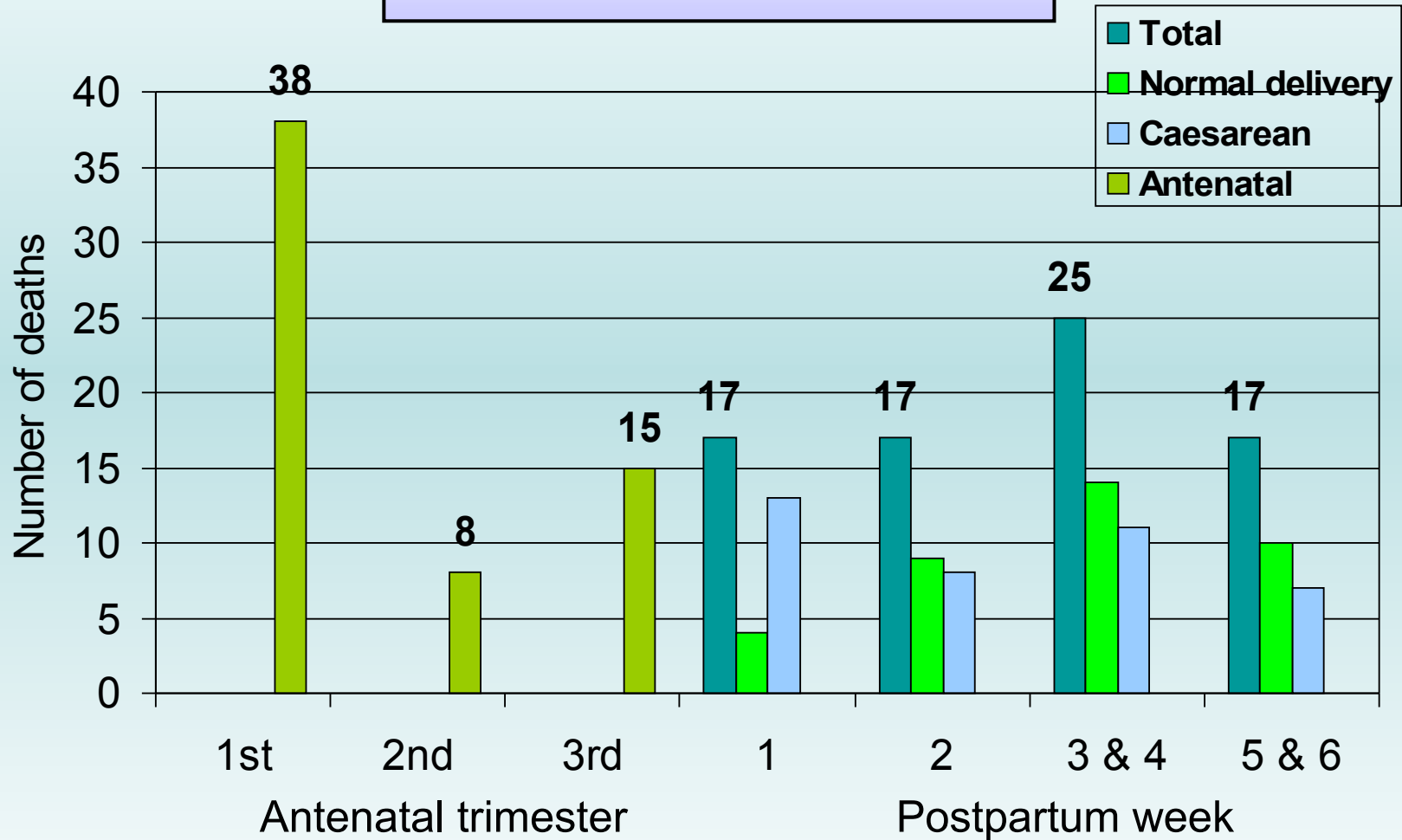
Incidence and distribution of VTE in pregnancy and puerperium

1 VT per 1000
pregnancies

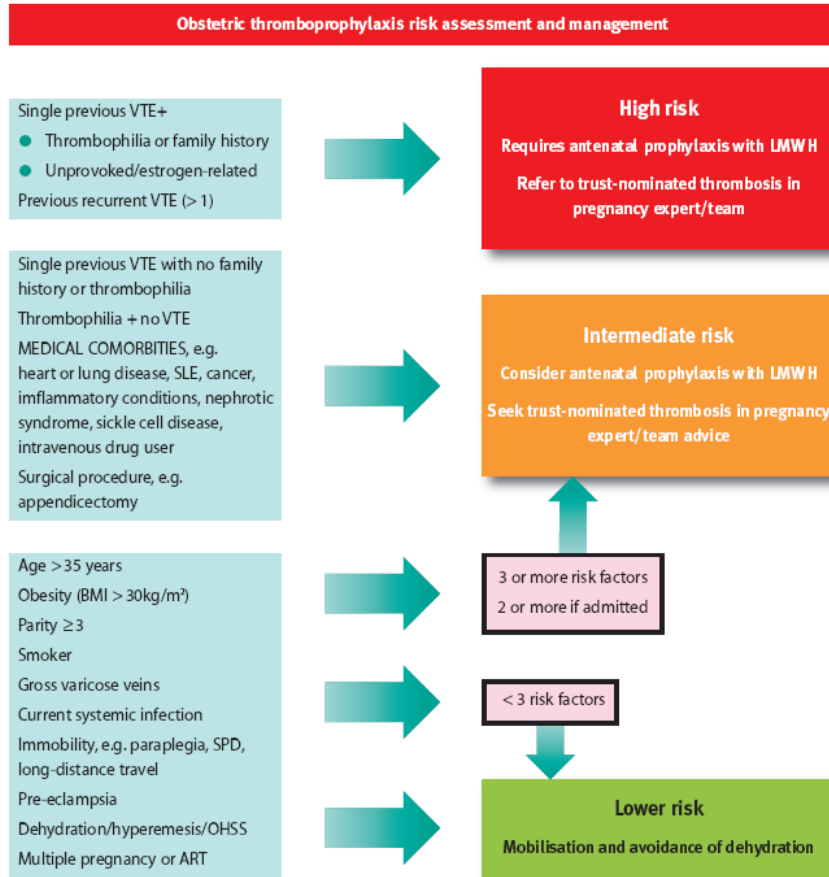




Fatal Maternal PE 1994-2008



Antenatal assessment and management (to be assessed at booking and repeated if admitted)

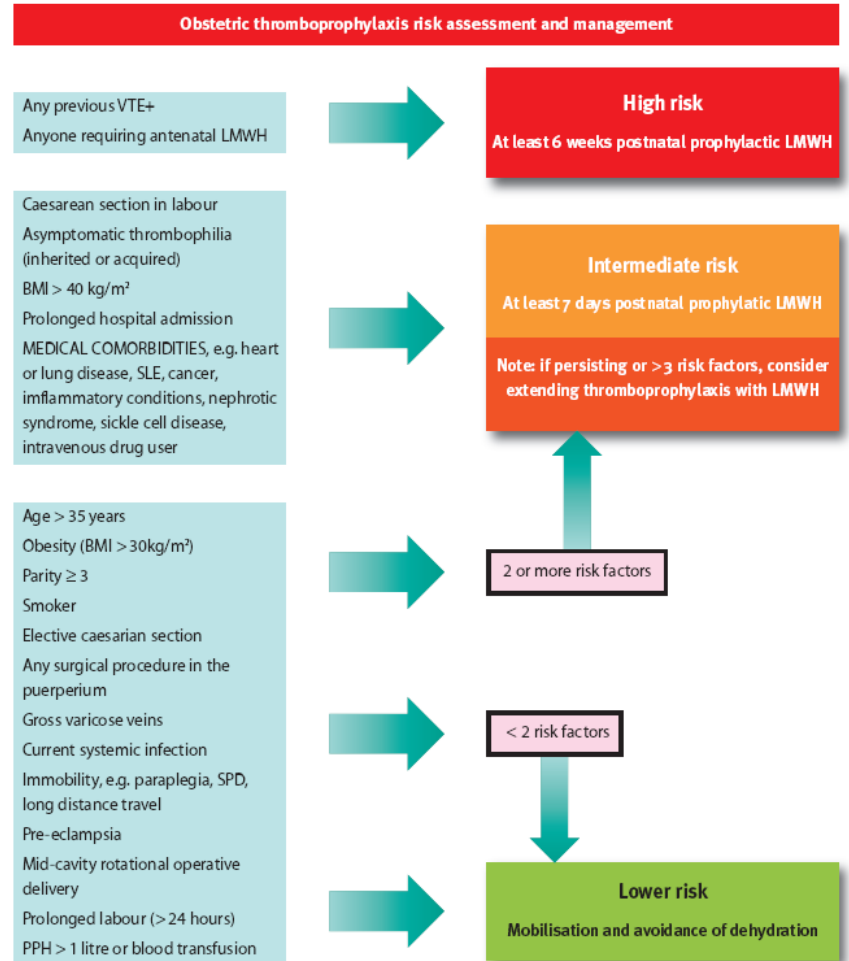


Antenatal and postnatal prophylactic dose of LMWH

Weight < 50 kg = 20 mg enoxaparin/2500 units dalteparin/3500 units tinzaparin daily
 Weight 50–90 kg = 40 mg enoxaparin/5000 units dalteparin/7000 units tinzaparin daily
 Weight 91–130 kg = 60 mg enoxaparin/7500 units dalteparin/10000 units tinzaparin daily
 Weight 131–170 kg = 80 mg enoxaparin/10000 units dalteparin/14000 units tinzaparin daily
 Weight > 170 kg = 0.6 mg/kg/day enoxaparin; 75 units/kg/day dalteparin/75 units/kg/day tinzaparin

Key
 ART = assisted reproductive therapy, BMI = body mass index (based on booking weight), gross varicose veins = symptomatic, above the knee or associated with phlebitis/oedema/skin changes, immobility = ≥ 3 days, LMWH = low-molecular-weight heparin, OHSS = ovarian hyperstimulation syndrome, PPH = postpartum haemorrhage, SLE = systemic lupus erythematosus, SPD = symphysis pubis dysfunction with reduced mobility, thrombophilia = inherited or acquired, long-distance travel = > 4 hours, VTE = venous thromboembolism

Postnatal assessment and management (to be assessed on delivery suite)

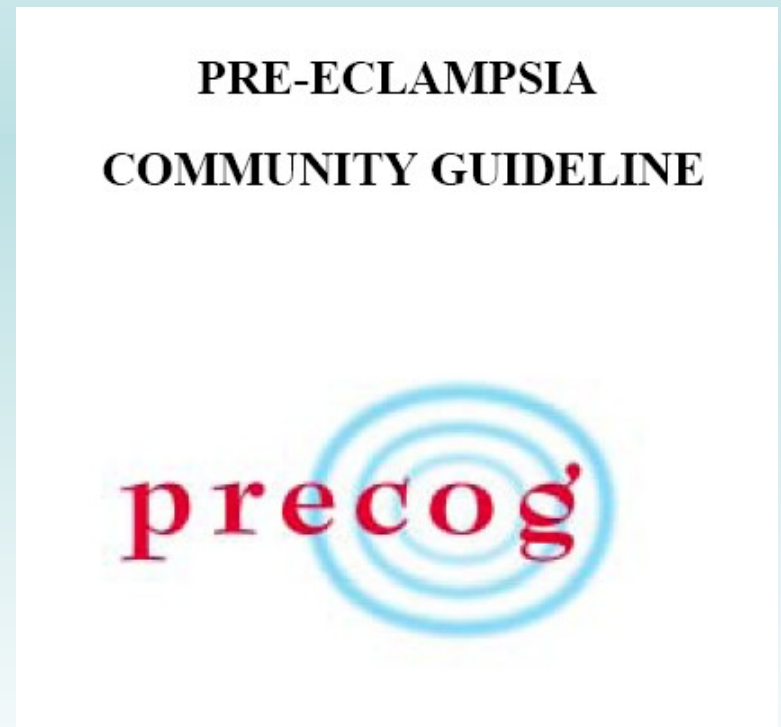


Key

ART = assisted reproductive therapy, BMI = body mass index (based on booking weight), gross varicose veins = symptomatic, above the knee or associated with phlebitis/oedema/skin changes, immobility = ≥ 3 days, LMWH = low-molecular-weight heparin, OHSS = ovarian hyperstimulation syndrome, PPH = postpartum haemorrhage, SLE = systemic lupus erythematosus, SPD = symphysis pubis dysfunction with reduced mobility, thrombophilia = inherited or acquired, long-distance travel = > 4 hours, VTE = venous thromboembolism

Hypertension

- When to refer to secondary care
- Pre-eclampsia
Community Guidelines



PRECOG

- Framework for antenatal care in the community
 - Risk factor stratification
 - Identification of appropriate care pathway
 - Guidelines for referral to secondary care
 - Guidelines for BP and proteinuria measurement

- **New onset Hypertension**
($\geq 160/100\text{mmHg}$ or $\geq 150/100\text{mmHg}$ + symptoms)
- **New onset Hypertension and Proteinuria**
($\geq 140/90\text{mmHg}$ & $\geq +1$ proteinuria)
- **New onset lone proteinuria**
($\geq +2$ or $+1$ proteinuria & symptoms)
- **Maternal sign/symptoms**
(epigastric pain, vomiting, headache, visual disturbance)
- **Fetal signs/symptoms** (reduced fetal movements, SGA)

Diastolic BP ≥ 90 and $< 100\text{mmHg}$	Refer to	
Diastolic BP ≥ 90 and $< 100\text{mmHg}$	Refer for same day hospital step-up	

When to treat?

What to treat with?

Hypertension in pregnancy: the management of hypertensive disorders during pregnancy

August 2010

NICE Clinical Guideline



National Collaborating Centre for
Women's and Children's Health

Management of Gestational Hypertension

Degree of hypertension	Mild hypertension (140/90 to 149/99 mmHg)	Moderate hypertension (150/100 to 159/109 mmHg)	Severe hypertension (160/110 mmHg or higher)
Admit to hospital	No	No	Yes (until blood pressure is 159/109 mmHg or lower)
Treat	No	With oral labetalol [†] as first-line treatment to keep: <ul style="list-style-type: none"> • diastolic blood pressure between 80–100 mmHg • systolic blood pressure less than 150 mmHg 	With oral labetalol [†] as first-line treatment to keep: <ul style="list-style-type: none"> • diastolic blood pressure between 80–100 mmHg • systolic blood pressure less than 150 mmHg
Measure blood pressure	Not more than once a week	At least twice a week	At least four times a day
Test for proteinuria	At each visit using automated reagent-strip reading device or urinary protein : creatinine ratio	At each visit using automated reagent-strip reading device or urinary protein : creatinine ratio	Daily using automated reagent-strip reading device or urinary protein : creatinine ratio
Blood tests	Only those for routine antenatal care	Test kidney function, electrolytes, full blood count, transaminases, bilirubin Do not carry out further blood tests if no proteinuria at subsequent visits	Test at presentation and then monitor weekly: <ul style="list-style-type: none"> • kidney function, electrolytes, full blood count, transaminases, bilirubin

Degree of hypertension	Mild hypertension (140/90 to 149/99 mmHg)	Moderate hypertension (150/100 to 159/109 mmHg)	Severe hypertension (160/110 mmHg or higher)
Admit to hospital	Yes	Yes	Yes
Treat	No	With oral labetalol [†] as first-line treatment to keep: <ul style="list-style-type: none"> • diastolic blood pressure between 80–100 mmHg • systolic blood pressure less than 150 mmHg 	With oral labetalol [†] as first-line treatment to keep: <ul style="list-style-type: none"> • diastolic blood pressure between 80–100 mmHg • systolic blood pressure less than 150 mmHg
Measure blood pressure	At least four times a day	At least four times a day	More than four times a day, depending on clinical circumstances
Test for proteinuria	Do not repeat quantification of proteinuria	Do not repeat quantification of proteinuria	Do not repeat quantification of proteinuria
Blood tests	Monitor using the following tests twice a week: kidney function, electrolytes, full blood count, transaminases, bilirubin	Monitor using the following tests three times a week: kidney function, electrolytes, full blood count, transaminases, bilirubin	Monitor using the following tests three times a week: kidney function, electrolytes, full blood count, transaminases, bilirubin

When to treat?

- Definitely $\geq 160/110$ mmHg
- Usually $\geq 150/100$ mmHg
- Especially if
 - Likely rapid progression of hypertension
 - Known chronic hypertension
 - Large difference between booking BP and new onset hypertension

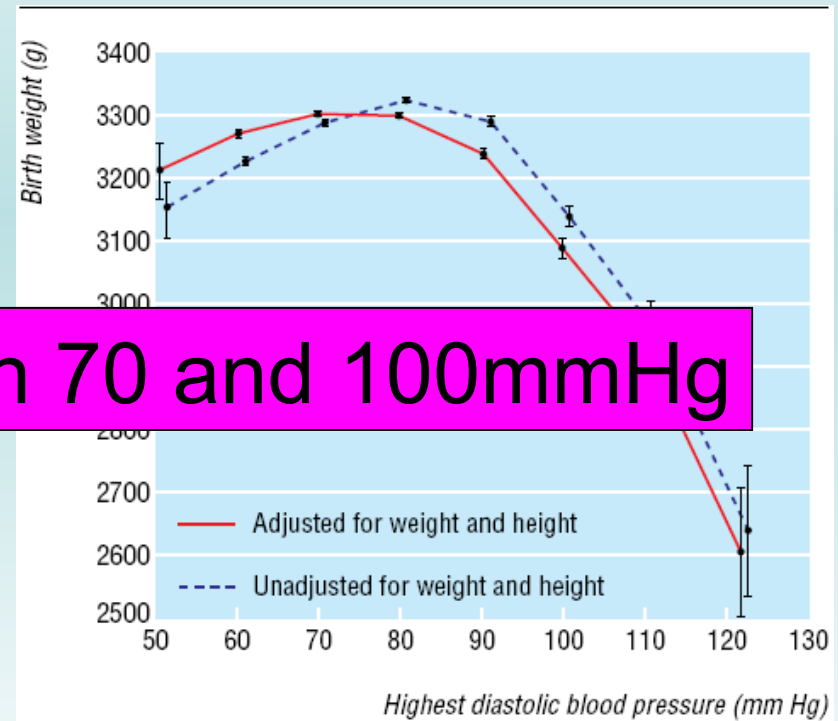
How low should you go?

- Risk of placental hypoperfusion

Meta analysis of RCTs of hypertensives used in late onset PIH

Aim for diastolic between 70 and 100mmHg

A drop in MAP of 10 mmHg associated with a reduction in birthweight of 145g



What to treat with

Agent	Receptor	Dose Range	Side Effects	Contra-indications
Methyl-dopa	Central action	250mg – 3 g tds	GI disturbance, dry mouth, headache, dizziness, low mood, sedation, stomatitis, bradycardia	Liver disease, depression, pheochromocytoma
Nifedipine	Calcium Channel antagonist	20-90mg od SR or 10-40mg bd MR	Headache, flushing, dizziness, lethargy, tachycardia, palpitations, ankle oedema, rash, nausea, visual disturbance	Aortic stenosis, Aortic Coarctation, Liver disease
Labetalol	α - and β -adrenoreceptors	200-1600mg tds	Bradycardia, brochospasm, GI disturbance, fatigue, scalp tingling	Asthma, pheochromocytoma

Pre-eclampsia and CVS disease

- After PET women have an increased risk of vascular disease

Disease	Weighted mean f/up (yrs)	RR (95%CI)	Absolute risk at time of f/up (%)
Hypertension	14.1	3.7 (2.7 to 5.05)	21.9
Ischaemic Heart Disease	11.7	2.16(1.86 to 2.25)	0.2
Stroke	10.4	1.81 (1.45 to 2.27)	0.2
VTE	4.7	1.79 (1.37 to 2.33)	0.3

- Dose response relationship (severe BP, early onset PET)

CVD risk factors & Pre-Eclampsia

- 3494 women, 133 (3.8%) had PET
- Adjusted for smoking, previous PET, parity, maternal age, education, socioeconomic position, time between baseline and delivery
- Increased incidence of:
 - higher waist circumference comparing $<67\text{cm}$ & $>83\text{cm}$
(OR=2.2, 95%CI 1.2-3.8)
 - Systolic BP comparing BP $< 111\text{mmHg}$ & $> 130\text{mmHg}$
(OR=7.3, 95%CI 3.1-17.2)
 - Diastolic BP comparing $<64\text{mmHg}$ & $> 78\text{mmHg}$
(OR=6.5, 95%CI 2.9-14.6)
 - Non-fasting total cholesterol

CVS disease and PET

- Women with pre-existing hypertension, obesity, high cholesterol are more likely to develop pre-eclampsia.
- Women who have had pre-eclampsia are more likely to develop CVS disease in later life.
- Rather than causative, PET and CVD may have a shared aetiology.

Magnitude of the risk for CVD in women with Hx PET is similar to dyslipidaemia

Prevention

Advise women at high risk or with > 1 moderate risk factor to take 75 mg of aspirin od from 12 weeks until the birth of the baby.

HIGH RISK

- hypertensive disease during a previous pregnancy
- chronic kidney disease
- autoimmune disease such as SLE or APS
- type 1 or type 2 diabetes
- chronic hypertension.

MODERATE RISK

- 1st pregnancy
- > 39 years old
- Pregnancy interval >10 yrs
- BMI >35
- FHx PET
- Multiple pregnancy

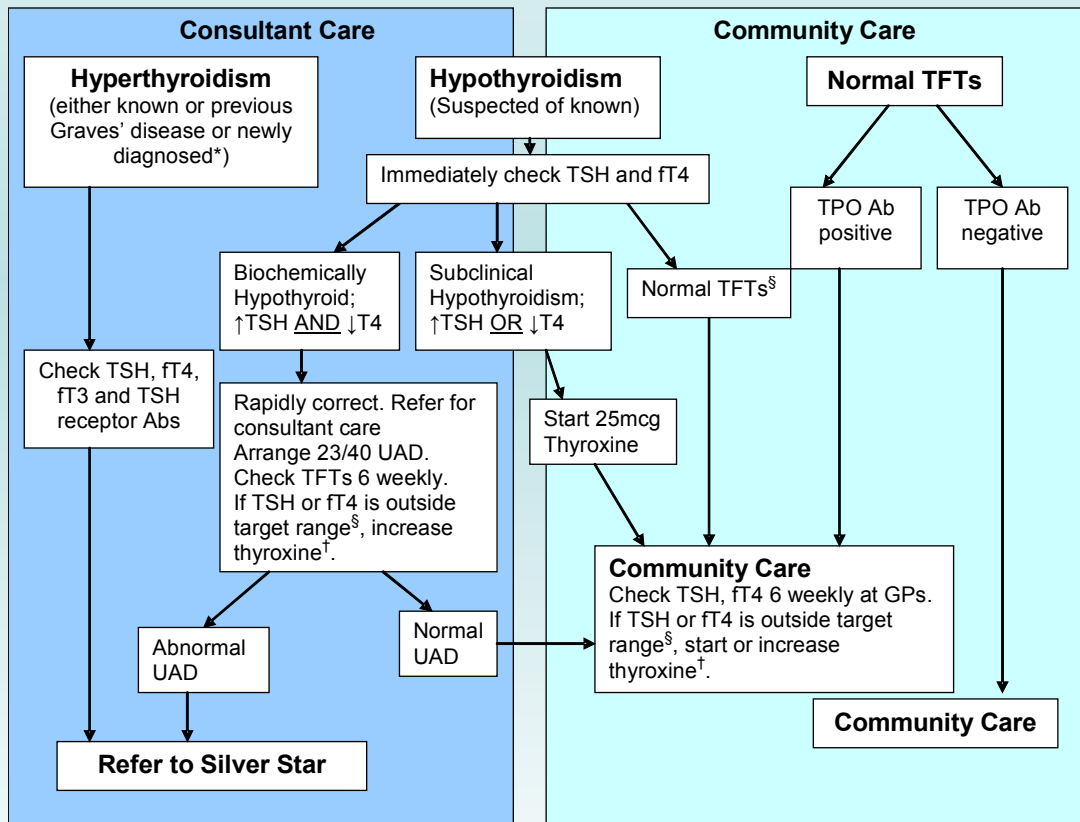
High dose - Folic Acid (5mg)

- Any one on anti-convulsants
- All diabetics (type 1 and 2)
- Sickle Cell (Hb SS, Hb SC)
- Those taking methotrexate within the last 6 months
- Those taking sulphasalazine
- Terminal ileal disease e.g. Crohn's or Coeliac
- Those with demonstrated deficiency
- Obesity, BMI > 30 kg/m²

New Guidelines

- Thyroid disorders
- Anaemia
- Vitamin D
- thrombocytopenia

- Screening for Thyroid Disease – test TSH, fT4 and TPO Ab**
- Past personal history of thyroid disease
 - Clinical suspicion of thyroid disease
 - Personal history of other autoimmune disease
 - Personal history of head or neck irradiation
 - Personal history of pituitary disease
 - Personal history of infertility
 - Personal history of recurrent miscarriage (> 3)
 - Personal history of type 1 or type 2 or gestational diabetes mellitus
 - >1 first degree relative with thyroid disease



- Different reference range in pregnancy
- Check fT4 and TSH and adjust if either are outside the ref range

*gestational (transient) thyrotoxicosis should be excluded

[†]recheck TFTs 4 weeks after a change in dose

[§] as per pregnancy specific range, see attached "Thyroid Disease in Pregnancy – Referral and Management"

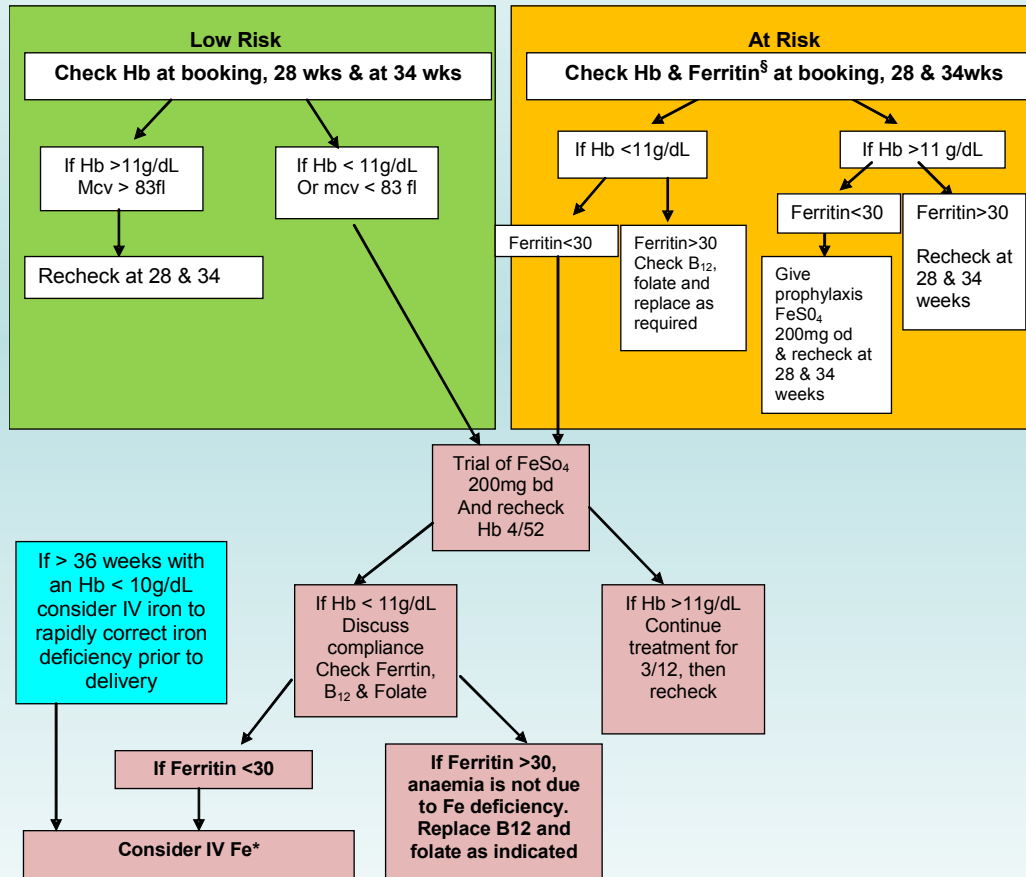
Normal Values for Thyroid Function Tests During Pregnancy

Test	Non-Pregnant	1 st Trimester	2 nd Trimester	3 rd Trimester
Free T4 (pmol/L)	9-26	10-16	9-15.5	8-14.5
Free T3 (pmol/L)	2.6-5.7	3-7	3-5.5	2.5-5.5
TSH (mu/L)	0.3-4.2	0-5.5	0.5-3.5	0.5-4

Antenatal Management of Anaemia

At risk groups

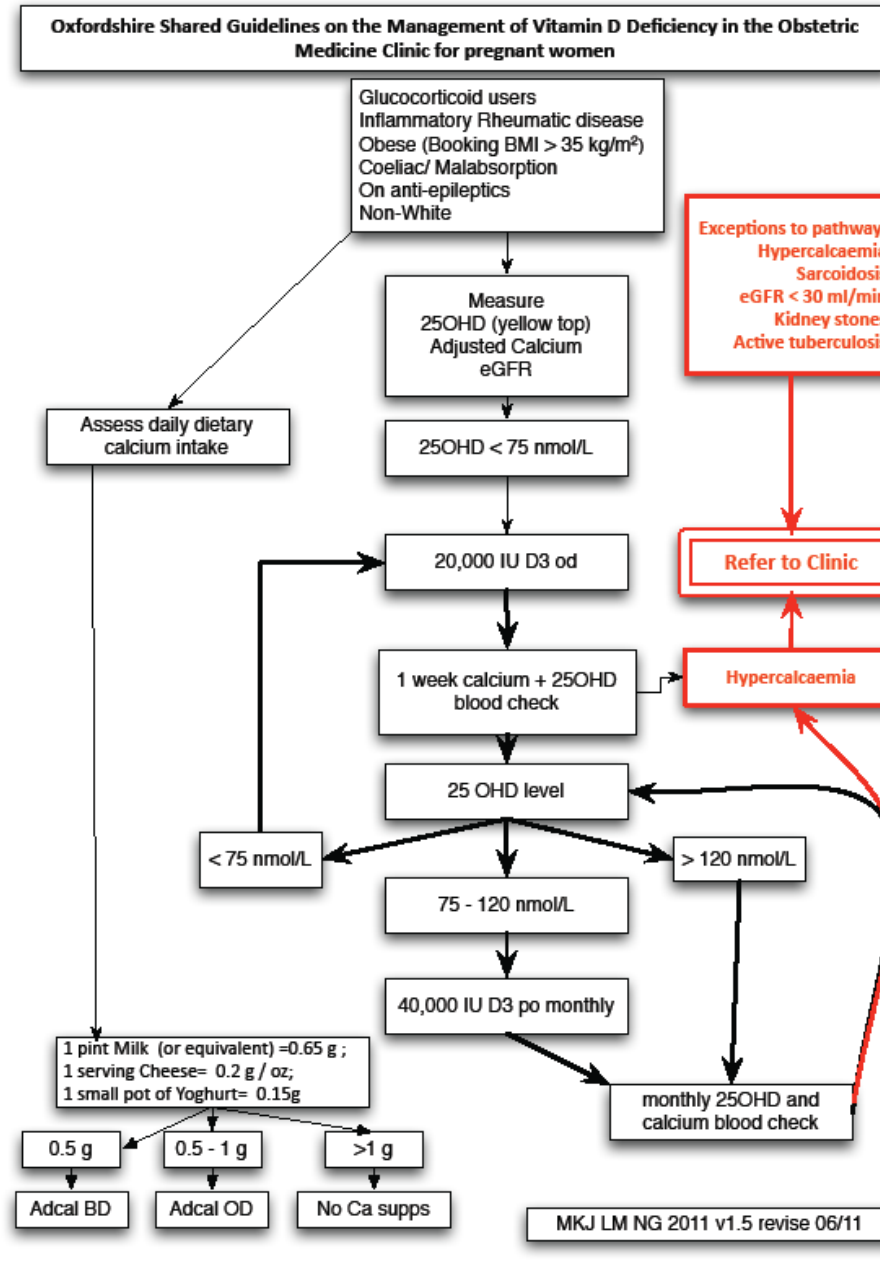
Haemoglobinopathies (Sickle Cell, α and β thalassaemia trait)
 Known anaemia (iron, folate or B₁₂ deficiency)
 Non – absorbers (IBD, previous gastric surgery, celiac disease)
 Increased requirement (multiple pregnancy, age < 20, last pregnancy < 1 year ago)
 Bleeding risk – previous PPH, Jehovah's Witness, placenta previa



Better targeting of women and treating with early oral supplements will hopefully reduce number of Women receiving IV Fe

*Dose based on ideal body weight aiming for an Hb 11.5g/dL. Do not give oral iron post dose but recheck Hb and Ferritin 2-4 weeks post infusion

§ Ferritin is the most sensitive marker for iron stores, there is no need to check iron, transferrin or TIBC



• I am just about to start trialling this in my clinic

• ?Issue with funding supps in the Community

• Calcium calculator

http://www.osteoporosis.ca/index.php/ci_id/5355/la_id/1.htm



GPs still handing out antidepressants linked to birth defects

Sophie Borland
August 8th 2009

Drug Treatment for Depression

- Tricyclics are safe: not teratogenic
- All SSRIs; risk of cardiac defects is small 0.5% - 1%. risk of neonatal withdrawal and pulmonary hypertension.
- BUT stopping confers a higher risk of developing new episode of affective disorder postnatally
- Sertraline is my preferred antidepressant
- Stop antidepressants at your (and your patients') peril in those with severe depression

Guidelines to come

- Thrombocytopenia
 - Depression
 - Any others?
-
- Other initiatives in the community...?
 - What are we going to do about GTTs?

Patient Information Leaflets

- Thromboprophylaxis
- ?Epilepsy
- Diabetes
- Hypertension
- Other suggestions for patients leaflets or guidelines?

Conclusion

- Increasing proportion of maternal deaths in the UK being due to indirect causes and substandard care identified in increasing numbers
- Increasing prevalence of medical conditions in the obstetric population
- **Need for more obstetric medicine training for GPs, physicians and obstetricians**

Education

- I teach GP, Haematology, Renal, Endocrinology, General Medicine, and Obstetrics and midwifery trainees
- Musculoskeletal Medicine and Pregnancy – July 2012
- International Society of Obstetric Medicine
- ?regular study day for GPs/other disciplines of medicine?



6th International Scientific Meeting of ISOM

Saturday & Sunday 7th & 8th July 2012
at Keble College, Oxford, UK



To register your interest contact info@isom2012.org

Pre-pregnancy counselling

- **Hypertensive disorders**, pre-existing hypertension, previous eclampsia/pre-eclampsia or HELLP syndrome
- **Cardiac**, e.g. valvular disease, congenital heart disease, arrhythmias, cardiomyopathy, ischaemic heart disease
- **Renal**, e.g. chronic renal failure of any cause, renal transplant, reflux nephritis
- **Respiratory**, e.g. asthma, cystic fibrosis, sarcoidosis
- **Rheumatological/Connective tissue disease**, e.g. rheumatoid arthritis, SLE, antiphospholipid syndrome, Marfan's syndrome, Ehlers Danlos syndrome
- **Hepatic**, e.g. viral hepatitis, primary biliary cirrhosis, primary sclerosing Cholangitis, previous obstetric cholestasis or acute fatty liver of pregnancy
- **Gastrointestinal**, e.g. inflammatory bowel disease, previous hyperemesis gravidarum.
- **Haematological**, e.g. venous thromboembolism, sickle cell disease, immune thrombocytopenic purpura, thrombotic thrombocytopenic purpura, haemophilia
- **Endocrine**, e.g. diabetes with any other medical condition, thyroid disease, pituitary disease, parathyroid disease, adrenal disease
- **Neurological**, e.g. epilepsy, multiple sclerosis, migraines, cerebrovascular accident, myasthenia gravis, idiopathic/benign intracranial hypertension.
- **High BMI**: BMI > 40 or a BMI > 30 AND co-morbidities e.g. hypertension

Thank you



lucy.mackillop@orh.nhs.uk



One night President Obama and his wife Michelle decided to do something out of routine and go for a casual dinner at a restaurant that wasn't too luxurious. When they were seated, the owner of the restaurant asked the president's secret service if he could please speak to the First Lady in private. They obliged and Michelle had a conversation with the owner. Following this conversation President Obama asked Michelle, "Why was he so interested in talking to you." She mentioned that in her teenage years, he had been madly in love with her. President Obama then said, "So if you had married him, you would now be the owner of this lovely restaurant," to which Michelle responded, "No. If I had married him, he would now be the President."



No. 1286
15 April -
28 April 2011
£1.50

PRIVATE EYE

CAMERON AND CLEGG - NEW NHS CRISIS

