Acquired heart disease and pregnancy

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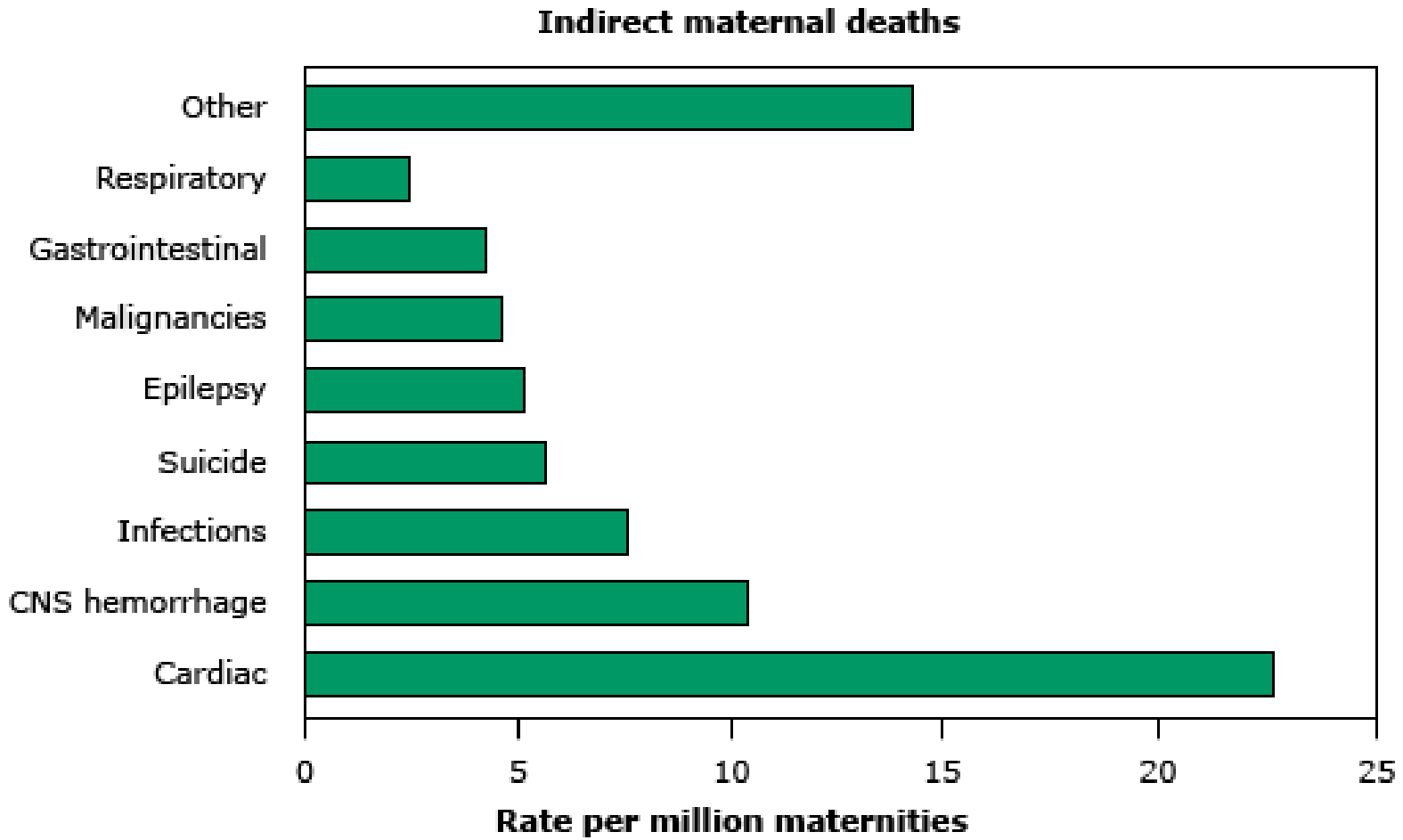
TABRIZ UNIVERSITY OF MEDICAL SCIENCES

Acquired heart disease and pregnancy learning objectives:

- Recognize the contraindications to pregnancy for patients with heart disease
- Outcome of pregnancies with acqiured heart disease
- Select the appropriate treatment strategies for patients with acquiered heart disease in pregnancy

Causes of maternal death in the UK



PREGNANCY & HEART DISEASE

Problems

- Symptoms and signs of a normal pregnancy may suggest presence of cardiac disease
- Pregnancy may exacerbate pre - existing cardiac disease
- Cardiac disease may manifest for the first time in pregnancy

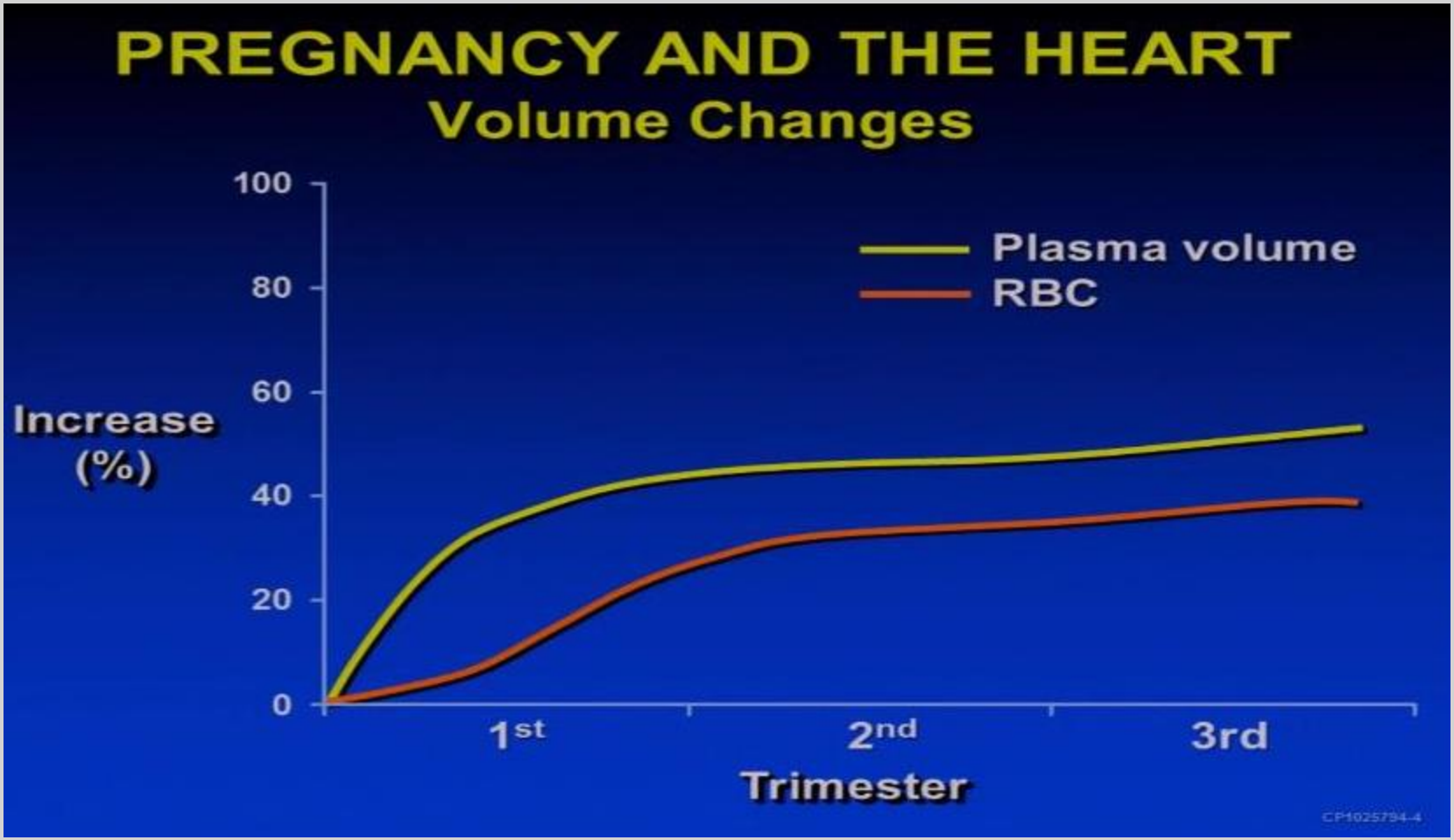
Acquired heart disease and pregnancy

- Rheumatic heart disease still predominates in developing countries
- Congenital heart disease is now the most common form of heart disease complicating pregnancy in the United States
- Many women are postponing childbearing until the 4-5 decades of life / HTN, DM, and hypercholesterolemia become more common and increase the incidence of acquired heart disease complicating pregnancy.

PRE – CONCEPTION COUNSELING

- Provide accurate a prognosis as possible for mother & baby ; give account of potl hazards Whether risks will change with time or Rx
- Risk stratification – organize ante-partum care outline principles CV follow-up & plan
- Intro to high risk OB & discuss location, timing & mode of delivery
- Alternative options : adoption, surrogacy
- Contraception *

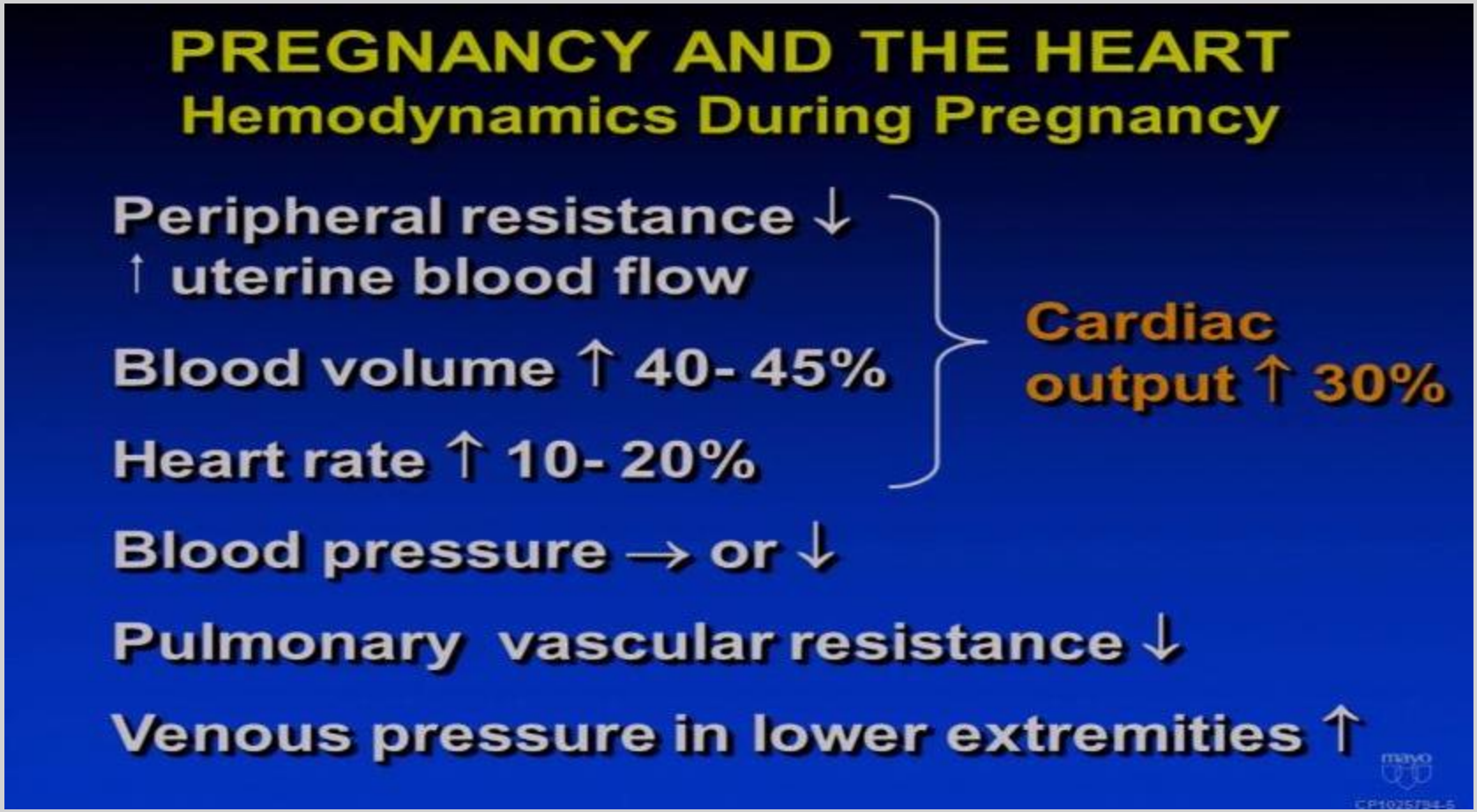
PHYSIOLOGY OF NORMAL PREGNANCY



PREGNANCY & HT DISEASE : Drugs

Relatively safe	Not safe
Digoxin	Amiodarone
Propafenone	ACE inhibitors, ARB's
Flecainide	Spironolactone
Ca channel blockers	Coumadin *
β blockers	Apixaban
Sotalol	Statins
Adenosine	Folic acid antagonists
Hydralazine	Bosentan, Ambrisentan

PHYSIOLOGY OF NORMAL PREGNANCY



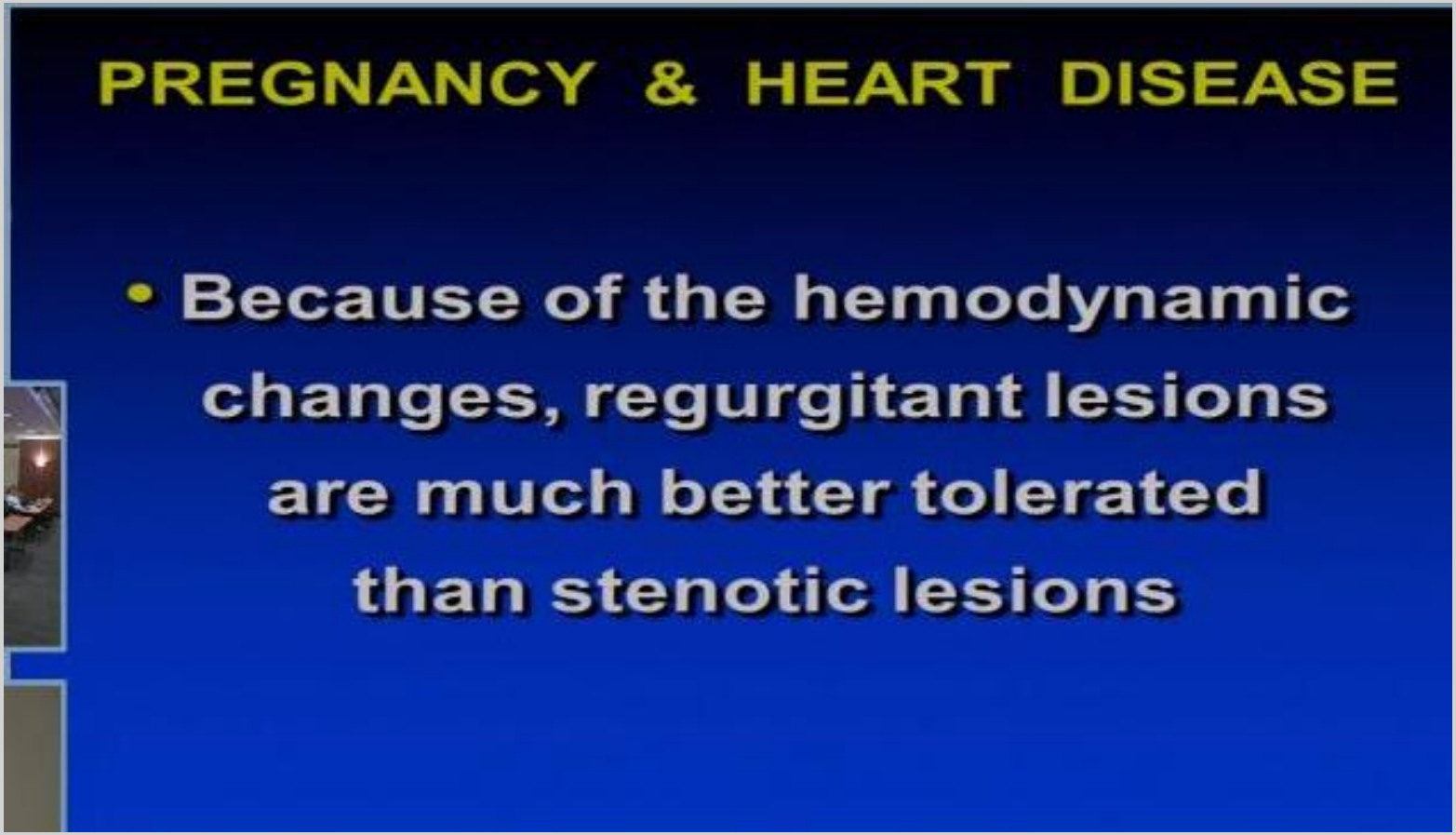
MODIFIED WHO CLASSIFICATION

Risk class	Risk by medical condition
I	No ↑ risk maternal mortality & no/mild ↑ morbidity
II	Small ↑ risk maternal mortality or mod ↑ morbidity
III	Sig ↑ risk maternal mortality or severe morbidity Expert counseling required. If pgy – expert care
IV	Extremely high risk maternal mortality, morbidity Pgy contraindicated. If pgy , discuss termination

PREGNANCY RISK WHO IV

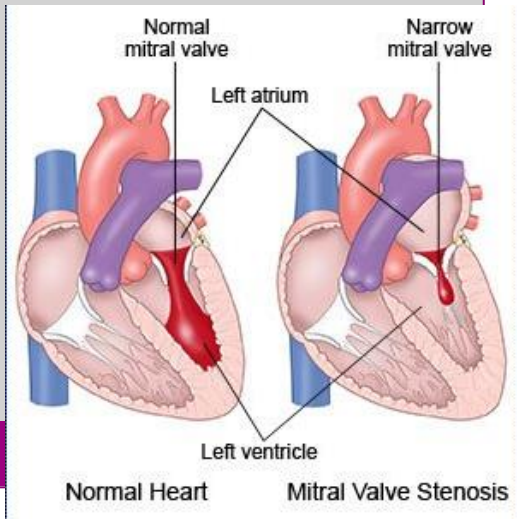
- PAH of any cause
- Severe systemic ventricular dysfunction
  LVEF < 30% , NYHA III – IV
- Prior peripartum CM & residual ⬇ LV function
- Severe MS, severe symptomatic AS
- Marfan with aorta > 45 mm
- Aorta > 50 mm + bicuspid aortic valve
- Native severe coarctation

Valve disease



Mitral stenosis

- The most common cause of MS among women of childbearing age is rheumatic heart disease
- moderate to severe MS, the increased cardiac output and heart rate (decreased diastolic filling time) associated with pregnancy can result in increases in LA pressure leading to complications, including AF & pulmonary edema



Mitral stenosis

Valvular heart disease
Original research

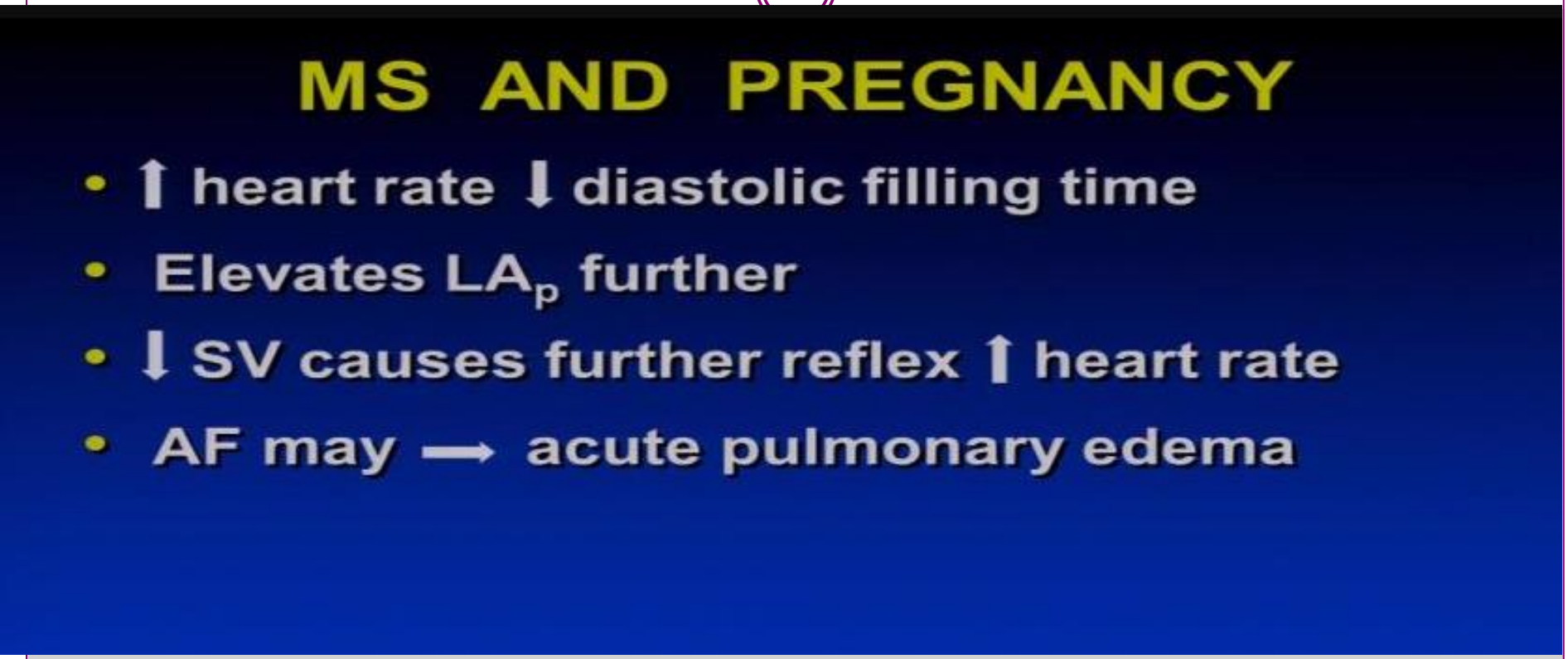
Pregnancy outcomes in women with significant valve disease: a systematic review and meta-analysis

Robin Alexandra Ducas [1, 2], David A Javier [2], Rohan D'Souza [3], Candice K Silversides [2, 4], Wendy Tsang [2]

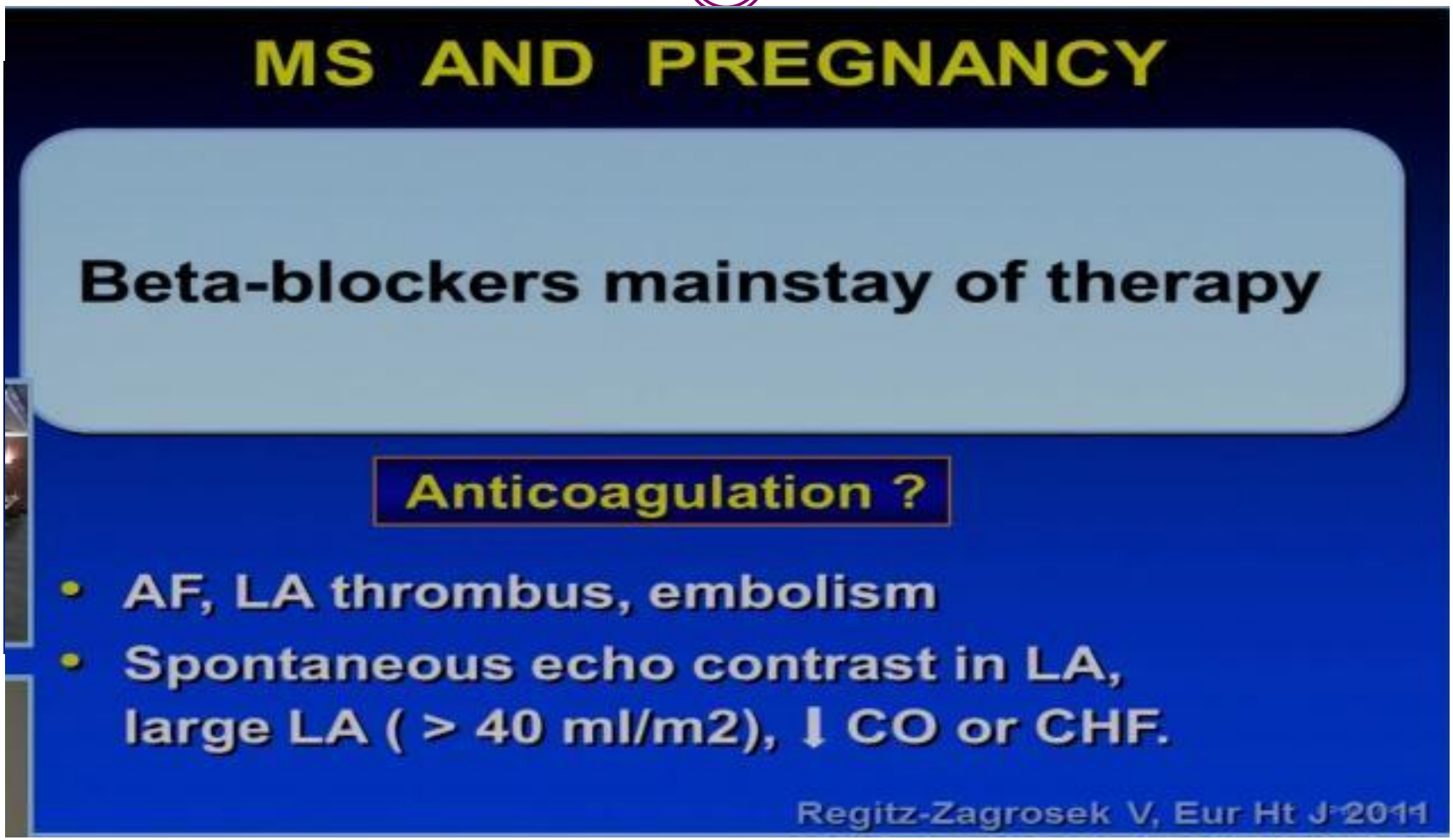
Correspondence to Wendy Tsang, Cardiology, University of Toronto, Toronto, ON M5G 2C4, Canada; wendy.tsang@uhn.ca

- Rates of pulmonary edema and new or recurrent arrhythmias were 37 and 16 % for women with severe MS & 18 and 5 % for women with moderate aortic stenosis.

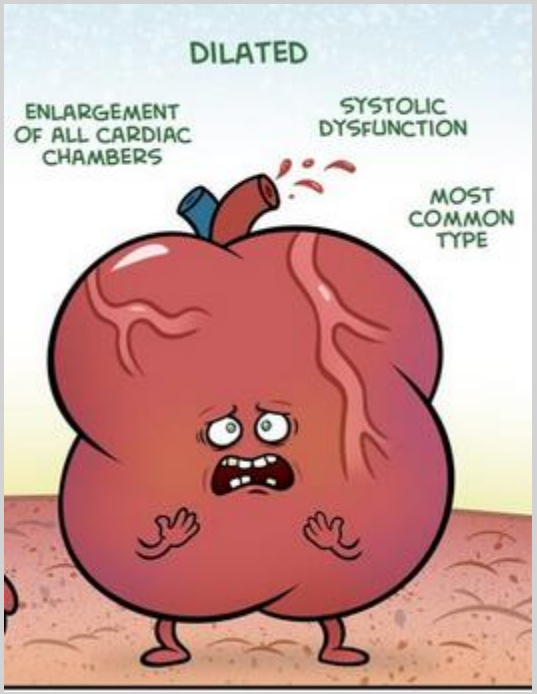
Mitral stenosis



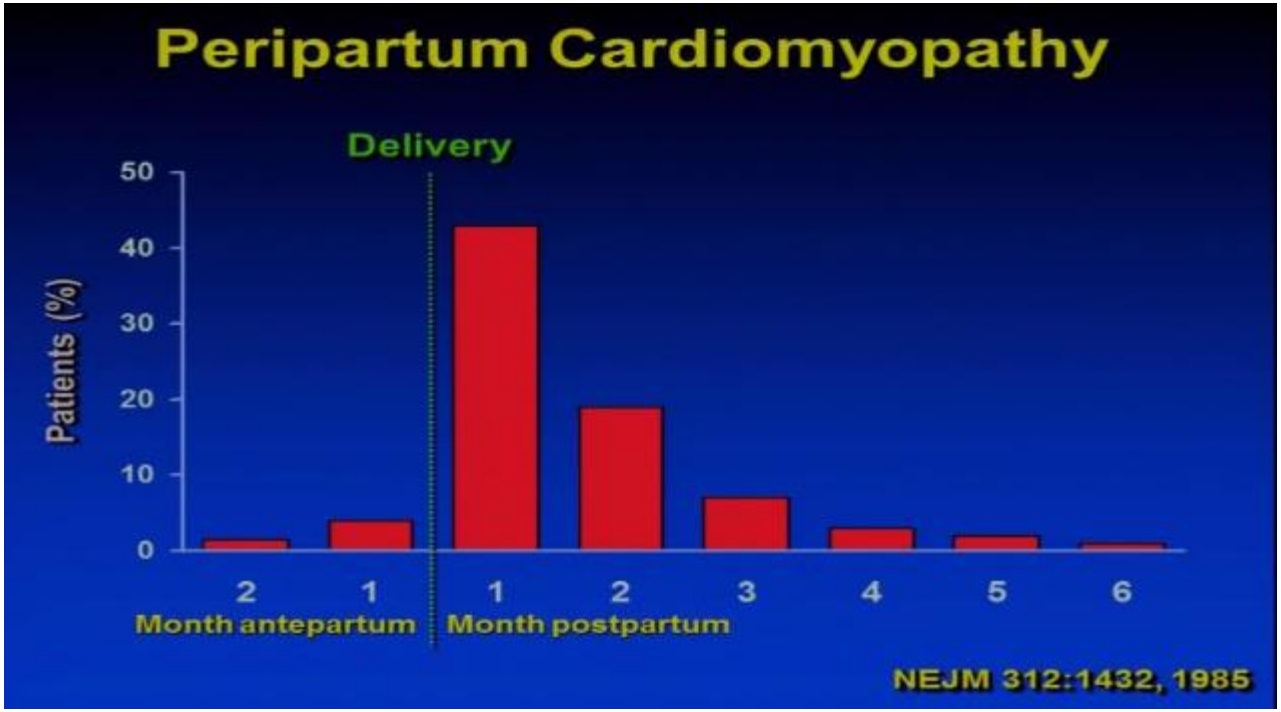
Mitral stenosis



Peripartum cardiomyopathy



CARDIOMYOPATHY

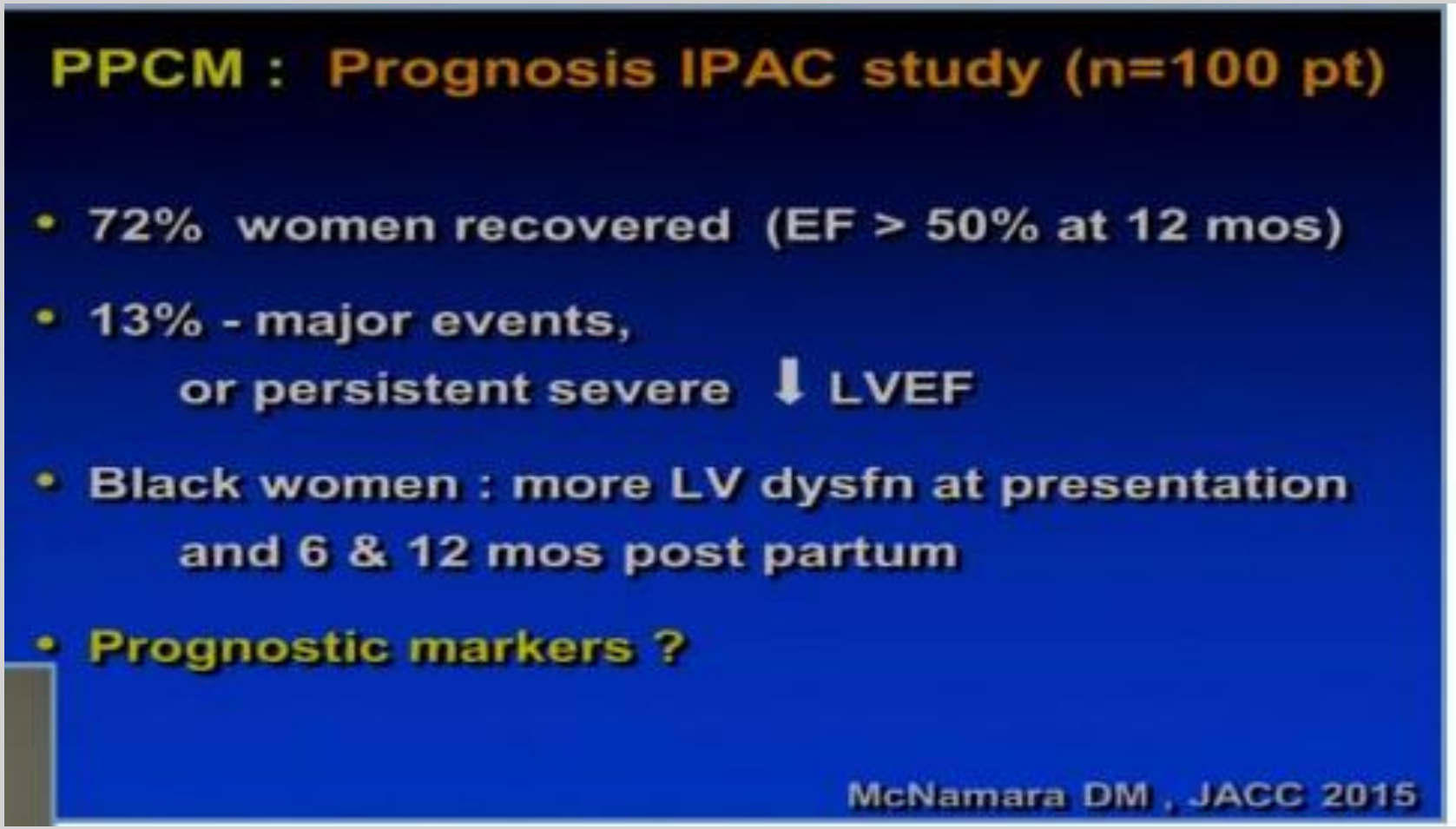


Cardiomyopathy

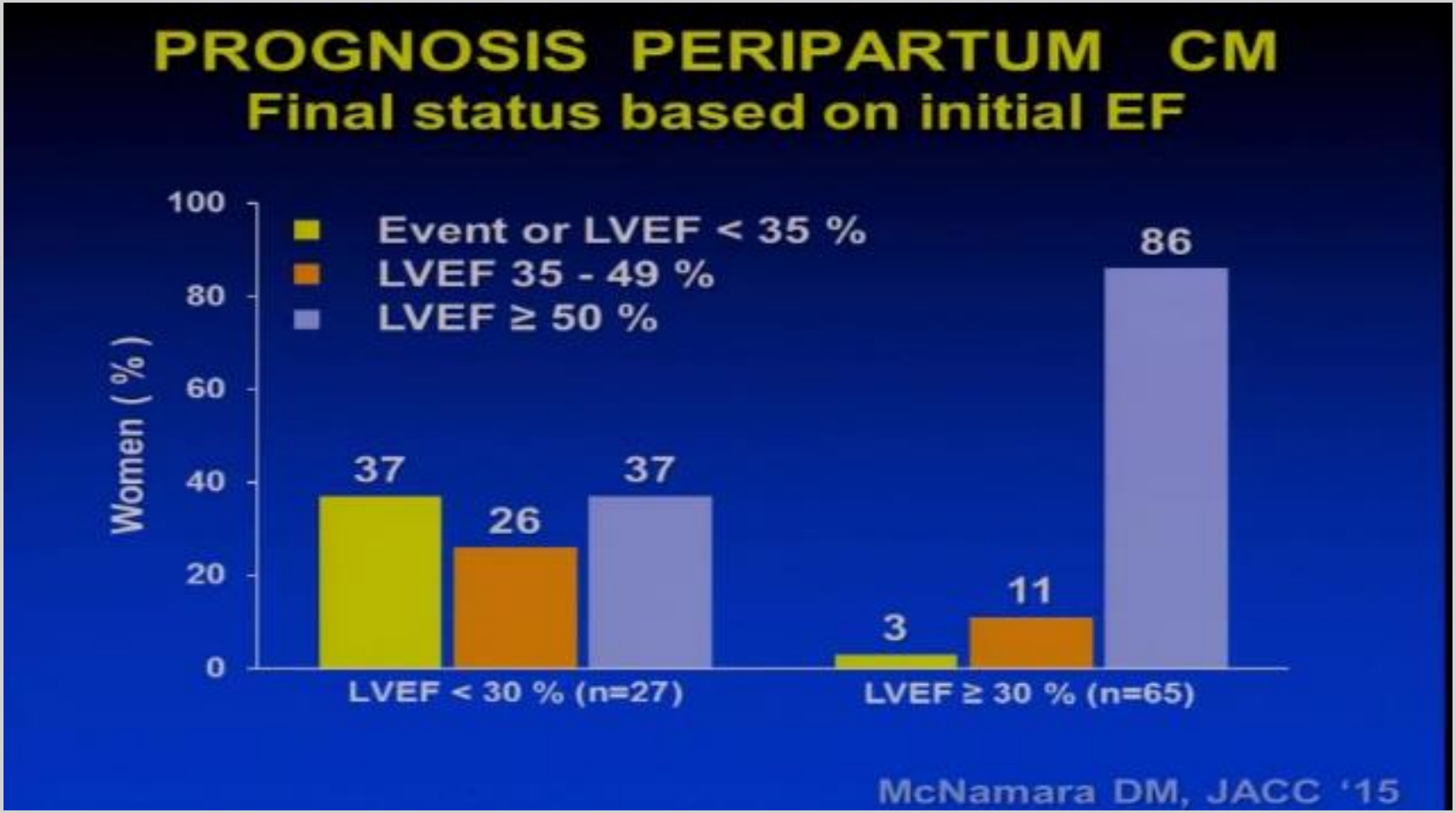
Peripartum Cardiomyopathy

- New diagnosis of HF due to LV dysfunction
  - Last trimester ⟶ 6 mos postpartum
  - Diagnosis of exclusion
- Incidence varies
  - U.S. 1 in 3200 deliveries (1350/yr)
  - South Africa 1 in 1000
  - Haiti 1 in 300
- ↑ frequency
  - Age > 30 yr
  - Multifetal pregnancy
  - Multiparity
  - Tocolytic
  - Black women
  - HTN, DM, smoking

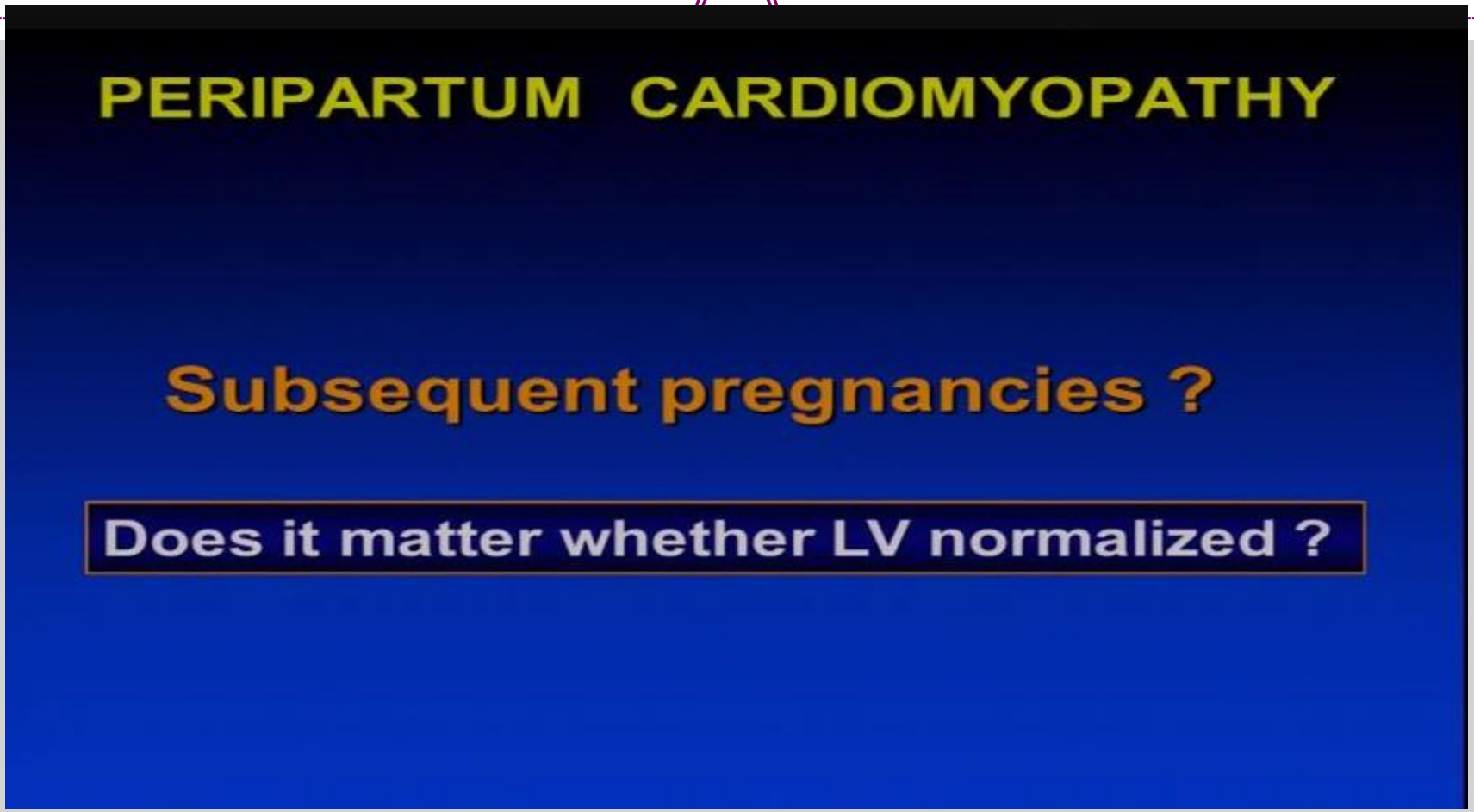
Cardiomyopathy



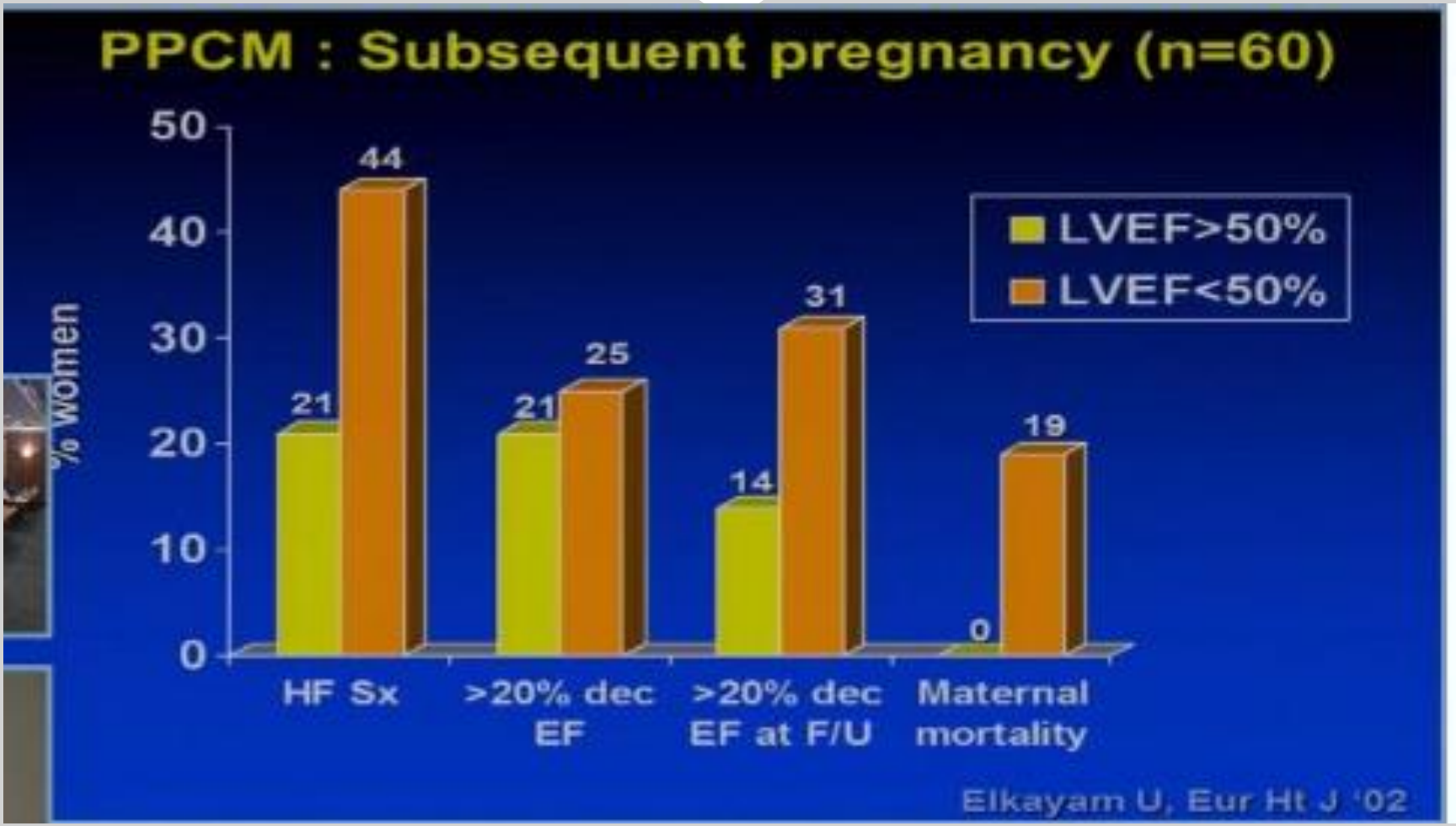
Cardiomyopathy



Cardiomyopathy



Cardiomyopathy

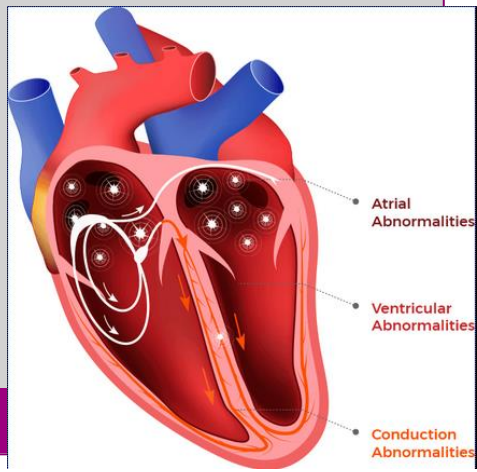


Cardiomyopathy

- An echocardiogram before conception, or as soon as possible after pregnancy is confirmed, to determine baseline ventricular function.
- Pregnancy should be discouraged if there is a significant reduction in ventricular function (EF<45%).
- Of concern, women with prior peripartum cardiomyopathy in whom LV function has returned to normal (≥50 %) still remain at significant risk for morbidity during subsequent pregnancies

ARRHYTHMIAS

- Arrhythmias and conduction disturbances can antedate or originate during pregnancy and may be exacerbated by it.



Recurrence Rates of Arrhythmias During Pregnancy in Women With Previous Tachyarrhythmia and Impact on Fetal and Neonatal Outcomes

Candice K. Silversides, MD, SM[a,b,*], Louise Harris, MD[b], Kym Haberer, BArtSc, MA[a], Mathew Sermer, MD[a,c], Jack M. Colman, MD[a,b], and Samuel C. Siu, MD, SM[a,b]

- Women with preexisting cardiac rhythm disorders, exacerbation of arrhythmia during pregnancy is common.
- Recurrence of arrhythmia during the antepartum period increases the risk of adverse fetal complications, independent of other maternal and fetal risk factors.

MANAGEMENT OF LABOR AND DELIVERY

- Anesthesia/analgesia:
- Opiates to relieve pain but not highly effective
- Lumbar epidural anesthesia is highly effective

MANAGEMENT OF LABOR AND DELIVERY

- Hemodynamic monitoring —
- Systemic arterial pressure and heart rate are routinely monitored during labor;
- Pulse oximetry and continuous (ECG) monitoring are utilized as required by the patient's condition

MANAGEMENT OF LABOR AND DELIVERY

- Mode and timing of delivery
- For nearly all cardiac disease, vaginal delivery is preferred
- Cesarean delivery is suggested for advanced heart failure and hemodynamic instability despite treatment
- Spontaneous onset of labor is preferred to induced labor in patients with functionally normal or well-controlled