

# “Value” from the Pregnancy OGTT

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# What is GDM?

## Depends on Your Population

### **Gestational**

- **“Pregnancy Hormones”**
  - Variable culprits
  - Increase with advancing gestation
- **Gestational Weight Gain**
- **Recurrence 30 – 70%**

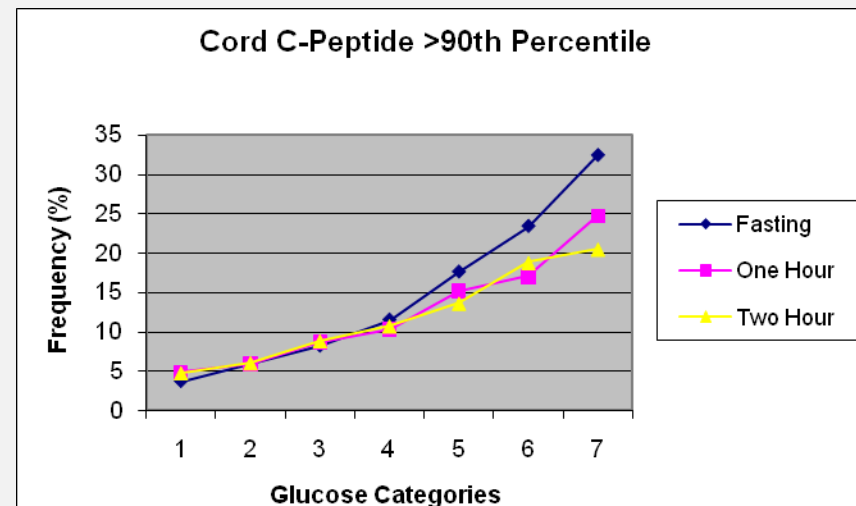
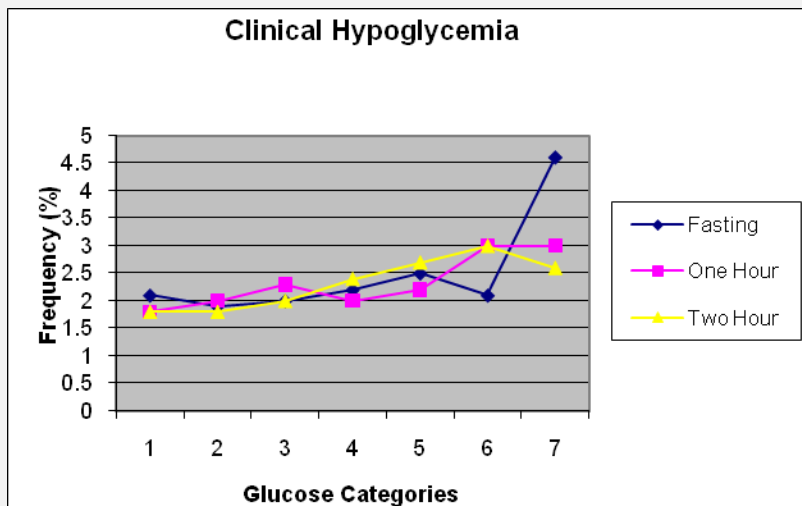
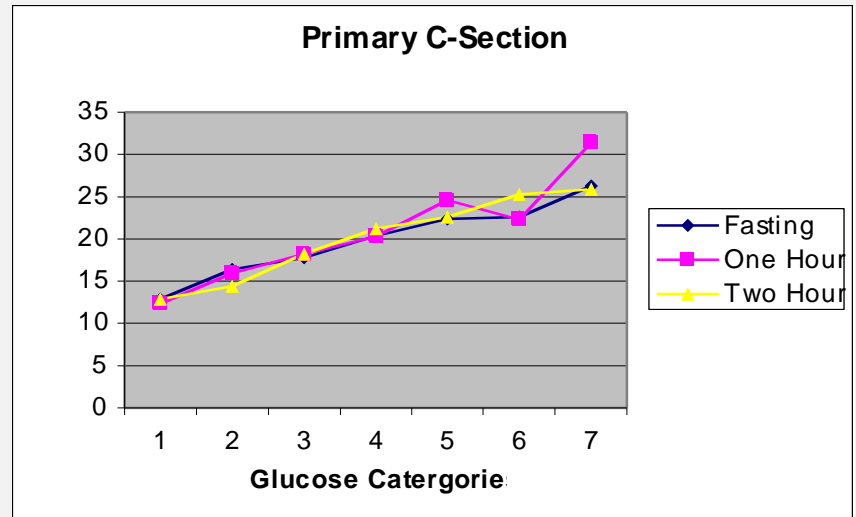
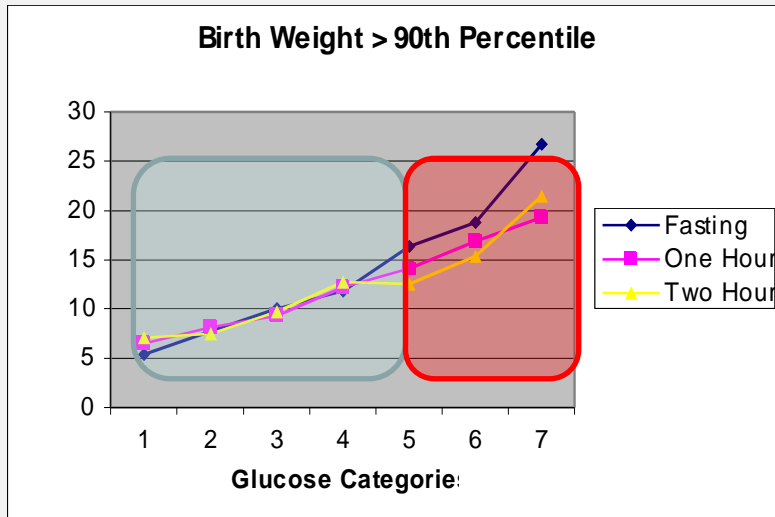
### **Diabetes**

- **Increasing diabetes**
- **Younger age at Dx**
- **Increasing obesity**
- **Increasing maternal age**
- **Diagnostic criteria**
- **Monogenic diabetes**
- **Autoimmunity**
- **DM / Pre DM detection and prevention**

# Outline of Presentation

- **Current GDM diagnostic approach**
- **Understanding ROC curves**
  - Youden index
  - Alternative approaches
- **Future perspectives**
  - Further assessment
  - Clinical utility

# HAP0 1° Outcomes - Risk is continuous, not binary



# Binary – Yes / No GDM Classification

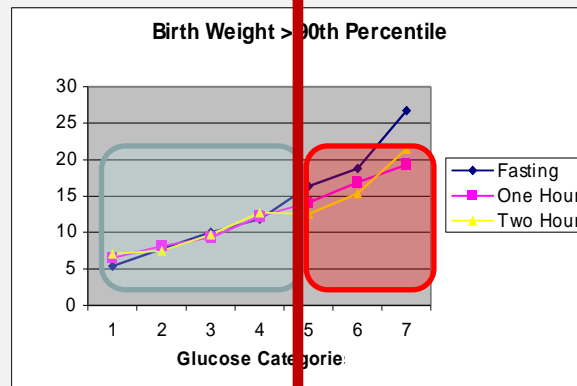
## Personal – Where we draw the line does matter

### *You are normal*

- Routine care in Pregnancy
- Your baby will be fine
- No long term risks

### *You have GDM*

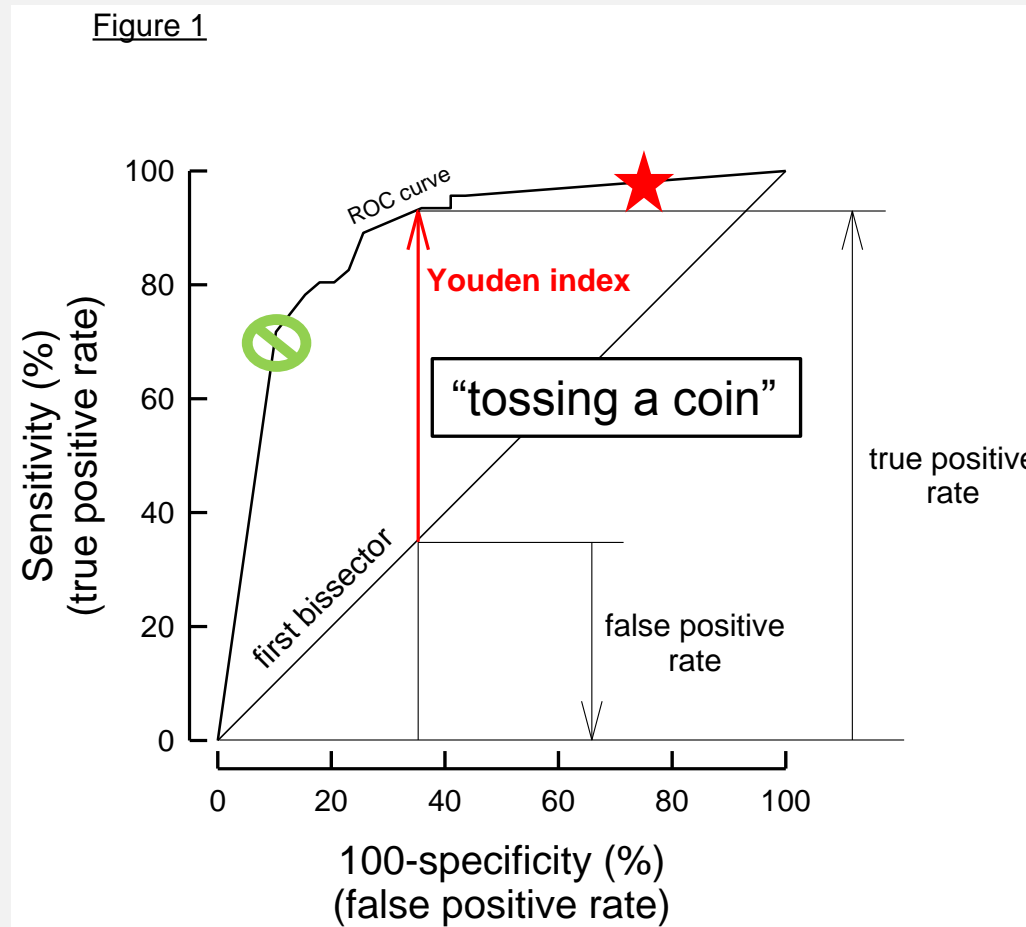
- You risk all DM complications
- Your baby will be fat, stuck, jaundiced, in the nursery
- You and your baby risk long term health problems



**Population – How much of the “glucose risk” does our diagnostic / treatment strategy cover?**

# ROC analysis / Youden Index “J”

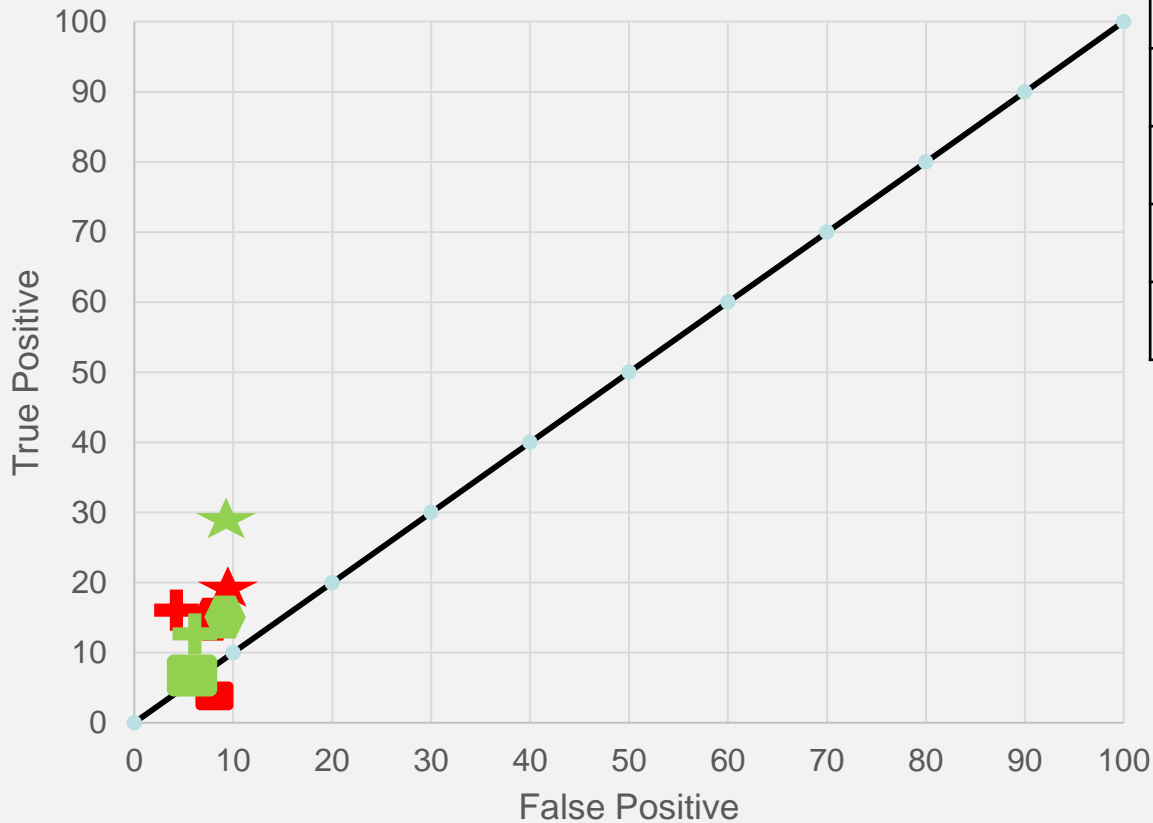
Miss Very Few Cases Maximize Sensitivity	Minimize False Alarms Minimize False Positives
★	⊘



# Current approach

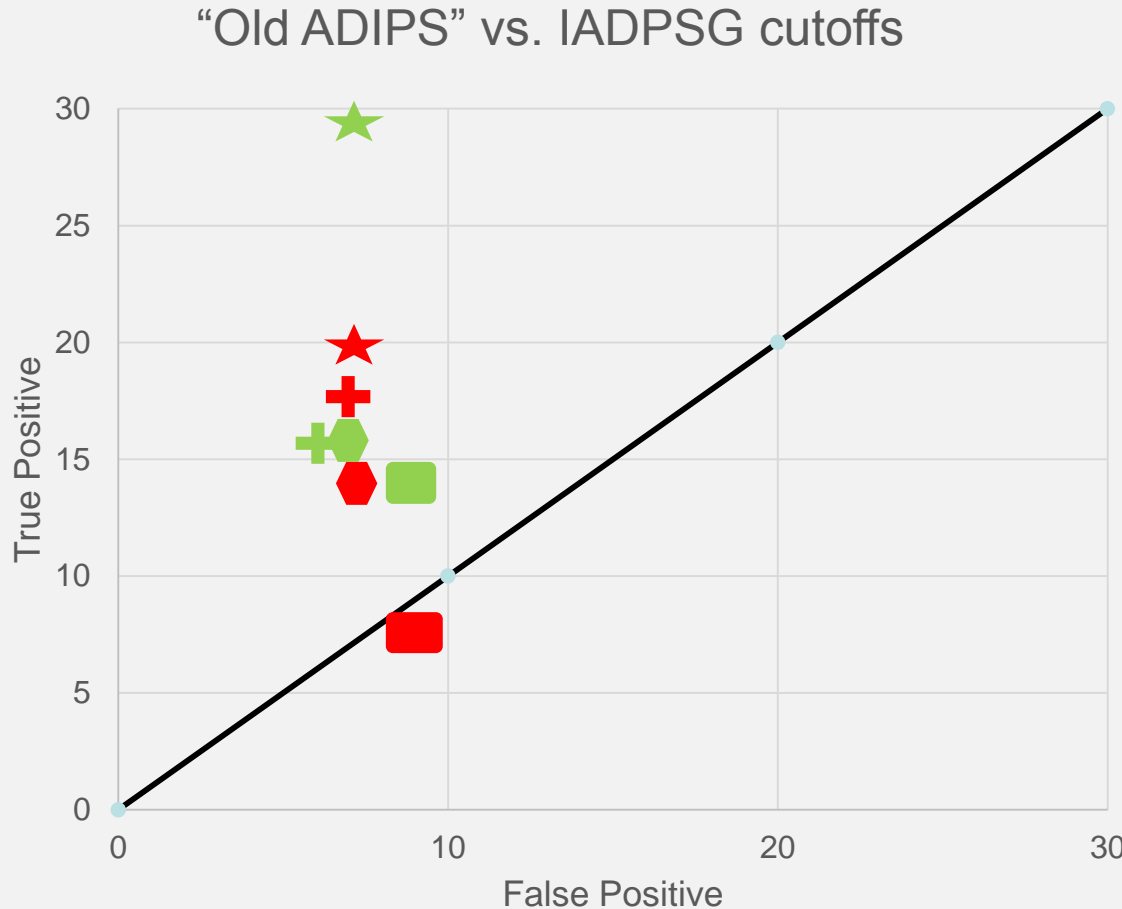
## One value > threshold

“Old ADIPS” vs. IADPSG cutoffs



	Old ADIPS	IADPSG
S dystocia	★	★
LGA	⬡	⬡
FGA	■	■
↑Cord CP	+	+

# Current approach and Youden Indices



	Old ADIPS	IADPSG
S dystocia	★	★
LGA	⬡	⬡
FGA	■	■
↑Cord CP	+	+

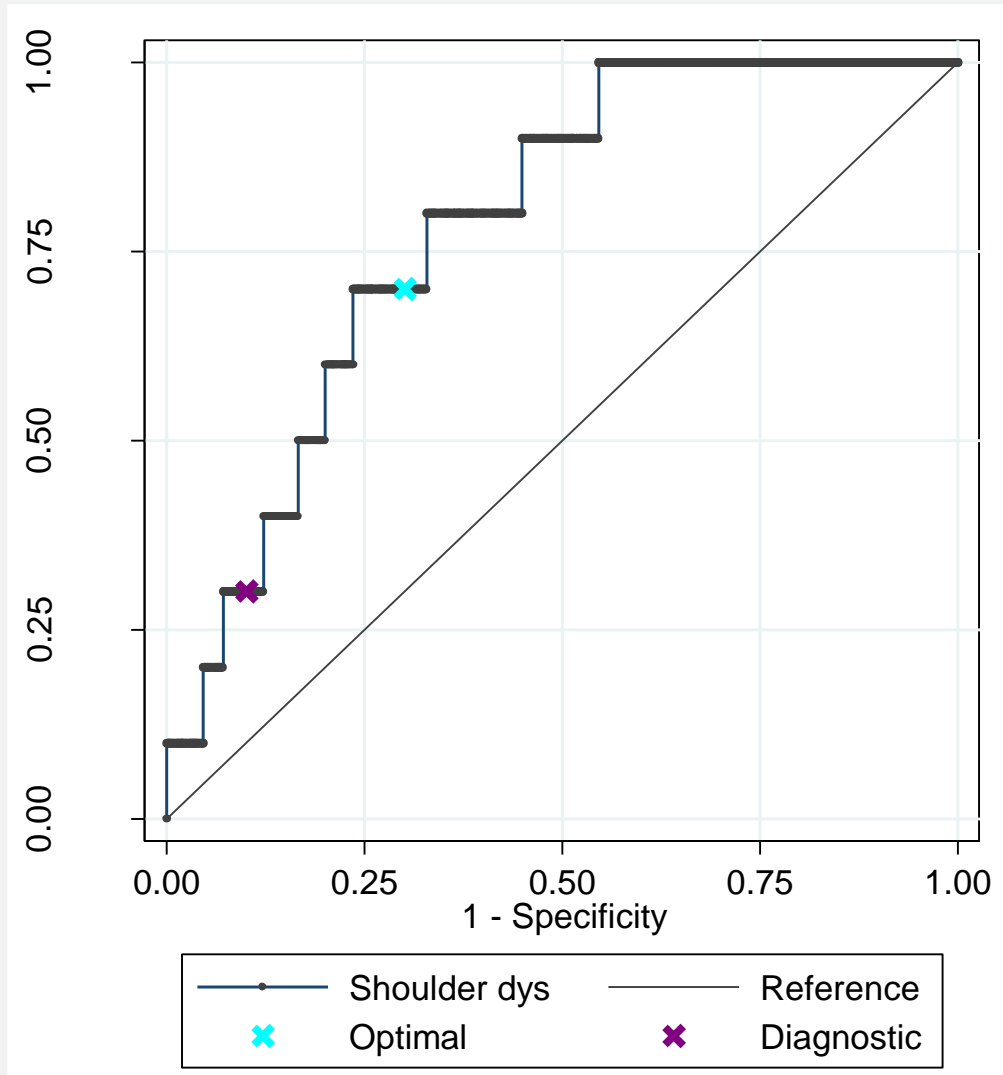
Youden Indices %	Old ADIPS	IADPSG
S dystocia	11	21.3
LGA	6.1	7.5
FGA	-1.0	4.8
↑Cord CP	9.2	7.7



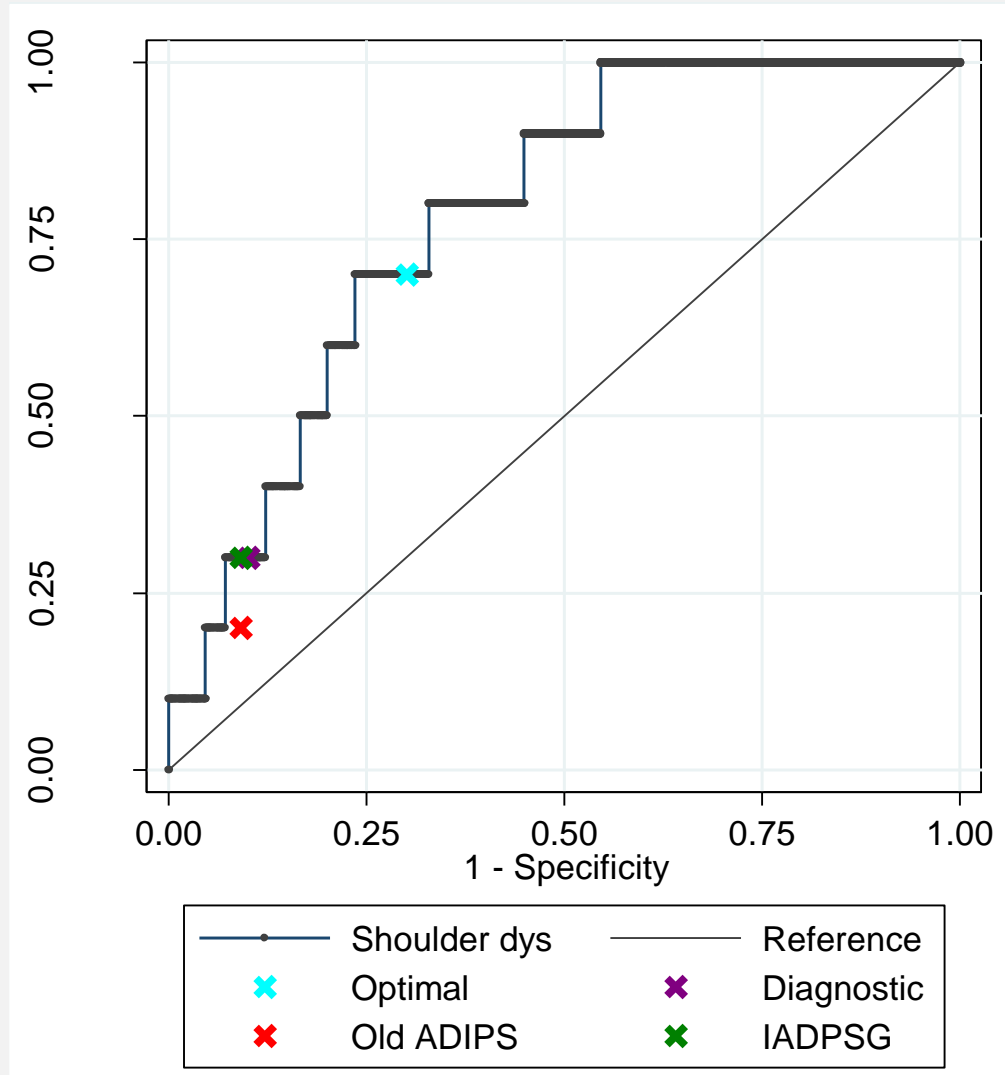
# Methods

- **HAPO dataset – Brisbane (n = 1248) (validated with Newcastle (n = 619) data)**
- **Derive parsimonious regression equations for each outcome using SD scores for all OGTT glucose values**
- **Analyse using ROC curves**
- **Concept of “GDM” as women with Hyperglycemia “At Risk Meriting Intervention” in line with current diagnostic thinking and practice**
- **Compare to current / recent approaches**

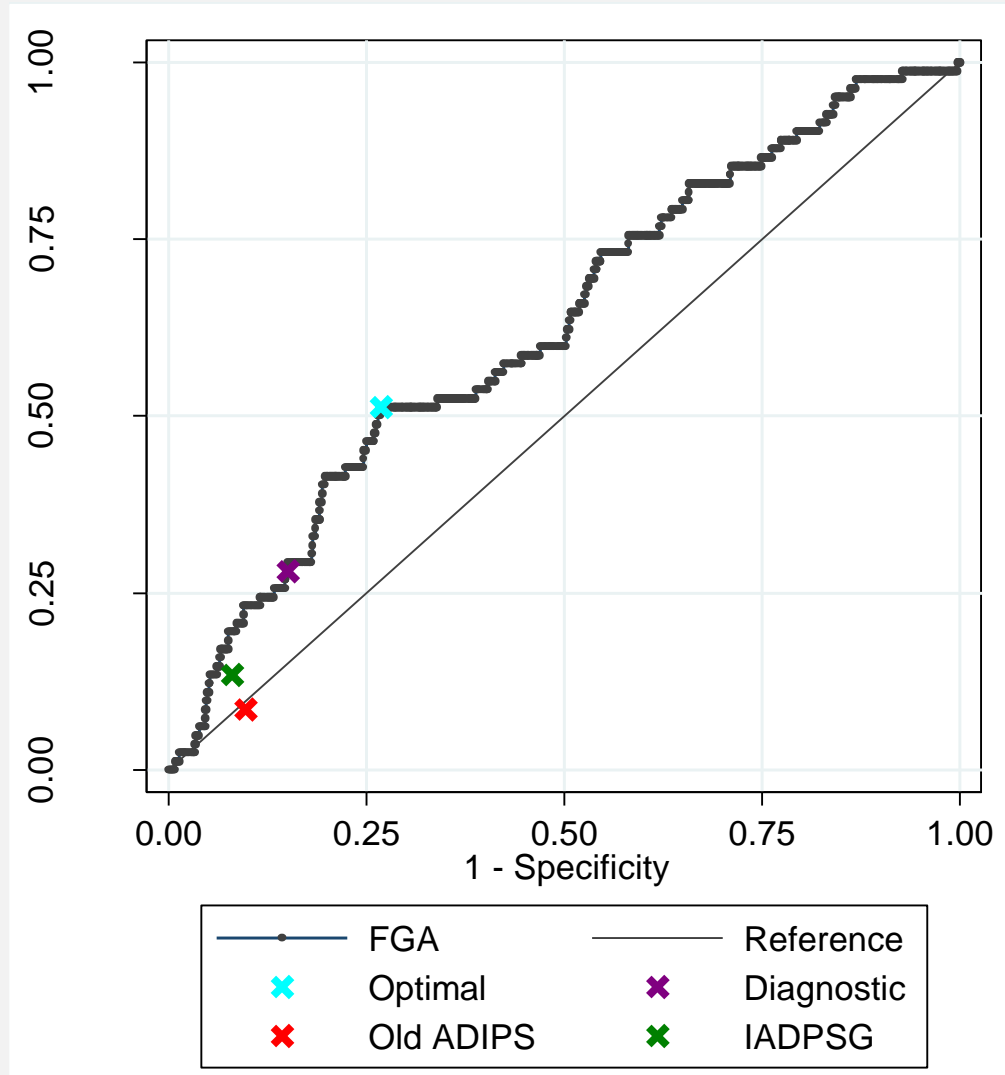
# ROC examples – Shoulder Dystocia



# ROC examples – Shoulder Dystocia (all)

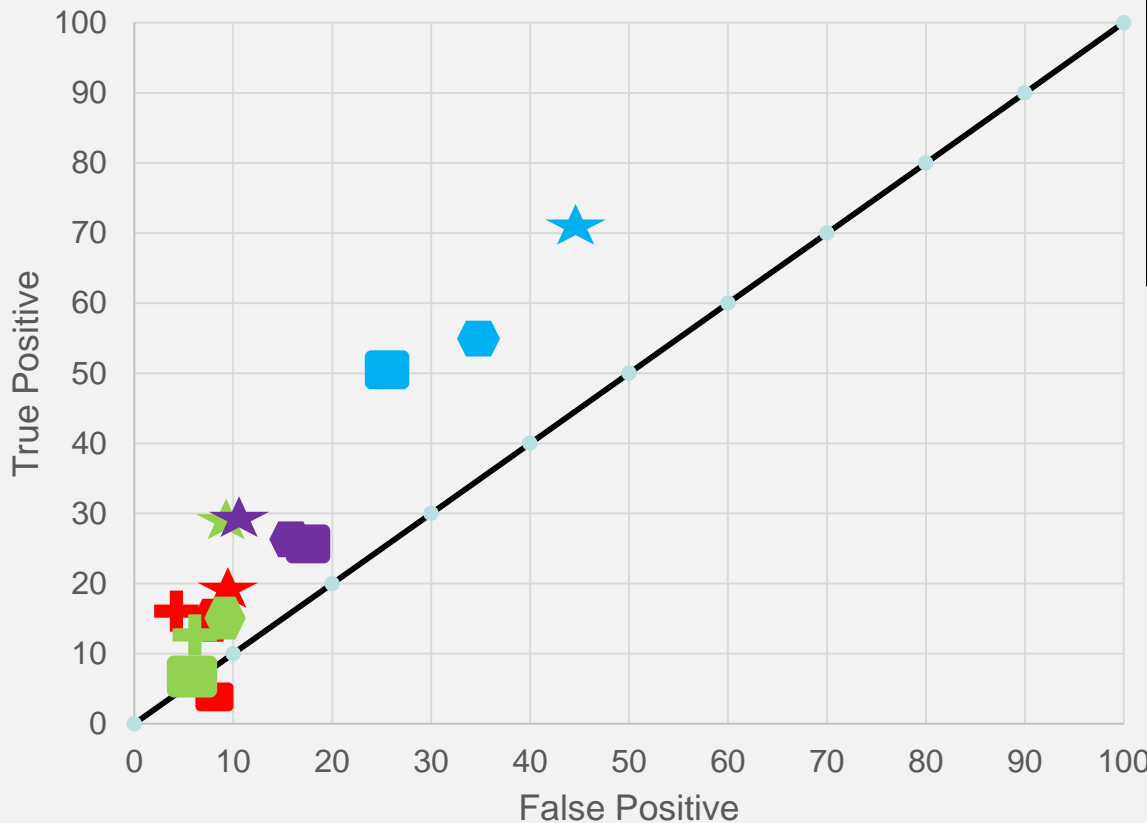


# ROC examples – FGA (all)



# Current approach vs ROC approach

“Old ADIPS” vs. IADPSG cutoffs



	Old ADIPS	IADPSG
S dystocia	★	★
LGA	⬡	⬡
FGA	■	■

GDM	9.1%	8.9%
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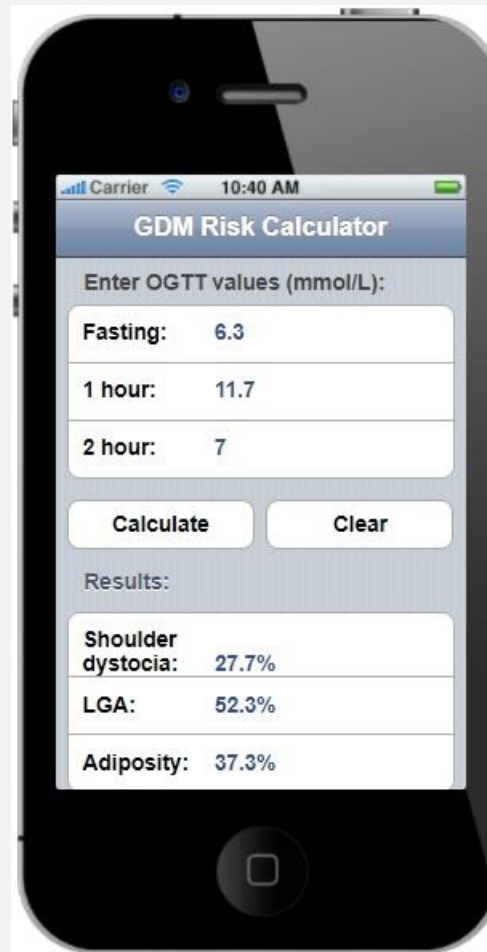
	Optimal	Diagnostic
S dystocia	★	★
LGA	⬡	⬡
FGA	■	■

ARMI	28-35%	10-17%
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# “APP” mock up example



# “APP” mock up example



# Conclusions (1)

- **Continuous relationships → Intrinsic limits to sensitivity and specificity**
- **Single threshold models (Old ADIPS / New ADIPS [IADPSG]) perform very poorly**
- **Standard “Optimal” ROC thresholds cover more of population risk but at “cost” of very high prevalence**
- **“Diagnostic” ROC thresholds may represent a compromise solution**



## Conclusions (2)

- **ROC models and “Diagnosis” not intuitive**
- **Nomenclature difficult: -**
  - “At Risk Meriting Intervention” a mouthful!!
  - How to explain to patients (and staff??)
- **A long way from implementation – further prospective trials / interventional trials / communication required.**