

## IUGA Debate

“This house believes that instrumental delivery should be abandoned in favour of Caesarean section”

Prof Don Wilson & Jim Dornan

# **UR-CHOICE: can we provide mothers-to-be with information about the risk of future pelvic floor dysfunction?**

**Don Wilson · James Dornan · Ian Milsom ·  
Robert Freeman**

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**Abstract** Vaginal childbirth is probably the most important factor in the aetiology of pelvic floor dysfunction (PFD) and results in the combination of some or all of the following conditions: urinary (UI) and faecal (FI) incontinence and pelvic organ prolapse (POP). Up until now, it has been difficult to counsel women antenatally regarding risk factors for subsequent PFD, as there has been little good-quality, long-

**Keywords** Pelvic floor dysfunction · Urinary incontinence · Faecal incontinence · Pelvic organ prolapse · Vaginal delivery · Caesarean section · Prediction

**Introduction**

**Moderately robust epidemiological data 12 & 20 years  
after delivery & pathophysiological data using risk factors**



**Major risk factors for subsequent PFD:**



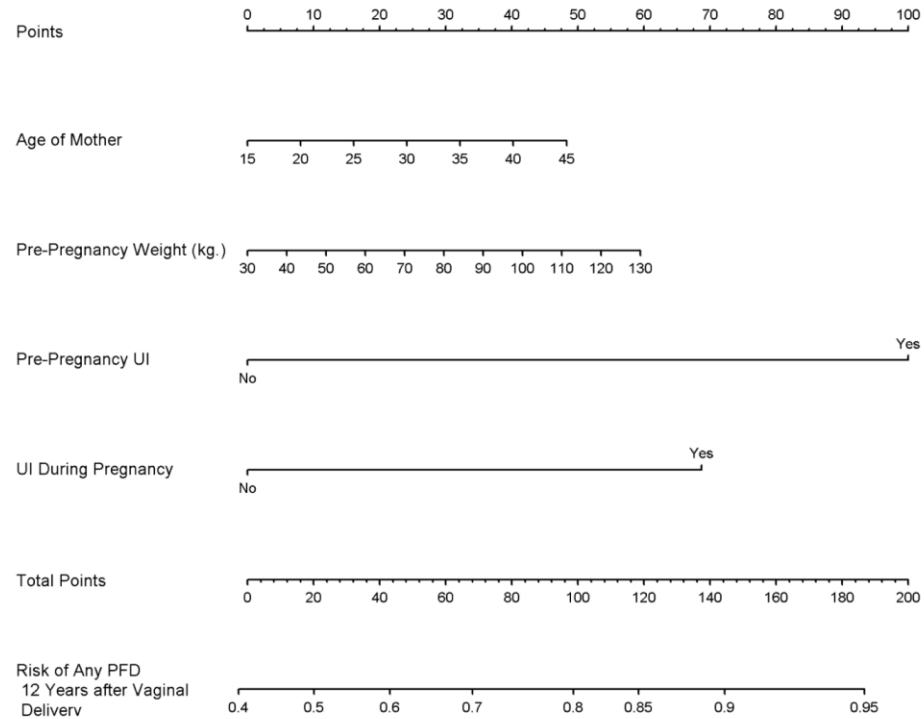
<b>U</b>	UI before pregnancy
<b>R</b>	Race/Ethnicity
<b>C</b>	Childbearing started at what age
<b>H</b>	Height of mother
<b>O</b>	Overweight (weight, BMI of mother)
<b>I</b>	Inheritance (family history)
<b>C</b>	Children (number of children desired) or Caesar/delivery mode for postpartum “score”
<b>E</b>	Estimated fetal weight

**Wilson, D, Dornan, J, Milsom, I, Freeman, R,  
(International Urogynaecology Journal, April 2014)**

# Prediction Models for Postpartum Urinary and Fecal Incontinence in Primiparous women

Jelovsek JE, Piccorelli A, Barber MD, Tunitsky-Bitton, Kattan MW  
Female Pelvic Med Reconstr Surg 2013;19:110-118

Vaginal Delivery – Risk of Any Pelvic Floor Disorder (AnyPFD)



Aim:

To Produce normograms  
that accurately generate  
individualized prognostic  
estimates of postpartum  
UI and FI

# **Predictive Modelling Co-operation**

## **SwePOP Study Group**

**Sahlgrenska Academy, Gothenburg**

**Maria Gyhagen, Jwan Othman, Björn Areskoug, Ian Milsom**

## **PROLONG Study Group**

**Aberdeen, Glasgow and Otago**

**Don Wilson, Charis Glazener, Suzanne Hagen, Andrew Elders**

## **CLEVELAND CLINIC Group**

**Cleveland**

**Matt Barber, Eric Jelovsek, Michael Kattan, Kevin Chagin**

# Study Population

Data from 2 longitudinal, prospective cohorts

## 1. **Swedish Pregnancy, Obesity and Pelvic Floor Study (SwePOP)**

- Only Primiparous women delivered 1985-1988 (n = 9423)
- Swedish Medical Birth Register data
- 4991 linked to Postal Questionnaire 20 years after delivery

## 2. **ProLong study from UK/New Zealand**

- All deliveries w/n 12 months (1993-94)
- 7883 participated 3 months after index birth
- Aberdeen (UK), Birmingham (UK), Dunedin (New Zealand)
- 3638 followed up to 12 years after delivery



**Study Cohort: 8624**

Gyhagen M, Bullarbo M, Nielsen T, Milsom I. BJOG 2013  
MacArthur C, Glazener C, Lancashire R, Herbison P, Wilson D, BJOG 2011



**TRIPOD - Transparent Reporting of a Multivariable Prediction Model for Individual Prognosis Or Diagnosis**

**Each cohort temporarily split**

**Women delivering in the first half of the cohort time period**

**Women in Second Half**

**Training**

**Test Set**

**Predictive Models**

**Actual Outcomes**



## METHODS

- Training Set
  - Multiple logistic models
  - Harrell's "Model Approximation" process of backwards elimination
  - Best parsimonious model
- Model accuracy was measured as discrimination using a concordance index and calibration using visual plots were created.
- Online calculators

# Results

## Model Discrimination

Overall all models were able to discriminate better than chance and able to discriminate risk 51-75% of the time for each temporal validation set.

Before delivery, 12 & 20 year concordance indices for bothersome or receiving treatment were:

- **POP (0.570, 0.627)**
- **UI (0.653, 0.689)**
- **FI (0.618, 0.676)**

## Other Predictive Models currently used in Clinical Practice

- National Cancer Institute Gail Model for Prediction of Breast Cancer Risk – Concordance Index 0.59
- Framingham Cardiovascular risk model – Concordance Index 0.72