Management of PUL

Which Approach is Best?

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ST6 OBSTETRICS AND GYNAECOLOGY

Background

- Pregnancy of unknown location difficult to manage
  - Uncertainty surrounding diagnosis
  - Difficult for both clinician and patient
  - Multiple EPAU visits
  - Protocols often not explicit

What currently happens?

- EPAU cases where diagnosis is unclear are discussed with on call doctor
- Management plan variable

Why change?

- Update local guideline
- Uniform approach to management
  - Nurse led service
- Reduction in the number of HCG tests
- Reduce the strain on resources, particularly USS department

What are the alternatives?

HCG Ratio

- HCG 48hours/HCG 0hours

Change in hCG (hCG ratio: hCG 48 hours/ hCG 0 hours)	Likely diagnosis	Follow-up
>13% decrease (<0.87)	Failed PUL	Urinary pregnancy test in 2 weeks. Repeat serum hCG if +ve
>66% increase (>1.66)	Normal intrauterine pregnancy	Repeat TVS on day 7
<66% increase (1.00-1.65)	Probable ectopic pregnancy	Repeat TVS on day 7 or when hCG expected to be >1000 IU/l
<13% decrease (0.87-1.00)	Failed PUL or possible ectopic pregnancy	Repeat serum hCG on day 7

What are the alternatives?

M4 Model

- Spreadsheet calculation of risk

Predictors	ENTER VALUES
Initial serum hCG level (IU/l)	683
Serum hCG level after 48 hours (IU/l)	912

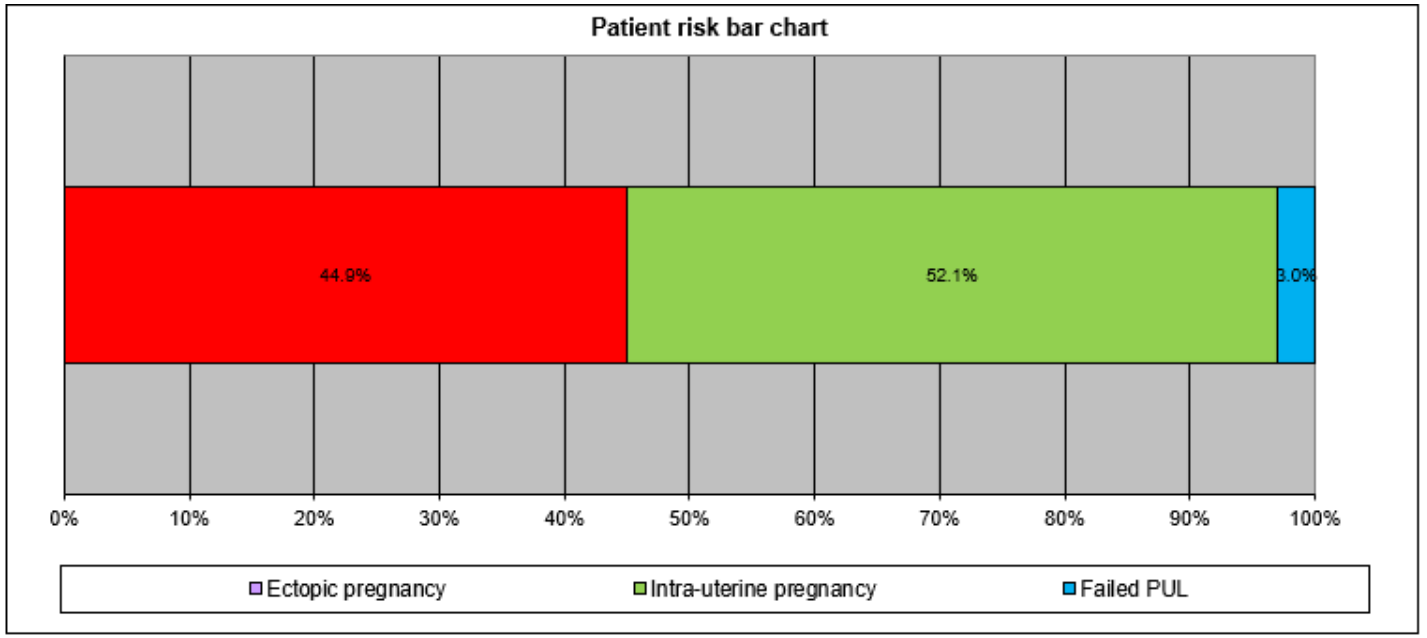
Risk predictions

PROBABILITY INTRA-UTERINE PREGNANCY	52.1%
PROBABILITY FAILED PUL	3.0%
PROBABILITY ECTOPIC PREGNANCY	44.9%

→→ *See patient risk bar chart* →→

CLASSIFICATION ACCORDING TO M4 PROTOCOL
(Van Calster et al, Hum Reprod 2013)

HIGH RISK



Audit

- What we did:
  - EPAU notes reviewed retrospectively over last 3months
  - Data collected on a paper sheet → spreadsheet
  - Analysed results

Data Collection Sheet

Hospital number: Age:

Date of EPAU referral:

Reason for referral to EPAU:

Management:

Number of hCGs	Number of USS

Date of definitive diagnosis:

Definitive diagnosis:

Management plan:

Date of discharge:

Comments:

Alternative management

Using 48hour hCG calculation to predict outcome:

hCG 0hours	hCG 48hours	Likely Diagnosis	Follow up

Using M4 patient risk prediction:

Probability ectopic pregnancy (%)	Probability IUP (%)	Probability failed PUL (%)

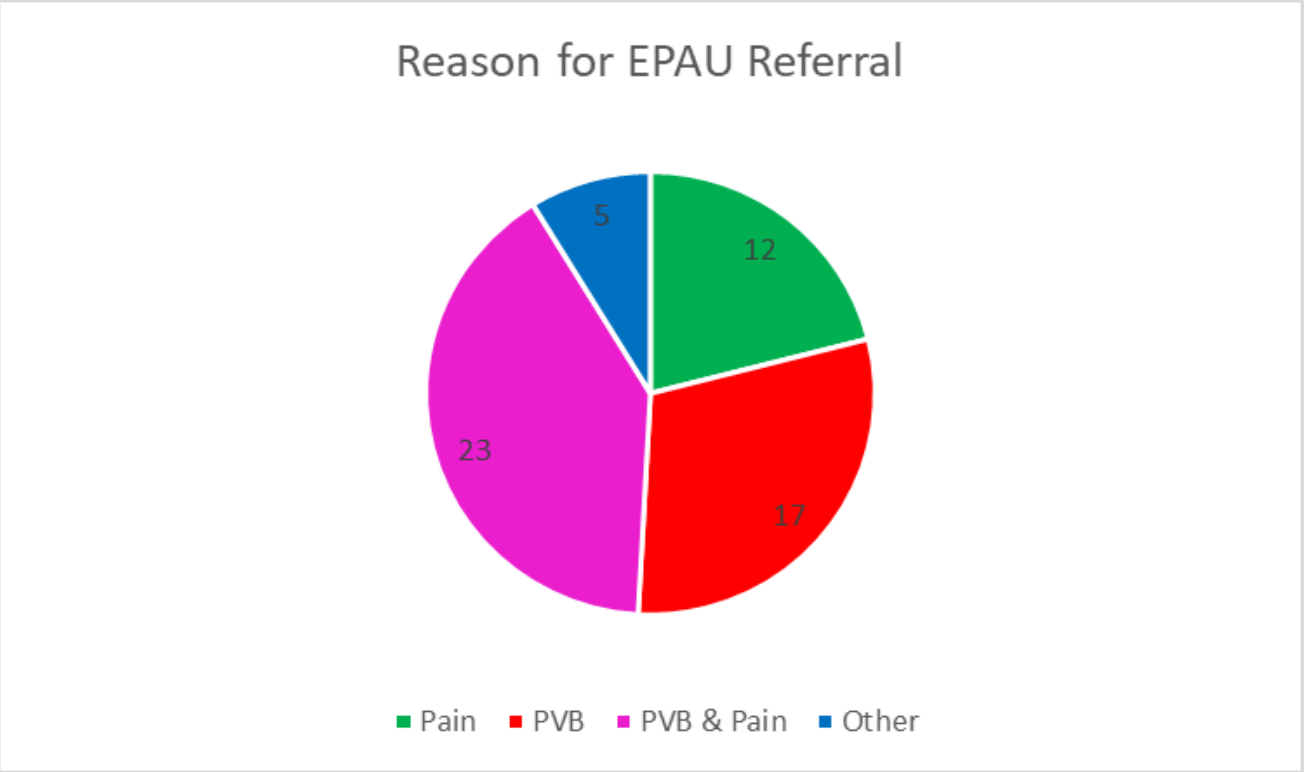
Risk Classification		
High risk	Low risk (IUP)	Low risk (failed PUL)

Results

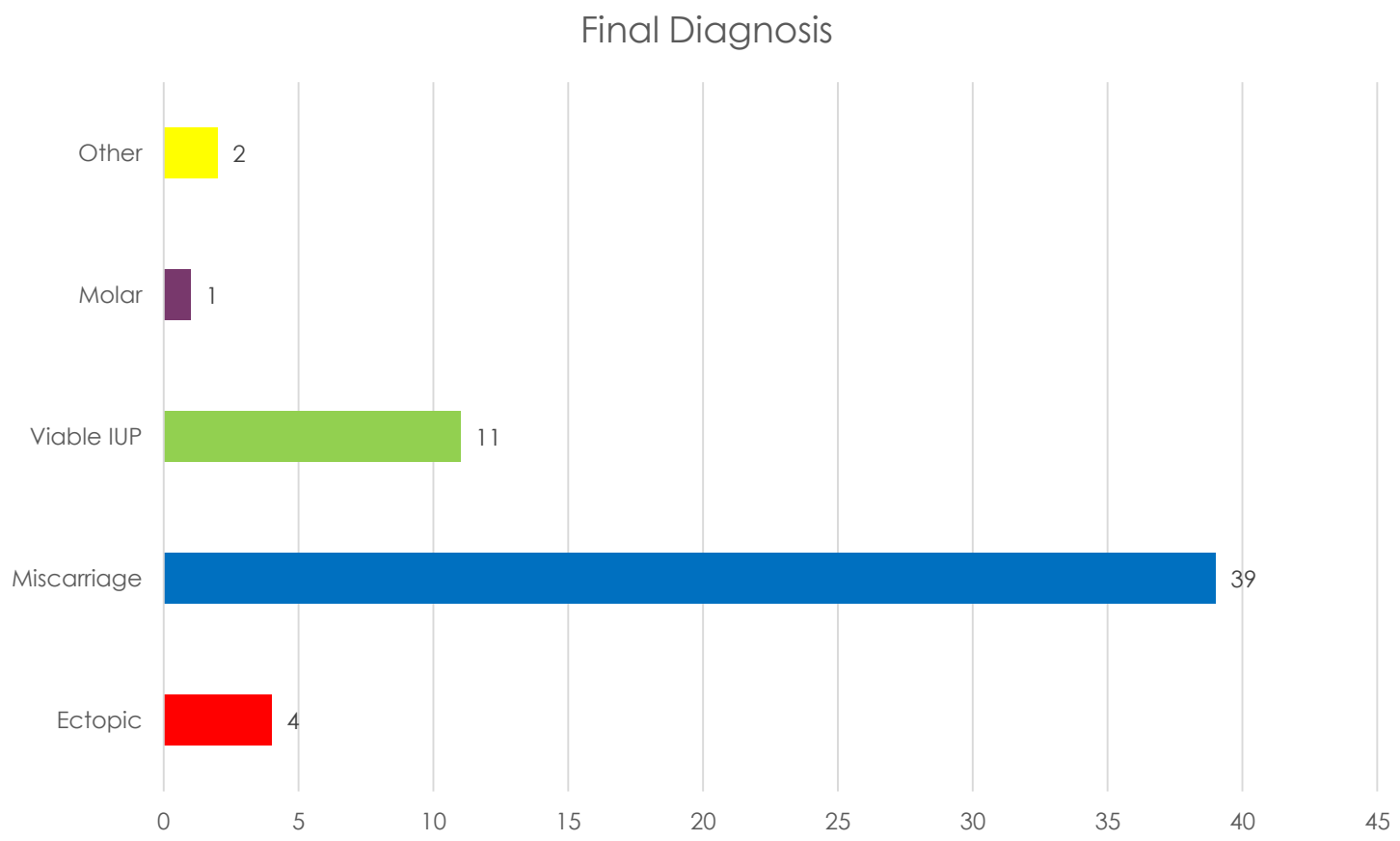
General

- Total number cases 57
- Average age 30 (range 21-44)

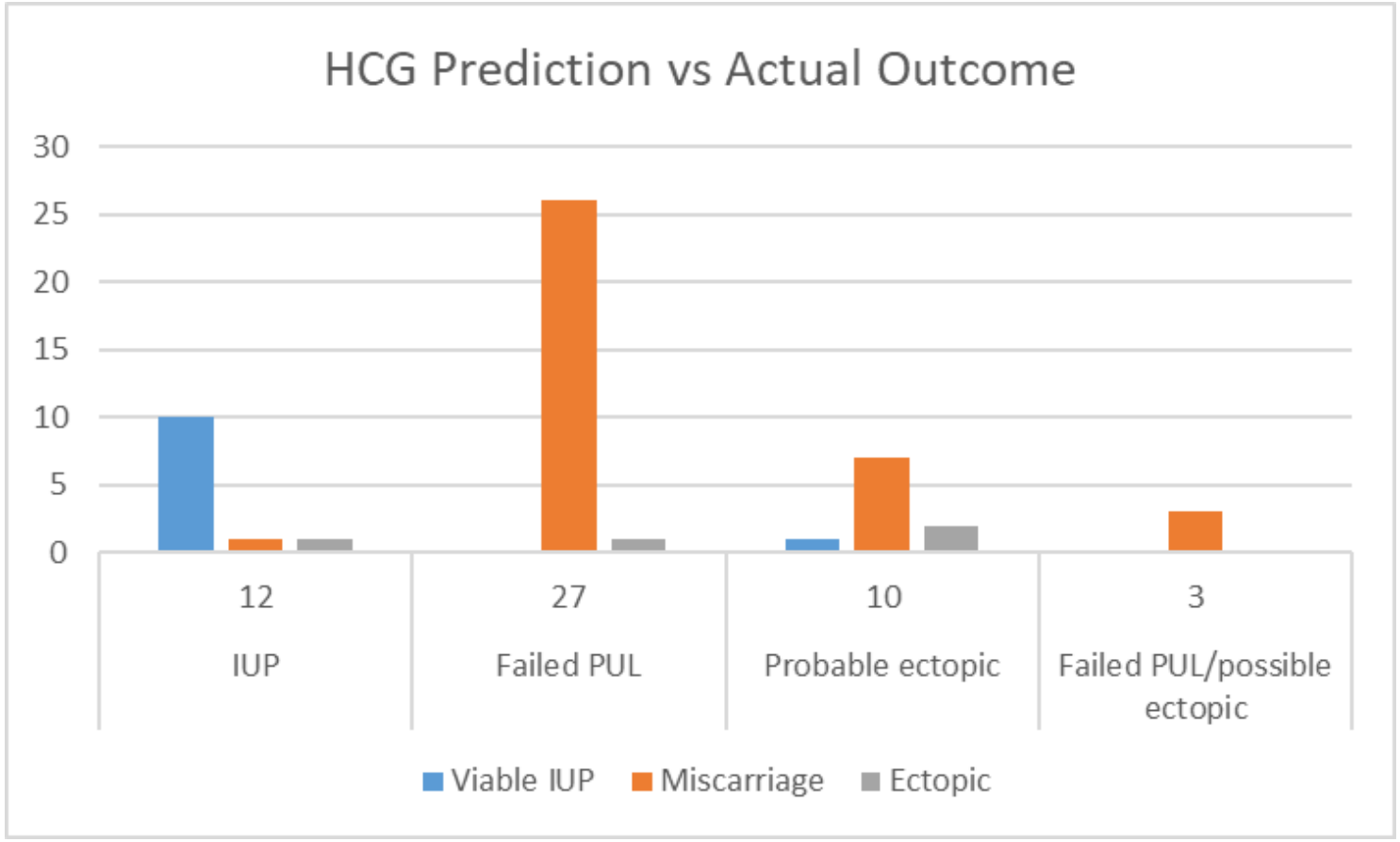
- Mean number HCG's: 3 (range 1-20)
- Mean number USS: 2 (range 1-5)
- Average number of days from referral to diagnosis: 10 (range 1-44)



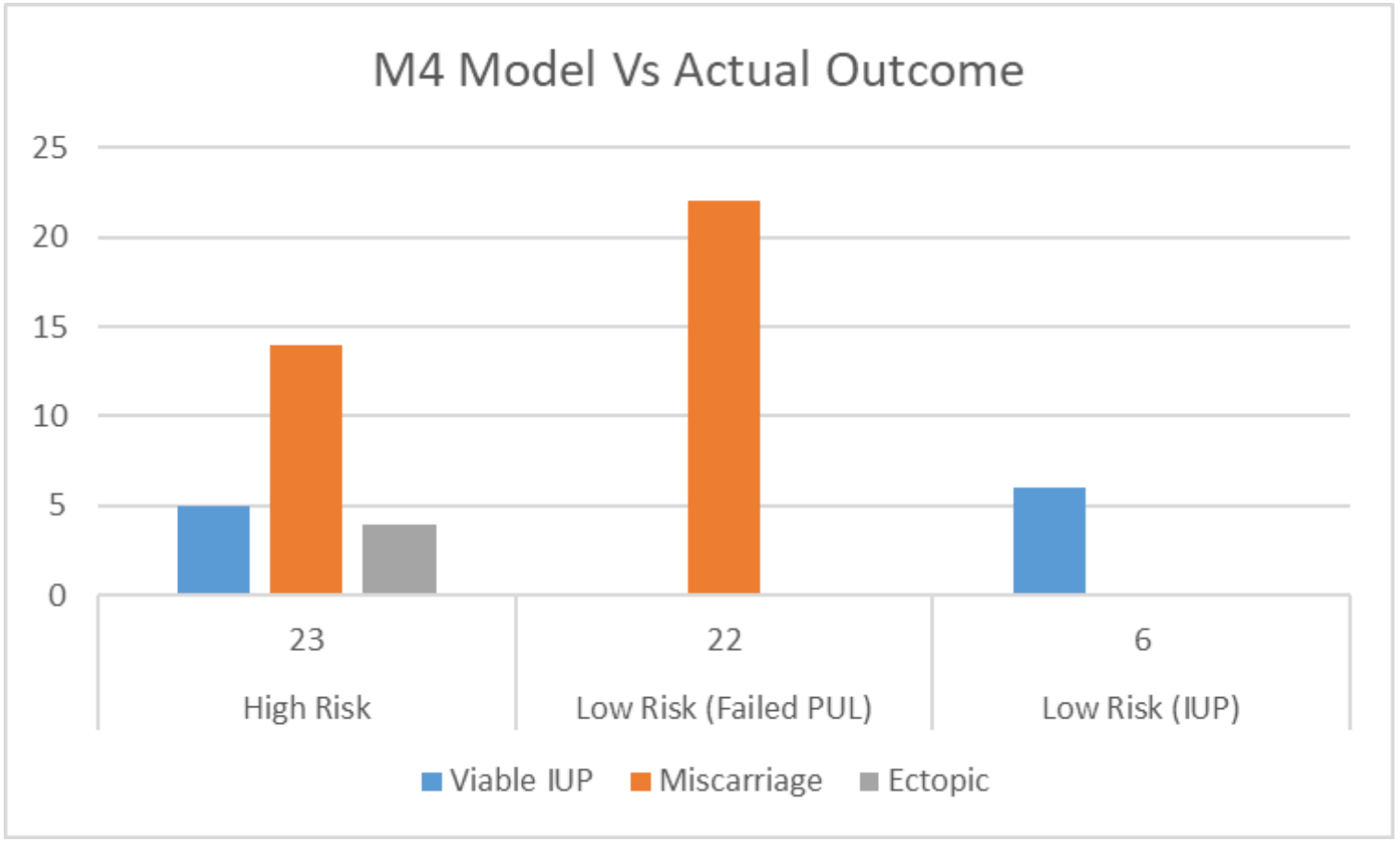
Final diagnosis



Using HCG ratio method



Using M4 model



Key Comparisons

HCG Ratio

- Reduction in HCGs for diagnosis from up to 4 currently to 2
- Reduction in USS for diagnosis in 5 cases, but increased scan numbers in those flagged as probable ectopic
- Possible reduction in time to diagnosis
- Two ectopic pregnancies misdiagnosed

M4 Model

- Reduction in HCGs for diagnosis from up to 4 to 2
- Reduction in USS for diagnosis to all low risk cases with one exception
- Possible reduction in time to diagnosis
- No ectopic pregnancies misdiagnosed → high risk cases identified and referred to senior clinician early on

Which method is best in our population?

- M4 model appears to be better
  - Reduction in HCG's/USS compared to current methods
  - Does not miss an ectopic diagnosis
  - More scope for confident nurse led discharge
  - Fewer cases overall referred to clinician as only those flagged as high risk require review

- Limitations – need access to spreadsheet

What do we propose?

- Implement M4 model in August 2019
  - Low risk (failed PUL) – Discharge after 2HCG's, no scan (nurse led)
  - Low risk (IUP) – Viability scan when HCG predicted to be >1500 (nurse led)
  - High Risk – Refer to clinician (EPAU lead) for decision regarding management
- Re-audit 6months worth of data to review effectiveness
  - Reduction in diagnosis time confirmed?
  - Reduction in HCG's (from 3→2) and USS (from 2→1)?
  - Any missed cases?
- Use in conjunction with STARRS screening to reduce number of cases attending EPAU and scan those truly in need of a scan
  - NB. Anomaly case

Questions?

WITH THANKS TO DR HODGE

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