A DGH ELECTIVE

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3rd year Biochemistry STP

TAKING PRIDE IN OUR CARE

Barking, Havering and Redbridge University Hospitals NHS Trust

PLANNING MY ELECTIVE

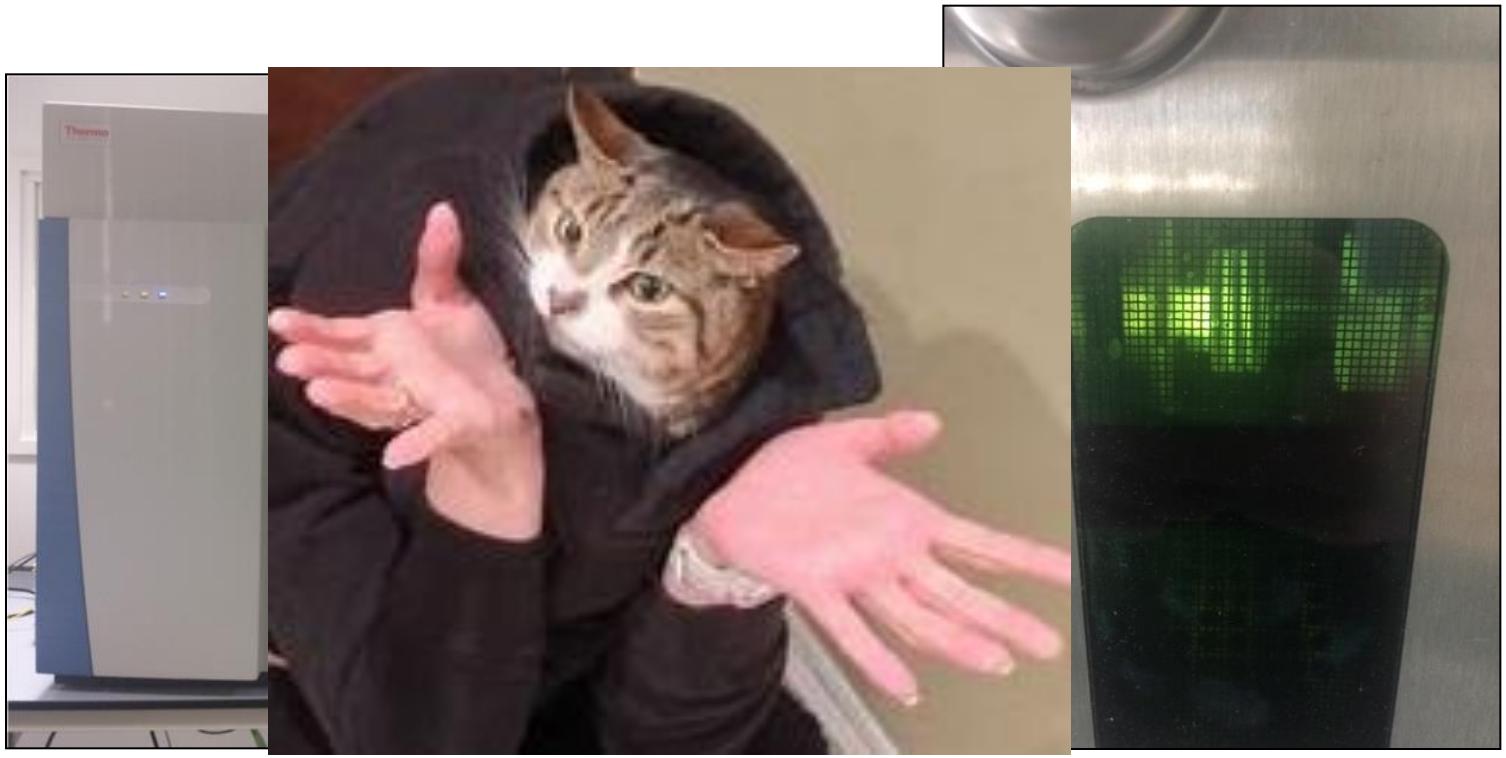
1. Brainstorming ideas

Toxicology? DOA – novel psychoactive substances? ICP-MS?

PLANNING MY ELECTIVE

ICP-MS Trace elements lab Guildford

2 weeks, option to return for remainder of elective



PLANNING MY ELECTIVE

A chance email to my supervisor from the consultant at Barking Havering and Redbridge NHS Trust!

Verification project available

No trainees themselves, needed an extra pair of hands

In return… verification experience, Duty biochemist experience

BARKING, HAVERING AND REDBRIDGE NHS UNIVERSITY HOSPITALS NHS TRUST

Barking, Havering and Redbridge NHS University Hospitals NHS Trust

- King George and Queen's Hospitals (Ilford and Romford)
- Serves a population of 750,000
- Biochemistry:
  - 2x Roche Lines (e-module, c-module)
  - proteins service
  - **Antenatal screening lab**

NHS Barts Health NHS Trust

Barts Health:

5 hospitals: RLH, Barts, WX, Newham, Mile End

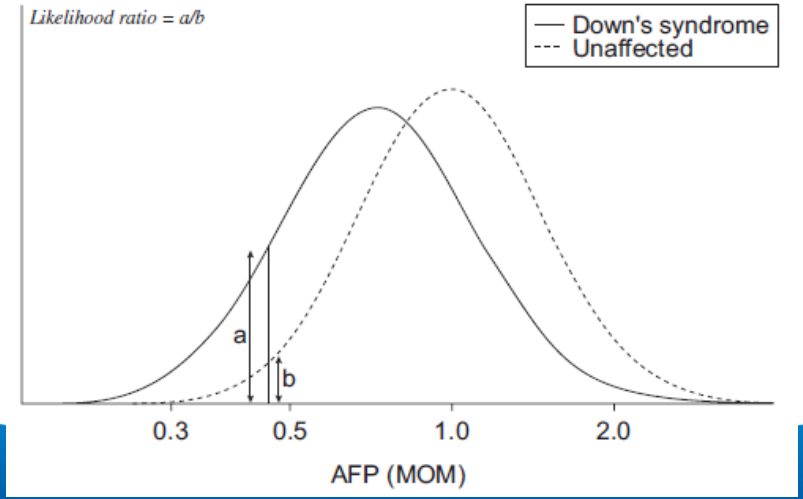
2.5 million patients/year

Biochemistry department:

- 4x Roche lines (6x e-module, 4x c-module)
- proteins service,
- specialist LCMS and HPLC labs
- trace elements.

ELECTIVE PART 1 – ANTENATAL SCREENING

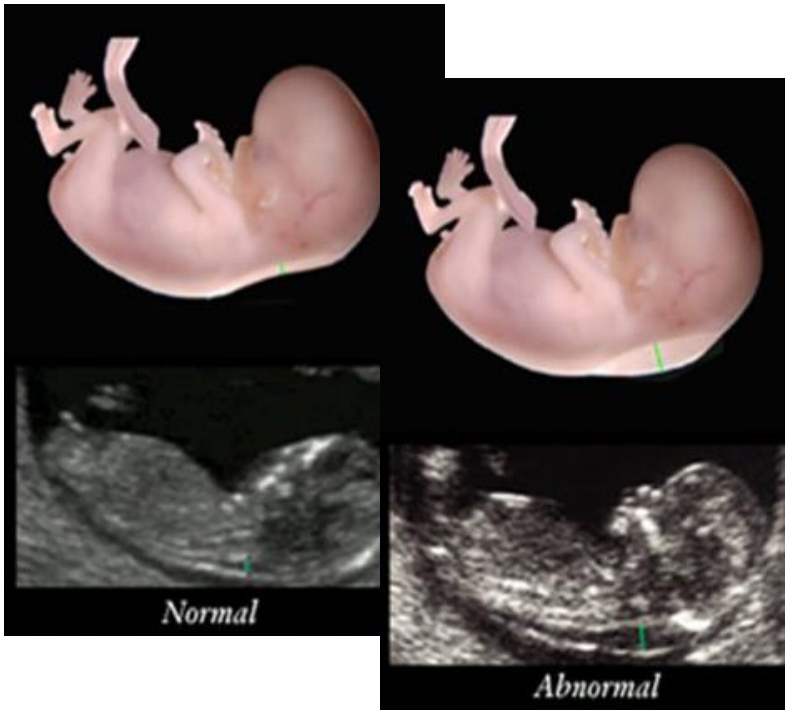
- Detects trisomies and neural tube defects early in pregnancy
  - Down's screening was initially based purely on maternal age (amniocentesis and karyotyping offered to all women >35y)
- Offered to all pregnant women in the UK – only 61% uptake
- Normal reports sent directly to patients from pathology
- FASP – Foetal Anomaly Screening Programme (PHE) regulates and supports the programme
- FMF – Foetal Medicine Foundation – certify screening laboratories
- MoM's – multiples of the median – are used to correct biochemical markers for gestational age, and other characteristics such as maternal age, weight, smoking status and ethnicity.

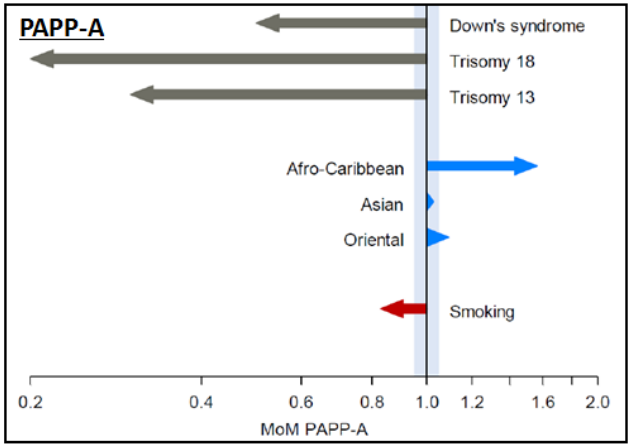


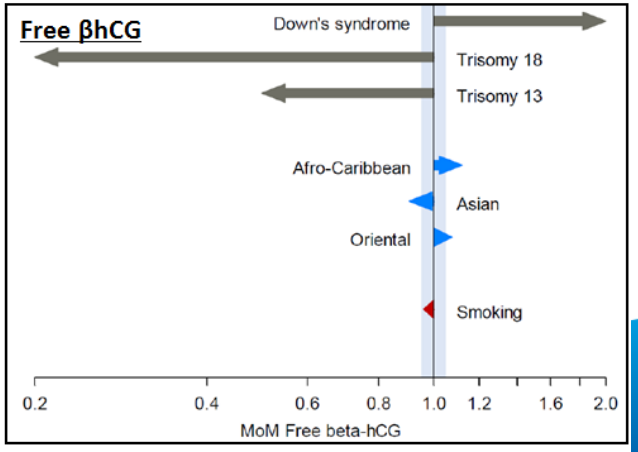
ELECTIVE PART 1 – ANTENATAL SCREENING

<u>First trimester screening:</u>

- 11w 3d – 14w 1d gestation (estimated by CRL from ultrasound)
- Risk of T21 (Downs syndrome) or T18/T13 (Edward's/Patau's syndrome)
- <u>Factors:</u> maternal age, gestational age, nuchal translucency and biochemical markers: **PAPP-A** (pregnancy associated plasma protein A) and **free beta-hCG**.
- 1:150 cut off for high risk referral
- 85% detection rate, 2.5% false positive rate







ELECTIVE PART 1 – ANTENATAL SCREENING

<u>Second trimester screening:</u>

14w 2d – 20w 0d, gestation calculated from foetal head circumference

Why: Late booking women, NT cannot be obtained on US, scan completed in first trimester but no bloods

"Quad test" – **AFP, total hCG, uE3, inhibin-A**

Biochemical Marker	Trisomy 21 (Down's)	Trisomy 18 (Edwards')
AFP	↓	↓
hCG (free beta/total)	↑	↓
uE3	↓	↓
Inhibin A	↑	Normal

ELECTIVE PART 1 – ANTENATAL SCREENING

BRAHMS Kryptor GOLD!

- Higher throughput
  (~80 samples/hour vs ~30)
- Less manual input required
- Improved interface

ELECTIVE PART 1 – ANTENATAL SCREENING

Verification of a new analyser for a screening programme:

- Precision
- Bias (EQA)
- Method comparison – **are medians in each GA week affected?**
- Linearity
- **Clinical verification**
  - **Detection rate, screen positive rate for T21** (65 known cases versus 389 normal controls, matched for collection time, maternal age, GA, maternal weight and smoking status). All Caucasian, all singleton pregnancies.

ELECTIVE PART 2 - DUTY BIOCHEMIST IN A DGH

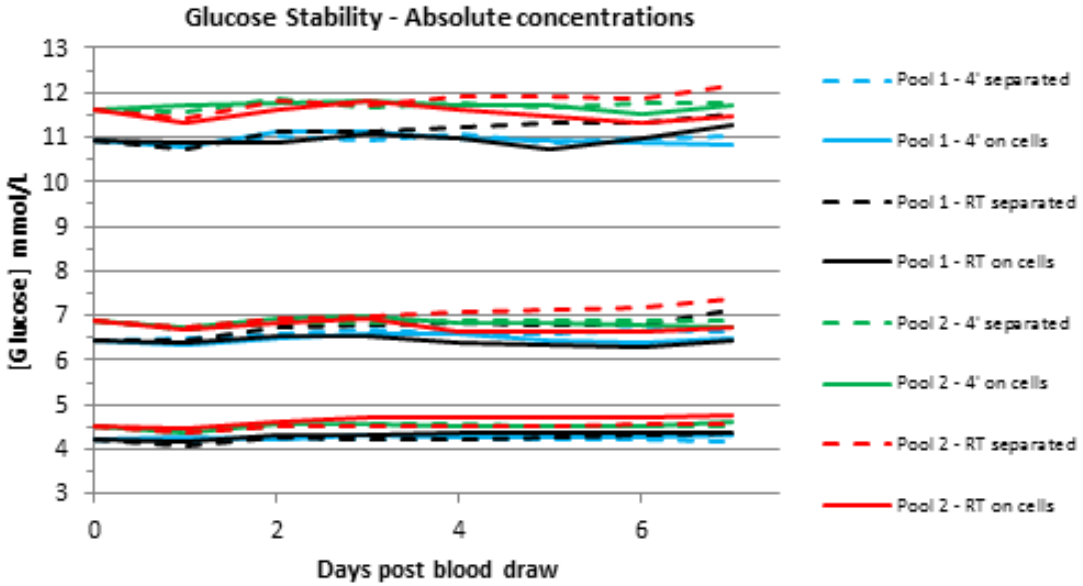
Authorisation (2-3 days per week):

- Routine biochemistry – osmolality, electrolytes, renal, liver
- Routine endocrine – thyroid, fertility, pituitary, HbA1c…
- Proteins

- Hand-written interpretive comments – very few "@" codes!!
- When to add on tests – GGT (ALP), PTH (calcium), testosterone (?PCOS)
  - These are instances where a clinical biochemist can add value, save money and lead to a quicker diagnosis!
- Attendance at MDTs – value of a biochemist is more evident in a DGH!

BONUS PROJECTS!

- Glucose stability study
- Paediatric reference ranges review
- Many opportunities to get competencies and CBDs signed off!



SUMMARY

DO A DGH PLACEMENT IF YOU CAN!

Ask your supervisor if you can do one as part of your training rather than your elective if you want to do something else!

Benefits of a DGH placement:

- Smaller teams = more responsibility
- Experience of a different work environment – not all clinical scientists work in big teaching hospitals!
- Often many small projects you can take on board to contribute to the department in a short time
- Seeing and interpreting real biochemistry results, not just text book cases

ANY QUESTIONS?