

Introduction of a module in inherited metabolic diseases for undergraduate medical students

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Introduction

Chemical pathology and, in particular, inherited metabolic diseases (IMD) have traditionally not featured heavily in undergraduate medical curricula.

Misunderstandings around these subjects and fear that they are overly complicated may have contributed to difficulties recruiting post-graduate trainees into the speciality.

The use of 'Student Selected Components (SSCs)' in medical schools allows students to spend some time exploring an area that they are interested in.

We piloted an SSC entitled 'Inherited Metabolic Diseases in Children and Adults' for medical students at Queen's University in September 2019.

The SSC was re-run in January 2020, but has been suspended since on account of COVID-19 restrictions. 3 students enrolled each time.

Staff Involved

- 1 Biomedical Scientist
- 1 Consultant Cardiologist
- 1 Consultant Geneticist
- 1 Midwife
- 1 Paediatrician
- 2 Clinical Scientists
- 2 Dietitians
- 2 Specialist Nurses
- 4 Consultant Chemical Pathologists

Clinical/Laboratory Experience

- Adult IMD clinic
- Community midwife visit
- Duty biochemist session
- Lipid clinic
- Paediatric IMD clinic
- Regional neonatal screening laboratory
- Specialist metabolic laboratory

Timetable

Week 1

	Monday 13 th January	Tuesday 14 th January	Wednesday 15 th January	Thursday 16 th January	Friday 17 th January
Session 1	09.00-10.00 Introduction to course Dr P Hamilton and Dr G Connolly Seminar Room 2, Mulhouse Building, RVH	11.30-12.30 Tutorial: Introduction to IMD Dr P Hamilton Seminar Room 2, Mulhouse Building, RVH	09.00 – 12.30 Paediatric clinic Dr G Connolly and Dr S O'Sullivan Medical Outpatients, Royal Belfast Hospital for Sick Children	11.00-12.00 Tour of metabolic laboratory Mr D Cardy (Wait in Kelvin Building Foyer for Mr Cardy)	09.00-12.00 Community midwifery session (Newborn screening programme) Venue to be confirmed with Ms McCormack on 16 th January afternoon
Session 2	Self-directed study	14.00-16.30 Adult clinic Drs G Connolly, K Ryan and C Loughrey Metabolic Outpatients, Level 8, Critical Care Building, RVH	Self-directed study	15.00-15.30 Allocation of community midwife placements Ms M McCormack Royal Jubilee Maternity Hospital (Go to office opposite Antenatal Clinic on ground floor).	13.00-14.00 Tutorial: Introduction to laboratory testing in metabolic disease Ms G Hamilton Seminar Room A, Kelvin Building, RVH (Wait in Kelvin Building Foyer for Ms Hamilton)

Week 2

	Monday 20 th January	Tuesday 21 st January	Wednesday 22 nd January	Thursday 23 rd January	Friday 24 th January
Morning	09.00-12.00 Lipid clinic Drs K Ryan and P Hamilton Level 7, Outpatients Building, RVH	10.00-11.00 Tutorial: Homocystinuria Dr K Ryan Seminar Room 2, Mulhouse Building, RVH	09.00 – 12.30 Paediatric clinic Drs G Connolly and S O'Sullivan Medical Outpatients, Royal Belfast Hospital for Sick Children	11.00-12.00 Tour of screening laboratory Mr D Cardy (Wait in Kelvin Building Foyer for Mr Cardy)	14.00-15.00 Tutorial: MCAD Deficiency Dr G Connolly Seminar Room A, Kelvin Building, RVH (Wait in Kelvin Building Foyer for Dr Connolly)
Afternoon	14.00-15.00 Tutorial: Galactosaemia Dr S O'Sullivan Medical Outpatients, Royal Belfast Hospital for Sick Children	14.00-15.00 Tutorial: Dietary management of IMD Ms J McDonald and Ms N McStravick Level 8, Critical Care Building, RVH	14.00-15.00 Tutorial: Phenylketonuria Dr P Hamilton Seminar Room 2, Mulhouse Building, RVH	14.00-15.00 Tutorial: The role of the metabolic nurse specialist Ms Nicky Cluskey Teaching room 2, Royal Belfast Hospital for Sick Children	Self-directed study

Week 3

	Monday 27 th January	Tuesday 28 th January	Wednesday 29 th January	Thursday 30 th January	Friday 31 st January
Morning	09.00-12.00 Lipid clinic Drs K Ryan and P Hamilton Level 7, Outpatients Building, RVH (Building near Falls Road entrance)	10.00-11.00 Tutorial: Newborn screening programme Dr J Cundick Seminar Room 2, Mulhouse Building, RVH	09.00 – 12.30 Paediatric clinic Drs G Connolly and S O'Sullivan Medical Outpatients, Royal Belfast Hospital for Sick Children	10.00-11.00 Tutorial: Urea cycle disorders Dr C Loughrey Meet at Coffee Shop, Ground Floor, Belfast City Hospital	Self-directed study
Afternoon	14.00-15.00 Tutorial: Fabry Disease Dr A Muir Seminar Room, 10 South, Belfast City Hospital	14.00-16.30 Adult clinic Drs G Connolly, K Ryan and C Loughrey Level 8, Critical Care Building, RVH	14.00-15.00 Tutorial: Cascade screening for familial hypercholesterolaemia Ms M Cather Library, Medical Genetics Department, A-Floor, BCH 15.30-16.30 Tutorial: Genetic Counselling and Genome Sequencing for Metabolic Disorders Dr S McKee Library, Medical Genetics Department, A-Floor, BCH	14.00-15.00 Duty biochemist shadowing Dr P Hamilton Doctor's Office, Kelvin Building, RVH (Wait in Kelvin Building Foyer for Dr Hamilton)	14.00-15.00 End of course debrief and student presentations Dr P Hamilton Dr G Connolly Seminar Room 3 (note different venue to usual), Mulhouse Building, RVH

Assessment

1. Students were individually asked to pick an IMD topic of particular interest to them, and to research a novel development in that field. They delivered a verbal presentation on the last day of the SSC to assembled staff members, and answered questions.
2. Students completed a 2500 reflective portfolio detailing their learning during the SSC.
3. A diary confirming attendance was completed

Feedback

The module was well organised?

- 100% strongly agree

The module was stimulating?

- 100% strongly agree

“Good balance of classroom and clinics”
“I really enjoyed the diverse range of topics we got to cover. Overall really enjoyable”
“I enjoyed the good mix of adult and paediatric clinical exposure, as well as an insight into the job of dietitians, midwives and lab pathologists.”

“The sessions were so varied in nature! Reflective diary and presentation is an excellent from of assessment for this module.”

Summary

An SSC is an excellent way to introduce IMD to a small number of medical students. Engaged and enthusiastic staff were key to the success of the SSC.

Acknowledgements

Thank you to all colleagues who made the SSC possible!