

CURRICULUM VITAE

JONATHAN DAVIS

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Personal Information

Date of Birth:

[REDACTED]

Postal Address:

St. Michael's Neonatal Unit
University Hospitals Bristol NHS Foundation
Trust
Southwell Street
Bristol
BS2 8EG

Home telephone:

[REDACTED]

Email address:

[REDACTED]

General Medical Council:

[REDACTED]

Medical Defence Union:

[REDACTED]

Full Drivers licence

Summary

I am currently a Consultant Neonatologist in St. Michael's Hospital, part of the University Hospitals Bristol Foundation Trust. St. Michael's is a supra-regional unit with inpatient services for surgical, cardiac and extremely preterm infants and associated with Bristol Royal Children's Hospital. It is the largest Neonatal unit in the South West of England. I was appointed in February 2011 and took up post in September 2011.

I am one of 7 consultants with rotating responsibility for the 31 bedded intensive care, high dependency, special care and 20-bedded transitional care unit. I also have responsibility for the regional transport service, which retrieves infants from around the South West of England and can provide transport with cooling and nitric oxide.

My roles within the team are as lead for Infection within the unit and I have a specific interest in infection control, early detection of infection and perinatal acquired infections. I also have responsibility for undergraduate education specifically bedside and lecture-based teaching in the University of Bristol, care of the newborn module in year 4 of the undergraduate medical course. I am also a senior clinical lecturer with the University of Bristol. I have responsibility for postgraduate training of appointed junior medical staff.

During my time as a consultant I have sought to learn and adapt to the challenges faced by a new appointee. I have sought to develop my interest as infection lead and am in the process of developing protocols for infection management within the unit. I have spoken at local and regional conferences on the topic of infection and am the principle investigator for the NEOMERO study due to begin in 2013.

Education

Undergraduate

Queen's University of Belfast

1996 – 2001

MB Bch BAO

July 2001

Postgraduate

Royal College of Paediatrics and Child Health

Part I

December 2002

Part II (Written)

December 2003

Part II (Clinical and Oral)

June 2004

MRCPCH (elected)

September 2004

FRCPCH

September 2011

Queen's University of Belfast

Doctorate in Medicine

2007 – 2013

Research Degree in the Application of molecular techniques in the practice of neonatal medicine. Graduation July 2013.

Certificate course in Statistics and Epidemiology (part of M.D. programme) (Course work assessment and written examination).

Critical Life Support

Advanced Paediatric Life Support

October 2004

Neonatal Life Support

October 2004/2007

Paediatric and Neonatal Critical

May 2005

Care Transport Course

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| Safe Transport and Retrieval | October 2005 |
| Paediatric and Neonatal Safe Transport and Retrieval | September 2008 |
| Queensland Retrieval training | August 2010 |

Previous Positions

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| 04/08/2010 – 02/08/2011 12 months full time. On call from home 1 in 4 – 1 in 5 for retrievals. 2-3 weeks roster Registrar per term (4 terms per year) included nights and evening shifts. | Senior registrar in Neonatology. Leading ward rounds, clinical supervision of ICN and SCN. High risk deliveries and their subsequent management. Antenatal consults, attendance at MFM meeting for MFM follow up, developmental assessment programme, follow up clinics and post natal ward responsibilities. Retrieval throughout Queensland and Northern New South Wales. | Grantley Stable Neonatal Unit, Royal Brisbane and Women's Hospital, Herston Road, Herston, QLD, 4129. Australia. Supervising consultants- Dr D Cartwright, Dr G Inglis. |
| 05/08/2009 – 03/08/2010 12 months Full time on call Full shift 7 person | RCPCH National Grid Training number in Neonatology Duties included in addition to those mentioned in core neonatology. Developing skills in leading ward rounds, junior medical staff supervision, rosters and acute personnel management. Provision of clinical and non-clinical leadership to the junior neonatal team. | Royal Maternity Hospital Grosvenor Road Belfast BT126BB UK Supervising consultants: Dr R Tubman, Dr S Craig, Dr D Sweet, Dr C Mayes, Dr D Millar, and Dr A Verner. |

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| | <p>Clinic and outpatient responsibilities as delegated by consultant staff.</p> <p>High risk deliveries and the management of more challenging infants.</p> | |
| <p>01/08/2007 – 04/08/2009</p> <p>24 months total</p> <p>Full time Research</p> <p>Locum on-call commitment.</p> | <p>Neonatal Research Fellow</p> <p>Regional Neonatal Medicine/ Regional Microbiology and Molecular Diagnostic Laboratory.</p> <p>Full time research post for 2 years for completion of a Doctorate in Medicine. This involved</p> <ul style="list-style-type: none"> • Creation of an original research project: from inception to conclusion: • drafting research protocol, • acquiring regional ethical approval, • patient recruitment and consent, • unit education and update, • molecular technique acquisition in the laboratory | <p>Royal Maternity Hospital Grosvenor Road Belfast BT126BB UK</p> <p>Supervising consultants: Dr R Tubman, Dr S Craig, Dr D Sweet, Dr C Mayes, Dr D Millar, and Dr A Verner. Dr S Christie, Dr A McCarthy, Prof. M Shields.</p> |

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| | <p>environment,</p> <ul style="list-style-type: none"> • development of a molecular assay, • extraction, processing and testing of samples, • analysis of results and comparison with clinical data. <p>The application to neonatal practice was also important in this post and the translational nature of the project is heavily emphasised.</p> <p>Clinical data on neonatal sepsis was accumulated and is currently being processed.</p> <p>This post also involved wider involvement as part of the neonatal team mainly in education/teaching (participation and leading), perinatal meetings, surgical meetings and partial on call commitment.</p> | |
| Core Training | | |
| Year 2 | | |
| Higher Specialist Trainee | | |
| 07/02/07 – 31/07/07 | <p>SpR Paediatric Intensive Care</p> <p>The Regional Paediatric</p> | <p>Paediatric Intensive Care Royal Belfast Hospital for Sick Children</p> <p>Grosvenor Road,</p> |

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| <p>On-call lin 6</p> <p>24 hour shift</p> | <p>intensive Care Unit is a 7-bedded intensive care unit for the provision of critical care for children aged from neonates to 18.</p> <p>Patients are admitted acutely from throughout the region and also transferred for pre and postoperative care.</p> <ul style="list-style-type: none"> • My duties consisted of medical management of the unit including • development of management plans on a daily and weekly basis, • liaison with members of the wider multi-disciplinary team, • management of ventilation (high frequency Sensor Medics, nitric oxide, Servo I), • weaning from artificial ventilation, management of sedation and paralysis for ongoing care • critical care transfer (to CT and MRI) practical skills – Intubation of a variety of ages using sedation and paralysis (condition | <p>Belfast</p> <p>BT12 6BA</p> <p>Supervising Consultants: Dr A Cisakuta, Dr J Lyons.</p> |
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| | <p>dependant),</p> <ul style="list-style-type: none"> • ventilation management, • line insertion (triple lumen percutaneous in femoral, subclavian, internal and external jugular veins) and peripheral arterial line insertion • review of patients possibly requiring intensive care. | |
| <p>02/08/06 – 06/02/07</p> <p>6 person: Full shift</p> | <p>SpR Regional Neonatal Medicine</p> <p>10-12 intensive care cots and 17 High Dependency Cots.</p> <p>Duties:</p> <ul style="list-style-type: none"> • participation and leading intensive care, • high dependency and special care ward rounds, • attending general neonatal and neuro-developmental follow up clinics, • attendance at high risk pre-term deliveries (on and off site), • participation in unit based teaching (induction and ongoing neonatal updates), • organisation of external and complicated diagnostic tests, • procedures: | <p>Royal Maternity Hospital Grosvenor Road Belfast BT126BB UK</p> <p>Supervising consultants: Dr R Tubman, Dr S Craig, Dr D Sweet, Dr C Mayes, and Dr D Millar.</p> |

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| | <ul style="list-style-type: none"> • intubation (elective and emergency, use of sedating drugs in procedures, • percutaneous central line insertion, • umbilical venous and arterial line insertion, peripheral arterial line insertion and supervision of junior medical in such procedures), • supervision and management of term post-natal infants with junior medical staff, participation in unit audit programme and quality control • organisation of perinatal meetings, surgical meetings, morbidity and mortality meetings. | |
| <p style="text-align: center;">Year 1</p> <p style="text-align: center;">Higher Specialist Trainee</p> | | |
| 03/08/05 – 01/08/06 7 Person: Full Shift | SpR General Paediatrics General Paediatrics (General Paediatric Medicine (6 months), Community Paediatrics (6 months) and Level II Neonatology Large District General Hospital Responsibilities, General | Altnagelvin Area Hospital, Glenshane Road, Derry, U.K. Supervising Consultants: Dr C Imrie, Dr. N Corrigan, Dr M Quinn, Dr D Brown, r B McCord. |

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| | | <p>Paediatrics:</p> <ul style="list-style-type: none"> • Leading and Participation of Ward rounds in Children's Ward and NICU/SCBU • Delivery suite and postnatal ward cover Medical supervision of Day case unit and Transitional Care Unit • Supervision of Junior medical staff • Practical Procedures in NICU/SCBU Outpatient Clinics and outpatient follow-up (2 -3 clinics per week): Neonatal Follow Up, Gastroenterology, General Medical, Diabetes • Transportation of Critically Ill patients to PICU <p>Responsibilities, Community Paediatrics:</p> <ul style="list-style-type: none"> • Undertaking and marinating ADHD outpatient clinics • Weekly Child Development Clinic • Palliative Care Rota Cover • Child protection duties with supervising consultation • Adoption medicals • Hospital Liaison | |
| Year 3 General Professional Training | | | |
| 04/08/04 02/08/05 | - | Middle Grade SHO (in Lieu of Registrar) | Craigavon Area Hospital, Portadown Road, Craigavon. |

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| <p>1 in 5 24 hour shift and 1 in 7 full shift rota</p> | <p>General Paediatrics (Paediatric Medicine and Level II Neonates)</p> <p>Responsibilities:</p> <ul style="list-style-type: none"> • Leading and participation in consultant ward rounds • Ward and day patient management and follow up • Transport of Critical Care Patients to PICU • Emergency Department Liaison and resuscitation team supervision of junior medical staff in procedures and management Neonatal Intensive Care ward rounds, day to day management • Cover for delivery suite resuscitation and post natal wards • Clinic attendance: Asthma, General paediatric, Adolescent, Neonatal Follow Up (8-10 per week for 4 months) | <p>Supervising Consultants: Dr B Bell, Dr M Smyth, Dr S Thompson, DR C Shepard, and Dr M Hogan.</p> |
| <p>2 Year Paediatric Rotation, Royal Hospitals Trust</p> | | |
| <p>Year 2 General Professional Training</p> | | |
| <p>04/02/2004 – 03/08/2004</p> | <p>SHO Paediatric Neurology/ Paediatric Intensive Care</p> | <p>Royal Belfast Hospital for Sick Children Grosvenor Road, Belfast</p> |

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| <p>1 in 7: 24hour Shift (1st on-call, Cardiology, Diabetes, Renal, Neurology and Haematology)</p> | <p>Responsibilities:</p> <ul style="list-style-type: none"> • Management of patients on the respective wards and supervised outpatients sessions in neurology • Ward assessments of outlying patients from neurology • Emergency Department Liaison for intensive care and neurology patients at presentation • Attendance at weekly neuroscience, EEG and neuro-imaging liaison meetings. • Practical procedures as outlined in PICU attachment above. • Neuro-metabolic liaison | <p>BT12 6BA</p> <p>Supervising Consultants: Dr A Cisakuta, Dr J Lyons (PICU), Dr D Hanrahan, Dr E Hicks.</p> |
| <p>06/08/03 – 03/02/04</p> <p>7 person: Full shift</p> | <p>SHO in Regional Neonatology</p> <p>Duties:</p> <ul style="list-style-type: none"> • Participation and leading intensive care, high dependency and special care ward rounds • Attending general neonatal and neuro-developmental follow up clinics • Attendance at high risk pre-term deliveries (on and off site) | <p>Royal Maternity Hospital Grosvenor Road Belfast BT126BB UK</p> <p>Supervising consultants: Dr R Tubman, Dr S Craig, Dr D Sweet, and Prof H Halliday.</p> |

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| | <ul style="list-style-type: none"> • Participation in unit based teaching. • Procedures (intubation (elective and emergency, use of sedating drugs in procedures, percutaneous central line insertion, umbilical venous and arterial line insertion, peripheral arterial line insertion) • Management of term post-natal infants Participation in unit audit programme and quality control. | |
| Year 1 General Professional Training | | |
| 07/05/03– 05/08/03 1 in 7: 24 hour shift (1 st on-call, general paediatrics) | SHO in General Paediatrics and Renal Medicine <ul style="list-style-type: none"> • Ward based duties – cannulation, phlebotomy, patient management (acute care), discharge planning and follow up • Participation in consultant based ward rounds • Cover of infectious diseases ward, medical input on surgical wards • Management of diabetic patients (in and outpatients) • Management of renal | Royal Belfast Hospital for Sick Children Grosvenor Road, Belfast BT12 6BA Supervising Consultants: Prof M Savage, Dr M O'Connor, and Prof M Shields. |

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| | patients (renal biopsy assistance, fluid management, outpatient clinics) | |
| 05/02/03 – 06/05/03 1 in 5: 24 hour shift | SHO in Emergency Medicine Paediatric Emergency Department <ul style="list-style-type: none"> • Reviewing patients at time of presentation in acute and emergency situations • Participation in department teaching • Liaison with ward departments • Acquisition of Emergency medicine and acute skills | Royal Belfast Hospital for Sick Children Grosvenor Road, Belfast BT12 6BA Supervising Consultant: Dr B Bartholemew, Dr J F T Glasgow |
| 07/08/02 – 04/02/03 1 in 7: 24 hour shift in Royal Belfast Hospital for Sick Children | SHO in Community Paediatrics <ul style="list-style-type: none"> • Outpatient based Clinics in Child development, ADHD, Constipation and enuresis, Community Asthma and general medical clinics • Special educational school liaison • Participation in autism diagnosis • Multi-discipline team liaison • Observation and experience | North and West Community Trust in Cupar Street, Falls Road, Belfast Supervising Consultant: DR M Stewart |

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| | <p>in audiology, visual and dental clinics</p> <ul style="list-style-type: none"> • Organisation and filing of results • Ongoing management of difficult social cases | |
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Courses and Symposia

Conferences

| Name | Place | Date |
|--|----------------------------------|----------------|
| 2012 | | |
| European Academy of Paediatrics | Istanbul | October 2012 |
| Echo Skills | London | October 2012 |
| 2011 | | |
| 6th World Congress of Pediatric Critical Care | Sydney Convention Centre, Sydney | March 2011 |
| Perinatal Association of Australia and New Zealand | Hobart | April 2011 |
| 2010 | | |
| Pediatric Academic Societies | Vancouver | May 2010 |
| Irish Perinatal Society | Dublin | April 2010 |
| Royal College of Paediatric and Child Health | Warwick | April 2010 |
| 2009 | | |
| ESPR | Hamburg | October 2009 |
| Neonatal Research Symposium | Dublin | September 2009 |
| 24 th International Workshop of Surfactant Replacement Therapy, | Ljubliana, Slovenia | June 2009 |
| Irish Perinatal Society | Maynooth, Co. Kildare | March 2009 |
| 2008 | | |
| European Society of Paediatric Research (ESPR) | Nice | October 2008 |

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| 23rd International Conference On Surfactant Replacement Therapy | Brugge | June 2008 |
| Perinatal Medicine, British Association of Perinatal Medicine | Harrogate | June 2008 |
| Irish Perinatal Society | Cork | April 2008 |
| Royal College of Paediatrics and Child Health | York | April 2008 |
| Network for the Advancements in Transfusion Alternatives (NATA) | Lisbon | April 2008 |
| 2007 | | |
| World Congress of Paediatric/Neonatal Critical Care | Geneva | June 2007 |
| 2006 | | |
| Europaediatrics Congress (now EAP) | Barcelona | September 2006 |
| Irish Paediatric Anaesthetic and Critical Care Society, ICU symposium | Kilarny | June 2006 |
| Irish Perinatal Meeting | Dublin | May 2006 |
| Ulster Paediatric Society 'Out of Town' Meeting | Limavady | May 2006 |
| Scottish ADHD | Edinburgh | March 2006 |

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| symposium | | |
| Scottish Neonatal Hot Topics | Glasgow | March 2006 |
| Association of Paediatric Emergency Medicine | Glasgow | September 2005 |

Critical Life Support Courses

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| Neonatal Retrieval Training | Brisbane, QLD | August 2010 |
| Paediatric and Neonatal Safe Transport and Retrieval Course | Belfast | September 2008 |
| Newborn Life Support Generic Instructors Course | Bristol | |
| Newborn Life Support Course | Belfast | September 2006 |
| Paediatric and Neonatal Critical Care Transport | Leicester | May 2005 |
| Advanced paediatric life support course | Manchester | October 2003 |
| Newborn Life Support Course | Manchester | October 2003 |

General Paediatric Education

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| Ulster Paediatric Society Spring Symposium on Paediatric and Neonatal Transport (chief organiser): Main speaker Prof. D. | Belfast | March 2007 |
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| Jaimovich. | | |
| Ulster Paediatric Society Spring Symposium on International Child Health | Antrim | March 2006 |
| Paediatric Registrar Symposium in Institute of Physics | London, | November 2005 |
| Does every child matter? Child Protection Course | Hammersmith hospital, Imperial College London | March 2004 |

Neonatal Courses

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| Neonatal Pain Symposium | Belfast | May 2009 |
| BAPM Perinatal Trainees Meeting | London | November 2008 |
| Neonatal Brain Imaging and Injury Course | Karolininka Institute Stockholm | September 2007 |
| All Ireland Neonatal study day | Belfast | March 2006 |
| Pharmacological management of the Neonate | Glasgow | January 2005 |

Research and Evidence Based Courses

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| Centre for Infection and Immunity Student Research Symposium | Queen's University, Belfast | May 2009 |
| Regional Microbiology Research Symposium | Royal Hospitals | June 2008 |
| Medical Statistics, (6 months lecture and practical based course) | Queen's University Belfast | Autumn/Winter 2007/8 |
| Generic Induction for Higher Research Degrees | Queen's University Belfast | Autumn/Winter 2007/8 |
| Evidence based medicine Residential Course | Cork | April 2005 |

Teaching

I have gained considerable experience in teaching medical students to post-graduates. I instruct on the newborn life support course. I have also have had significant involvement with Queen's University of Belfast's and the University of Queensland's undergraduate programme in neonatology and with student selected components on neonatal adaptation.

Undergraduate

General Paediatrics

- Ward level
- Student tutorials
- Bedside teaching and lectures
- Organised medical student exams in Craigavon Area Hospital 2004-2005
- Teaching on Transport telelink review in Altnagelvin Area Hospital in Friday lunch time teaching
- Presenting the transport of critically ill child at telelink forum in Craigavon Area Hospital (on 3 occasions)
- Teaching case of PUO to peers in Craigavon Area Hospital as part of Thursday pm teaching seminar

Neonatology

- Senior Clinic Lecturer, University of Bristol
- Associate lecturer in paediatric and child health, University of Queensland
- Lectures on general neonatology, Belfast and Brisbane
- Unit teaching, bedside teaching and tutorials
- Cardio-Respiratory Adaptation as a basis of Neonatal Medicine. Teaching on Year 2 Special Study Module on Neonatal in Queens University, Belfast, February 2009

- Non-Queen's Student Elective Projects – research orientated project for non- QUB students

Resuscitation

- Ward based teaching
- Newborn Life Support Instructor, 2007 - present (UK Resuscitation Council accredited)
- Newborn Resuscitation Programme course in Brisbane, Australia, 2010 – 2011, Lectures and practical sessions.

Multidisciplinary

- Regional Transport Multi-site telelink co-ordinator - I initiated this project in April 2005 to facilitate and enable multidisciplinary learning on the topic of critical care transport. I have expanded this project to include 4 centre meeting monthly via teleconferencing facilities to discuss critical care transport and to improve education in this area. This project also involves multidisciplinary team members including the Northern Ireland Director of Paediatric and Neonatal Transport. This project was developed into a regional audit and was funded £30,000.
- Chief organiser of a regional Conference on the topic of Paediatric and Neonatal Transport. Attended by 150 delegates and with a renowned international faculty including Dr D Jaimovich, Former Director of Critical Care Transport, Hope Hospital, Chicago, Illinois and Author of numerous papers and books on the subject of neonatal transport.
- Newborn Life Support
- Combined Medical and Nursing Student Education
- Neonatal Nursing Education Tutorials

Postgraduate

- Teaching Co-ordinator in Craigavon Area Hospital 2004-2005
- Weekly registrar led SHO teaching

- SpR teaching
- Supervision of Clinical Work
- Multiple teaching presentations to neonatology department, RJMH including:
Neonatal Seizures

Systematic Review and 21% Oxygen in Newborn Resuscitation

Research Presentations (updates and protocol explanation)

- Transport education – including tele-conferencing and tutorials
- Newborn Life Support
- **Reviewer for Archives of Disease in Childhood:** Assuring validity of multi-source feedback in a national programme. On three occasions
- Newborn Life Support Instructor

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| NLS (x2 Courses) | Belfast | February 2008 |
| NLS (x2 Courses) | Belfast | September 2008 |
| NLS | Derry | November 2008 |

Management

Rota Organisation

Organisation of Rotas in Altnagelvin (Derry), RMH, RBHSC and Craigavon

Organisation of Weekly Rota in RMH

Organisation of weekly prenatal meetings, educational meetings and journal club in RMH

Examinations

Organisation of medical student examinations in Craigavon 2004 – 2005

Committees

Member of the Royal College of Paediatric and Child Health, Ireland committee

Junior medical staff representative at the RMH directorate meeting, Royal Maternity Hospital, Belfast

Member of Regional Transport Audit Group

Member of the project group for the sextuplet delivery in Belfast, May 2009

Protocol Development

Transport education and discussion protocol

Development of revised Northern Ireland Transport Performa

Protocol for the management of Kawasaki's Disease, Craigavon

Development of research protocol for small and larger projects on blood culture collection, breast milk expression and TPN administration

Management course

Neonatal management training course sponsored by Cheisi, Hathersage, Lancs.

Audits

5 year review of blood culture data in NICU, RBWH, Queensland. April 2010

Audit of very-low-dose Dexamethasone in extreme prematurity.

Review of Dexamthasone medication and efficacy of a very low dose on infants <26 weeks between January 2003 – January 2006. December 2008

Audit of surfactant use over 15 year period in Belfast NICU. Review and comparison of early respiratory management in Royal Maternity Hospital, January 2006 – January 2008 (comparison with early 1990's practice) December- January 2007/2008

Audit of Neonatal Phlebotomy. Description of phlebotomy practice and comparison following an educational intervention. November 2007

Audit of expression of breast milk in the neonatal unit. Description of Breast Milk Expression in Preterm Infants and points for practice improvements. October 2007

Regional Critical Care Transport audit data collection as part of the RMAG group. (Described above).

Incorporation of Altnagelvin Area Hospital into Craigavon and PICU tele-link review to create a three-way transport review network. August 2005

Audit of critical care transport from Craigavon Area Hospital to the PICU in RBHSC in Belfast. (Tele-link with expert review), May 2005 -

Audit of Paediatric resuscitation in Craigavon Area Hospital, June 2005

Audit of the use of Standardized vs. individualized TPN in a regional neonatal unit, Winter 2003-2004

Research

The use of molecular techniques in the neonatal sepsis.

In August 2007 I commenced the above titled project. This project is centred on the use of 16s ribosomal RNA in a real time PCR assay to aid in the identification of bacterial pathogens in late onset neonatal sepsis. This project was undertaken as part of a higher medical research degree (Doctorate of Medicine) through the Queen's University of Belfast.

I am the principal investigator of the project, designing and writing the protocol and funding application. I also wrote the ethics application and defended this application to the Northern Ireland Regional Ethics Committee. The project was undertaken in the Regional Neonatal Intensive Care Unit between August 2007 and August 2009. All infants (all gestations) were consented 48 hours after their admission. Following consent if blood culture was required a further 0.5 mls of blood (in potassium EDTA bottle) was collected in addition to the routine blood taken at this time. In total I consented 150 patients who provided 108 samples for testing with the developed 16s rRNA assays. At the time of blood collection clinical data was collected to determine whether the patient was septic at the time of sampling and in the subsequent time period.

I also developed the molecular assay in the Regional Virology and Microbiology labs with post-doctoral science support. The assay involved the development of a 16s rRNA Taqman (real time) assay to screen samples for bacteraemia/infection and to determine the copy number of bacteria and a T-RFLP assay for the identification of bacterial species. The 108 samples were then tested with this battery of tests and correlated with the clinical information collected after presentation.

The use of this broad spectrum bacterial identification test should allow increased versatility and sensitivity in the understanding of bacterial infection or sepsis in neonatal

patients. It should provide information on difficult to culture organisms, presence of bacterial DNA following antibiotics and also determination of bacterial 'load'.

Viral Pathogens in Neonates

As part of this research project I also have investigated the infection of neonates with novel and common viruses namely Human enterovirus and Parechovirus (HPeV). Using a molecular assay targeted to the 5'-UTR region of HPeV and found that in the collected samples there was an incidence of 11%. I am in the process of re-testing these samples to verify the incidence of infection using a different gene sequence. This aspect of the research is due to be presented at the European Society of Paediatric Research in Hamburg in October.

Bacterial Culture and Neonatal Patients

As an extension of this research, I have studied the use of the blood culture in the diagnosis of bacterial infection in neonates. The company which produces the blood culture analysis system (BAC-TEC 3D, Biomérieux) has produced guidance blood volume required for their blood culture system. This volume is 2mls and represents approximately 4mls/kg of a neonate's blood volume. This volume is seldom achieved in micro-premies and so sensitivity and specificity is unknown at the lower volumes used. Volumes of blood were calculated (following interception and weighing of blood bottles) and correlated with overall positivity, time to initial growth and clinical condition of the infant. To date we have initially collected 19 samples and plan to continue collection to improve the reliability of the study. Interim results indicate that volumes of less than one ml are very commonly sent for culture. Further analysis is being undertaken.

Respiratory Studies

I have also been involved in a number of respiratory based studies in the Regional Neonatal Unit in Belfast. These studies have involved the investigation of surfactant replacement therapy and associated respiratory therapy in the Royal Maternity Hospital, Belfast. I demonstrated that the early respiratory management of pre-term infants has changed somewhat over this period and had become more targeted during this time.

Surfactant administration has become more selective, post-natal steroids has reduced and is now used in infants who meet very specific criteria, there is also an increased use of CPAP from earlier in life and in smaller infants.

I have also investigated the use of very low Dexamethasone in pre-term infants with chronic ventilatory requirements. It was demonstrated that a very low dose 0.05mg/kg/day for 7-9 days was as effective as larger doses (recommended by the DART protocol and others). This research was presented at the 23rd and 24th International Workshop on Surfactant Therapy in Brugge and Ljubljana in 2008 and 2009 respectively. These studies have also been presented at the Irish Perinatal Society and the latter study is due to be presented at the European Society of Paediatric Research in Hamburg 2009.

Neonatal Phlebotomy

I have been involved in a large scale project for the quality control and reduction of phlebotomy losses in pre-term infants in Belfast. In this project, over two distinct time periods, blood volumes of haematology and biochemistry samples were calculated (following collection and weighing). Over 500 samples were collected and compared. Between the two time periods an educational intervention was undertaken. There was a non-significant reduction in the volumes of blood sent for analysis between the two time periods. This study has been presented at the European Society of Paediatric Research, British Association of Perinatal Medicine, Network for the Advancement of Transfusion Alternatives and the Irish Perinatal Society.

Neonatal Outcome

I have also completed a project with the theme of neonatal outcome. In 1992 data was collected in Royal Maternity Hospital regarding the outcome of infants admitted to NICU. In 2007 we collected similar data and compared the changes in management and outcome over this period. We demonstrated that mortality has remained unchanged over this time period but this can be explained by the increase in multiple births and lower gestations infants. We also showed that rates of BPD had remained relatively unchanged. I presented this research at the Royal College of Paediatrics and Child Health in York in April 2008 and at the European Society of Paediatric Research in Nice, September 2008.

Multi-centre Randomised Controlled Trials

I have recruited and investigated patients for a number of randomised controlled trials:

NEOMERO – Meropenem in neonates

CoolXenon trial

HIPERSPACE – high flow oxygen versus CPAP for extubation

NIPPV- RCT of NIPPV versus CPAP

INIS - immunoglobulin for adjunctive treatment of sepsis in the newborn period

TOBY - Whole Body Hypothermia for the Treatment of Perinatal Asphyxial

Encephalopathy

BOOST II – Benefits of Oxygen Saturation Targeting

ADEPT - Abnormal Doppler Enteral Prescription Trial

Presentations

International

5 year review of blood cultures at the Grantley Stable Neonatal Unit, Brisbane, Queensland, Australia. Poster presentation at the Perinatal Society of Australia and New Zealand, Hobart, April 2011.

Bacterial load quantification in late onset neonatal sepsis using molecular techniques. Poster presentation at PAS, Vancouver. May 2010.

Comparison of Generic Bacterial Molecular Detection (16srRNA) with CRP and Blood Culture in the Diagnosis of Late onset sepsis. Presentation in Dublin for the IPS, April 2010.

Human Parechovirus infection in Neonates. Oral Presentation at the European Society of Paediatric Research, Hamburg, Germany. October 2009

Is a low dose dexamethasone regimen effective in extremely low birth weight babies with evolving bronchopulmonary dysplasia? Oral presentation at the 24th International Workshop on Surfactant Replacement Therapy, Ljubliana, June 2009

Early respiratory management in extreme preterms – a review of outcomes with changing practice. Poster presentation by Dr. N Saxena in European Academy of Paediatrics, Nice, 2008

Changes in the morbidity and mortality in extremely low birth weight infants in Northern Ireland over a 15 year period. Poster presentation in European Academy of Paediatrics, Nice, 2008

Is Formal Teaching in Neonatal Phlebotomy Necessary for the education of junior medical staff? Poster presentation by Dr K Tanney at the European Academy of Paediatrics, Nice 2008

Changing patterns of early respiratory management in extreme prematurity. Presented at 23rd International Meeting for Surfactant Replacement Therapy, Bruges 2008

Is education required for junior medical staff performing neonatal phlebotomy? Poster presentation at the Network for the Advancement of Transfusion Alternatives (NATA), Lisbon, April 2008

Poster presentation on Paediatric Critical Care Transport Review: A Novel Approach. World congress of Paediatric and Neonatal Critical care, Geneva, June 2007

Poster Presentation on Paediatric Critical Transport: A Novel Approach. European Academy of Paediatrics, Barcelona, 2006

DKA, CVL and DKA. Irish and American Paediatric Society, Philadelphia 2005
(Presented by Dr S Thavagnaham)

National

Practical neonatology – Infection control, Bristol, 2012.

Neonatal Phlebotomy Education: A Quality Initiative. Poster presentation at the Perinatal Medicine Conference, Harrogate, June 2008

Outcome of Infant <1000g: A 15-year Comparison. Oral presentation at the Royal College of Paediatrics and Child Health Spring Meeting, York, 17th April 2008

Early respiratory management of extremely preterm infants. Display poster presentation at Irish Perinatal Society, Cork, 12th April 2008

Patterns of breast milk expression in neonatal intensive care. Oral poster presentation presented by Dr B. Rao at Irish Perinatal Society, Cork, 12th April 2008

Outcome of ELBW infants: A 15-year comparison. Oral presentation (plenary session) at Irish Perinatal Society, Cork, 12th April 2008

Improving standards in neonatal phlebotomy. Oral neonatal presentation presented by Dr K. Tanney at Irish Perinatal Society, Cork, 12th April 2008

Paediatric Critical Transport in Northern Ireland: A process Evolving:
Presentation to the Paediatric Visiting Club, Bushmills, September 2007

Poster presentation on Paediatric Critical Care Transport Review to Irish Paediatric Anaesthetic and Critical Care Society ICU Symposium, June 2006

Poster presentation on Paediatric Critical Care Transport Review presentation to the Ulster Paediatric Society Out of Town Meeting, May 2006

Neonatal Sick Cell Syndrome, poster presentation at the Irish Perinatal Society, May 2006

Presentation of Paediatric Critical Care Transport Review: a Novel Approach at Association of Paediatric Emergency Medicine in Glasgow. September 2005

DKA, CVL and DKA at the UPS Out of Town Meeting, May 2005

Acceptance of Standardised TPN: A quality assurance initiative. As a poster at the British Association of Parenteral and Enteral Nutrition. Birmingham 2005

Standardized TPN fast food for sick babies. Irish Paediatric association/ Ulster Paediatric Society, Sligo, May 2004

Standardized TPN fast food for sick babies, Irish Perinatal society, Cork, April 2004

Local

Queens University 2nd year research symposium: Molecular Techniques in Paediatric and Neonatal Sepsis, May 2009

Research Symposium in Microbiology, June 2008

Local participation in regional hospitals (at time of employment) in hospital based teaching programme

Teaching on Transport tele-link review in Altnagelvin Area Hospital in Friday lunch time teaching

Presenting the transport of critically ill child at tele-link forum in Craigavon Area Hospital (on 3 occasions)

Teaching case of PUO to peers in Craigavon Area Hospital as part of Thursday pm teaching seminar

Case presentation of 3 cases of *Metapneumovirus* in children's intensive care unit to the inter-directorate meeting of Royal hospitals, and to the Joint Quarterly Infectious Diseases meeting, March 2004

Involvement in **Joint medical/nursing student** teaching in Queens University, Belfast

Multiple teaching presentations to neonatology department, RJMH including:
Neonatal Seizures

Systematic Review and 21% Oxygen in Newborn Resuscitation

Research Presentations (updates and protocol explanation)

Publications

Book chapters

Chapter 20. Human Immunodeficiency Virus in Antenatal Consults: A Guide for Neonatologists and Paediatricians. Jonathan Davis and Michael Nissen

Papers

Tanney K, Davis J, Halliday HL, Sweet D G. Extremely low dose Dexamethasone to facilitate extubation in mechanically ventilated preterm babies. *Neonatology* 2011;100:285-289 (DOI: 10.1159/000326273)

Davis JW, Sweet D G. **Pathophysiology and Prevention of BPD.** *Current Paediatric Reviews.* 2008, 1 (4) p 2-14.

Davis J, Surendran T, Thompson S, Corkey C. **DKA, CVL and DVT. Increased risk of deep venous thrombosis in children with diabetic ketoacidosis and femoral central venous lines.** *Ir Med J.* 2007 Jan; 100(1):344.

Published Abstracts

Tanney K, Davis JW, Halliday HL, Sweet DG. **How effective is very low dose dexamethasone in reducing ventilation requirements in extremely low birth weight babies?** Published in IMJ online:
<http://www.imj.ie/Archive/Abstracts%20from%20Peri-Natal%20Society%20-%202009.doc>

Davis JW, McCall, Craig JS. **Changes in Morbidity and Mortality In Extremely Low Birth Weight Infants in Northern Ireland Over A 15- Year Period.** *Arch Dis Child* 2008;93(Suppl II):A427

Saxena N, Davis J, O'Neill C, Sweet D. **Early Respiratory Management in Extreme Preterms: A Review Of Outcomes With Changing Practice** Arch Dis Child 2008;93(Suppl II):A437

Tanney K, Davis J, McCall E, Murray S, Craig S, Mayes C. **Is formal education in Neonatal phlebotomy necessary for the education of junior medical staff.** Arch Dis Child. 2008;93(Suppl II):A439

Davis JW, Saxena N, O'Neill CP, Sweet DG. **Changing Patterns of Early Respiratory Management in Extreme Prematurity.** Neonatology 2008; 93 (4): 328 – 337.

Davis JW, McCall E, Craig JS. **Outcome of Infants < 1000g: A 15 year comparison.** Arch. Dis. Child. 2008, 93 (4).

Tanney K, Davis J, McCall E, Murray S, Craig S, Mayes C. **Improving Standards In Neonatal Phlebotomy.** Published in IMJ online:
<http://www.imj.ie/Archive/Prgforirisihper.pdf>

Rao B, Davis J, Mayes C. **Patterns of breast milk expression in neonatal intensive care.** Published in IMJ online:
<http://www.imj.ie/Archive/Prgforirisihper.pdf>

Davis JW, McCall E, Craig JS. **Outcome of Extremely Low Birth Weight Infants: A 15 Year Comparison:**
<http://www.imj.ie/Archive/Prgforirisihper.pdf>

Davis JW, McCall E, Craig JS. **Improving outcomes at extreme prematurity in Northern Ireland: A ten-year comparative study of infants born at 22-25⁺⁶ weeks gestation.** Published in IMJ online:
<http://www.imj.ie/Archive/AbstractsfromtheIrishPeriNatalSociety2007.doc>

Davis J W, Taylor R H, Imrie C B, Bell B. **Review of paediatric critical care transport in Northern Ireland: an evolving process.** Pediatric Critical Care Medicine. 2007; Book of Abstracts. 8(3) Suppl:A1-A364, May 2007.

Davis J W, Taylor R H, Imrie C B, Bell B. **Paediatric Critical Care Transport Review. Paediatric Critical Care Transport Review: A Novel Approach.** European Journal of Paediatrics 2006; 165 (1), 334.

Chillingworth A, Davis J, Thavagnanam S, Craig J S. **Standardised TPN: Fast food for Sick Babies.** Journal of Maternal – fetal and neonatal medicine. 2004; 16 (suppl 1) fc 2.6.3

Published book reviews

Davis J W. **Paediatric Surgery.** Arch.Dis.Child 2007; 92: 187.

Davis J W. **Paediatric Surgery and Urology. Long Term Outcomes, 2nd edition.** Arch. Dis. Child. 2007; 92: 469.

Learned Societies

Royal College of Paediatrics and Child Health

British Association of Perinatal Medicine

Ulster Paediatric Society

Irish Perinatal Society

Other Information

Participant in National Cheisi training days for Curosurf.

International Medical Experience

Semester working in a rural Kenyan hospital in general paediatrics and neonatology. Work included supervised ward rounds (immediate and by telephone) by one of two doctors on site, satellite clinics and I in 4 on call responsibility for acute care and wards.

International Summer School in Paediatrics in Groningen and Amsterdam, Netherlands. 2 weeks course on a variety of paediatric topics with an international faculty and student body.

References

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