NeoCard 22nd – 23rd September 2025

Aims and objective of lectures

Each talk is 25 minutes – please see agenda for full timings

Day 1 – 22nd September 2025

Talk: Perinatal management of twin-to-twin transfusion syndrome
Presenter: Prof Asma Khalil

Aims: To provide an overview of the diagnosis and perinatal management of twin-to-twin transfusion syndrome (TTTS) in monochorionic twin pregnancies.

Learning objectives:

- Define TTTS and understand its underlying pathophysiology.
- Recognise the diagnostic criteria and staging systems.
- Outline key management options, including fetoscopic laser ablation.
- Identify complications and monitoring strategies before and after birth.
- Appreciate the importance of timely referral and multidisciplinary care.

Talk: Cardio-pulmonary resuscitation and outcomes in extreme premature infancy
Presenter: Prof Charles C Roehr

Aims: To explore current approaches to cardio-pulmonary resuscitation in extremely premature infants and examine associated short- and long-term outcomes.

Learning objectives:

- Outline the principles and modifications of neonatal CPR in extreme prematurity.
- Discuss survival rates and neurodevelopmental outcomes following CPR at the limits of viability.
- Recognise the ethical and clinical considerations influencing resuscitation decisions in this population.

Talk: Hemodynamic consequences of respiratory interventions in premature infants
Presenter: Prof Arvind Sehgal

Aims: To discuss hemodynamic effects of common respiratory practices; PPV and surfactant

Learning objectives:

- Available evidence regarding haemodynamic impact of respiratory practices
- Enhanced diagnostic precision and therapeutic judiciousness
- Vulnerability of PT infants to hemodynamic disturbances
- Hemodynamic effects of common respiratory practices; PPV and surfactant
- Identify tools to assess cardiopulmonary interactions and guide management

Talk: Cardiac NRP/NLS 2025
Presenter: Prof Jonathan Wyllie

Aims: Provide the knowledge to give confidence resuscitating newborns with cardiac problems

Learning objectives:

- Discuss the incidence and significance congenital cardiac problems
- Discuss the potential anatomical and physiological differences
- Discuss resulting postnatal
- Inadequate pulmonary blood flow
- Impaired intracardiac mixing
- Insufficient cardiac output.
- Potential airway obstruction
- Discuss which CHD abnormalities may cause immediate cardiovascular instability during transition
- Reassure that for most abnormalities a standard approach works

Talk: Echocardiography assessment of patent ductus arteriosus
Presenter: Dr Maria Carmen Bravo

Aims: Provide the details of echocardiographic evaluation of patent ductus arteriosus

Learning objectives:

- Discuss the evaluation of PDA size and flow pattern.
- Discuss the evaluation of pulmonary overflow.
- Discuss the evaluation of systemic hypoperfusion.

- Discuss different PDA score systems.

Talk: Prophylactic & early treatment of PDA with paracetamol
Presenter: Prof Jean Christophe Roze

Aims: Provide the benefits and challenges of treating presymptomatic patent ductus arteriosus in extremely preterm infants with Acetaminophen

Learning objectives:

· Discuss the Pharmacokinetics of Intravenous Acetaminophen (Paracetamol) in extremely preterm infants
· Discuss the evidence-based principles of efficacity of Acetaminophen in extremely preterm. infants
· Share the results of TREOCAPA trial (Prophylactic treatment of the patent ductus arteriosus with acetaminophen)
· Discuss the short-term safety profile of Acetaminophen (Paracetamol)
· Discuss the long-term safety profile of Acetaminophen (Paracetamol)

Talk: Critical appraisal of early targeted treatment of PDA
Presenter: Prof Samir Gupta

Aims: Appraise the PDA treatment strategies

Learning objectives:

- To treat or not treat the patent ductus arteriosus in preterm infants
- Limitations of various treatment strategies and the potential for harm
- Way forward and future directions for managing PDA

Talk: Fetal primary cardiomyopathy: Current state and strategies to improve outcome
Presenter: Dr Caroline Jones

Aims: Provide an overview of fetal cardiomyopathy and perinatal management strategies

Learning objectives:

- Discuss the incidence and presentation of fetal cardiomyopathy

- Discuss how to make the diagnosis and important aspects of fetal counselling
- Outline genetic testing and implications pre and postnatally
- Discuss perinatal management planning and the role of the neonatologist
- Share future directions and improving outcomes in this challenging patient group

Talk: Impact of therapeutic hypothermia on cardiopulmonary performance
Presenter: Prof Eirik Nestaas

Aims: Provide an overview of impact from cooling on the cardiopulmonary system

Learning objectives:

- Discuss the impact from perinatal asphyxia and therapeutic hypothermia on the cardiopulmonary system
- Discuss the potential impact from impaired cardiopulmonary performance during cooling on outcome following perinatal asphyxia
- Discuss risk factors related to impaired cardiopulmonary performance as amendable factors with potential impact on outcome

Talk: Functional Echocardiography & Assessment of Pulmonary Hypertension
Presenter: Prof Willem deBoode

Aims: To provide an overview of the use of Neonatologist Performed Echocardiography (NPE) in the assessment of pulmonary hypertension in the newborn infant.

Learning objectives:

- Discuss the underlying cardiovascular pathophysiology of pulmonary hypertension
- Describe the different clinical phenotypes of pulmonary hypertension in newborn infants
- Explain the use of NPE to understand the underlying pathophysiology and enable an individualised, tailored management approach

Day 2 – 23rd September 2025

Talk: Hemodynamics at the edge of viability
Presenter: Dr Nim Subhedar

Aims: To understand the challenges of cardiovascular management in the extremely preterm infant

Learning objectives:

Talk: Fetal growth restriction: How the first nine months shape the rest of your lives
Presenter: Prof Arvind Sehgal

Aims: To describe how FGR state affects the heart and the blood vessels.

Learning objectives:

- Scope of the problem
- Cardiovascular journey-what to see on echocardiograms
- Animal data on heart and vessels
- What is known on fetal ultrasound
- Human (neonatal) cardiac & vascular-systemic arterial data
- Human (neonatal) cardiac & vascular-pulmonary arterial data
- Life-long effects of FGR
- Therapeutics

Talk: Role of non-invasive cardiac output monitoring in preterm neonates during postnatal transition
Presenter: Dr Silvia Martini

- Aims: Provide evidence on the use of non-invasive cardiac output monitoring during postnatal transition in preterm infants

Learning objectives:

- Discuss methods and technology for electrical cardiometry
- Discuss evidence on reliability and accuracy of this technique in preterm neonates

- Discuss the main scientific results and potential clinical indications for non-invasive cardiac output monitoring in preterm infants during the transitional period

Talk: Using MRI to investigate altered brain development in fetuses and infants with congenital heart disease
Presenter: Dr Daniel Cromb

Aims: To provide an overview of what we know about placental and brain development in congenital heart disease

Learning objectives:
- Discuss recent research findings from MR Imaging studies assessing fetal brain development in CHD
- Discuss the evidence base for altered brain development in CHD
- Discuss the impact of CHD on neurodevelopment
- Discuss recent work assessing altered placental development in fetuses with CHD

Talk: Artificial intelligence to improve screening for congenital heart disease
Presenter: Dr Thomas Day

- Aims: Outline the latest research and clinical applications on using AI to screen for CHD

Learning objectives:

- Discussion potential benefits of AI in screening context
- Outline risks and pitfalls of using AI
- Outline different AI approaches, and why each might work in different scenarios.

Talk: Cardiovascular biomarkers for prediction of outcomes in infants with CDH
Presenter: Prof Florian Kipfmueller

Aims: Provide an overview of the role of cardiovascular biomarkers in predicting outcomes in infants with congenital diaphragmatic hernia (CDH), including benefits, limitations, and future directions for biomarker-based prognostication in CDH.

Learning objectives:

- Discuss the pathophysiology of cardiovascular compromise in CDH and its relationship with biomarker release.
- Identify key cardiovascular biomarkers (e.g., BNP, NT-proBNP, troponins, echocardiographic markers) studied in infants with CDH.
- Evaluate the potential clinical applications, challenges, and research gaps in integrating biomarkers into CDH outcome prediction.

Talk: Stably unstable: Who goes to cath lab vs. Who goes to OR AND When
Presenter: Dr David Crossland

Aims: To enhance clinical decision-making in managing hemodynamically unstable patients by determining when catheter-based intervention or surgical management is most appropriate.

Learning objectives:

- Distinguish between patients best suited for catheterisation lab vs. surgical intervention based on clinical presentation and diagnostics.
- Identify key indicators of "stable instability" and how they influence timing of intervention.
- Apply multidisciplinary decision-making principles to optimise outcomes in acute cardiovascular emergencies.

Talk: Pharmacotherapy for management of pulmonary hypertension

Presenter: Prof Florian Kipfmueller

Aims: Provide an evidence-based review of pharmacologic strategies for managing pulmonary hypertension (PH) in neonates.

Learning objectives:

- Discuss the evidence-based pharmacotherapies for PH, including inhaled nitric oxide, sildenafil, milrinone, prostacyclin analogues, and endothelin receptor antagonists.
- Evaluate the indications, dosing considerations, side effects, and monitoring requirements for these agents in the NICU.
- Discuss controversies, limitations, and future research directions in the pharmacologic management of neonatal PH.

Talk: Nutritional considerations for the neonate with congenital heart disease
Presenter: Prof Jon Dorling

Aims: To understand the unique nutritional challenges and strategies for optimizing growth in neonates with congenital heart disease.

Learning objectives:

- Describe the impact of congenital heart disease on neonatal growth and metabolism.
- Identify appropriate feeding strategies and nutritional support for pre- and post-operative care.
- Recognise the role of multidisciplinary teams in monitoring and managing nutrition in this population

Talk: Can echocardiography reliably assess diastolic performance in preterm infants
Presenter: Dr David Crossland

Aims: To evaluate the role and reliability of echocardiography in assessing diastolic function in preterm infants.

Learning objectives:

- Explain the principles and parameters used to assess diastolic function via echocardiography.
- Discuss the challenges and limitations of diastolic assessment in preterm infants.
- Interpret echocardiographic findings in the context of clinical relevance and evolving evidence.