Updates on Paediatric clinical research activities

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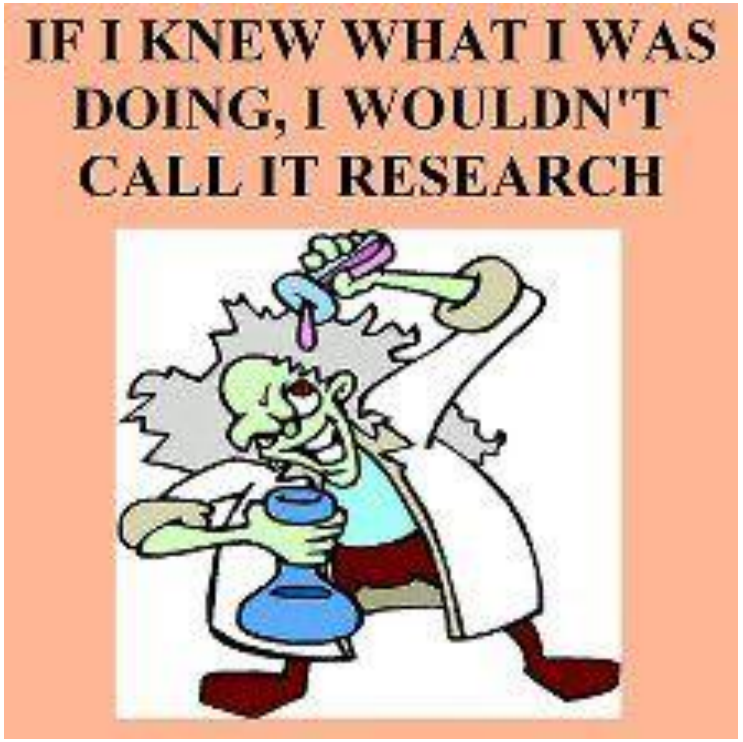
Aim to…

- **Brief introduction**
- **Research updates**
- **Improve contribution**

Clinical challenges…

- *New nephrons can't be made & damaged nephron has a limited capacity to restore activity through regeneration*
- Rare diseases
- Present late
- Uncertain cause, pathogenesis, progress
- No specific therapy
- Limited 'cure'
- Uncertain prognosis, progress to CKD

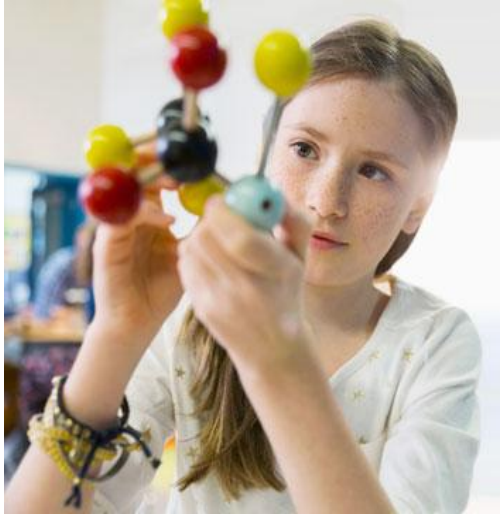
What is it ?
Why bother ?



Clinical research influences our clinical practice

Evidence based practice

Clinical Research …



- Research networks
- Better coordination between units
- Improved local research infrastructures
- Important agenda in national/international meetings
- Multicentre studies
- Registry studies

Research studies which changed clinical practice

- Antenatal Hydronephrosis
- AKI
- UTIs
- Nephrotic syndrome
- Renal genetics
- Progress and prognosis of renal disease
- Hypertension, incl obesity related
- Renal replacement therapy, bone diseases
- Imaging

TABLE I
SUMMARY OF CHALLENGES TO RESEARCH IN PEDIATRIC NEPHROLOGY

Challenge	Contributors	Strategies to address problems
Inadequate power	Small sample size	• Multicenter studies / research networks • Registry data
	Rare outcomes	• Outcomes of particular relevance to children • Intermediate/surrogate outcomes
	Heterogeneity	▪ Normalize age/body size-dependent outcome measures appropriately ▪ Adjust for confounders ▪ Account for effect modification
Funding	Industry: children represent a small market	• Problem largely solved by legislation
	Other agencies: competitive funding climate	• Strongest possible study design • Consider application to funding agencies focused exclusively on child health
Ethical issues	Concerns regarding research in legally incompetent individuals	• Public education and education of health professionals regarding the importance of research in children
Practical barriers	Potentially greater possibility of refusal to participate	• Streamlined consent process • Flexibility in scheduling study visits • Compensation for participants/families

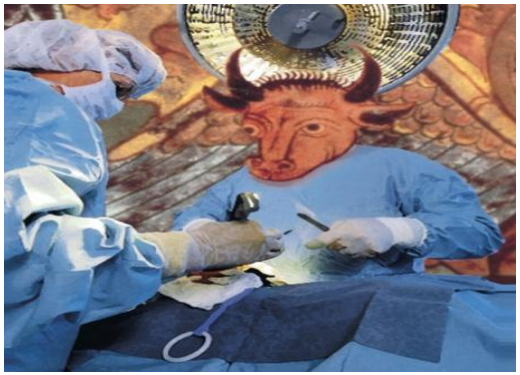
BJ. Foster & BA Warady , Challenges of pediatric nephrology research JNEPHROL 2009 ; 22 (6):685- 693

Clinical Research activities

- Multicentre studies

- Registry

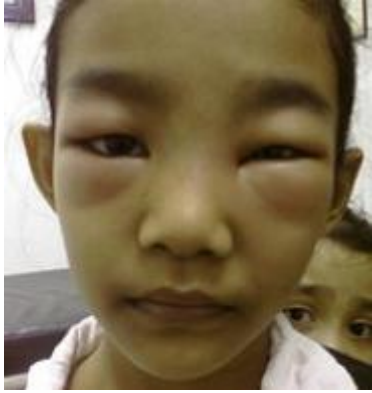
Orthopaedic surgeons: as strong as an ox and almost twice as clever? Multicentre prospective comparative study



BMJ 2011; 343 doi: https://doi.org/10.1136/bmj.d7506 (Published 15 December 2011)

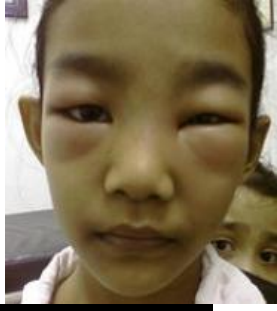
- **Objective** To compare the intelligence and grip strength of orthopaedic surgeons and anaesthetists.
- **Design** *Multicentre prospective comparative study*.
- **Setting** Three UK district general hospitals in 2011.
- **Participants** 36 male orthopaedic surgeons and 40 male anaesthetists at consultant or specialist registrar grade.
- **Main outcome measures** Intelligence test score and dominant hand grip strength.
- **Conclusions** -Male orthopaedic surgeons have greater intelligence and grip strength than their male anaesthetic colleagues, who should find new ways to make fun of their orthopaedic friends.

The PREDNOS study

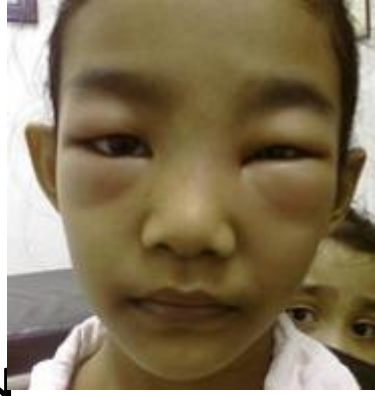


- MHRA Clinical Trials Authorised
- **Trial Co-Sponsors** –University of Birmingham & Central Manchester University Hospitals NHS Foundation Trust
- **Chief Investigator** –Prof Nicholas Webb
- **Funding Body**: National Institute for Health Research Health Technology Assessment (NIHR HTA) programme

Study rationale



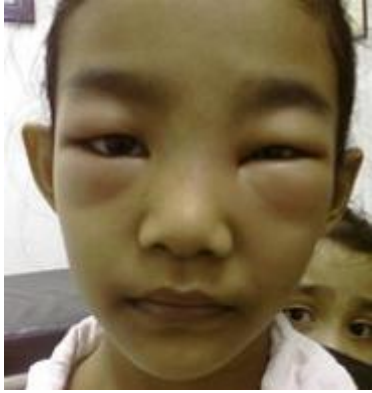
- Optimal duration of prednisolone therapy at disease presentation remains uncertain
  - ISKDC initially proposed 8 week regimen
  - Number of studies have suggested that longer duration therapy may be beneficial in reducing the subsequent relapse rate
  - Safety and cost-effectiveness of this approach is not well documented
  - Cochrane group recommended that a further study be conducted
- PREDNOS should help definitively answer these questions



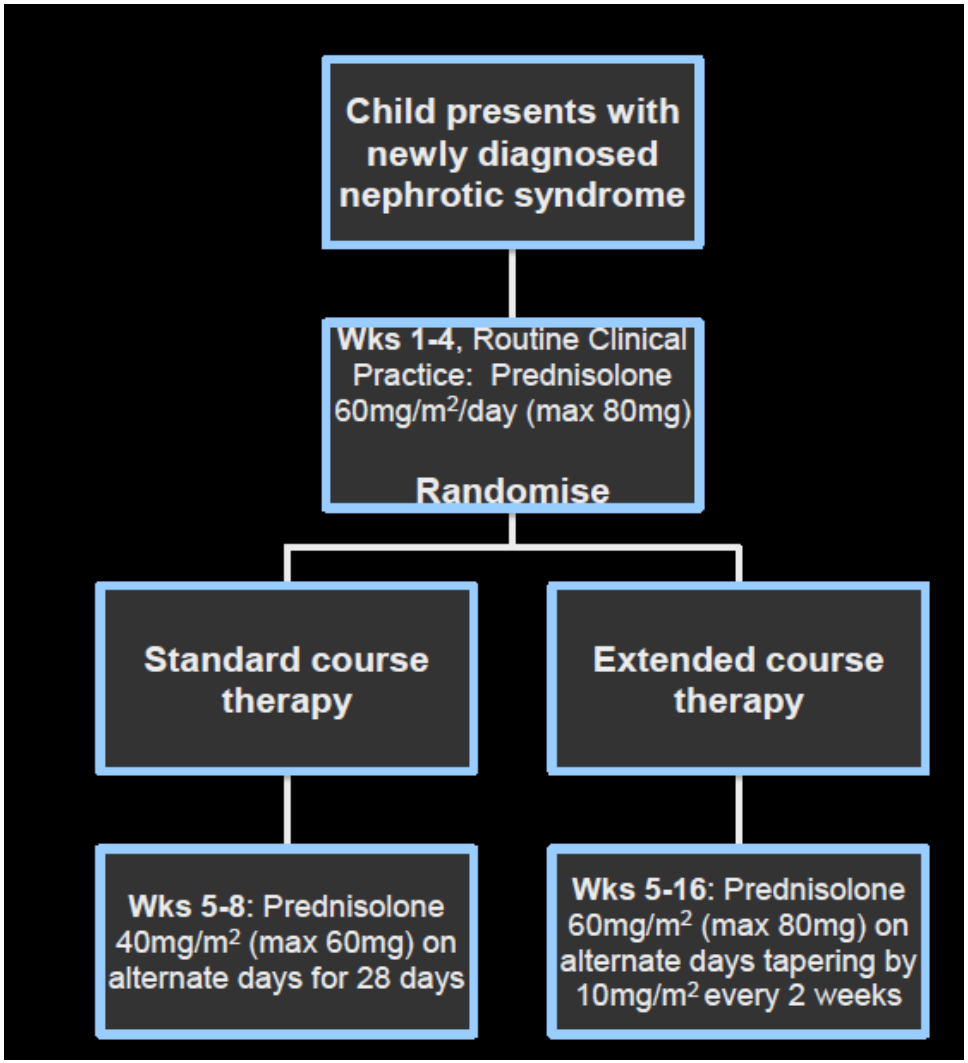
Study details

- **Aim of Study**:–To compare an extended Course (16 week) tapering prednisolone regimen with the standard 8week ISKDC Regimen

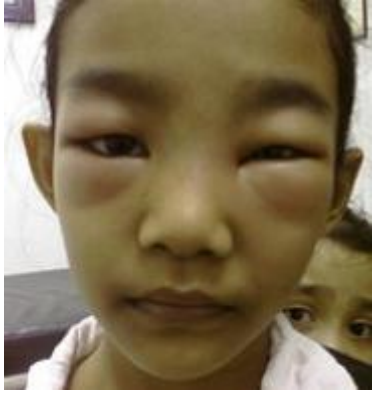
- **Design** –Double blind RCT



PREDNOS Study Schema



PREDNOS



- **Primary end point**
  - Time to first relapse
- **Secondary end points**
  - Frequently relapsing and steroid dependent disease
  - Incidence of relapse
  - Frequency and severity of adverse effects
  - Total use of prednisolone over study period
  - Use of other immunosuppressive therapies
  - Behavioural change
  - Cost effectiveness

PREDNOS 2

- **Full Title**: Short course daily prednisolone therapy at the time of upper respiratory tract infection in children with relapsing steroid sensitive nephrotic syndrome
- **Short Title**: PREDNOS 2 Study

Study rationale

- 70-80% of children develop disease relapses and around 50% develop frequently relapsing disease
- At least 50% of relapses are precipitated by viral URTI
- URTI results in relapse in over 50% of instances in FRNS
- ? How to prevent URTI related relapses
- Varying practice to prevent them

Study details

- **AIM OF STUDY**
- To evaluate the effectiveness of a **six day course of daily prednisolone (**15mg/m2/day) **therapy at the time of upper respiratory tract infection (URTI)** in reducing the development of subsequent nephrotic syndrome relapse in children with relapsing SSNS.
- **DESIGN**

Phase III double blind randomised controlled trial (RCT)

Prednos 2 details

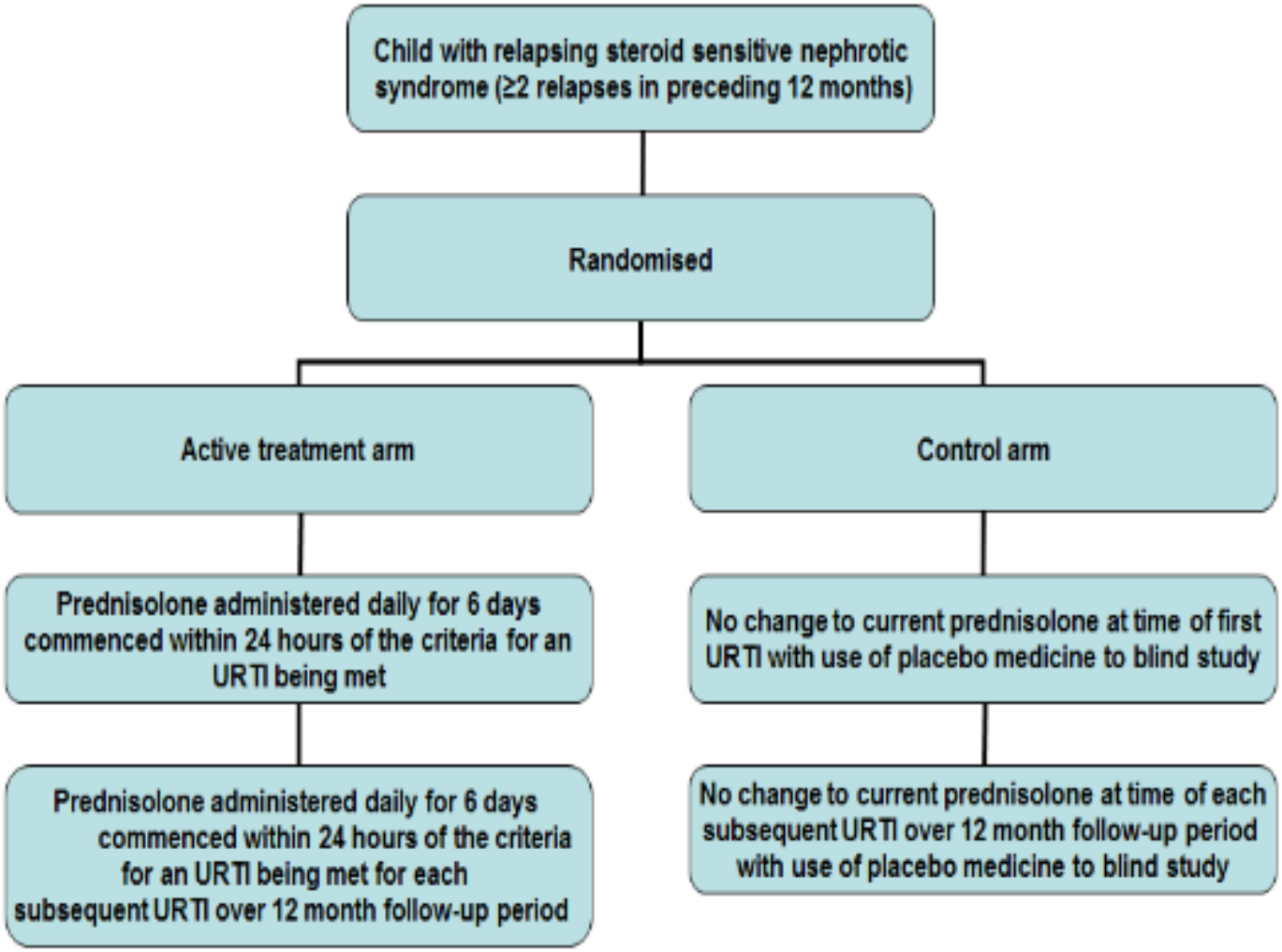
- Target number of patients: 300
- Length of recruitment period: 2 years
- Length of follow-up: 1 year
- **C**hief **I**nvestigator-Dr Nicholas Webb,
- **Funding**: NIHR HTA
- Co-sponsors: University of Birmingham and Central Manchester University Hospitals NHS Foundation Trust

Prednos 2

Inclusion Criteria

- 1-18 years of age (inclusive)
- Frequently relapsing steroid sensitive nephrotic syndrome with **2 or more relapses in the preceding 12 months**.
  - on no long-term immunosuppressive therapy
  - on alternate day prednisolone at ≤15mg/m2 AD
  - on alternative immunosuppressive therapy, including levamisole, ciclosporin, tacrolimus, MMF, mycophenolate sodium and azathioprine
  - on alternate day prednisolone at ≤15mg/m2 AD and alternative immunosuppressive therapy, including levamisole, ciclosporin, tacrolimus, MMF, mycophenolate sodium and azathioprine
  - If have received cyclophosphamide or rituximab, must be at least 3m post therapy and must have experienced at least one post-treatment relapse (and two in the past 12 months)

TRIAL SCHEMA



PRIMARY STUDY OBJECTIVE

- To determine whether a **six day course of oral prednisolone given at the time of URTI** reduces the incidence of **first URTI -related relapse** in children with relapsing steroid sensitive nephrotic syndrome.

SECONDARY STUDY OBJECTIVES

Will it-

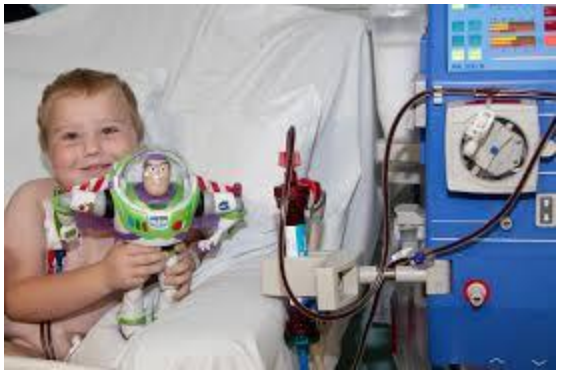
- reduce the overall rate of **URTI-related relapses**
- reduce the **overall rate of relapse**
- reduce the cumulative **dose of prednisolone** received over the 12 month study period.
- reduce the incidence and prevalence of **adverse effects** of prednisolone including behavioural abnormalities.

The effects of haemodiafiltration (HDF) vs conventional haemodialysis (HD) on growth and cardiovascular markers in children:

3 H (HDF, Hearts and Height) Study

R&D number-13NU02 Project ID 14/RPM/5878

No	Date recruited	Study number
1	28/04/2014	3H/CAR/002
2	29/04/2014	3H/CAR/001
3	20/05/2016	3H/CAR/003



National Registry of Rare Kidney Diseases (RaDaR)

- RA initiative to gather information from patients with rare kidney diseases
- Longitudinal collection of demographic, clinical data, registry linkage
- Blood, urine, biopsy results, genetics
- Transplant and dialysis history
- Each condition is overseen by specific rare disease group

RaDaR

- Began in 2010 and covers over 36 conditions
- Paediatric initiative, now joined by adults
- Over 15,000 recruits from 70 renal units
- Provides important data to facilitate further research, develop evidence-based clinical guidelines and improve the quality of care for these patients

Clinician Information

Information for clinicians is available for the conditions currently recruiting for the RaDaR rare disease registry.

Diagnosis

- Autosomal Dominant Polycystic Kidney Disease (ADPKD)
- Autosomal Dominant Tubulointerstitial Kidney Disease (ADTKD)
- Alport Syndrome
- Adenine Phosphoribosyltransferase Deficiency (APRT-D)
- Autosomal Recessive Polycystic Kidney Disease (ARPKD)
- Atypical Haemolytic Uraemic Syndrome (aHUS)
- Bartter Syndrome (Type 3)
- Bartter Syndrome (Types 1, 2 & 4)
- Calciphylaxis (UK Calciphylaxis Study Website)
- Cystinosis
- Cystinuria
- Dent Disease

Links

RaDaR (NHS access only)

PatientView

Latest news

RaDaR Autumn Newsletter

Expressions of interest for new guidelines

15,000th RaDaR patient recruited!

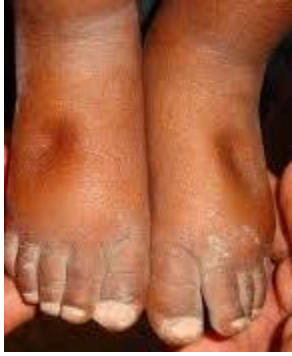
RaDaR Ethics Amendment Approved

Cystinosis Rare Disease Lead Advert

Rare Disease Groups

Current Conditions		
ADPKD	Dense Deposit Disease	Membranous Nephropathy
ADTKD	Dent Disease	MPGN
aHUS	EAST Syndrome	Pregnancy and CKD
Alport Syndrome	Fibromuscular Disease	Primary Hyperoxaluria
APRT Deficiency	Gitelman Syndrome	Pure Red Cell Aplasia
ARPKD	HNF1B	Retroperitoneal Fibrosis
Bartters Syndrome	Hyperuricaemic Nephropathy	SRNS
C3 Glomerulopathy	IgA Nephropathy	SSNS
Calciphylaxis	Liddle Syndrome	STEC-HUS
Cystinosis	Lowe Syndrome	Thin Basement Membrane Nephropathy
Cystinuria	Medullary Cystic Kidney Disease	Vasculitis

National Study of Nephrotic Syndrome (NephroS Study)

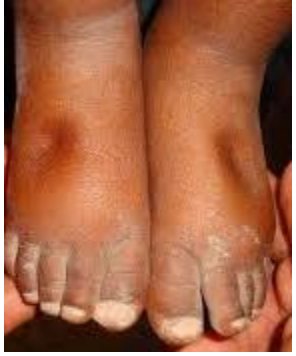


Rationale..

- Limited understanding of mechanism of NS
- ? circulating factors in FSGS causation
- ?Unique mechanism post Tx recurrence
- activation of TRPC6 results in a form of FSGS
- link between acquired FSGS and slit diaphragm protein signalling

- prospective multi-centre observational study

Development of NephroS



- Set up in January 2010-SRNS
- Adults included 2015-NephroS
- Collaboration set up with the NIHR BioResource
- 2016-2017 scope widened, part of NURTuRE

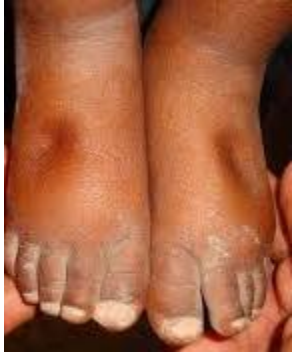
(National Unified Renal Translational Research Enterprise)

- Additional funding secured
- Type A & B centres, more samples

NURTuRE

- Collaboration between independent investigators, Kidney Research UK and commercial companies
- Maximise the scientific value of the samples and data collection
- Contribute for better understanding of NS and development of new treatments
- Currently NephroS & CKD

NephroS



Inclusion criteria-

- Children and adults (no age restrictions)
- Idiopathic Nephrotic Syndrome, includes:
- Congenital NS (presumed Steroid resistance)
- Childhood or adult onset with primary Steroid Resistance
- Childhood or adult onset with late onset Steroid Resistance
- Steroid Sensitive Nephrotic Syndrome, early in the disease course i.e. after one episode of Nephrotic Syndrome
- As part of a syndrome e.g. Nail Patella Syndrome and Denys-Drash Syndrome

Exluded-secondary NS

NephroS-advantages..

1) To identify a common disease mechanism in this group of patients, which would form the basis for an interventional clinical trial of novel pharmaceutical agents

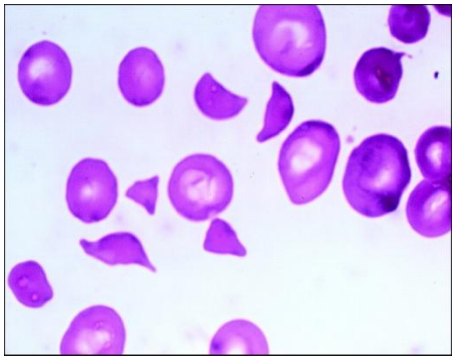
2) To provide comprehensive genotype/phenotype correlation of the disease, in a substantial cohort of patients (all adult and paediatric patients diagnosed with idiopathic NS in UK)

3) To answer the question of whether and to what degree, post-transplant recurrence of FSGS is a heterogeneous disease seen at the level of the cellular response

4) To provide the basis for a predictive *in vitro* test for patients who will suffer recurrence of the disease post-transplantation

Activity	Baseline	Relapse	Remission post relapse	Routine clinical appointment update (approx. every 6 months or when seen in clinic)	Pre- transplant	Post-transplant (1 week and 6/12/18 months after)	Post- transplant recurrence (first exchange and weekly thereafter for 4 weeks)	Biopsy
Screen	x							
Consent	x							
Blood samples	x	x (in clinic, or request patient to attend appointment to give a sample)	x	x	x	x	x	
Urine	x	X (in clinic, or request patient to attend appointment to give a sample)	x	x	x	x	x	
Tissue Sample								x
Plasma exchange fluid							x	
Demographics	x							
Update demographics		x	x	x	x	x	x	x
Clinical data	x	x	x	x	x	x	x	x (pathology report)

Shocking E coli pictures of toddler left in coma for five days by deadly stomach bug

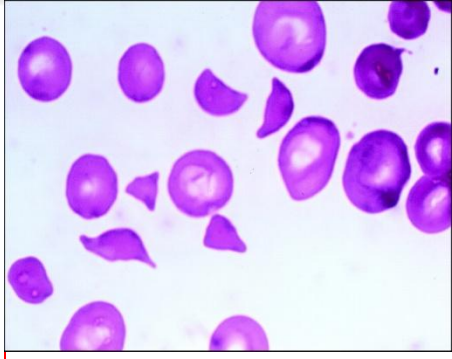


12:15, 28 NOV 2014 | UPDATED 12:54, 28 NOV 2014 | BY SAM RKAINA

Freddy Osbourne, just 21 months old, was one of 10 people struck down in a serious outbreak of E coli in Dorset

Intensive Care Freddy Osborne was in a coma for five days after contracting E coli

Full Title: Eculizumab in Shiga-Toxin producing E. Coli Haemolytic Uraemic Syndrome (ECUSTEC): A Randomised, Double-Blind, Placebo-Controlled Trial



Short Title: ECUSTEC trial

PROTOCOL: VERSION 1.0, 7th September 2016

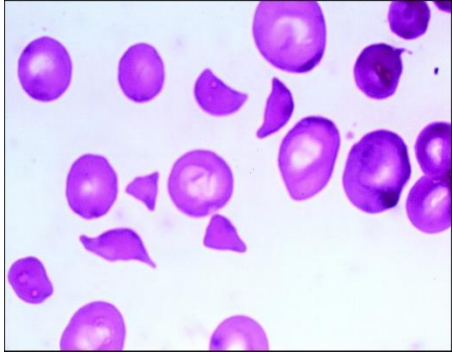
Sponsor: The Newcastle upon Tyne Hospitals NHS Foundation Trust
Sponsor's Project Number: 7837

Chief Investigator: Dr Sally Johnson, The Newcastle Upon Tyne Hospitals NHS Foundation Trust

Coordinating Centre: Birmingham Clinical Trials Unit (BCTU)

Funder: National Institute for Health Research (NIHR) and the Medical Research Council (MRC) Efficacy and Mechanism Evaluation (EME) Programme (Ref. No.: 14/48/43)

Study rationale

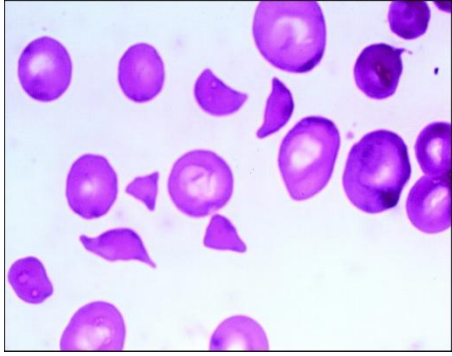


- STEC HUS is the most common single cause of paediatric acute kidney injury (AKI)
- 2-3% mortality, morbidity, @ 50-60% need RRT
- 20-25% develop severe disease with other organ involvement
- 12% of patients with STEC HUS die or develop end - stage renal disease by 4.4 years of follow – up with long term sequelae
- all cases require lifelong renal follow -up

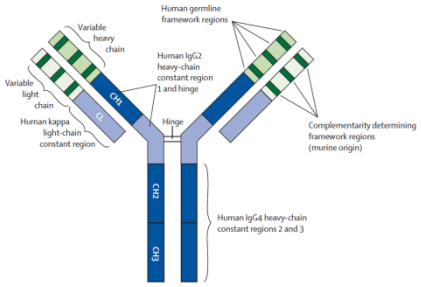
HUS, complement &Eculizumab

- Monoclonal antibody, inhibits complement
- Effective therapy for many with atypical HUS (60% of whom have defects of the alternative complement pathway)
- STEC HUS-some evidence of complement role in pathogenesis
- Some reports of successful use of eculizumab in STEC HUS

Eculizumab



Humanised monoclonal antibody against complement C5



eculizumab

'always on'

alternative pathway

C3

C3bBb

C5a

C5 activation

C3b

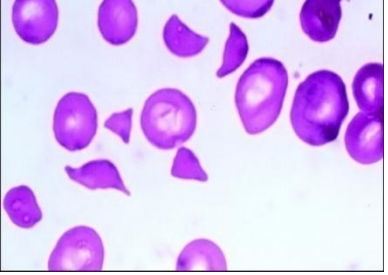
Factor B
Factor D

MAC

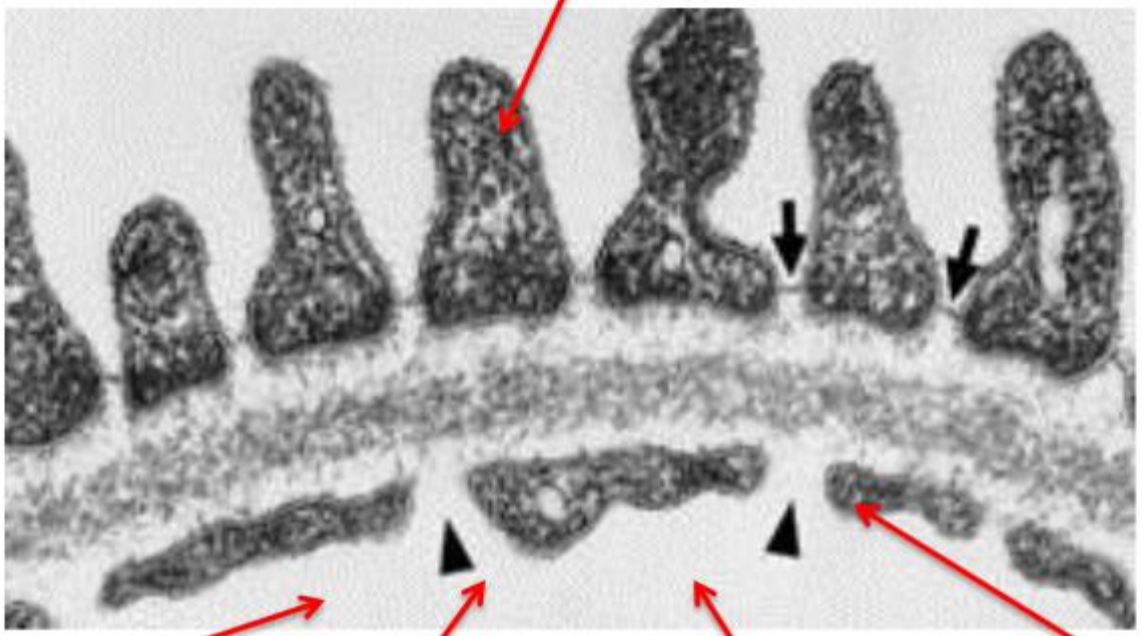
C3b C3b C3b C3b

PNH-RED CELL SURFACE

'Alternative pathway C3 amplification loop'



Shiga toxin reduces podocyte VEGF which in turn reduces endothelial complement regulator expression



Podocyte

GBM

Endothelium

Stx interacts with CFH in fluid phase

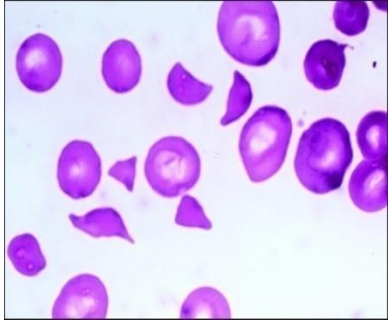
Stx activates complement on endothelium via ACP (P-selectin binds C3)

Activated complement components are detected on platelet-leucocyte complexes

Complement mediates proliferative response to vascular injury (C3a/C5a)

Orth J Immunol 2009, Sakuma Art Thromb Vasc Biol 2010, Mason J Biol Chem 2004
Eremina NEJM 2008, Keir Ped Nephrol 2014, Morigi J Immunol 2011

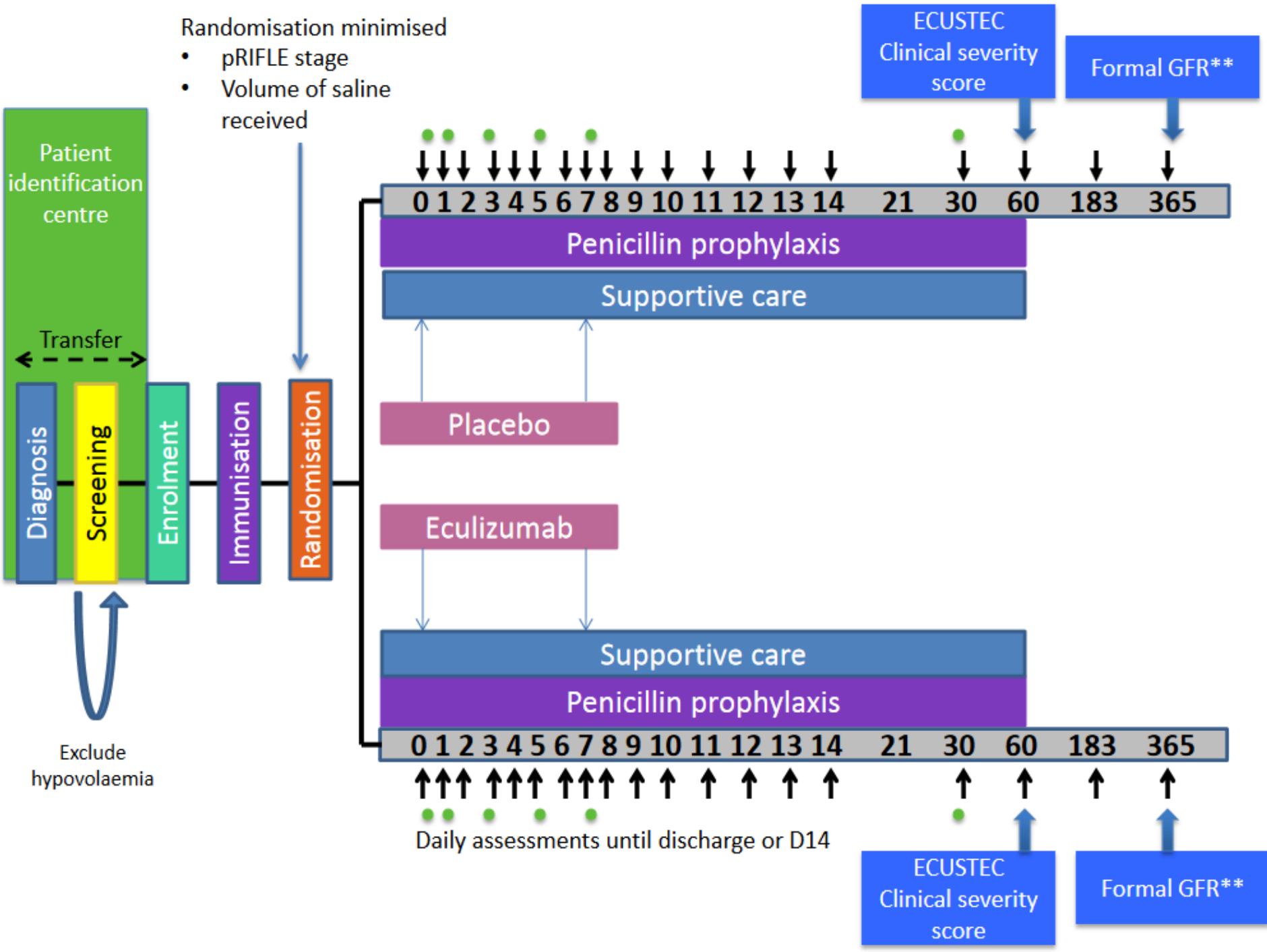
ECUSTEC trial



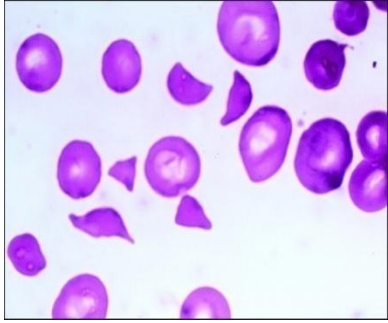
- A Randomised, Double Blind, Placebo-Controlled Trial
- 2 doses eculizumab to decrease the severity of haemolytic uremic syndrome (HUS) due to Shiga toxin -producing E. coli
- **Funded** by National Institute for Health Research, Efficacy and Mechanism Evaluation Programme (NIHR EME)
- **CI**-Dr Sally Johnson (Newcastle)

Research objectives

- In children aged 6 months to <19 years inclusive, we intend:
  - To determine whether the severity of STEC HUS is less in those given Ecu compared with those given placebo
  - To assess the safety of Ecu in STEC HUS
  - To determine whether the incidence of CKD following STEC HUS is less in those receiving Ecu compared with those receiving placebo
  - To evaluate the cost-effectiveness of administration of Ecu in STEC HUS from the perspective of the NHS


Randomisation minimised
• pRIFLE stage
• Volume of saline received
Patient identification centre
Transfer
Diagnosis
Screening
Enrolment
Immunisation
Randomisation
Exclude hypovolaemia
ECUSTEC Clinical severity score
Formal GFR**
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 21 30 60 183 365
Penicillin prophylaxis
Supportive care
Placebo
Eculizumab
Supportive care
Penicillin prophylaxis
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 21 30 60 183 365
Daily assessments until discharge or D14
ECUSTEC Clinical severity score
Formal GFR**

Inclusion Criteria



1] Age 6 months to <19 years, Weight ≥5kg

2] Diagnosis of HUS -

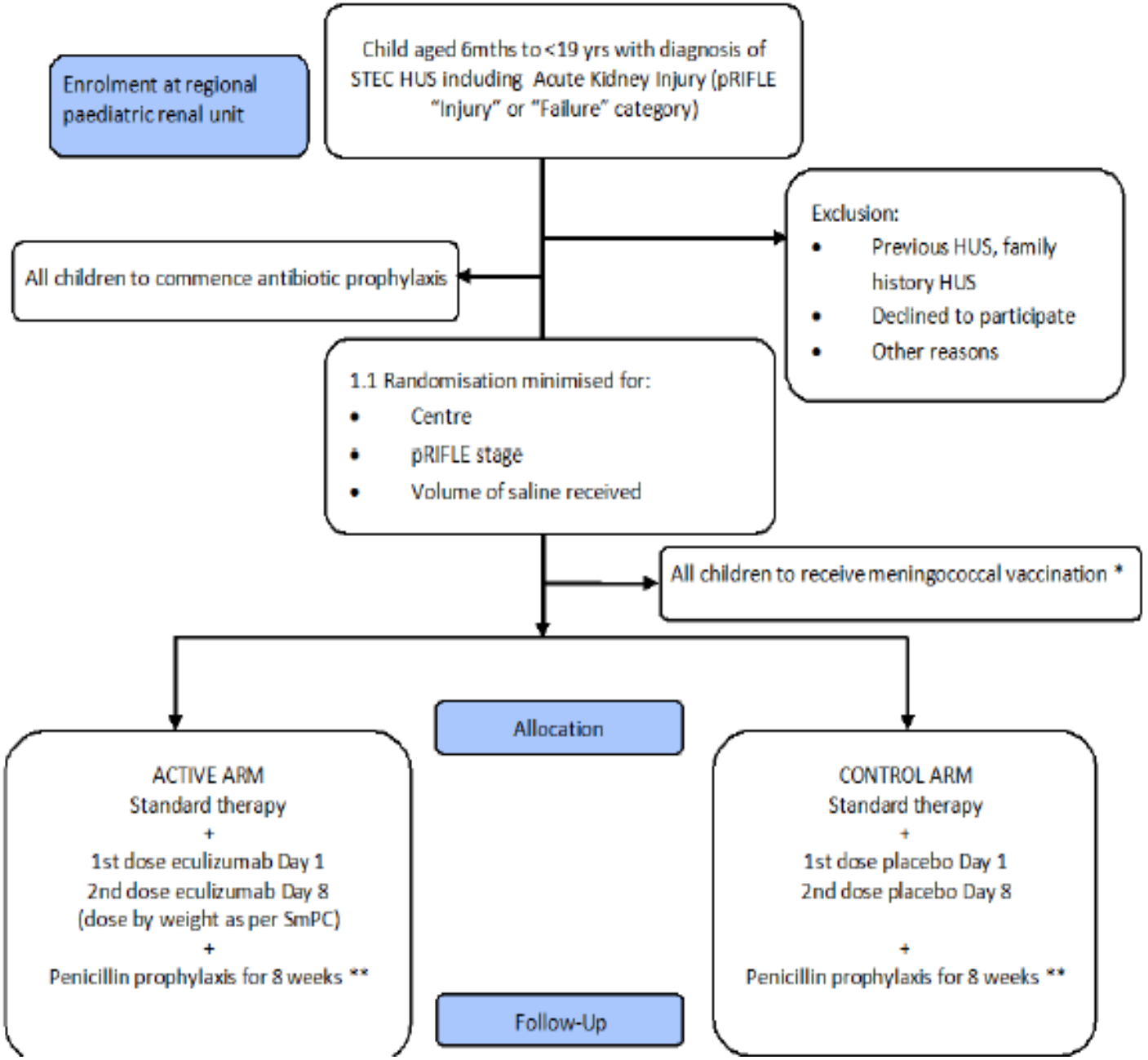
a. Micro-angiopathic haemolytic anaemia (fragmented red cells on blood film **OR elevated plasma lactate dehydrogenase (LDH))**
AND b. Thrombocytopenia (platelets <150x109/l)
AND c. Acute Kidney Injury (AKI): "injury" or "failure" category of pRIFLE criteria despite correction of hypovolaemia

3] EITHER

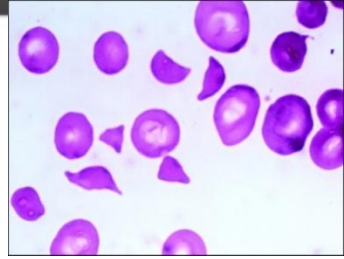
Reported **diarrhoea within 14 days prior** to diagnosis of HUS
OR
A stool **culture or shiga toxin polymerase chain reaction or STEC serology** result indicating **STEC** in the patient or household contact within 14 days prior to diagnosis of HUS

4] Patient intended to be able to receive trial drug within 36 hours of arrival at renal unit, or within 24 hours of eligibility if already at renal unit

Trial Schema



Renal	Lowest eGFR >50	1
	Lowest eGFR 25-49, no oligoanuria*	2
	Lowest eGFR < 25, no oligoanuria*	3
	Oligoanuria* but no dialysis required	4
	Dialysis <48 hours	5
	Dialysis 2 days	6
	Dialysis 3 days	7
	Dialysis 4 days	8
	Dialysis 5 days	9
	Dialysis 6 days	10
	Dialysis 7 days	11
	Dialysis 8 days	12
	Dialysis 9 days	13
	Dialysis 10 days	14
	Dialysis 11 days	15
	Dialysis 12 to 13 days	16
	Dialysis 14 to 17 days	17
	Dialysis 18 to 20 days	18
	Dialysis 21 to 27 days	19
	Dialysis 28 to 34 days	20
	Dialysis 35 to 41 days	21
	Dialysis 42 to 48 days	22
	Dialysis 49 to 55 days	23
	Dialysis >55 days	24
CNS	No obvious CNS involvement	0
	Altered consciousness (Agitation, irritability, hallucinations, confusion, excessive drowsiness)	2
	Single seizure	4
	Two or more seizures 24 hrs apart**	6
	Transient focal neurological defect (>24 hrs*** but <1 week)	7
	Persistent focal neurological defect (present at day 60 and persistent for more than 1 week)	10
	Persistent global (≥ 2 brain functions - vision/hearing/cognitive/motor/sensory/memory) neurological defect at day 60	15
Pancreas	No clinical or biochemical evidence pancreatitis	0
	Raised amylase and/or lipase without clinical symptoms/signs	2
	Hyperglycaemia without insulin requirement	6
	Pancreatitis with sequelae (laparotomy, TPN, insulin required)	8
	Chronic sequelae of pancreatitis at day 60 (TPN, insulin, other)	10
Gastro-intestinal	No abdominal surgery reguired (except related to peritoneal dialysis catheter)	0
	Laparoscopy/laparotomy required for abdominal symptoms	5
	Intestinal perforation AND/OR bowel resection required	8
	Stoma formation	10
Cardiac	No cardiac involvement (normal CVS examination - except hypertension/volume overload)	0
	Cardiac failure confirmed by ECHO (impaired systolic ventricular function or chamber enlargement or valve regurgitation)	4
	Cardiac failure confirmed by ECHO with dilated cardiomyopathy	6
	Myocardial infarction (on standard ECG +/- troponin +/- ECHO evidence)	10



Primary outcome measure: ECUSTEC Clinical Severity Score

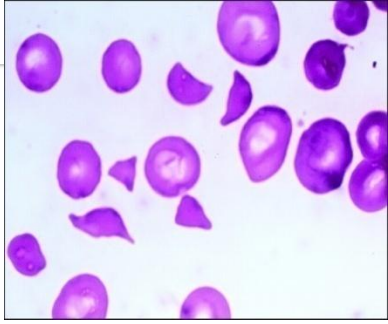
80% power to detect a
5 point reduction in CSS

Pilot data:
Mean score 13.16
SD score 9.66

Secondary outcome measures

- Survival
- Duration of thrombocytopenia (number of days until platelet count >150x10^9/l)
- Duration of haemolysis (number of days until LDH within normal reference range)
- Number of packed red blood cell transfusions required and volume (ml/kg)
- Markers of inflammation (number of days until normal white cell count and CRP)
- CKD at 1 year - a composite endpoint of the presence of
  - Hypertension
    - Average of 3 readings by manual method using centiles for age/sex/height
    - Above 95th centile for age/sex/height
  - Albuminuria
    - Early morning urine albumin-creatinine ratio >2.5mg/mmol
  - eGFR<90ml/min/1.73m^2 at 1 year
- Persistent neurological defect at 60 days

Additional outcomes



- Safety
- Mechanistic studies
- Health economic evaluation
  - Cost-effectiveness of eculizumab vs. placebo will be measured
    - cost per ECUSTEC CSS point
    - cost per QALY
- Health-related QoL
  - CHU9D (>5y) and PEDsQL (<5y)

Recap…Ongoing trials

- Prednos 2
- RaDaR
- NephroS
- Ecustec

Cardiff & Vale UHB
@CV_UHB

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First in Wales - Paediatric clinical research facility opens at the Noah's Ark Children's Hospital for Wales
cardiffandvaleuhb.wales.nhs.uk/news/46366

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european society for paediatric nephrology

BRS
British Renal Society
Multi-professional working

IPNA

NHS
National Institute for Health Research

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[UK Clinical Trials Gateway]

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NAPRTCS Online

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Thank You
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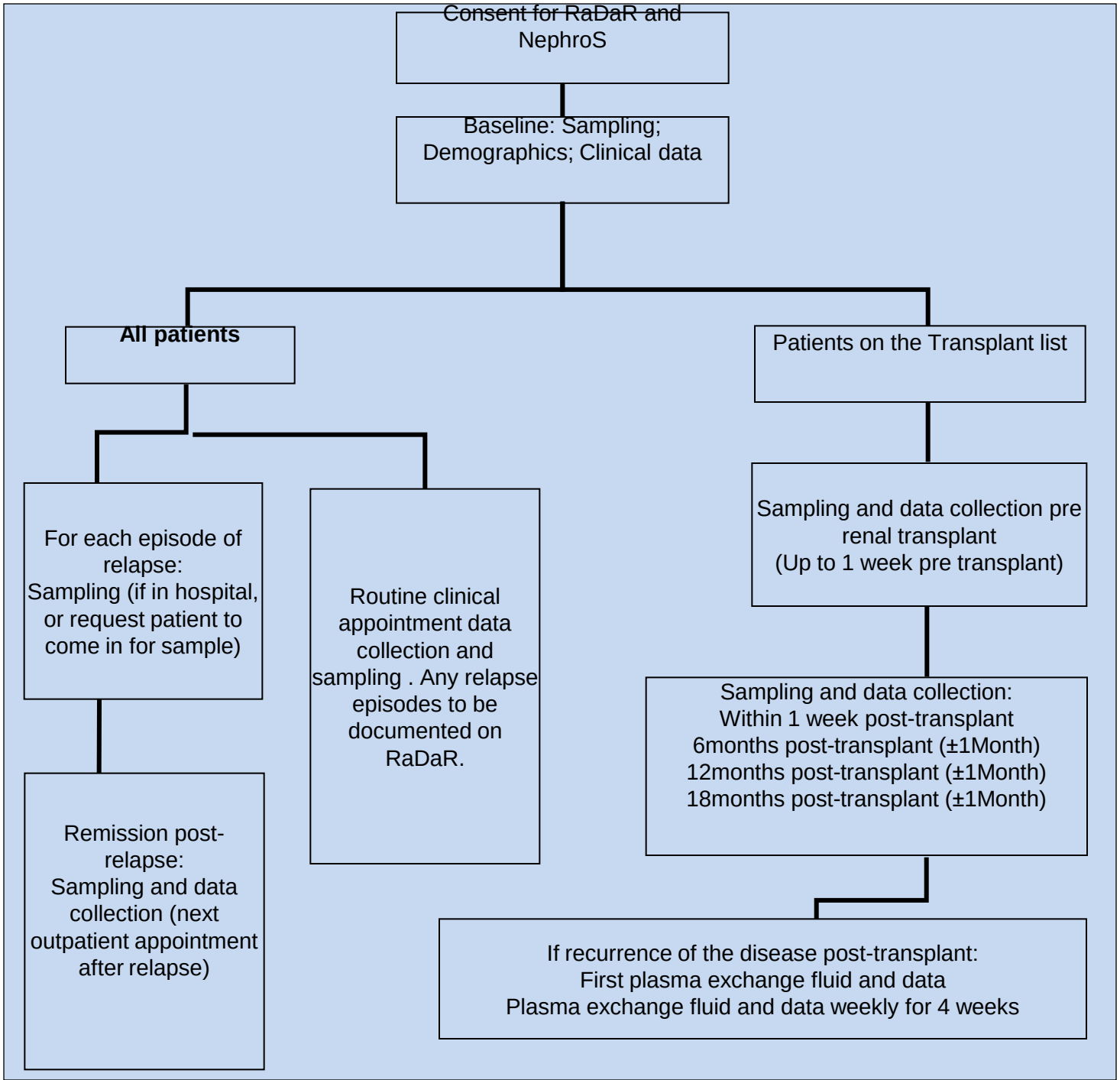
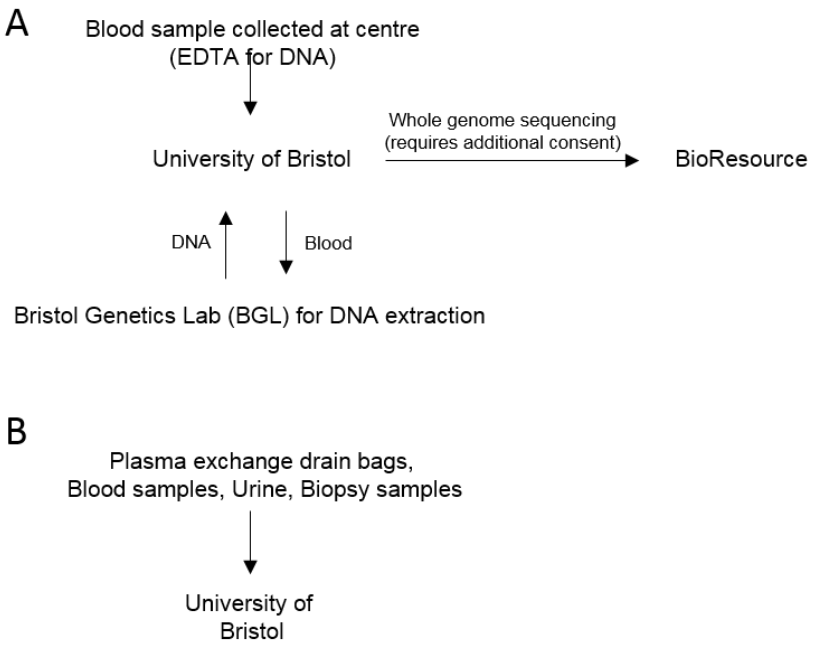

Consent for RaDaR and NephroS
Baseline: Sampling; Demographics; Clinical data
All patients
Patients on the Transplant list
For each episode of relapse: Sampling (if in hospital, or request patient to come in for sample)
Routine clinical appointment data collection and sampling . Any relapse episodes to be documented on RaDaR.
Sampling and data collection pre renal transplant (Up to 1 week pre transplant)
Sampling and data collection: Within 1 week post-transplant 6months post-transplant (±1Month) 12months post-transplant (±1Month) 18months post-transplant (±1Month)
Remission post-relapse: Sampling and data collection (next outpatient appointment after relapse)
If recurrence of the disease post-transplant: First plasma exchange fluid and data Plasma exchange fluid and data weekly for 4 weeks

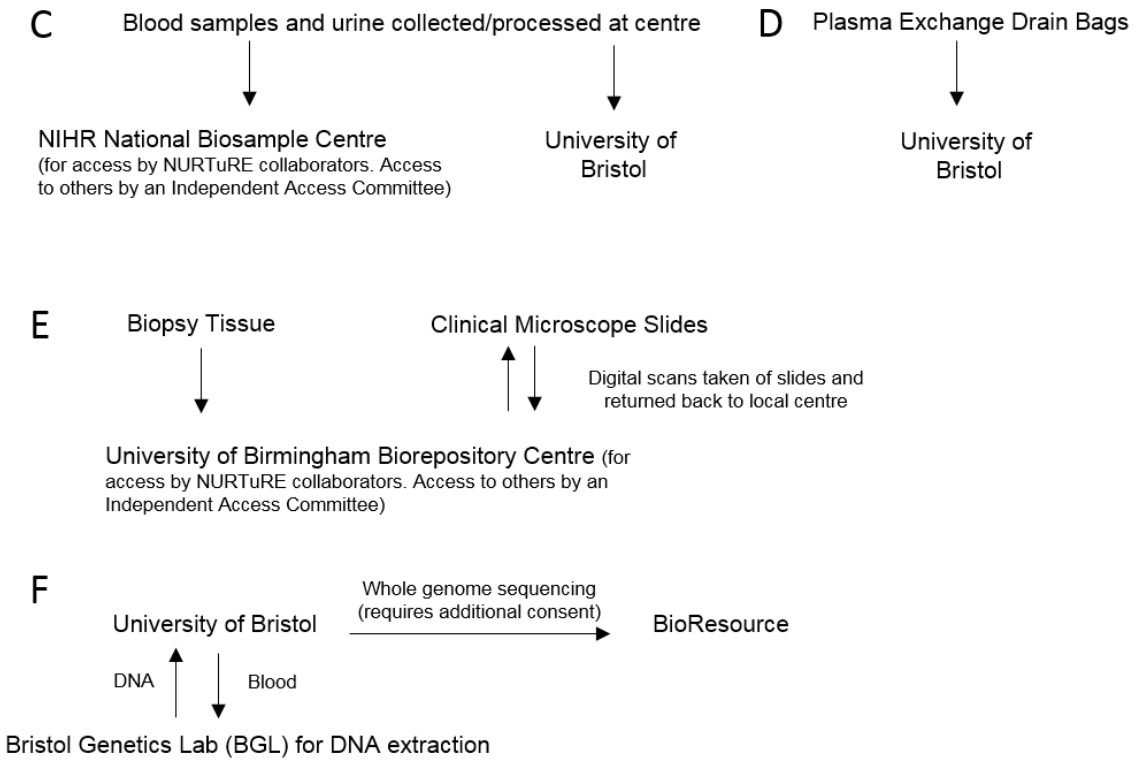
Sample Transfer within the NephroS Study

Site Type A



Sample Transfer within the NephroS Study

Site Type B



Exclusion Criteria

1] Family history of atypical HUS

2] Previous episode of HUS

3] Known pre-existing eGFR <90ml/min/1.73m2

4] Known or suspected pneumococcal infection

5] Known or suspected meningococcal infection

6] Prior to diagnosis, patient taking a drug known to be associated with HUS, e.g. calcineurin inhibitors, chemotherapy, quinine, oral contraceptive pill

7] Hypersensitivity to Ecu, murine proteins or any of the excipients listed in the Summary of Product Characteristics

8] Pregnancy or lactation

9] Malignancy

10] Known Disseminated Intravascular Coagulopathy

NephroS

Exclusion criteria

- Secondary causes of Nephrotic Syndrome e.g. primary diagnosis of Glomerulonephritis (IgA Nephropathy, Membranoproliferative Glomerulonephritis, Membranous Nephropathy)
- Vasculitis, Systemic Lupus Erythematosus, Diabetes, Obesity, Hypertension

Trial Description/Arms

- Active arm: Standard therapy + 1st dose Ecu Day 1 and 2nd dose Ecu Day 8

- Control arm: Standard therapy + 1st dose placebo Day 1 and 2nd dose placebo Day 8

Prednos2 study

EudraCT 2012-003476-39

No	Date recruited	Study number
1	16/12/2014	21386
2	03/02/2015	21469
3	15/09/2006	22483

	Site Type A – NephroS (continuing as before)	Site Type B – NURTuRE-NephroS
Consenting and collecting samples	Patients consented and samples collected.	Patients consented and samples collected.
Processing of Samples	No processing of samples on site - samples are sent direct to the University of Bristol	Samples are processed, aliquoted and stored at site until collected via courier approximately every 4months and sent to the NIHR National Biosample Centre (blood and urine). Biopsy slides and blocks are sent to the Biorepository at the University of Birmingham. Plasma Exchange Bags are sent directly to the University of Bristol.
Use of samples	Samples will be stored and analysed at the University of Bristol. Research may include the participation of other academic researchers/commercial companies. Upon further patient consent, some samples will be shared with BioResource-Rare Diseases for whole genome sequencing	Samples will be available to NephroS researchers and commercial companies who are part of the NURTuRE consortium. Some samples will be biobanked and stored for future studies. Access to these stored samples will be via an Independent Access Committee.

NephroS Study (previously SRNS)

Portfolio ID7945

No	Date recruited	Study number
1	27/09/2010	330
2	19/07/2011	457
3	19/05/2013	747
4	31/05/2011	440
5	03/02/2014	926
6	13/01/2015	2107
7	10/12/2014	2017
8	17/02/2015	2250

MPGN study

R&D number 12-RPM-2339

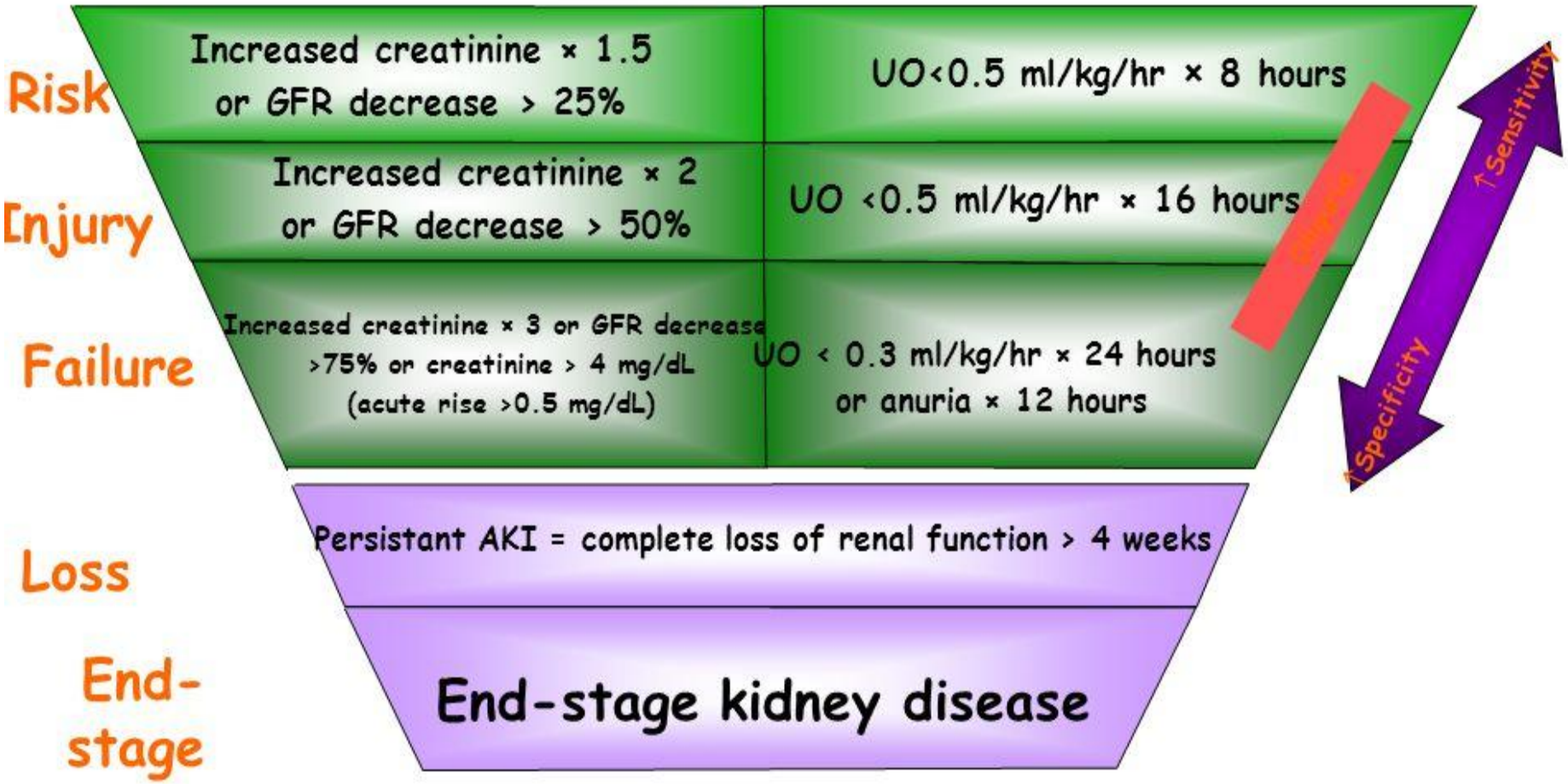
No	Date recruited	Study number
1	28/07/2014	746
2	22/08/2012	614
3	22/08/2012	616
4	01/06/2014	892
5	03/11/2015	3767
6	16/05/2016	6810

Prednos study

EudraCT 2010-022489-29

No	Date recruited	Study number
1	13/10/2011	1131
2	07/03/2012	1438
3	11/02/2013	2089
4	14/01/2014	2774
5	06/05/2014	3020
6	16/09/2014	3277

The pRifle Criteria



Bellomo et al. Crit Care 2004;8:R204-R212.