

Islet Cell Transplantation

The Oxford AHSN Diabetes Clinical Network
Launch Event, February 2014

Stephen Gough



Oxford Centre for Diabetes
Endocrinology & Metabolism

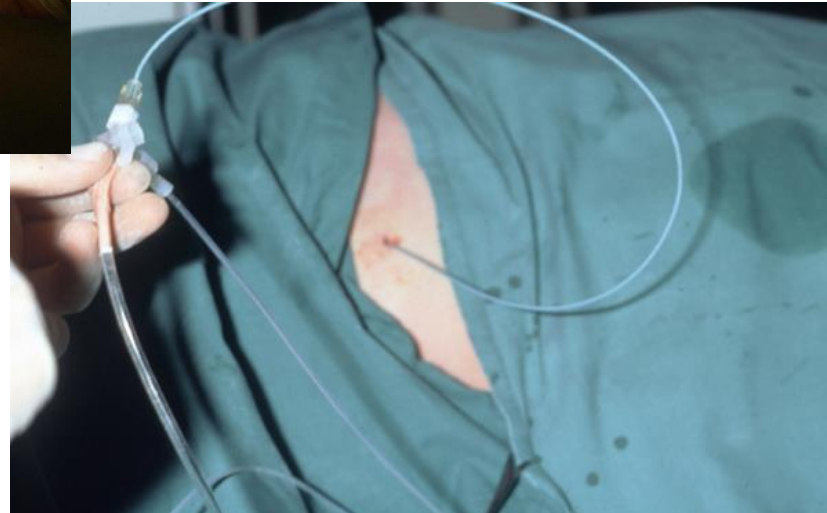
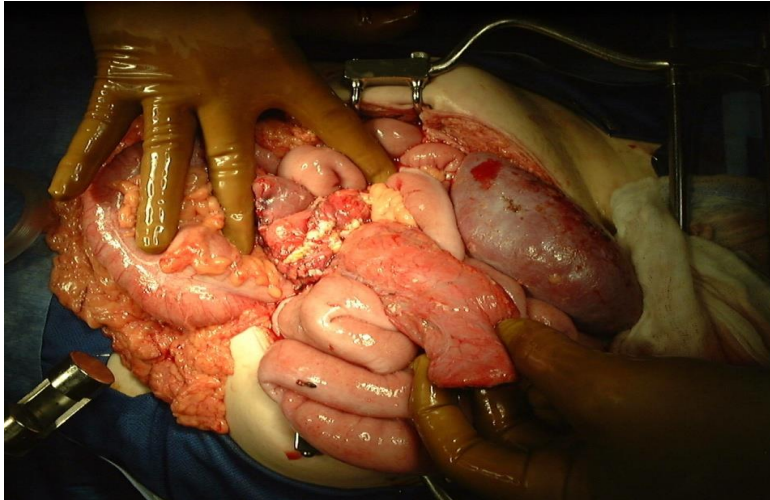


Islet Transplant Service (Oxford)



Islet v Pancreas

Two different approaches



What are the options available?

- Whole Pancreas Transplantation
 - Simultaneous pancreas + kidney (SPK)
 - Pancreas Transplant Alone (PTA)
 - Pancreas after kidney (PAK)
- Islet Transplantation
 - Islet Transplant Alone (ITA)
 - Islet after kidney (IAK)
 - Simultaneous islet + kidney (SIK)
 - Autotransplantation

History of islet cell transplantation

- 267 allografts, 1990-2000
- 41% some graft function
- 12.4% insulin-independence >1 week
- 8.2% insulin-independence for >1year

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ISLET TRANSPLANTATION IN SEVEN PATIENTS WITH TYPE 1 DIABETES MELLITUS USING A GLUCOCORTICOID-FREE IMMUNOSUPPRESSIVE REGIMEN

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Islet Transplantation in Oxford

Pre-NHS up to 2008

9 Transplants pre-Edmonton Protocol

3 Transplants post-Edmonton Protocol (funded by DUK)

NHS post 2008

Currently 8-10 per annum (~30-40 Across UK)

April 2013 – present, 7 (2+5)

National NHS Consortium



**Oxford
Kings
(Edinburgh)**

Newcastle
Manchester
Royal Free

(Bristol)

Understanding NICE guidance

Information for people who use NHS services

Transplanting donated pancreatic islet cells for patients with type 1 diabetes

*NICE 'interventional
procedures
guidance' advises
the NHS on when
and how new
procedures can
be used in
clinical practice.*

This leaflet is about when and how transplanting donated pancreatic islet cells can be used in the NHS to treat people with type 1 diabetes. It explains guidance (advice) from NICE (the National Institute for Health and Clinical Excellence).

Interventional procedures guidance makes recommendations on the safety of a procedure and how well it works. An interventional procedure is a test, treatment or surgery that involves a cut or puncture of the skin, or an endoscope to look inside the body, or energy sources such as X-rays, heat or ultrasound. The guidance does not cover whether or not the NHS should fund a procedure. Decisions about funding are taken by local NHS bodies

Islet cell transplantation: why?

To improve the quality of life of people with T1DM who suffer severe, recurrent and potentially life-threatening hypoglycaemia

To improve hypoglycaemia unawareness

? to achieve insulin-independence

Transplantation inclusion criteria

- **T1DM, > 18 years of age, > 5 years duration**
- Failure to optimise glycaemic control with standard therapy without hypoglycaemia
- Impaired awareness of hypoglycaemia
- Recurrent severe hypoglycaemia, (2 or more episodes within the last 2 years)

Process

- Referral by diabetologist to transplant team to Oxford Centre
- Detailed clinical assessment including exclusion of other causes of hypo
- Discuss/council - risks/benefits/alternatives

The Islet Transplant

Percutaneous transhepatic approach via portal vein, local anaesthetic

Infuse over 10-15 minutes

12 hours bed rest

Home 48-72 hours



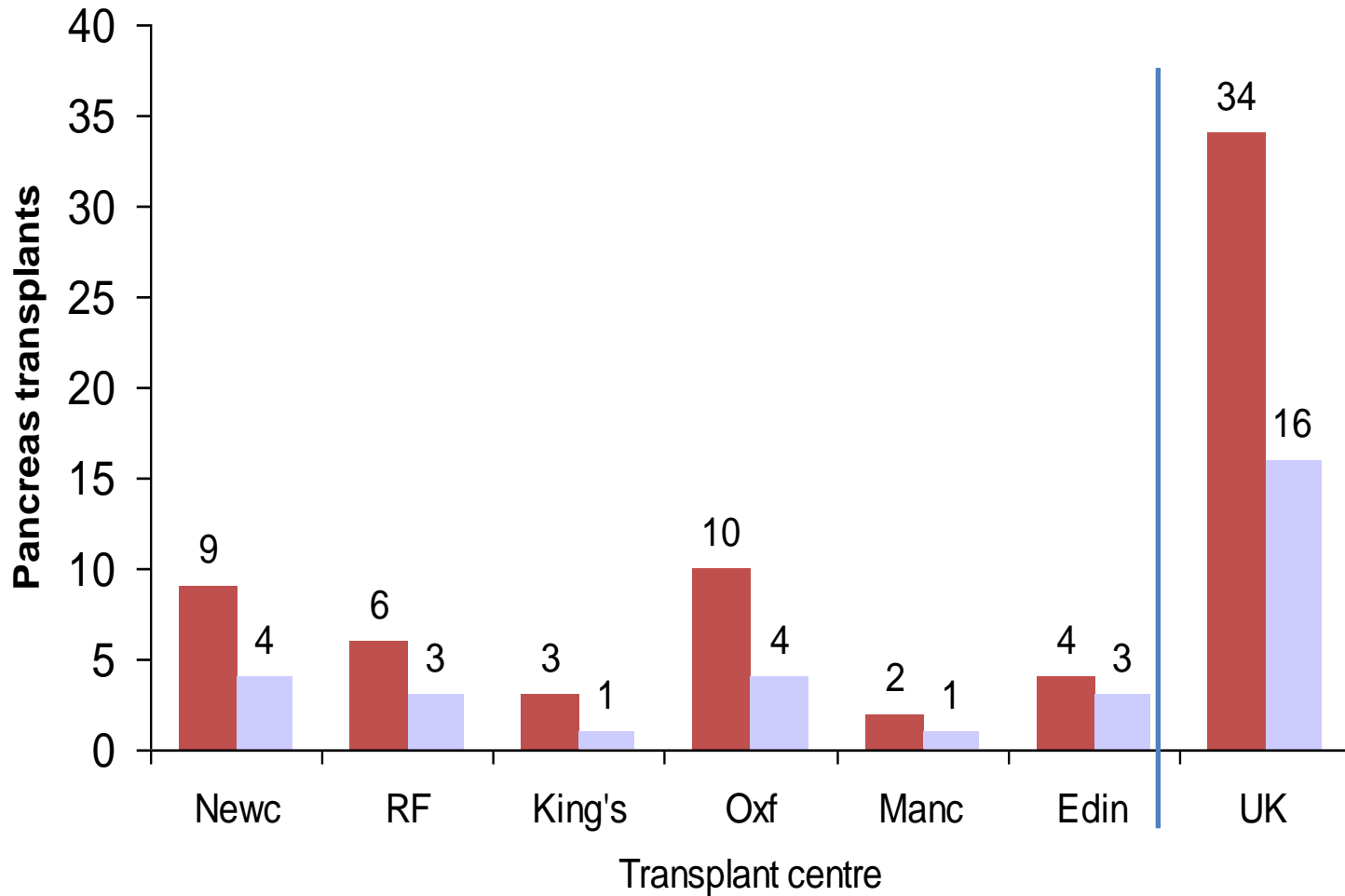
Intensive Follow-up

- Metabolic control (Blood glucose 4-6 mmol)
- Immunosuppression (+infection/neoplasia)
- Assessment of graft function
- General medical review

Pancreatic islet transplant activity by centre

(1 April 2008 - 8 January 2012)

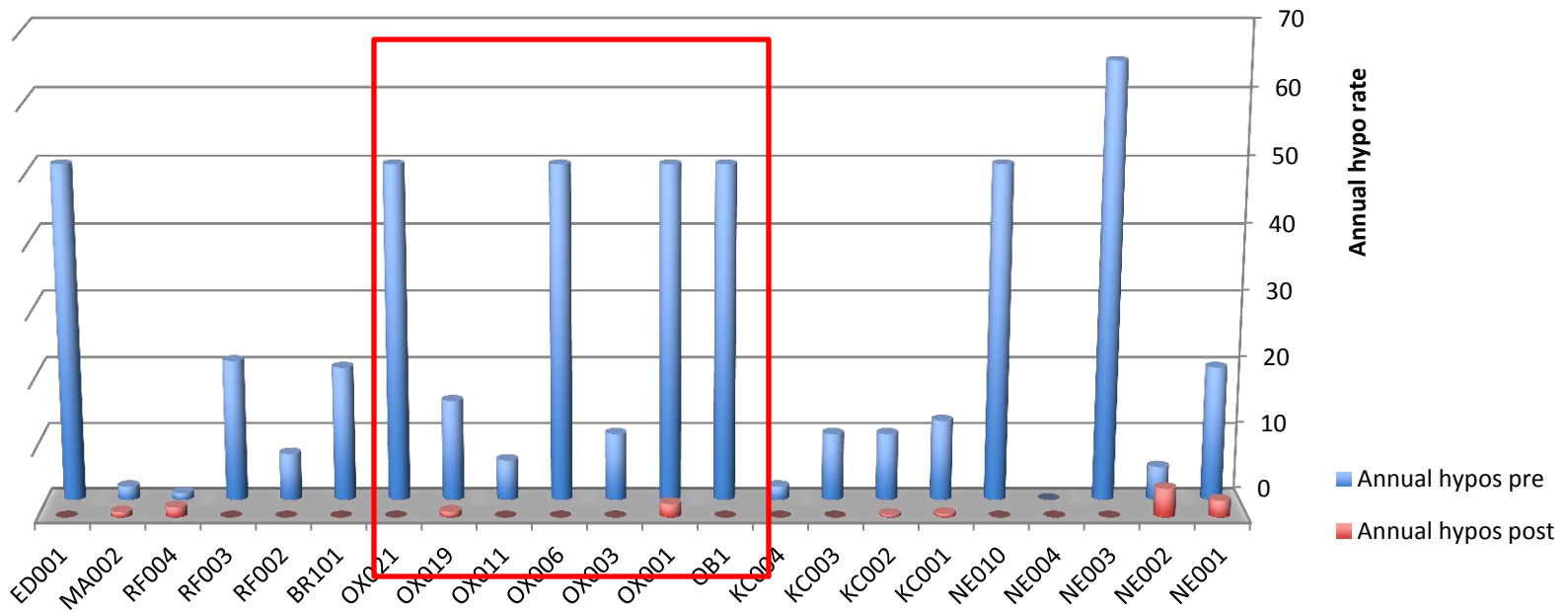
■ Routine ■ Priority



Hypoglycaemia outcomes

(snap shot of few patients 2008 – 2011)

Impact of islet transplantation on annual hypo rate



(UK 1 year graft survival >85%*)

* Brooks AMSA Diabetic Med 2012; 29 (suppl1) :A15

International Outcome Data

citr

Collaborative Islet Transplant Registry

Seventh Annual Report

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Islet cell transplant outcomes

	1 year	3 year	5 year
Insulin independence	50%	35%	25%
Absence of severe hypoglycaemia	90%	75%	50%

(graft function $>0.3\text{ng/ml}$, 50-80% at 5 years)

Brief Communication

Attainment of Metabolic Goals in the Integrated UK Islet Transplant Program With Locally Isolated and Transported Preparations

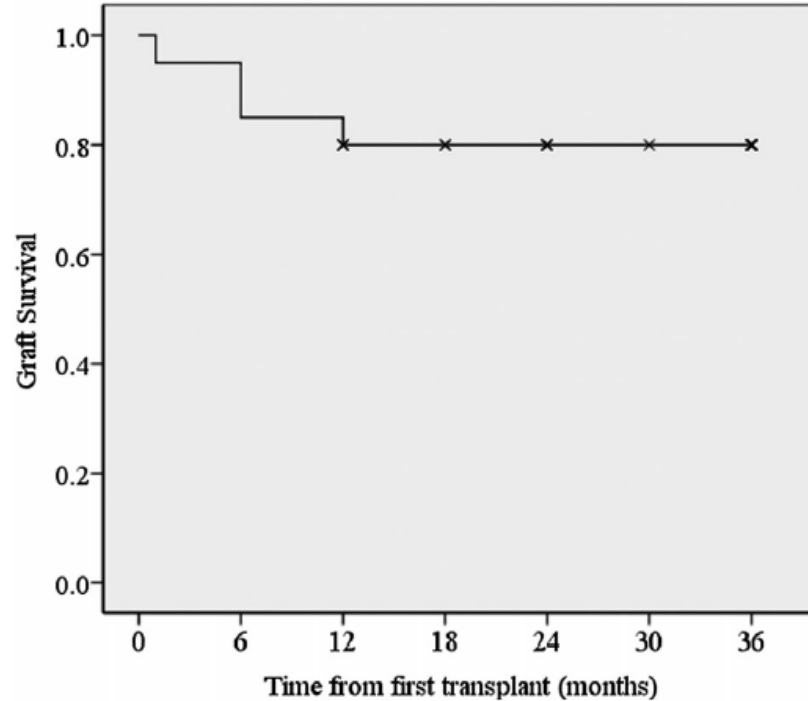
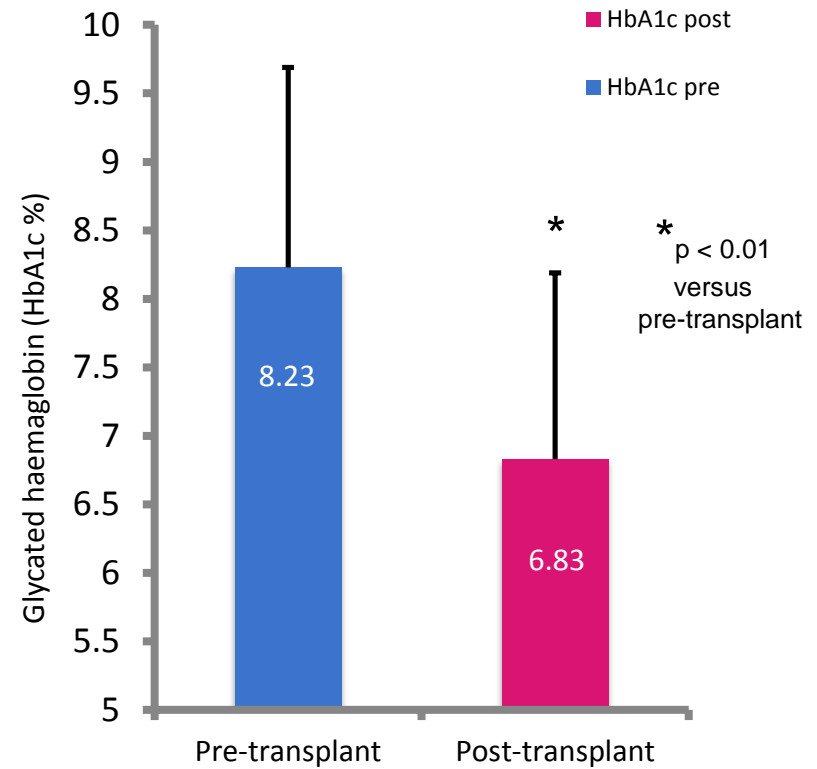
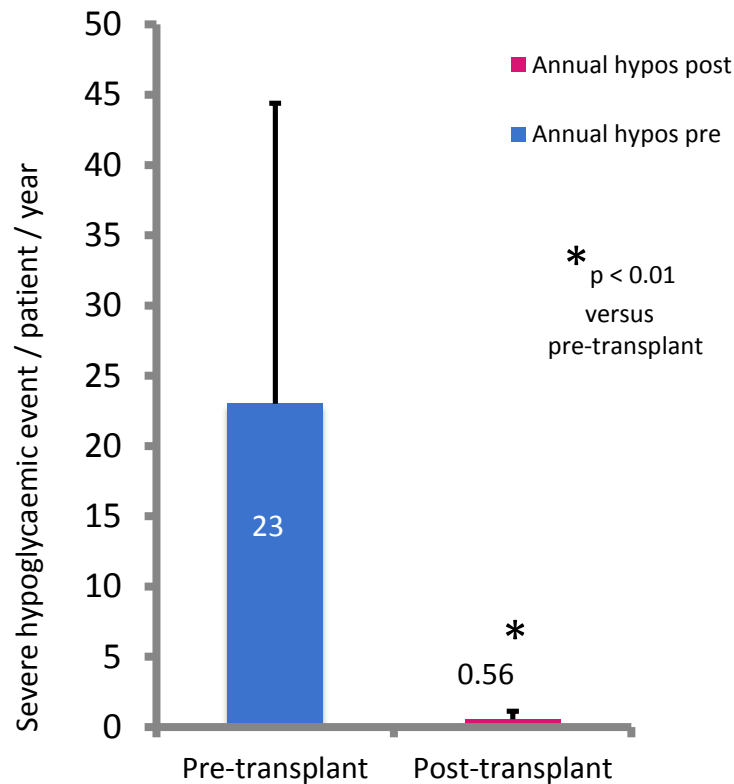


Figure 2: Kaplan–Meier plots of graft survival up to 36 months posttransplant (n = 20).

Post-Islet Transplant Metabolic Outcomes



UK & World Latest News

Gunman found guilty in Dewani c_

'I remember nothing' says Birmingham diabetic death crash driver

Nov 9 2007

By Ross McCa

A DIABETIC
nothing abo
car knocked

It is alleged
that his bloo
continued to
youngster.

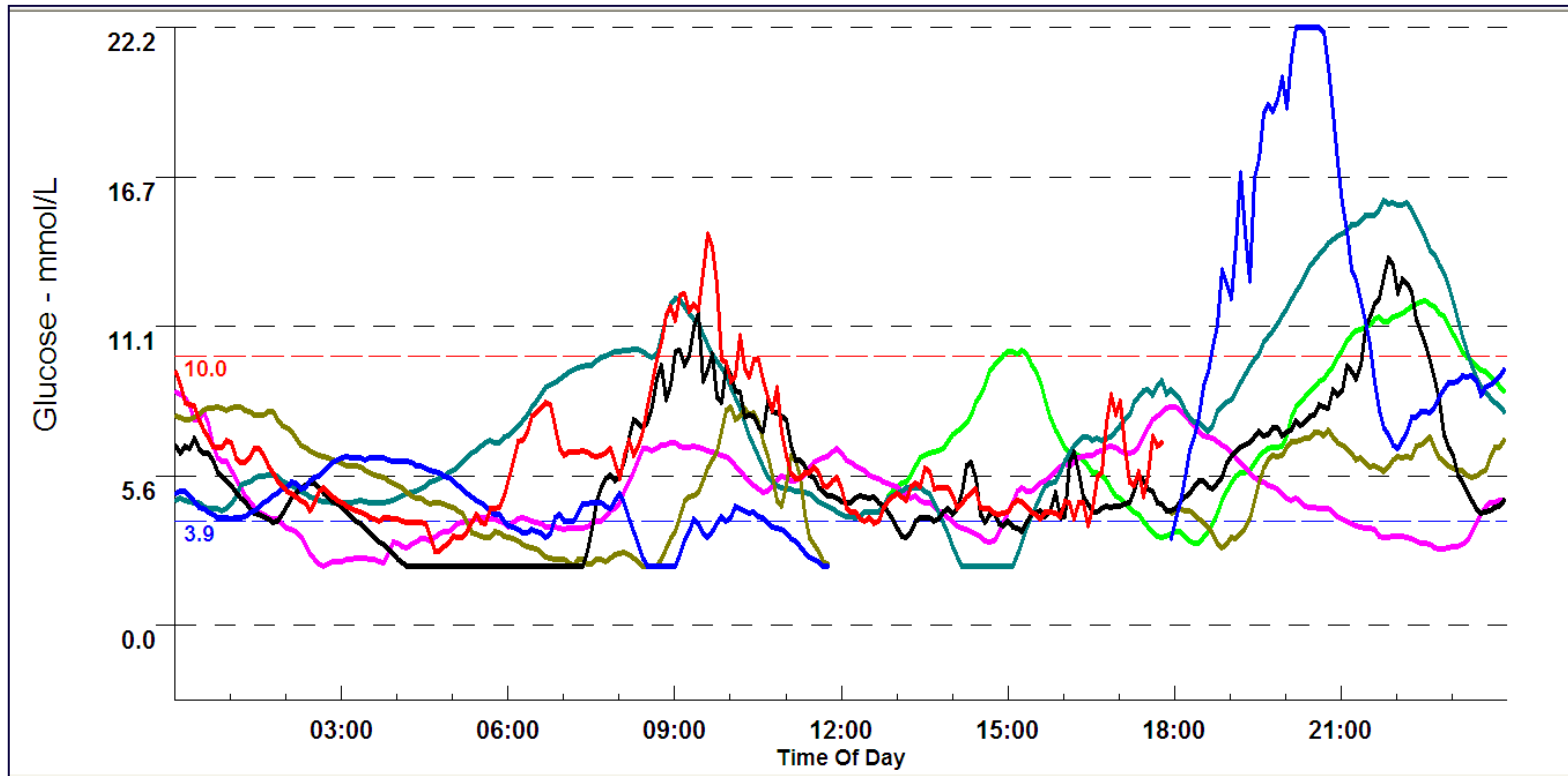
Clarke, aged
denied caus

One witness who saw the defendant behind the wheel shortly before the accident described him as "looking paranoid"

His vehicle mounted a pavement, struck the boy and his brother, then went through a garden wall, across a garden and into a house in Stirchley.

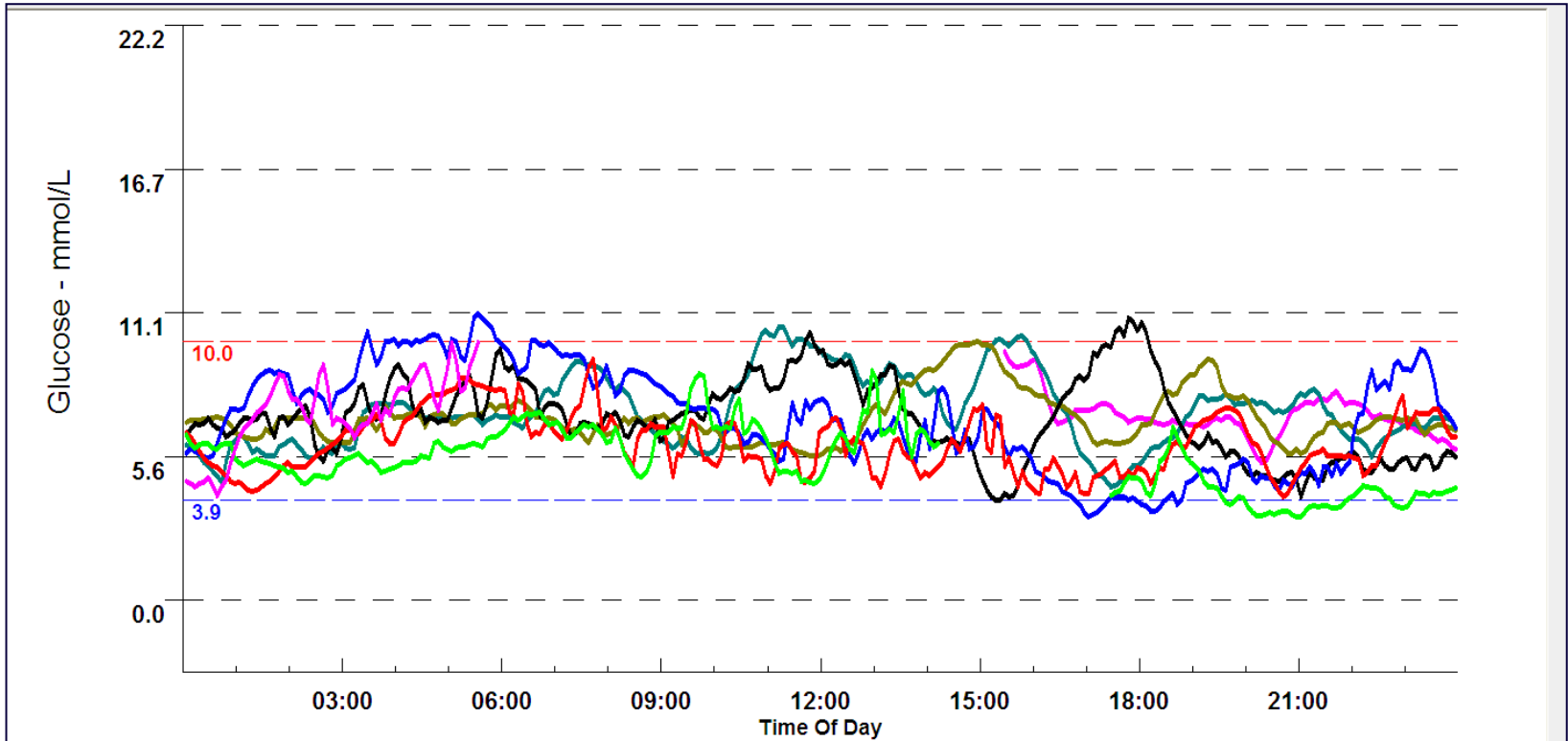
Leading up to the accident the defendant, who was at the wheel of a Renault, had been driving in an erratic manner and was seen to swerve across lanes

Pre-transplant glucose profile (September 2009)



HbA1c 7.0%

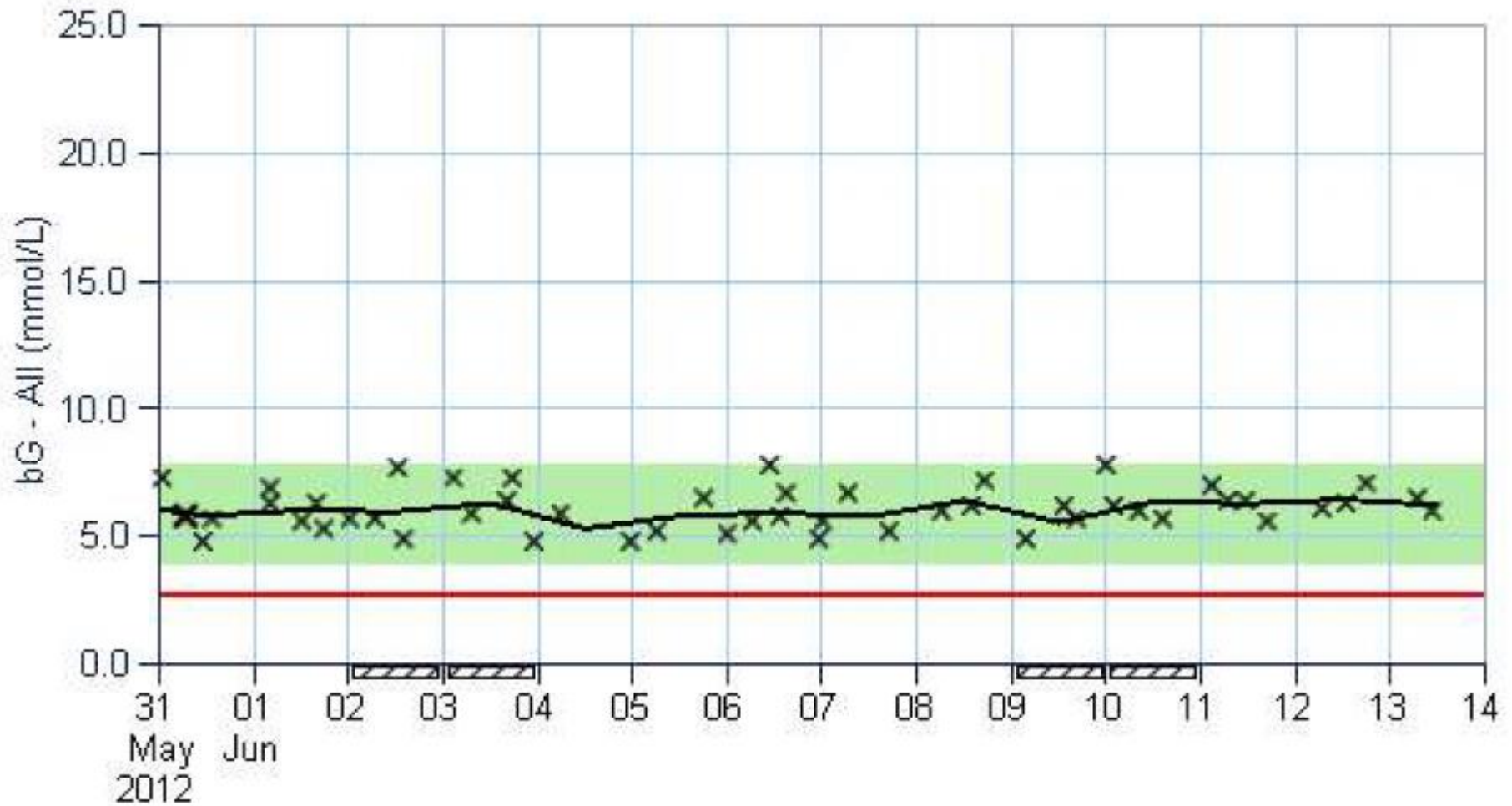
Post-transplant glucose profile



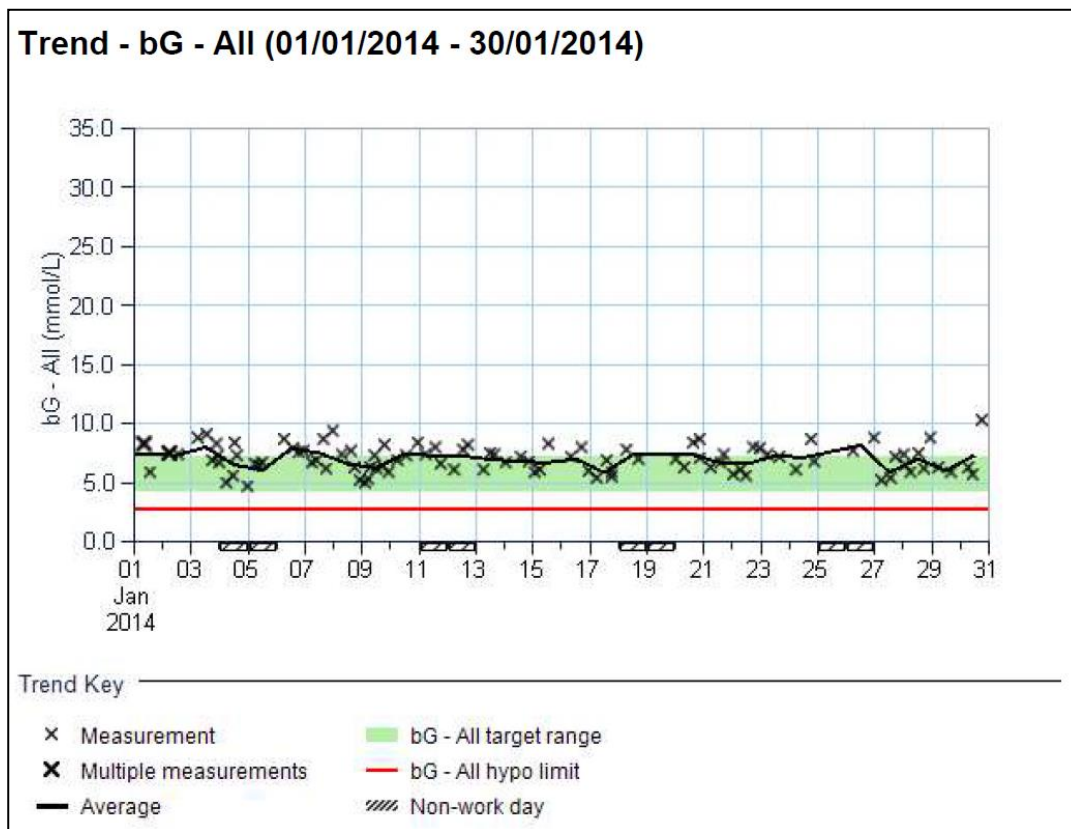
HbA1c 6.0%

Glucometer trends May – June 2012

Trend - bG - All (31/05/2012 - 13/06/2012)



January 2014



1st transplant September 2009

Remains off insulin, on Liraglutide 1.2 mg OD

Challenges

- National funding for 100 per year
- Oxford largest centre 8-10 per year
- Most referrals from 2-3 centres
- Post-transplant follow-up, intensive
- Have 1 satellite clinic (Birmingham)

Proposal

- Increase hub and spoke service across TV
- AHSN funded transplant coordinator
- Satellite clinics
- Use of IT, (? Skype follow up in local centre)

Conclusions

Islet cell transplantation

Research to Clinical (NHS) service

NICE Outcome Measures are being achieved

- Prevention of recurrent severe hypoglycaemia
- Attainment of HbA1c <53 mmol/mol (7%)

Need to expand the service

Acknowledgements

Oxford Clinical Team

Rob Crookston

Chitra Ballav

Paul Johnson

Transplant Surgeons/Team

Diabetes on-call team – SpRs

Islet Isolation Team