



Perioperative Management of People with Diabetes and Those on Glucocorticoids

Dr Ketan Dhatariya MSc MD MS FRCP
Consultant in Diabetes and Endocrinology
Norfolk and Norwich University Hospitals



When in Doubt

- There are usually 2 or 3 consultant ward round EVERY DAY and a consultant diabetologist on call 24/7
- There are THREE Endocrine SpR's each of whom has a bleep – 0126 / 0669 / 0988
- There are THREE Diabetes Inpatient Specialist Nurses – 0407

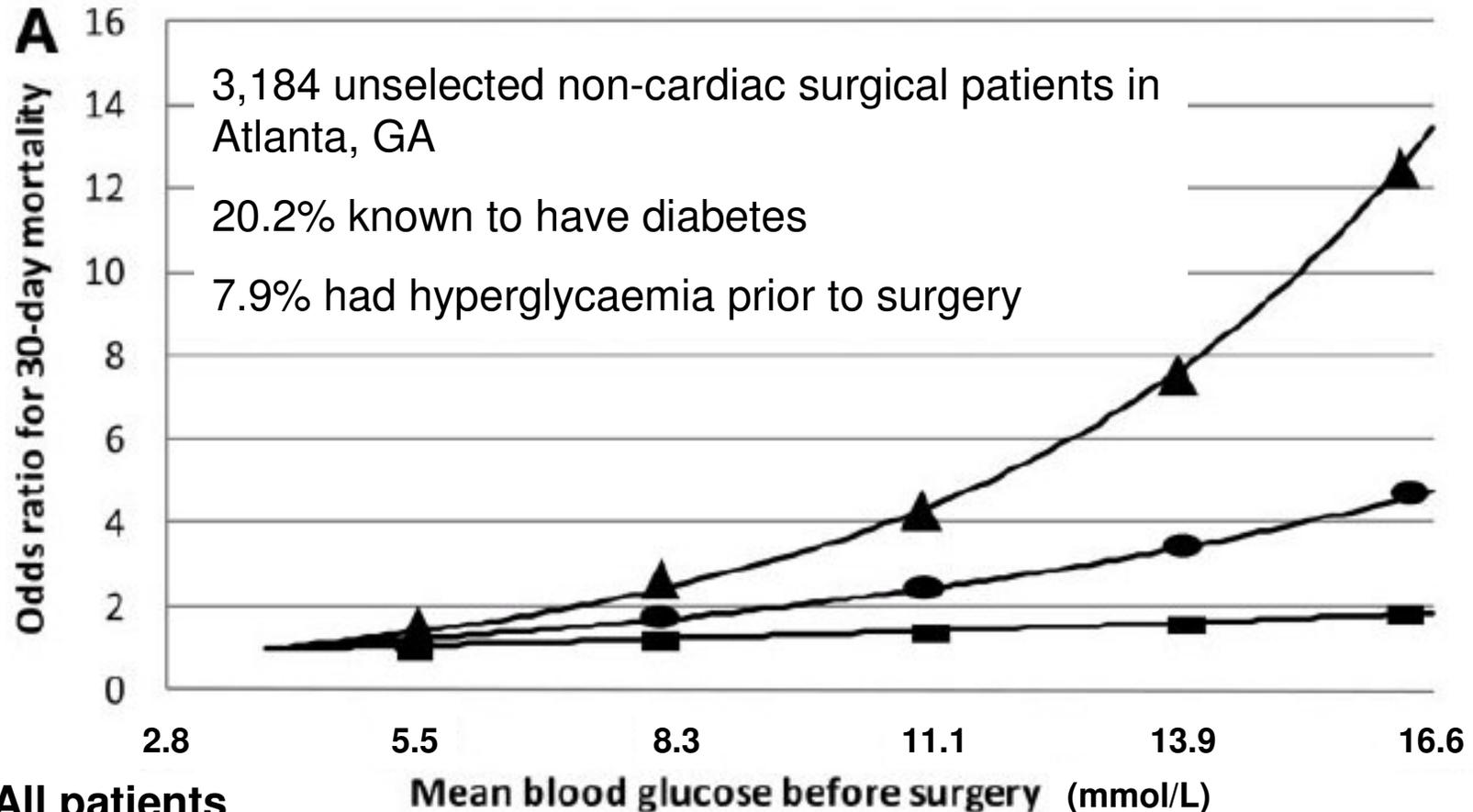
Let Me Say That Again

- **THERE ARE 17 CONSULTANT
LED WARD ROUNDS EVERY
WEEK AT THE N&N**

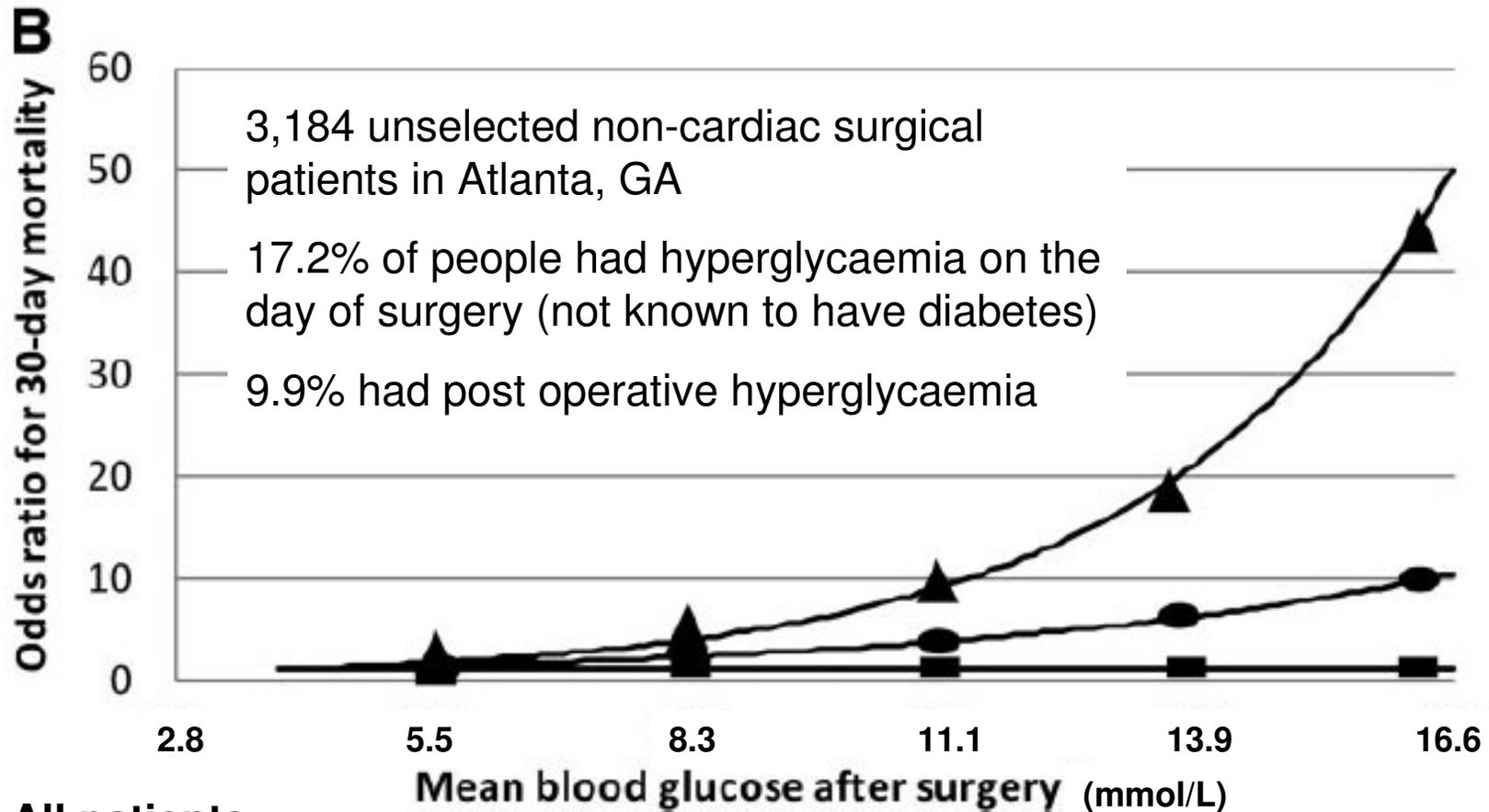
There is NO EXCUSE for getting it
wrong

Diabetes

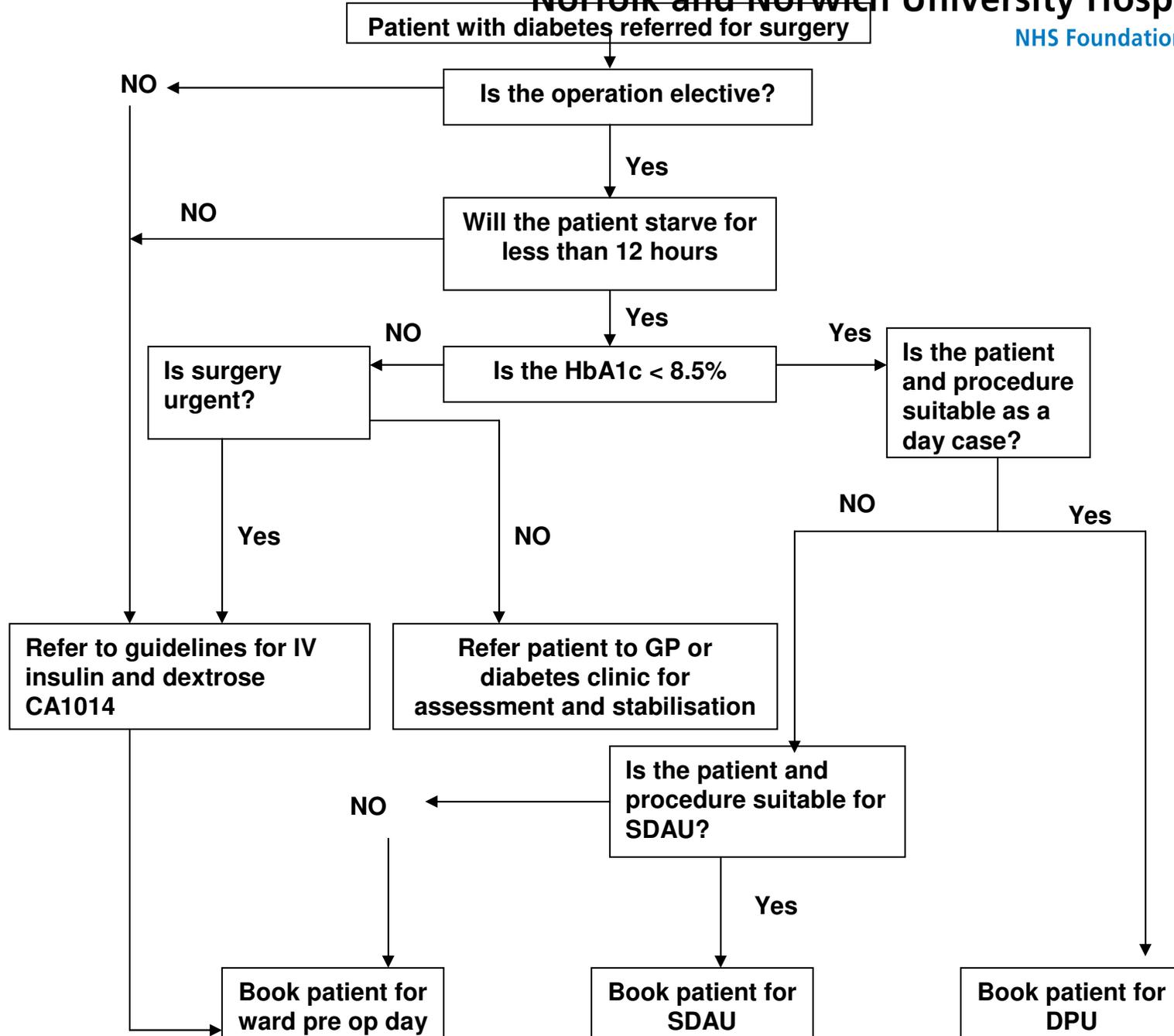
Do High Admission Glucose Levels Cause Harm?



Do High Admission Glucose Levels Cause Harm?



- All patients
- Patients with diabetes
- ▲ Patients without diabetes



Different Classes of Non-Insulin Glucose Lowering Agents

- α glucosidase inhibitors
- Metaglinides
- Metformin
- Sulphonylureas
- Thiazolidindiones
- DPP-IV inhibitors
- GLP-1 inhibitors

Fortunately
There is
This.....

Diabetes UK Position Statements and Care Recommendations

NHS Diabetes guideline for the perioperative management of the adult patient with diabetes*

K. Dhatariya¹, N. Levy², A. Kilvert³, B. Watson⁴, D. Cousins⁵, D. Flanagan⁶, L. Hilton⁷, C. Jairam⁸, K. Leyden³, A. Lipp¹, D. Lobo⁹, M. Sinclair-Hammersley¹⁰ and G. Rayman¹¹
for the Joint British Diabetes Societies

Diabet. Med. 29, 420–433 (2012)

The image shows the cover of an NHS Diabetes guideline. At the top, there is a horizontal timeline with five stages: 'Preoperative Care', 'Preoperative Assessment', 'Hospital Admission', 'Theatre and Recovery', and 'Discharge'. The NHS logo is in the top right corner, with the word 'Diabetes' below it. The main title is 'Management of adults with diabetes undergoing surgery and elective procedures: improving standards'. At the bottom right, the slogan 'Supporting, Improving, Caring' is visible. The background features a large puzzle piece graphic.

Tablets	Day prior to admission	Day of surgery	
		Patient for AM surgery	Patient for PM surgery
Acarbose	Take as normal	Omit morning dose if NBM	Give morning dose if eating
Meglitinide (repaglinide or nateglinide)	Take as normal	Omit morning dose if NBM	Give morning dose if eating
Metformin (procedure not requiring use of contrast media*)	Take as normal	Take as normal	Take as normal
Sulphonylurea (e.g Glibenclamide, Gliclazide, Glipizide, etc.)	Take as normal	Once daily AM omit Twice daily omit AM	Once daily AM omit Twice daily omit AM and PM
Pioglitazone	Take as normal	Take as normal	Take as normal
DPP IV inhibitor (e.g. Sitagliptin, Vildagliptin, Saxagliptin)	Take as normal	Omit on day of surgery	Omit on day of surgery
GLP-1 analogue (e.g. Exenatide, Liraglutide)	Take as normal	Omit on day of surgery	Omit on day of surgery

Insulin

Insulins	Day prior to admission	Day of surgery	
		Patient for AM surgery	Patient for PM surgery
Once daily (evening) (e.g. Lantus® or Levemir®. Insulatard®, Humulin I®, Insuman®)	No dose change*	Check blood glucose on admission	Check blood glucose on admission
Once daily (morning) (Lantus® or Levemir® Insulatard®, Humulin I®, Insuman®)	No dose change	No dose change*. Check blood glucose on admission	No dose change*. Check blood glucose on admission
Twice daily (e.g. Novomix 30®, Humulin M3®, Humalog Mix 25®, Humalog Mix 50®, Insuman® Comb 25, Insuman® Comb 50 twice daily Levemir® or Lantus®)	No dose change	Halve the usual morning dose. Check blood glucose on admission. Leave the evening meal dose unchanged	Halve the usual morning dose. Check blood glucose on admission. Leave the evening meal dose unchanged
Twice daily - separate injections of short acting and intermediate acting (e.g. animal neutral, Novorapid® Humulin S®) Apidra® (e.g. animal isophane Insulatard® Humulin I® Insuman®)	No dose change	Calculate the total dose of both morning insulins and give half as intermediate acting only in the morning. Check blood glucose on admission. Leave the evening meal dose unchanged	Calculate the total dose of both morning insulins and give half as intermediate acting only in the morning. Check blood glucose on admission. Leave the evening meal dose unchanged
3, 4, or 5 injections daily	No dose change	Basal bolus regimens: omit the morning and lunchtime short acting insulins. Keep the basal unchanged.* Premixed AM insulin: halve the morning dose and omit lunchtime dose Check blood glucose on admission	Take usual morning insulin dose(s). Omit lunchtime dose. Check blood glucose on admission

Other Documents to Help

Joint British Diabetes Societies
Inpatient Care Group

The Management of Diabetic
Ketoacidosis in Adults

March 2010

The Hospital Management of
Hypoglycaemia in Adults
with Diabetes Mellitus

March 2010

Self-management of
diabetes in hospital

Joint British Diabetes Societies
for Inpatient Care Group

BMJ

341:841-896 No 7778 Clinical research ISSN 0959-8138
23 October 2010 | bmj.com

PLUS Ethnic density and mental health
Tricyclic antidepressants for migraine
Assessing equity in systematic reviews
Pyrexia of unknown origin in adults

JOBS, COURSES, AND CAREERS

Drug				
Insulin Soluble				
Dose	Frequency	Route	Start date	8-00
80	TDS	SC		
Additional instructions			Stop date	
			Pharmacy	14-00
Doctor's signature				22-00

How to avoid
errors in insulin
prescribing.

Return to Course View



Welcome to your e-learning module on
The Safe Use of Insulin



Jump to page Your Notes 1 / 6 00:00:08

VIRTUAL COLLEGE

Print Glossary 47 %

Save Help Minimise Quit

NHS Diabetes - Supporting, improving, caring - Windows Internet Explorer

http://www.diabetes.nhs.uk/

Members Login

Supporting, Improving, Caring

Search

NHS Diabetes

Home About us National guidance In your area Our publications News and events Contact us

You are here: Home

Safe use of insulin - Sign up to our free and very successful Safe Use of Insulin e-learning module aimed at those administering insulin – and find out about our new courses.

Commissioning Networks

Quality improvement Information & data

Areas of care Safe use of insulin

NHS Diabetes is the essential link between diabetes strategy and frontline improvements for patients. Through our integrated work programmes we provide national leadership and direction as well as support to local organisations working to champion excellent diabetes care.

Supporting the implementation of the [NHS Outcomes Framework](#) and the [NICE Quality Standards for diabetes](#) is at the heart of our work. We do this by:

- **Providing national leadership:** we work to ensure diabetes remains high on the national health agenda and translate national strategy into local action.
- **Tackling unacceptable variation:** our tools, guidance, networks and 'primary care consultancy' service help to reduce unacceptable and persistent variation in diabetes care.
- **Supporting local improvement:** our networks help share ideas and good practice, drive forward service improvements and improve links between national strategy and local action.
- **Championing 'audit to action':** we provide easy to understand data to local organisations so they can see where to act to improve services.
- **Offering tailored support:** we use data to identify where services are not up to scratch and offer organisations

5.5% of the adult population of England has diabetes, but analysis of Hospital Episode Statistics shows that in 2009-10 people with diabetes accounted for at least 9.7% of hospital admissions, and 19.8% of hospital bed days.

Diabetes care areas - click here to navigate to a care area page

Diabetes care areas - click here to navigate to a care area page

Latest news

26 Jul 2012

Diabetes study finds differing sugar levels

[Find out more >](#)

25 Jul 2012

Hypo Awareness Week - registration is open

[Find out more >](#)

Become a Member of NHS Diabetes

Hot topics

Start | Calendar - Microsoft ... | Teaching new FY1's ... | NHS Diabetes - Su... | Reference Manager - ... | Perioperative manag... | A Mishmash of Inpati... | 11:23

Areas of care -> Safe use of insulin - NHS Diabetes - Windows Internet Explorer

http://www.diabetes.nhs.uk/safe_use_of_insulin/

Members Login

Supporting, Improving, Caring

Search

NHS Diabetes

Diabetes

Home About us National guidance In your area Our publications News and events Contact us

You are here: Home > Safe use of insulin

Safe use of insulin

NHS Diabetes is the essential link between diabetes strategy and frontline service improvements for patients. Through our integrated work programmes we are able to provide national leadership and direction and support local organisations working to champion good quality diabetes care.

If this is your first visit to our website please take some time to have a look at the wide range of resources we have available to support you to improve diabetes care. Below you will find more information on our safety work programme.

Diabetes care areas - click here to navigate to care area page

Ask a question

Was this page useful?

Yes No

Latest module

The III e-learning module is now available

Click here to access

Other safety e-learning modules

We have also developed a free e-learning module on intravenous insulin infusion and will shortly be publishing two further modules. Find out more by using the links below:

- [Intravenous Insulin Infusions](#) – launched in September 2011
- [Safe Management of Hypoglycaemia](#) – launching in Summer 2012
- [Safe Use of Oral Anti-Hyperglycaemic Agents](#) – launching in Winter 2012

Background

In 2010 the National Patient Safety Agency issued a Rapid Response Report showing over 5,000 patient safety incidents were reported between 2003 and 2009 in England and Wales. The figures included one death and one case of severe harm that occurred after clinicians misinterpreted the abbreviation of the term 'unit'. A further three deaths and 17 other incidents occurred between January 2005 and July 2009 where an intravenous syringe was used to measure and administer insulin.

Are you insulin safe?

Did you know:

- 1 in 5 patients on an inpatient ward has diabetes¹
- Around 4 in 10 inpatients with diabetes experience a medication error¹
- Since 2003 insulin errors have led to over 17,000 safety incidents²
- And, most importantly,
- Insulin safety training is now a requirement for all those who prescribe, prepare, handle or administer insulin.²

1 National Patient Safety Agency 2010 Rapid Response Report. 2 National Diabetes Inpatient Audit 2010: bedside

To find out all about insulin passports and the patient information booklet click on the button below

Insulin Passports

Safety E-bulletins

- July 2012: NHS Diabetes celebrates 80,000 Safe Use of Insulin course registrations**
- May 2012: Do the course. Save a life. NHS Diabetes launches insulin safety poster campaign**

Resources

- [Safe use of insulin press release \(Word 314KB\)](#)

Start | Calendar - Microsoft Outl... | Teaching new FY1's 11/0... | Areas of care -> Safe ... | Reference Manager - [R... | Perioperative managemen... | 11:24

NHS Diabetes Self Registration - Windows Internet Explorer

http://nhsdiabetes.healthcareea.co.uk/

File Edit View Favorites Tools Help

Areas of care -> Safe use of... NHS Diabetes Self Regist... x

Home 26 July 2012

NHS Diabetes

Supporting, Improving, Caring

Powered by VIRTUAL COLLEGE

Welcome

Welcome to the Healthcare e-Academy (www.healthcareea.co.uk) and the NHS Diabetes Suite of safety e-learning modules.

This site has been developed to help you access courses in a more flexible way. Please select the country in which you work or study from the list below.

- ENGLAND click here to register
- SCOTLAND click here to register
- NORTHERN IRELAND click here to register
- WALES click here to register
- OUTSIDE THE UK click here to register

Copyright © 1995-2012 Virtual College Group PLC | All Rights Reserved

Taskbar: Start, Internet, 100%, 11:25

NHS Diabetes
Supporting, Improving, Caring

Powered by **VIRTUAL COLLEGE**

Home | NHS Diabetes England 26 July 2012

Welcome to NHS Diabetes England

Welcome to the Healthcare e-Academy (www.healthcareea.co.uk) and the NHS Diabetes Suite of safety e-learning modules

The modules listed above are free of charge to anyone living or working in England. Please note, you will need the following information in order to register:

- NHS Employees:** You will need your ESR number to register. Your ESR number can be found on your payslip.
[What is my ESR number?](#) [View example payslip](#)
- Non NHS Employees:** You will need your organisational code to register.
[What is my Organisational code?](#)

If you have already registered for one module and would like another, please login using your existing login details and simply select the course you want from your 'Requested Learning' tab.

If you have forgotten your login details please do not re-register. Please contact us on the details provided below:
Tel: 01943-885086
Email: info@healthcareea.co.uk

REGISTER
new user click here

LOGIN
existing user click here

Please note, if you are already registered as a NHS Diabetes e-learner you will need to re-register to access The Productive Series suite of e-learning, to register please [click here](#).

The Safe Use of Insulin



The Safe Use of Intravenous Insulin Infusions



The Safe Management of Hypoglycaemia

Coming soon

Due for release August 2012 Email info@healthcareea.co.uk to pre-register interest

The Safe Use of Non-Insulin Therapies for Diabetes

Coming soon

Due for release August 2012 Email info@healthcareea.co.uk to pre-register interest

Glucocorticoids

If in doubt call for help from the endocrine
registrar on 1200

Glucocorticoids

- Only an issue if the dose of exogenous steroid are
 - Chronic administration (>3 weeks)
 - Supraphysiological (>7.5 mg/day)
- They upset the normal physiological response to stress by suppressing endogenous adrenal glucocorticoid production

Chronic Glucocorticoid Exposure

- Endocrine and metabolic
 - Suppression of HPA axis (adrenal suppression)
 - Growth failure in children
 - Carbohydrate intolerance
 - Hyperinsulinemia
 - Insulin resistance
 - Abnormal glucose tolerance test
 - Diabetes mellitus
- Cushing's syndrome
 - Impotence, menstrual disorders
 - Decreased thyroid-stimulating hormone and triiodothyronine
 - Hypokalaemia, metabolic alkalosis
- Gastrointestinal system
 - Gastric irritation, peptic ulcer
 - Acute pancreatitis (rare)
 - Fatty infiltration of liver (hepatomegaly) (rare)
- Haemopoietic system
 - Leucocytosis
 - Neutrophilia- Increased influx from bone marrow and decreased migration from blood vessels
 - Monocytopenia
 - Lymphopenia- Migration from blood vessels to lymphoid tissue
 - Eosinopenia
- Immune system
 - Suppression of delayed hypersensitivity
 - Inhibition of leucocyte and tissue macrophage migration
 - Inhibition of cytokine secretion or action
 - Suppression of the primary antigen response
- Musculoskeletal system
 - Osteoporosis, spontaneous fractures
 - Aseptic necrosis of femoral and humeral heads and other bones
 - Myopathy
- Ophthalmic
 - Posterior subcapsular cataracts (more common in children)
 - Elevated intraocular pressure or glaucoma
- Neuropsychiatric disorders
 - Sleep disturbances, insomnia
 - Euphoria, depression, mania, psychosis
- Pseudotumor cerebri (benign increase of intracranial pressure)

What is the Fear?

- Precipitating a hypoadrenal crisis intra / post operatively

How Can This be Avoided?

- Planning!
- For minor surgery (local / minimal physiological upset) – just double oral steroid dose for the day of the procedure and for 2-3 days afterwards

For More Invasive Procedures

- If they are to be NBM
 - i.v. hydrocortisone 50 mg tds for ‘medium’ procedures with short periods of NBM
 - i.v. hydrocortisone 100 mg tds for the major procedures
 - To stay on these doses until they are eating and drinking
- However.....

However....

- If they are NBM for a long time and their physiological parameters are better, then reduce dose of HC

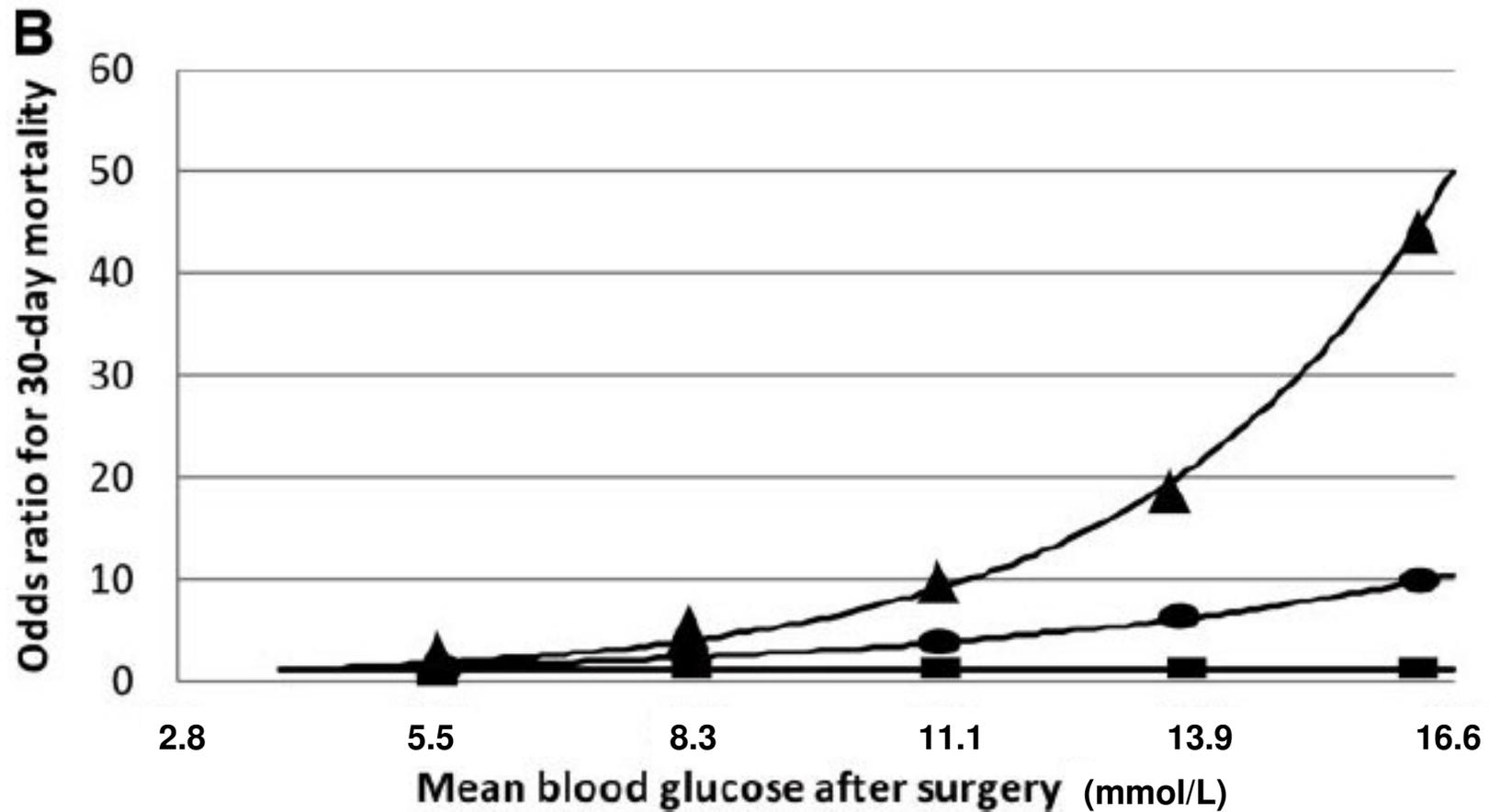
Once They Are Eating and Drinking

- Back to oral HC – at double their standard dose for a few days
- Then back to usual maintenance dose
- If in doubt call the endocrine team who will come and review the patient with their registrar or consultant that day or the next

Remember

- There are 17 consultant wards rounds per week
- The endocrine registrar is available on bleep 1200
- The Diabetes Inpatient Specialist Nurse is available on bleep 0407
- When in doubt call for help

You don't want to contribute to this



Any questions?

