



In-patient Diabetes Care – A Modern Approach

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Who is This Strange Man?

- I qualified in 1991
- I trained in D&E and G(I)M in London
- I did general practice for 2 years
- I did ITU / anaesthetics for a year
- I did research at Mayo Clinic for 2 years
- I have been in Norwich since 2004
- Currently my other roles include
 - Chair of the Specialist Clinical Exam in D&E and the European Board Exam in Endocrinology, Diabetes and Metabolism
 - President of the D & E Section of the Royal Society of Medicine
 - Chair of the Joint British Diabetes Societies for Inpatient Care



Conflicts of Interest

- I am the current Chair of the Joint British Diabetes Societies

Standardisation

Operational productivity and performance in English NHS acute hospitals: Unwarranted variations

An independent report for the Department of Health
by Lord Carter of Coles

THE MID STAFFORDSHIRE
NHS FOUNDATION TRUST
PUBLIC INQUIRY

Chaired by Robert Francis QC

Targets - ICU

Year	Organization	Patient Population	Treatment Threshold (mmol/l / mg/dl)	Target Glucose (mmol/l / mg/dl)
2021	American Diabetes Association (ADA)	ICU patients	10.0 (180)	7.8 – 10.0 (140 – 180)
2018	Canadian Diabetes Association (CDA)	ICU patients	10.0 (180)	5.9 – 10.0 (106 – 180)
2012	Society of Critical Care Medicine (SCCM)	ICU patients	10.0 (180)	8.3 (150)
2011	American College of Physicians (ACP)	SICU/MICU patients	Do not use IIT to strictly control or normalize BG in MICU/SICU patients with or without Diabetes	7.8 – 11.0 (140 – 200)
2009	Surviving Sepsis Campaign (SSC)	ICU patients	10.0 (180)	8.3 (150)
2009	American Association of Clinical Endocrinologists (AACE)	ICU patients with acute coronary syndromes	10.0 (180)	7.8 – 11.0 (140 – 200)
2016	RSSDI	ICU	10.0 (180)	7.8 – 11.0 (140 – 200)

Targets – Acute Coronary Syndrome

Table 3. Summary of guidelines for the management of patients with acute coronary syndrome and diabetes

Society	Recommendations	Level of recommendation where available
AACE/ADA ³¹	Target 7.8–10.0 mmol/L most non-critical patients.	Evidence level C
ACC/AHA ³²	Treat hyperglycaemia if >10.0 mmol/L and avoid hypoglycaemia.	Downgraded recommendation for use of insulin from class 1 to class II (evidence level B)
Canadian Diabetes Association ³³	Patients with acute MI and admission glucose >11.0 mmol/L may receive glycaemic control in the range of 7.0–10.0 mmol/L.	Grade C level 2
	Insulin may be required to achieve this target.	Grade D (consensus)
ESC/EASD ³⁴	Insulin based glycaemic control should be considered in ACS patients with significant hyperglycaemia (10.0 mmol/L) with the target adapted to possible comorbidities.	Recommendation class IIa, evidence level C
NICE ³⁵	Keep blood glucose levels below 11.0 mmol/L. Consider intravenous insulin as a method to achieve target.	
SIGN ³⁶	Patients with ACS and glucose >11.0 mmol/L should have immediate blood glucose control aiming for target of 7.0–10.9 mmol/L.	

AACE = American Association of Clinical Endocrinologists; ACC = American College of Cardiology Foundation; ADA = American Diabetes Association; AHA = American Heart Association; EASD = European Association for the Study of Diabetes; ESC = European Society of Cardiology; NICE = National Institute for Health and Care Excellence; SIGN = Scottish Intercollegiate Guidelines Network.

Targets – General Ward Patients

Organisation	Target Glucose (mmol/l / mg/dl)	Comments
JBDS	6.0 – 10.0 (106 – 180)	6.0 – 12.0 (106 – 215) acceptable 6.0 – 15.0 (106 – 270) for End of Life care
ADA / AACE	<7.8 (140) fasting <10.0 (180) random	Pre-meal glucose targets should generally be <7.8 (140) Random glucose levels <10.0 (180) Targets can be individualised depending on risk of hypoglycaemia and comorbidities

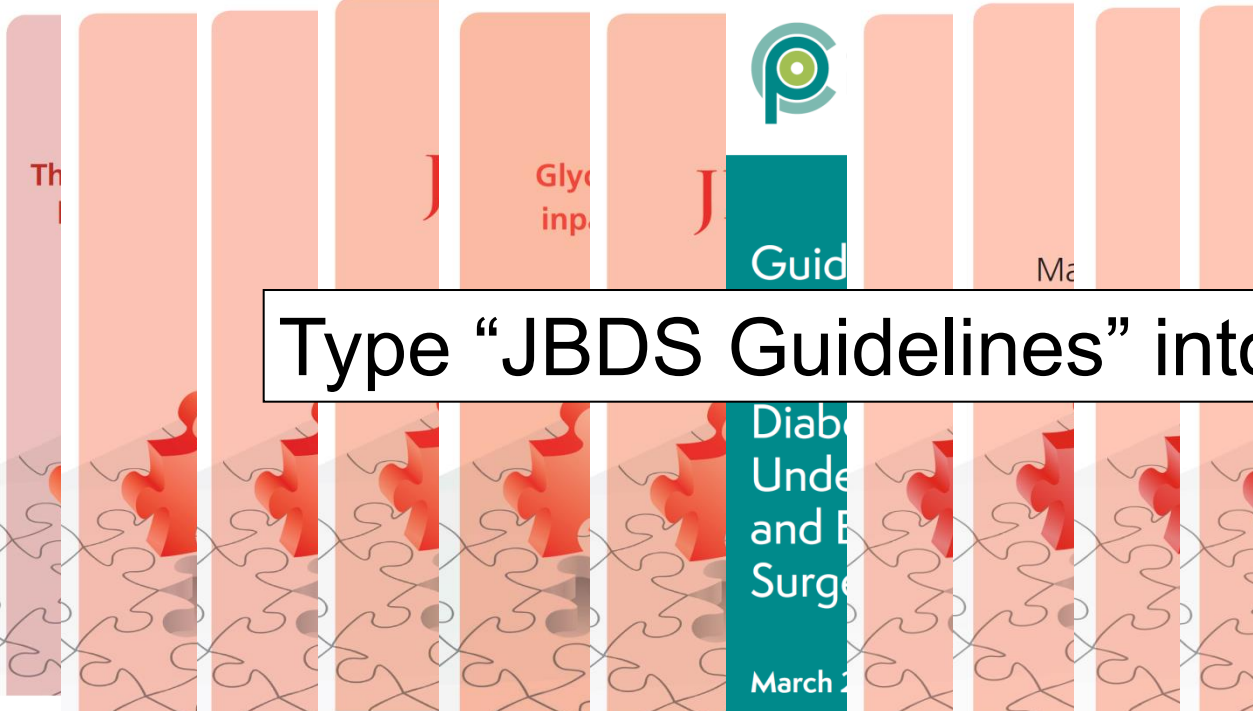
What Guidelines are Those Then?

- *The hospital management of hypoglycaemia in adults with diabetes mellitus*** JBDS 01
- *The management of diabetic ketoacidosis in adults** JBDS 02
- *Management of adults with diabetes undergoing surgery and elective procedures: improving standards*** JBDS 03
- *Self-management of diabetes in hospital*** JBDS 04
- *Glycaemic management during the inpatient enteral feeding of stroke patients with diabetes** JBDS 05
- *The management of the hyperosmolar hyperglycaemic state (HHS) in adults with diabetes** JBDS 06
- *Admissions avoidance and diabetes: guidance for clinical commissioning groups and clinical teams** JBDS 07
- *Management of hyperglycaemia and steroid (glucocorticoid) therapy*** JBDS 08
- *The use of variable rate intravenous insulin infusion (VRIII) in medical inpatients**** JBDS 09
- *Discharge planning for adult inpatients with diabetes* JBDS 10
- *Management of adults with diabetes on the haemodialysis unit** JBDS 11
- *Management of glycaemic control in pregnant women with diabetes on obstetric wards and delivery units** JBDS 12
- *The management of diabetes in adults and children with psychiatric disorders in inpatient settings**** JBDS 13
- *A good inpatient diabetes service* JBDS 14
- *Inpatient care of the frail older adult with diabetes** JBDS 15
- *Diabetes at the front door*** JBDS 16
- *Diabetes in people living with cancer* JBDS 17
- *Diabetes related devices in the hospital****

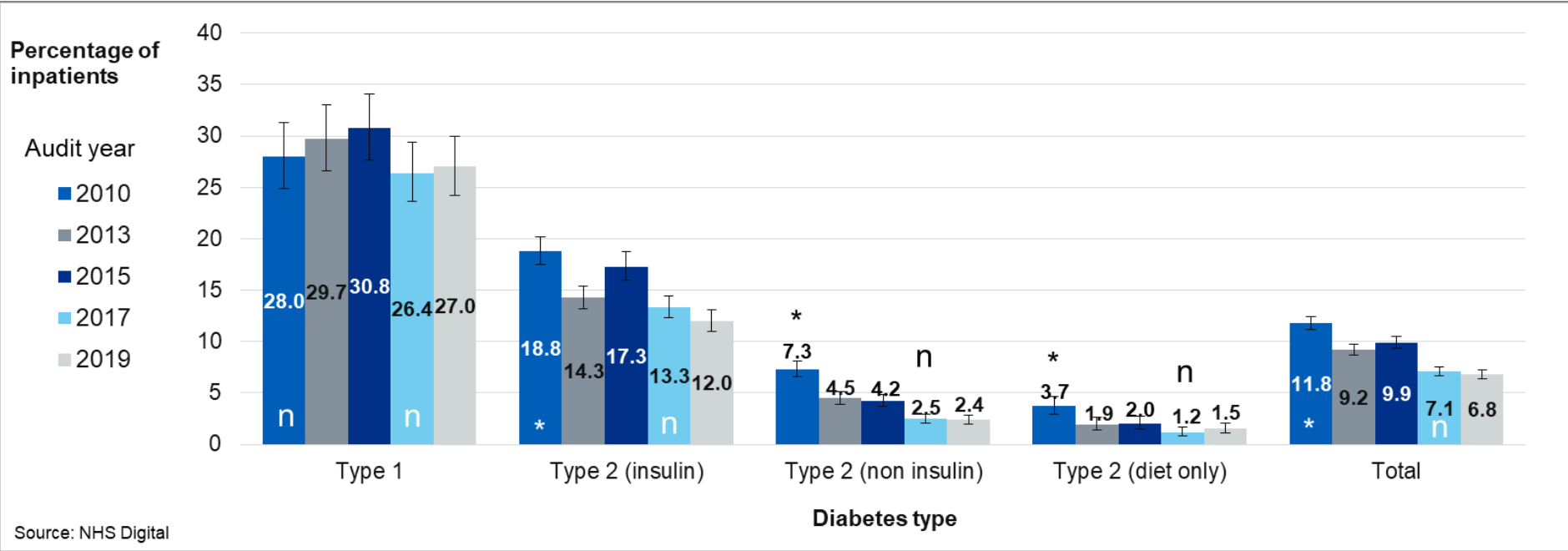
*Revision about to be published **Revision published *** New guidance due out later this year

Freely Available Resources

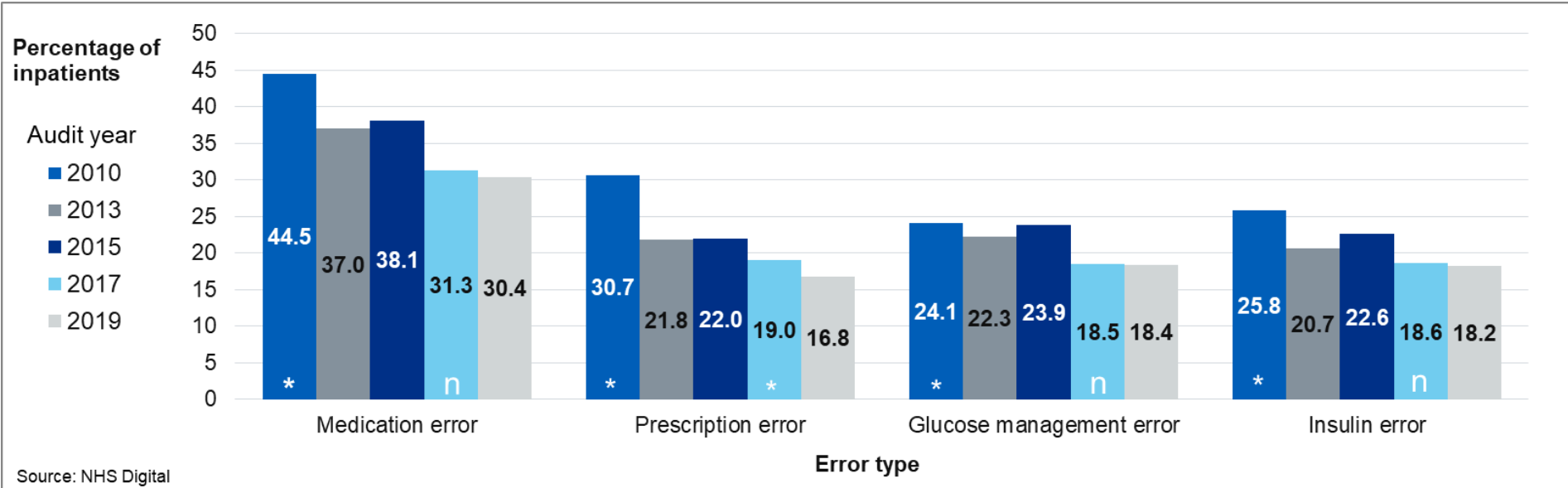
Type "JBDS Guidelines" into Google



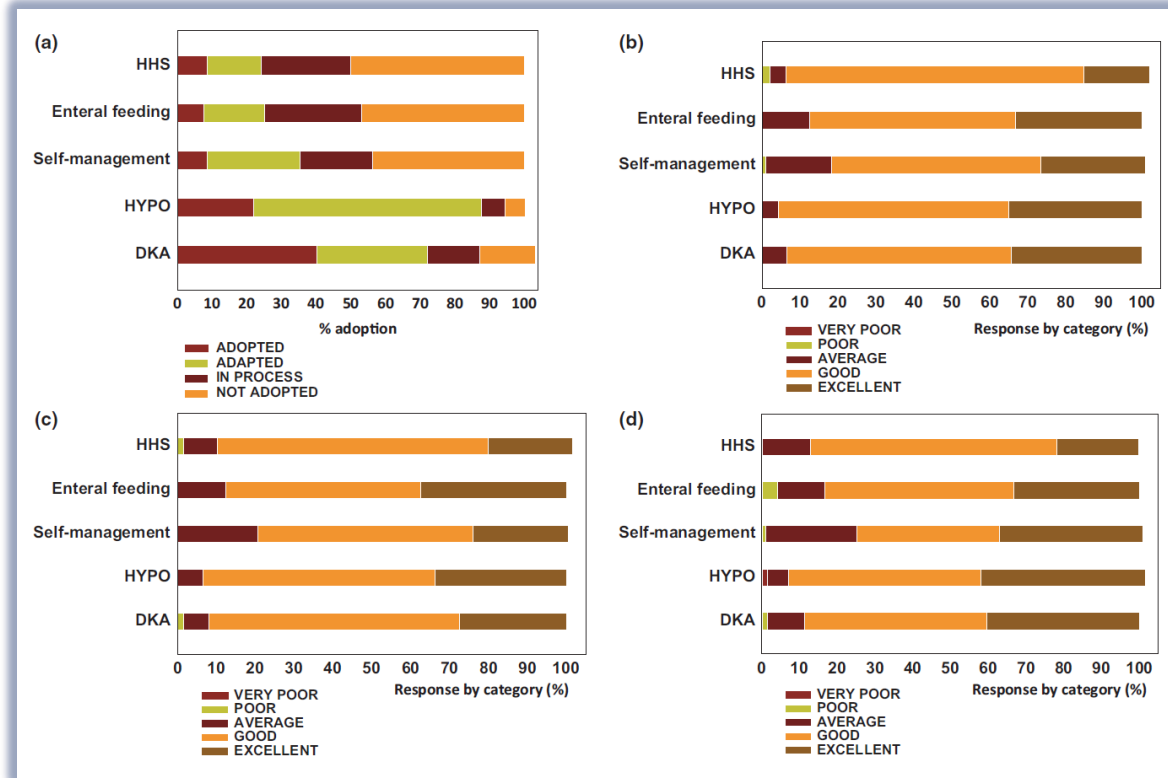
Evidence of Benefit? Severe Hypos



Evidence of Benefit? Medication Errors



JBDS Adoption, Value, Quality, Safety



If You Want to Know More.....



Management of diabetes and hyperglycaemia in the hospital

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Hyperglycaemia in people with and without diabetes admitted to the hospital is associated with a substantial increase in morbidity, mortality, and health-care costs. Professional societies have recommended insulin therapy as the cornerstone of inpatient pharmacological management. Intravenous insulin therapy is the treatment of choice in the critical care setting. In non-intensive care settings, several insulin protocols have been proposed to manage patients with hyperglycaemia; however, meta-analyses comparing different treatment regimens have not clearly endorsed the benefits of any particular strategy. Clinical guidelines recommend stopping oral antidiabetes drugs during hospitalisation; however, in some countries continuation of oral antidiabetes drugs is commonplace in some patients with type 2 diabetes admitted to hospital, and findings from clinical trials have suggested that non-insulin drugs, alone or in combination with basal insulin, can be used to achieve appropriate glycaemic control in selected populations. Advances in diabetes technology are revolutionising day-to-day diabetes care and work is ongoing to implement these technologies (ie, continuous glucose monitoring, automated insulin delivery) for inpatient care. Additionally, transformations in care have occurred during the COVID-19 pandemic, including the use of remote inpatient diabetes management—research is needed to assess the effects of such adaptations.

Introduction

Diabetes and stress hyperglycaemia are common in the hospital setting and are associated with increases in hospital complications, length of stay, and mortality.¹⁻³

Recommendations and international variations in practice

Despite a paucity of good quality evidence on the inpatient management of diabetes, several international

Summary

- Inpatient diabetes is a HUGE topic
- There have been some major strides in improving care for inpatients with diabetes with JBDS
- DUK/ADA/EASD are working hard at this as well
- There remains a lot of room for improvement




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