

Inpatient Hyperglycaemia and it's Consequences

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Topics to Cover

- Surgical patients – US data
- Medical patients – NNUH data

Excess Mean Length of Stay in Diabetes Inpatients Aged 18 – 60 Years

269,265 Diabetes Discharges and 4,411,593 Matched Controls

	Mean LOS (days)			Excess LOS (days)			n		
	E10	E11	C	E10	E11	E10	E11	C	
Surg.	5.4 (0.1)	5.1 (0.1)	4.2 (0.2)	1.2	0.9	18,032	32,135	1,501,453	
T & O	4.8 (0.1)	5.3 (0.2)	4.6 (0.1)	0.2	0.7	8,178	12,203	885,606	
GM	4.8 (0.2)	5.4 (0.2)	4.4 (0.1)	0.4	1.0	70,988	82,446	1,709,553	
Card.	4.2 (0.1)	4.2 (0.1)	3.8 (0.1)	0.4	0.4	5,307	15,009	229,784	
MFE	4.8 (0.2)	5.6 (0.2)	4.7 (0.1)	0.1	0.1	2,444	4,549	85,197	

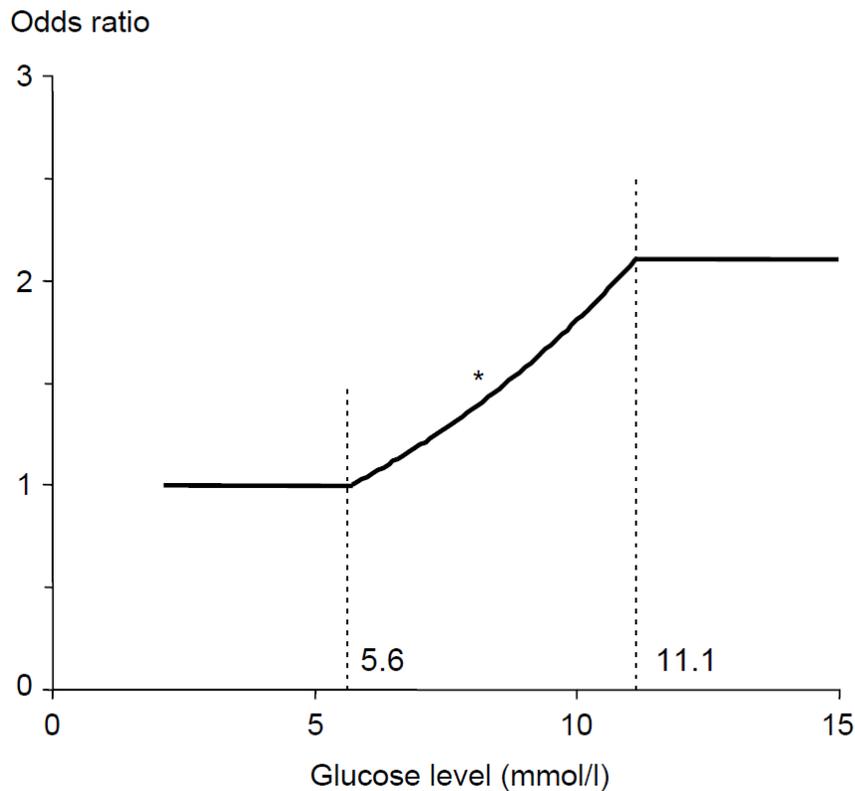
E10 = Type 1 diabetes E11 = Type 2 diabetes c = controls

English Hospitals, 4 consecutive years of discharges 2000-2004

Sampson MJ et al Diabetes Research & Clinical Practice 2007;77(1):92-98

However.....

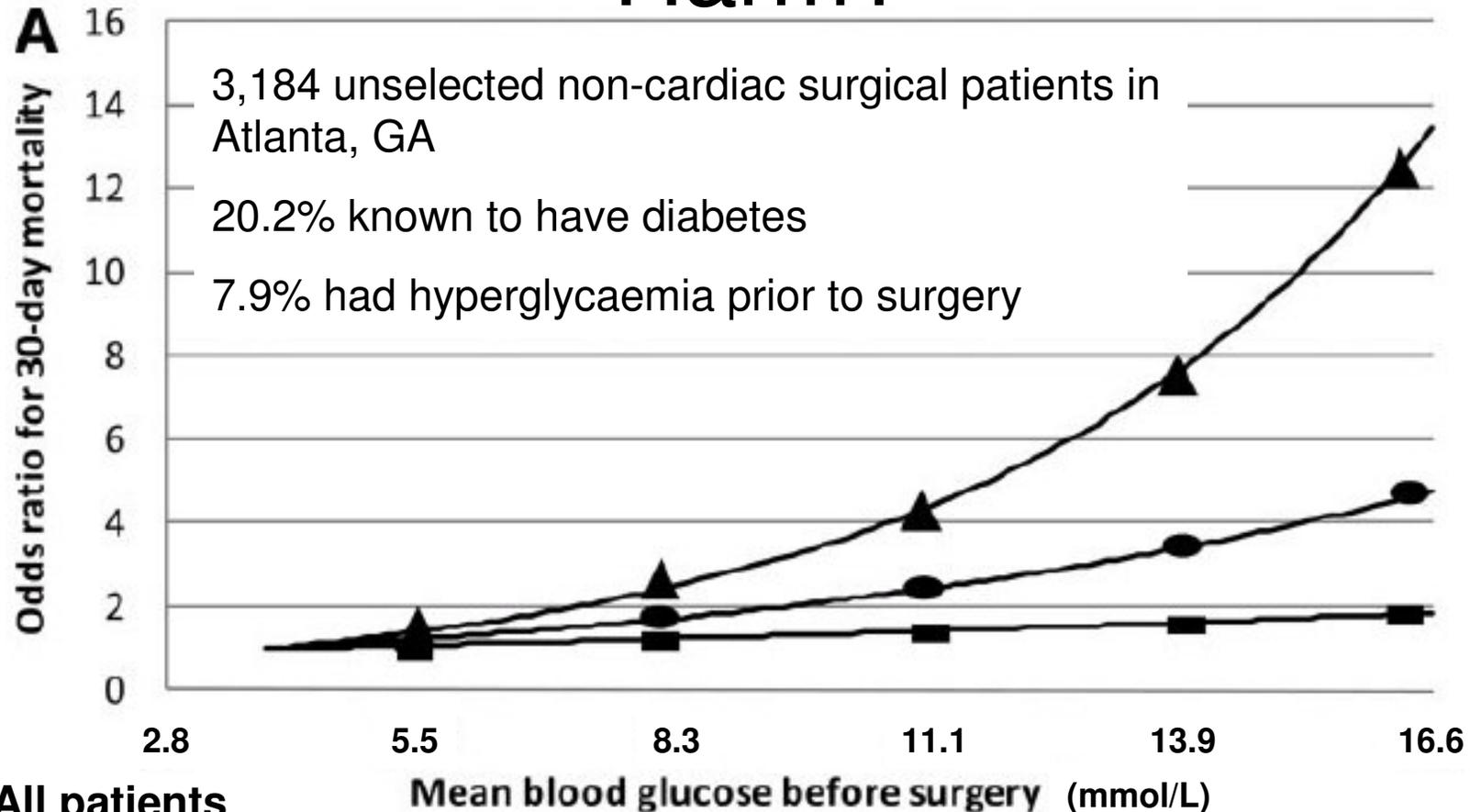
- Other data has confirmed the harm of high pre-operative glucose levels in non-cardiac, non vascular surgery



30 day mortality rates for 989 patients with diabetes – for each mmol/L increase in blood glucose, OR for mortality rose by 1.19 (CI 1.1 - 1.3)

Noordij PG et al EJE 2007;156(1):137-142

Do High Glucose Levels Cause Harm?

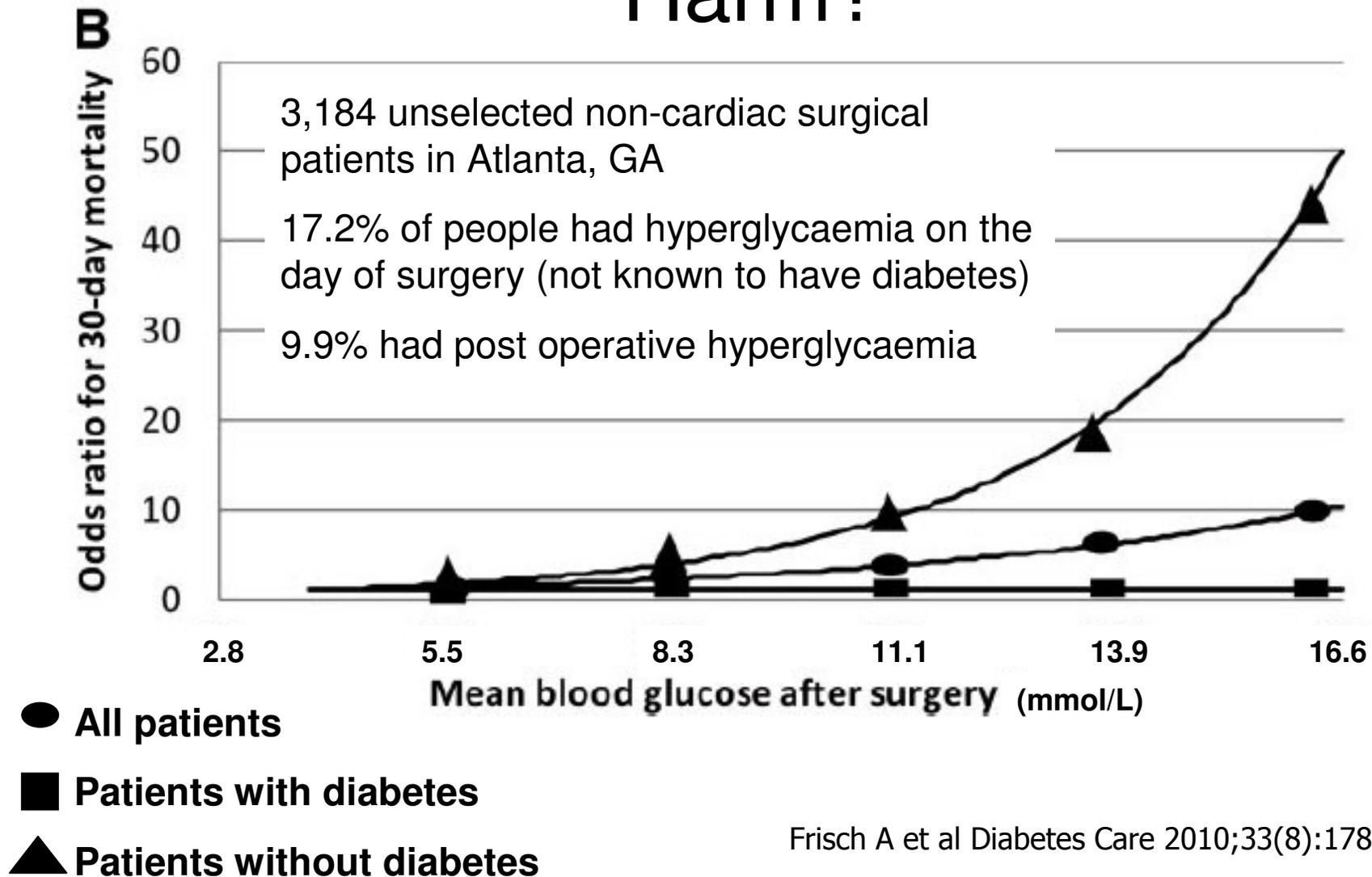


● All patients

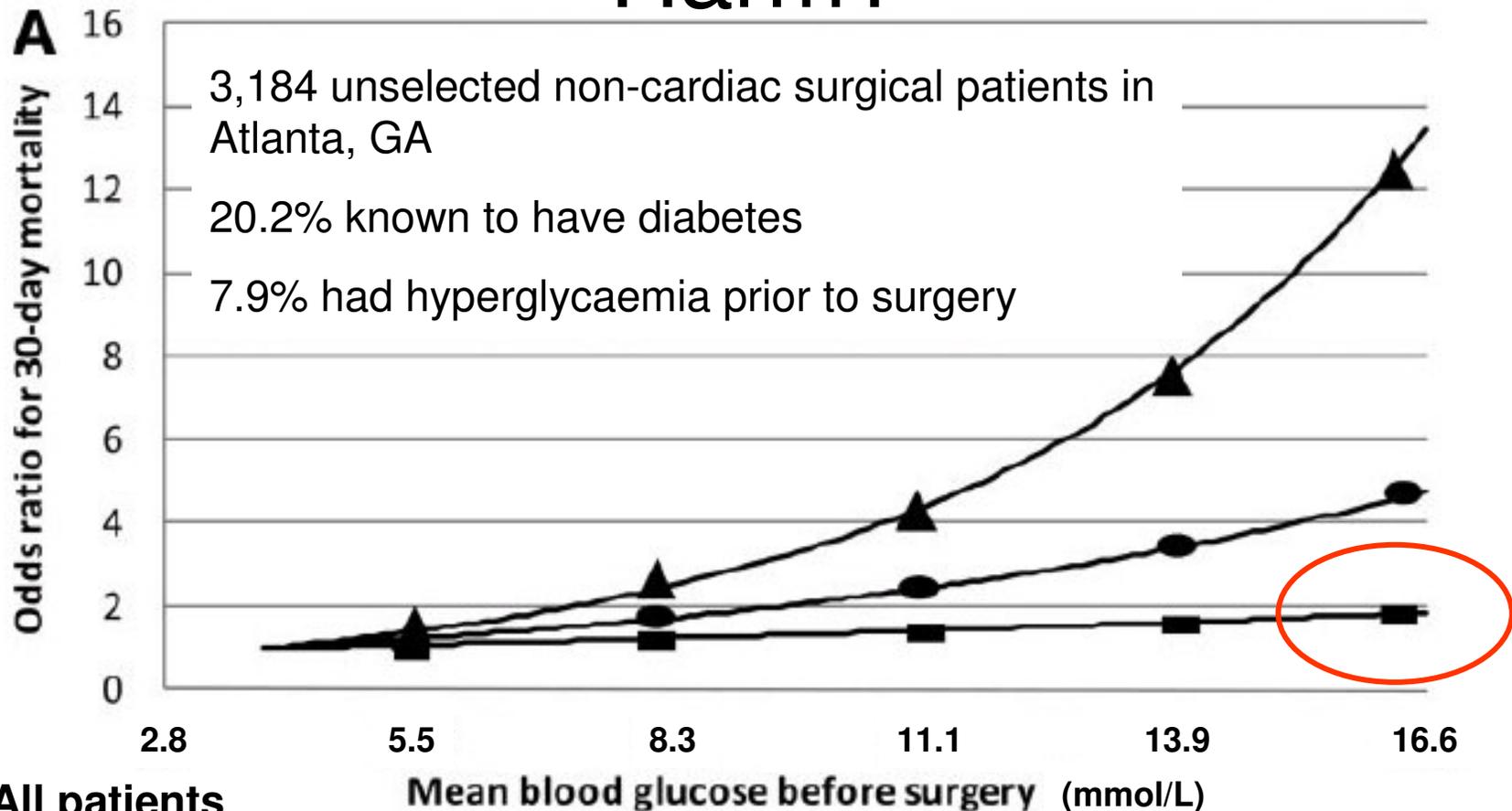
■ Patients with diabetes

▲ Patients without diabetes

Do High Glucose Levels Cause Harm?

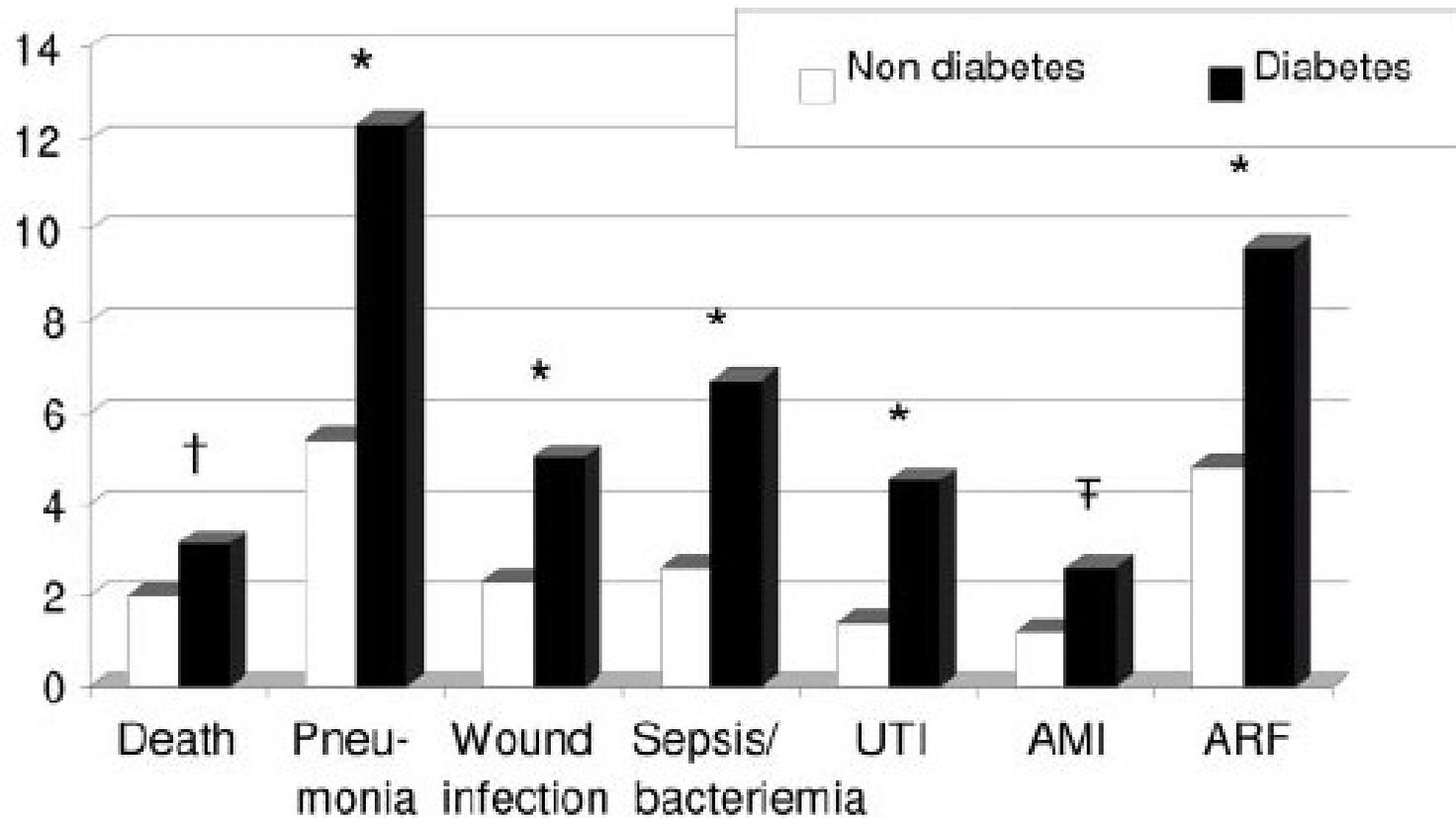


Do High Glucose Levels Cause Harm?



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

Do High Glucose Levels Cause Harm?



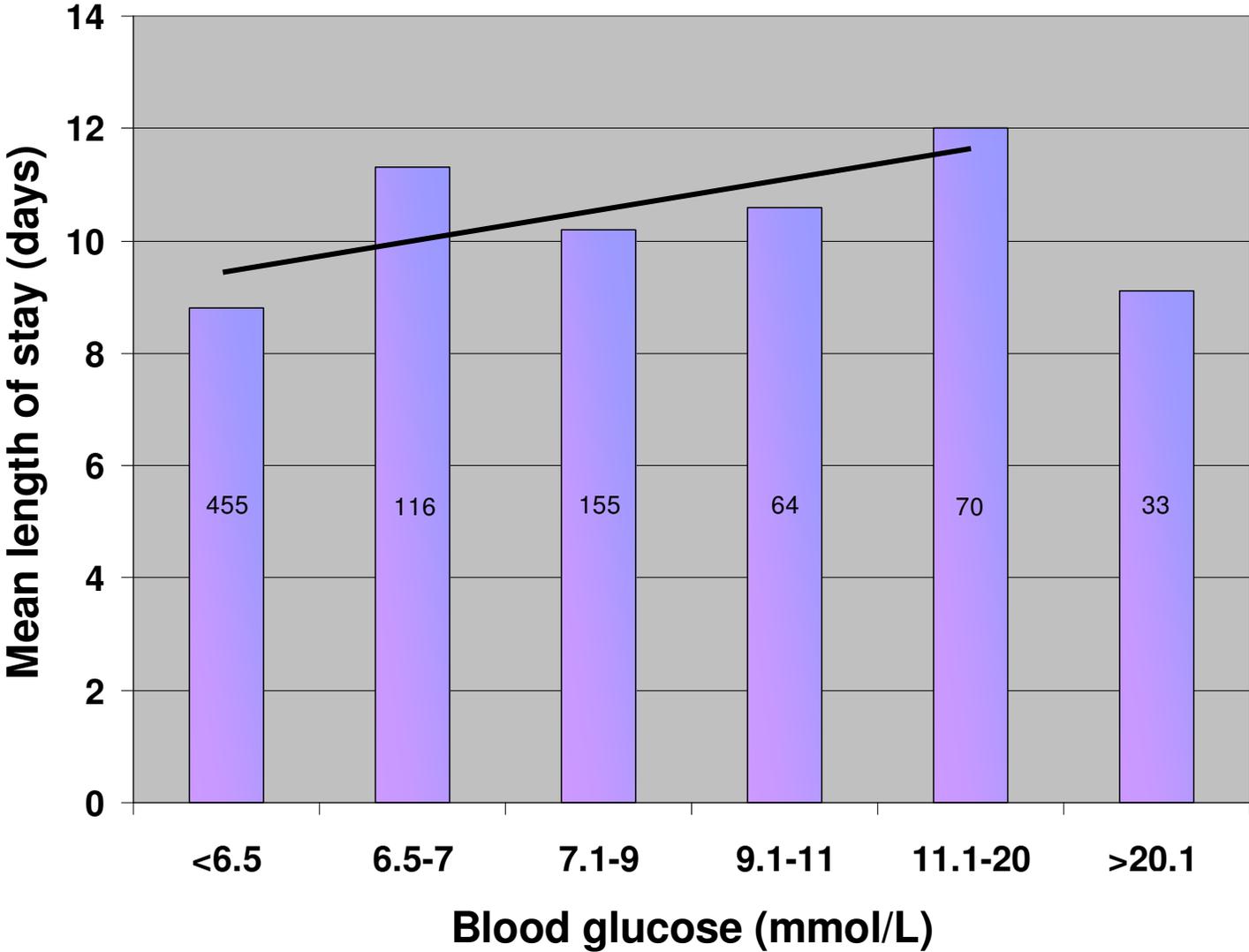
NNUH Data

- We analysed the data for all 1,502 patients admitted through our AMU in February 2010
- We assessed
 - admission blood glucose,
 - LOS
 - 28-days readmission and mortality
 - whether admission blood glucose ≥ 11.1 mmol/l in non-diabetic individuals was followed-up

Who Admitted Them?

Specialty	Number of patients	Number with diabetes
Medicine for the elderly	577	94 (16.3%)
Cardiology	221	25 (11.3%)
Respiratory	200	28 (14%)
Nephrology	30	9 (30%)
Gastroenterology	132	18 (13.6%)
Endocrinology	30	22 (73%)
Neurology	77	12 (16.9%)
Dermatology	1	0 (0%)
Haematology	16	0 (0%)
Oncology	56	4 (7.4%)
General medicine	162	27 (16.7%)

LOS vs Admission Glucose

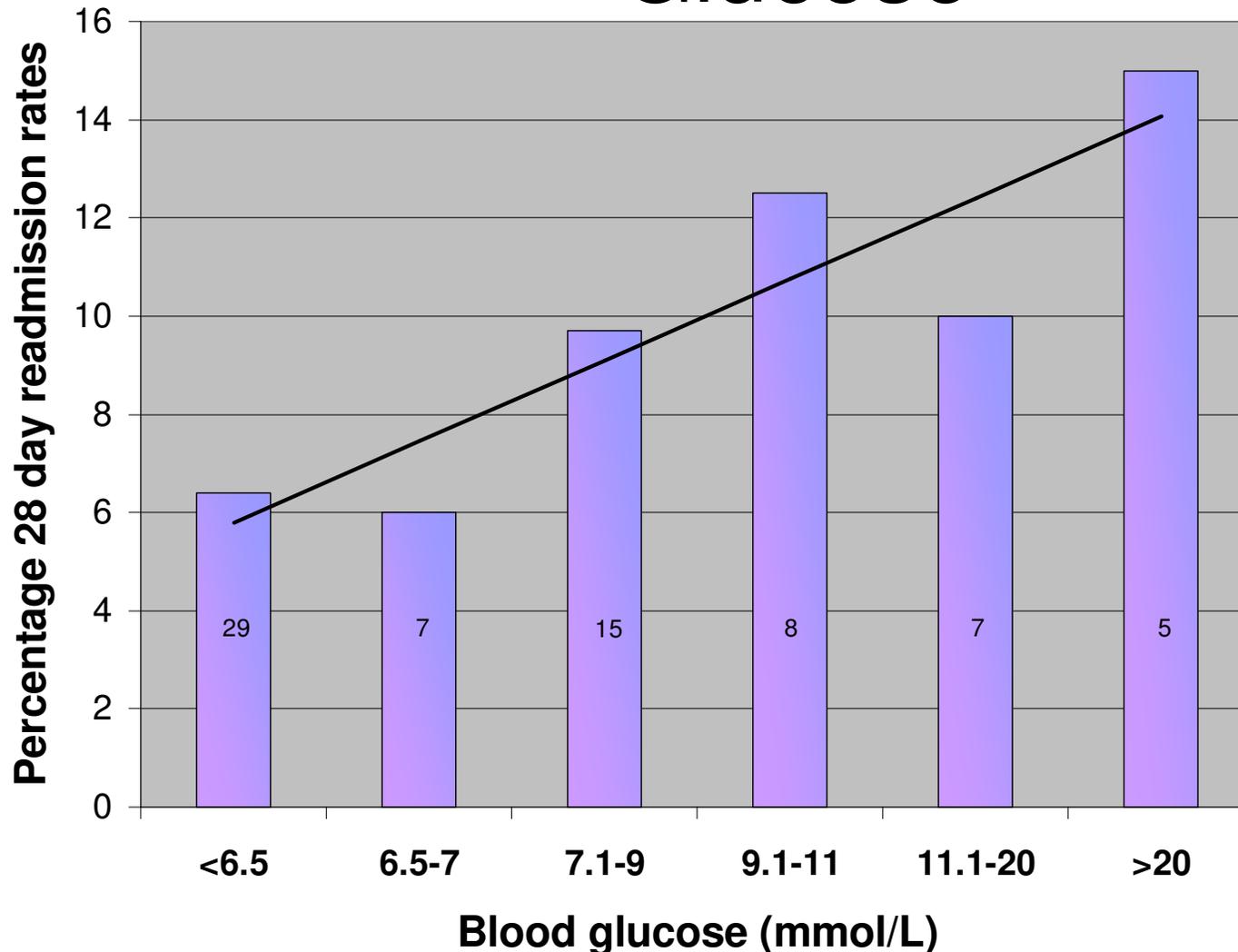


Trend $R^2 = 0.5556$

$P=0.002$

Those above 20mmol/L excluded (most under the diabetes team)

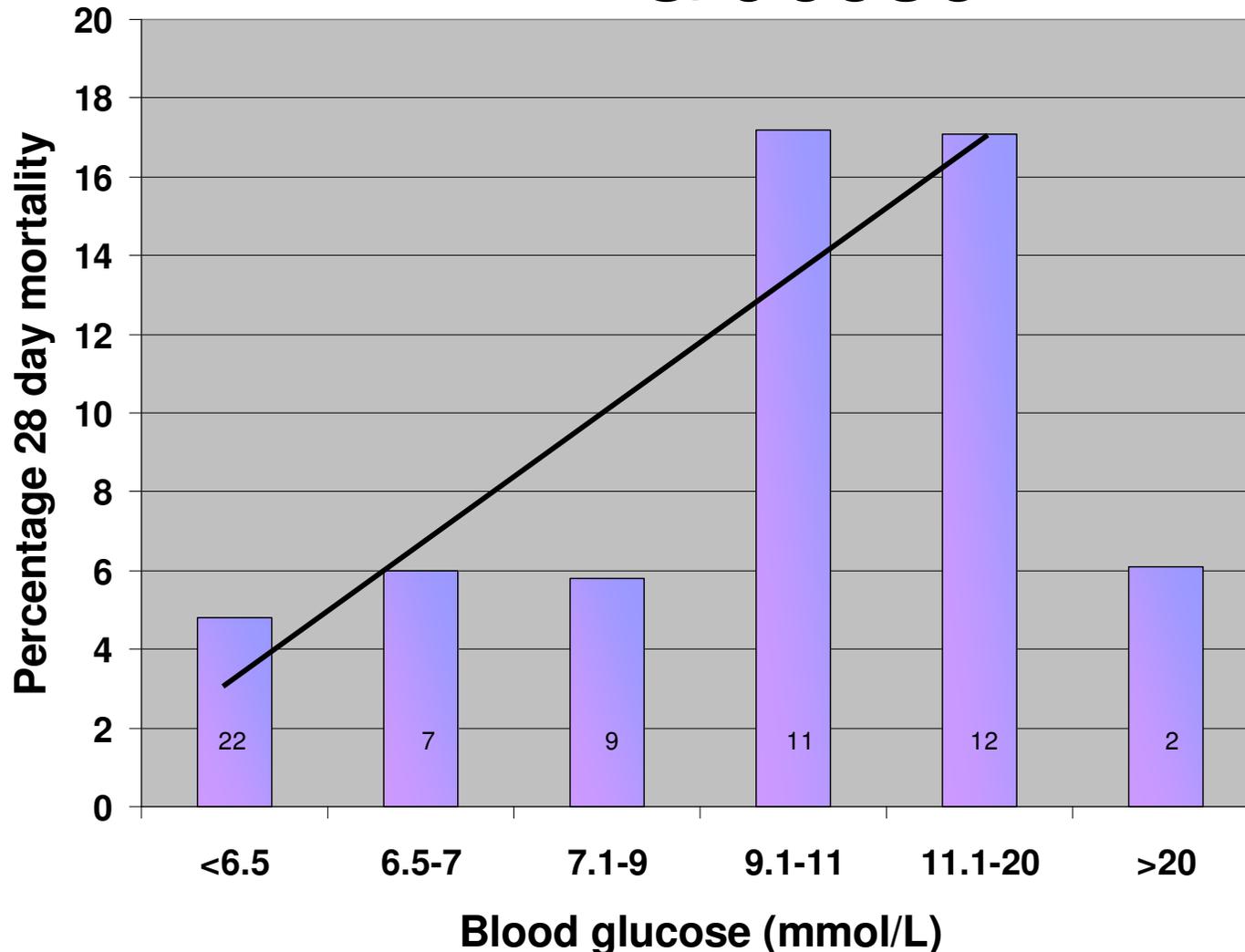
28 Day Readmission vs Admission Glucose



Trend $R^2 = 0.7918$

Of the 1,502 admissions in February 2010, 71 (4.73%) were readmitted within 28 days

28 Day Mortality vs Admission Glucose



Trend $R^2 = 0.7874$

$P < 0.0001$

Of the 1,502 admissions in February 2010, 63 (4.19%) died within 28 days

Documents to Help

Joint British Diabetes Societies
Inpatient Care Group

The Hospital Management of
Hypoglycaemia in Adults
with Diabetes Mellitus

Management of adults with
diabetes undergoing surgery and
elective procedures:
improving standards

Self-management of
diabetes in hospital

Joint British Diabetes Societies
for Inpatient Care Group

SPECIAL FEATURE

Clinical Practice Guideline

**Management of Hyperglycemia in Hospitalized
Patients in Non-Critical Care Setting: An Endocrine
Society Clinical Practice Guideline**

(J Clin Endocrinol Metab 97: 16–38, 2012)

What is Lacking?

- Interventional studies to show that lowering glucose makes a difference to outcomes
- The will to make this happen

Any Questions?