

# **Survey of inpatient diabetes services in the UK**

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**ABCD /Sanofi Aventis audit 2005**

## Reasons for study

- UK Diabetes inpatient Specialist Nurse (DISN) group started March 2004
- Membership now 232 diabetes specialist nurses (not all DISN)
- Web based forum [www.cgsupport.nhs.uk/disn/](http://www.cgsupport.nhs.uk/disn/) provided by NDST
- Shared inpatient management protocols: *blood glucose monitoring, colonoscopy, DKA, HONK, Hypoglycaemia, perioperative management etc.*
  - Roles and use of DISN service
  - Pressures on Diabetes Specialist Nurses (DSN)
  - Variable use of inpatient management guidelines in UK
  - Inconsistent referral patterns in UK hospitals

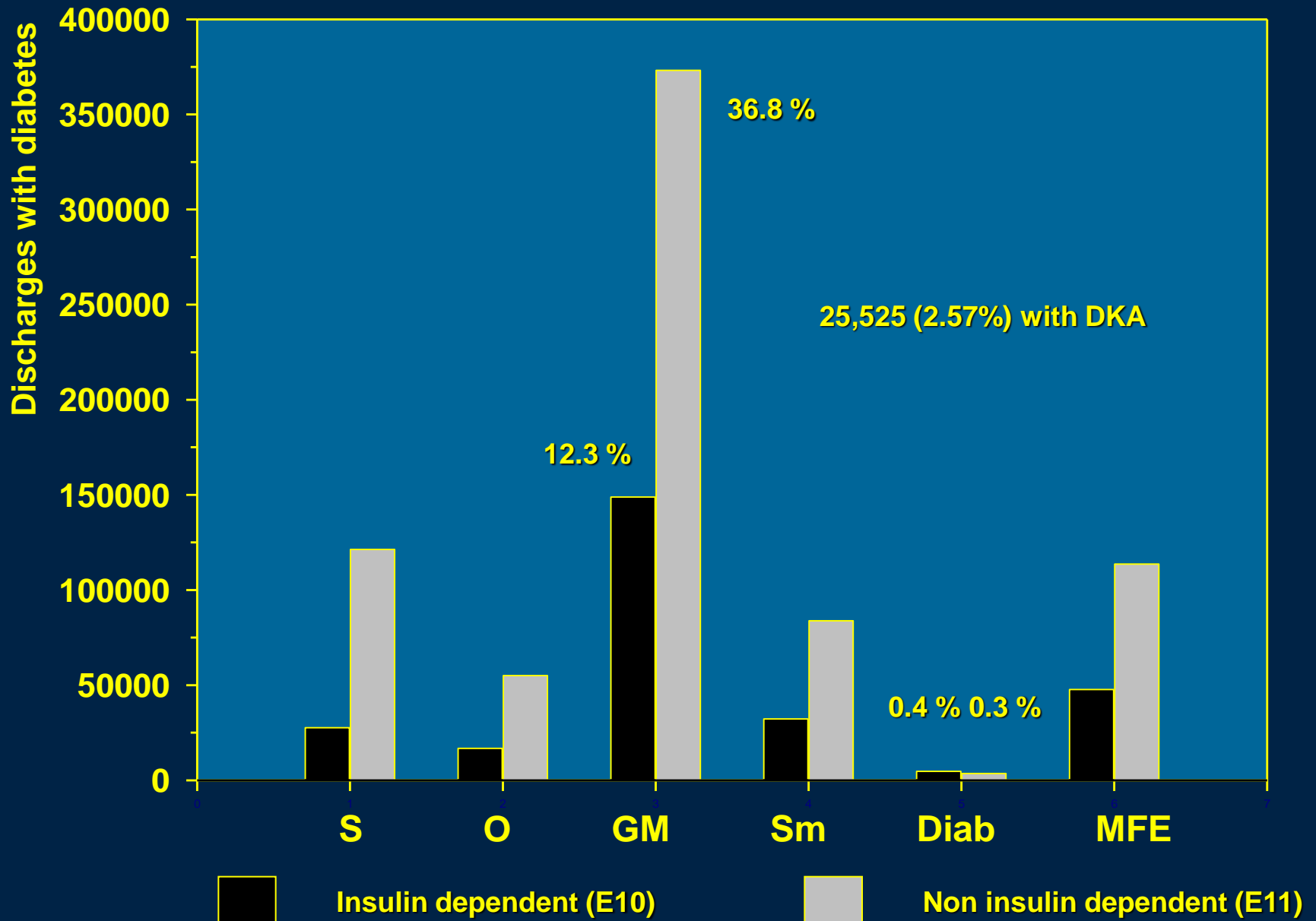
# Reasons for study

- **UK use of DISN**
- **DSN inpatient workload**
- **Use of diabetes inpatient management guidelines in UK**
- **Inpatient referral patterns to the diabetes specialist team in UK**

## Reasons for study : excess length of stay (LOS) in diabetes inpatients

	LOS (days)			Diabetes population	
	Diabetes	Controls	Excess	n	Patient group
Currie (1995)	11.4	7.1	3.3	13,458	Wales; Unselected
Ray (1996)	10.1	8.1	2.0	371,314	USA; Unselected; Age matched (45- 64yrs)
Ray (1996)	10.1	8.9	1.2	712,725	USA; Unselected; Age matched (>65yrs)
Currie (1997)	12.3	5.1	7.2	753	Wales;Unselected;Age matched (60 – 64 yrs)
Currie (1998)	10.9	8.7	2.2	625	Wales; Foot disease; age adjusted
Carral (2002)	13.4	11.3	2.1	2,453	Spain; Age - matched (60 – 74yrs)
Carral (2003)	13.3	10.6	2.7	1,706	Spain; CVD; Age matched (45 – 64yrs)

# Distribution of 989,656 diabetes discharges from all English Trusts (2000 – 2004)



## **Background – reasons for study**

- **Awareness of overall Trust diabetes inpatient activity.**
- **Satisfaction with inpatient diabetes care**
  - **Inpatients**
  - **Specialist diabetes teams**

## **Letter and questionnaire survey to all diabetes teams (2005/2006)**

- **Questionnaire sent to both the Senior Diabetes Nurse and Diabetes Consultant(s)**
- **'ABCD survey of inpatient diabetes care for all inpatients with diabetes'**
- **'Provision of diabetes services for diabetic inpatients in the entire Trust, not just those under the care of the diabetes specialist team'**
- **'In particular we are interested in the role and use of Diabetes Inpatient Specialist Nurses in the UK'**

# Survey of UK inpatient diabetes services - questionnaire

<b>Section 1</b>	<b>DISN numbers and activity</b>	<b>(18 questions)</b>
<b>Section 2</b>	<b>DSN numbers &amp; inpatient workload</b>	<b>(8 questions)</b>
<b>Section 3</b>	<b>Inpatient activity data</b>	<b>(12 questions)</b>
<b>Section 4</b>	<b>a) Use of protocols and guidelines</b>	<b>(14 questions)</b>
	<b>b) Use of inpatient DTSQ</b>	<b>(1 question)</b>
	<b>c) Referrals to specialist team</b>	<b>(9 questions)</b>
<b>Section 5</b>	<b>Written comments on inpatient services</b>	



# UK Acute Hospitals

<b>England:</b>	<b>153 NHS Trusts</b>	<b>200 hospitals</b>
<b>Scotland:</b>	<b>15 Health Boards</b>	<b>29 hospitals</b>
<b>Wales:</b>	<b>12 NHS Trusts</b>	<b>18 hospitals</b>
<b>NI:</b>	<b>9 HSSTs</b>	<b>15 hospitals</b>
	<b>189 Trusts/HB</b>	<b>262 Hospitals</b>

## Response to questionnaire

- **Mail shot:** **18<sup>th</sup> May 2005**
- **Follow-up contacts:** **1<sup>st</sup> March 2006**
- **Completed responses:** **239/262 (91.2%)**

## Response to questionnaire – who

<b>239 responses</b>	<b>Consultant</b>	<b>71 (29.7%)</b>
	<b>DSN/DISN</b>	<b>168 (70.3%)</b>
	<b>Both</b>	<b>22 (9.2%)</b>

## Self reported total and diabetes populations

	<b>Total population</b>	<b>54,481,941</b>
<b>239 responses</b>	<b>Diabetes population</b>	<b>1,526,523</b>
	<b>Hospital beds *</b>	<b>142,945</b>

**Self estimated diabetes prevalence 2.80 %**

**\* Data obtained from DH**



## Hospitals with a DISN service

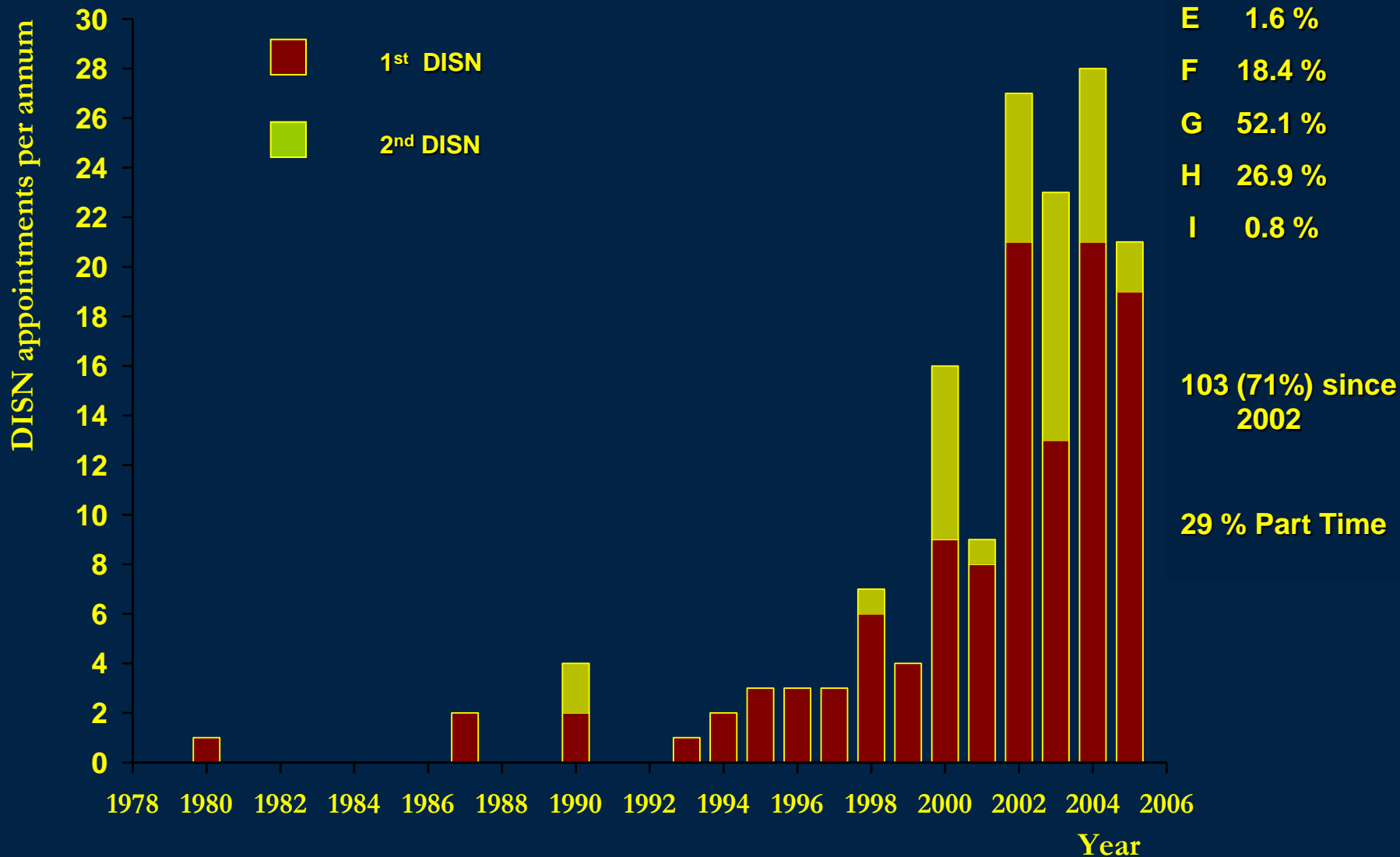
**100 (41.8 %) with a single DISN**

**239 responses**

**23 (9.6 %) with two or more DISN**

**116 (48.5 %) with no DISN**

# Sequence of 149 UK DISN appointments by year (1980 - 2006) in 123 UK Hospitals



## UK Hospitals with a DISN service

	Hospitals	Replies (%)	DISN (%)
England	200	185 (93 %)	109 (59 %)***
Scotland	29	25 (86 %)	4 (16 %)
Wales	18	16 (89 %)	7 (44 %)*
NI	15	13 (87%)	3 (23 %)

\*\*\*  $p < 0.0001$

\*  $p = 0.05$



## Percentage of Hospitals in English StHA (n = 28) with a DISN service

Highest use	%	Lowest use	%
Birmingham	100	SW London	40
South Yorkshire	100	Surrey & Sussex	40
Beds & Herts	100	NW London	33
Cheshire & Merseyside	89	Thames Valley	33
NE London	83	NE Yorkshire	29
West Midlands (s)	80	SE London	25
Greater Manchester	73	Leicester/Northants	20

## Differences between Acute Hospitals with or without a DISN

	DISN	No DISN
Total Population (n)	306,493 (187,342)	308,751 (197,076)
Diabetes population (n)	10,867 (10,552)	9,226 (7759)
WTE Diabetes specialist nurses (n)	3.1 (2.6)	3.5 (2.5)
Diabetes specialist nurses (WTE/100,000)	1.19 (1.0)	1.39 (0.8)
Diabetes specialist nurses (WTE/100 beds)	0.60 (0.6)	0.76 (0.7)
Numbers of acute beds per hospital	590 (245) ***	486 (227)

*Data as mean (SD)*

*\*\*\* p < 0.001*

## Funding source for 126 DISN appointments

	n (%)
Acute Trust	73 (58.8)
PCT/Commissioning	17 (13.7)
Reconfiguration of DSN post	16 (12.1)
Drug company	6 (4.8)
Charitable	3 (2.4)
Other	11 (8.7)
Funding not confirmed	18 (14.2)

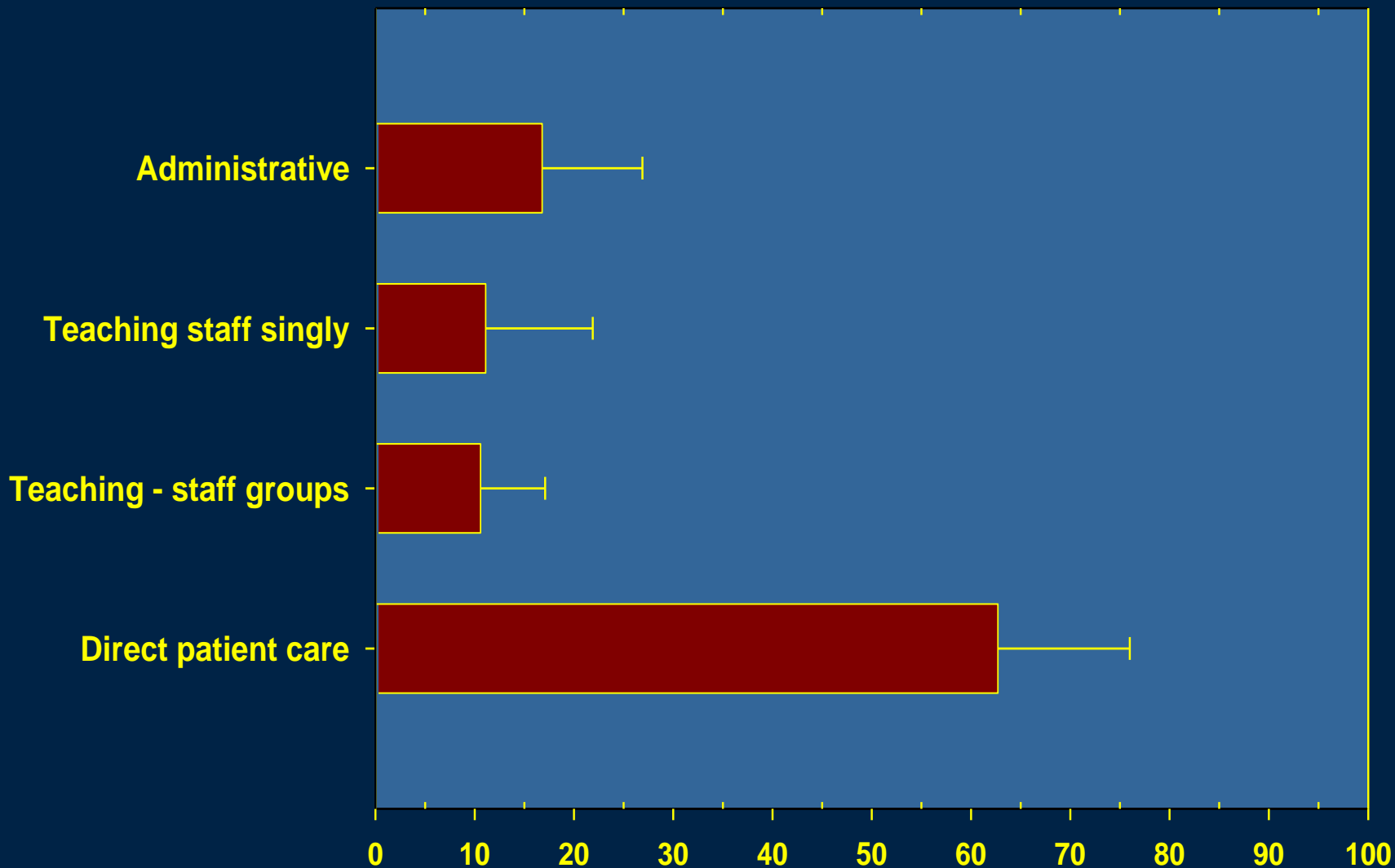
## Diabetes teams perceptions of power of their successful DISN bid

	Mean score	% rated highest
Reduced bed occupancy MED	2.04 (1.3)	44.5
Reduced bed occupancy SURG	2.42 (1.8)	39.7
Overall improvement in Trust Diabetes care	2.69 (1.7)	32.5
Improved Inpatient satisfaction	3.17 (1.3)	10.8
Avoidance of litigation	4.16 (2.0)	7.2

*Data as mean (SD)*

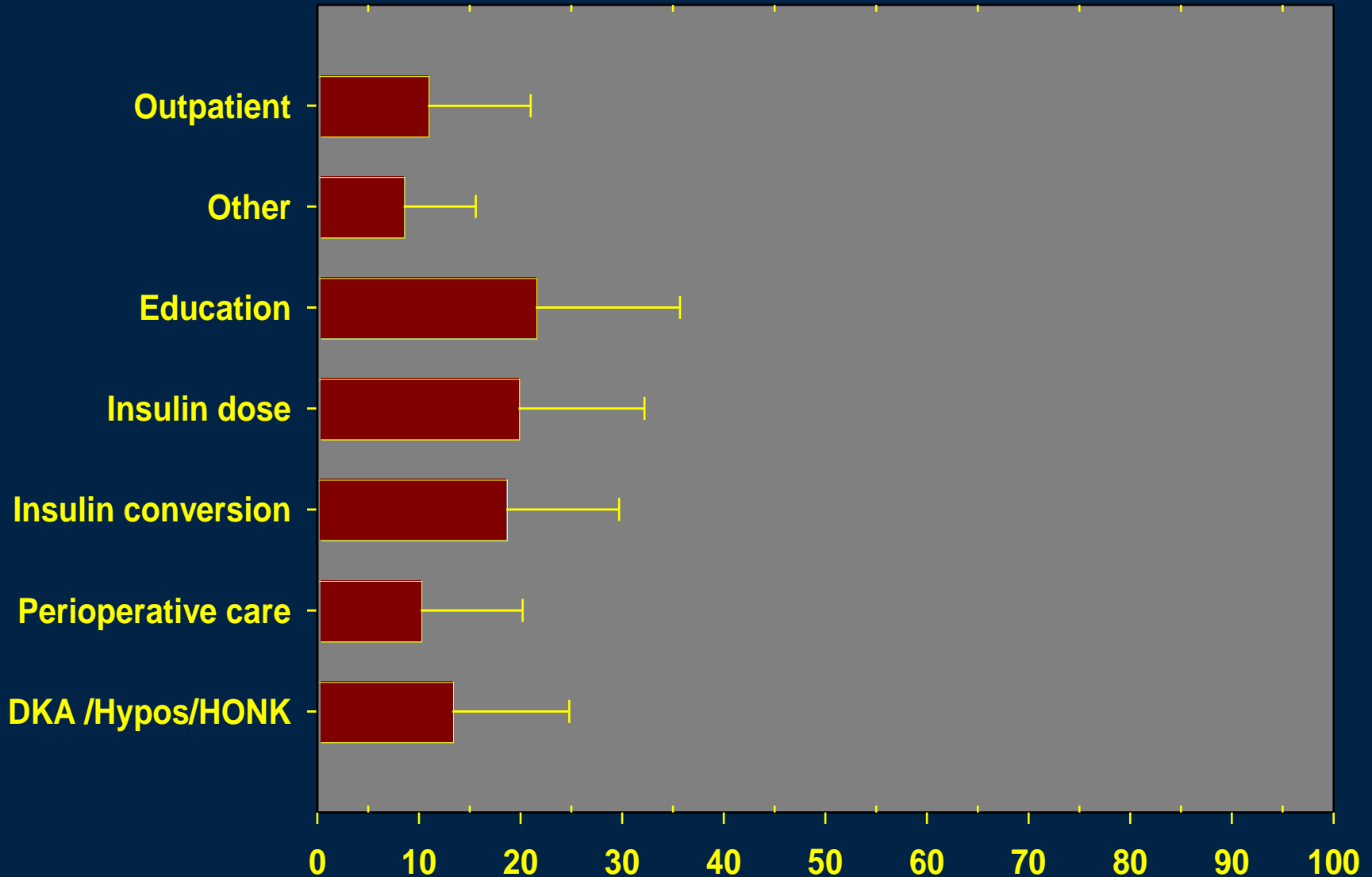
*Low score = high power on scoring*

# Can you estimate how DISN workload is distributed each month (%) ?



Data as mean (SD) percentage for 123 UK Hospitals

# How is DISN direct clinical workload distributed in 123 UK Hospitals (%) ?



## Direct clinical activity and ward coverage by DISN in 123 UK Hospitals

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<b>Medical</b>	<b>96%</b>
<b>Surgical</b>	<b>94%</b>
<b>Orthopaedics</b>	<b>88%</b>
<b>MFE</b>	<b>96%</b>
<b>CCU</b>	<b>95%</b>
<b>Paediatrics</b>	<b>17%</b>
<b>O&amp;G</b>	<b>45%</b>
<b>A/E</b>	<b>16%</b>

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***Mean 1242 (1062) inpatient contacts per annum (n = 53)***

## Does the DISN suggest changes in the following :

	<u>Hospitals (%)</u>
<b>Sliding scales</b>	<b>106 (84.8)</b>
<b>Insulin regimens other than sliding scale</b>	<b>119 (95.2)</b>
<b>insulin dose adjustments</b>	<b>122 (97.6)</b>
<b>Oral hypo glycaemics</b>	<b>120 (97.5)</b>



# Does the DISN undertake inpatient NURSE PRESCRIBING ?

	<u>Hospitals (%)</u>
<b>Sliding scales</b>	<b>12 (9.7)</b>
<b>Insulin regimens other than sliding scale</b>	<b>21 (20.5)</b>
<b>Insulin dose adjustments</b>	<b>28 (22.7)</b>
<b>Oral hypo glycaemics</b>	<b>17 (13.8)</b>

## Does your DISN service have direct involvement in the training /education of:

	YES
Student nurses	106 /122 (86.8%)
Health Care assistants	102/120 (85.0 %)
PRHOs	63/118 (53.4 %)
SHOs	54/120 (45.0 %)

**Does your DISN team have formal clinical support from the following in the direct clinical management of all inpatients with diabetes in your Trust ?**

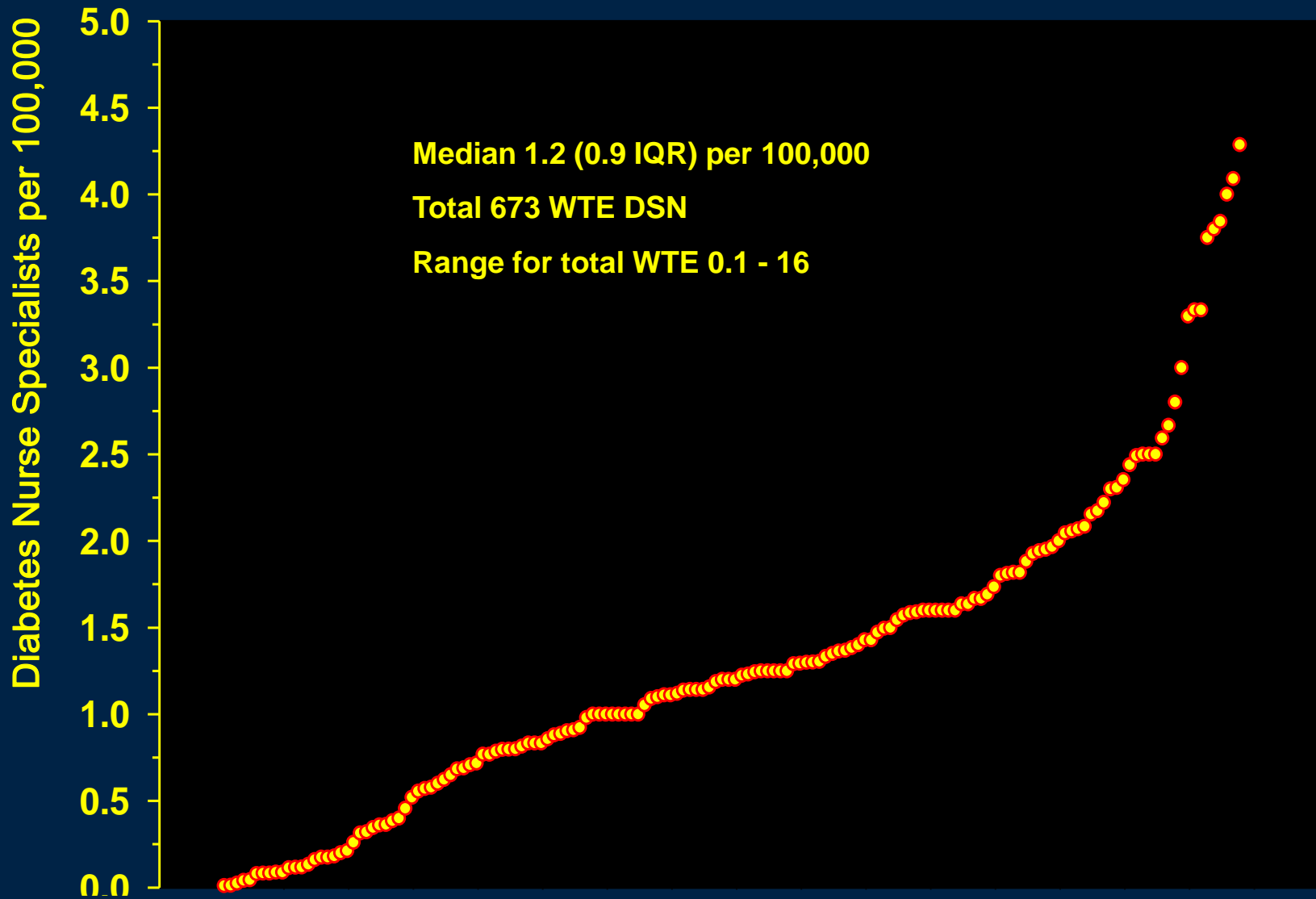
<b>Consultant Diabetologists</b>	<b>90/119 (75.6 %)</b>
<b>SpR (Endo/DM)</b>	<b>83/122 (68.2 %)</b>
<b>SHO/HO Diabetes team</b>	<b>54/120 (45.0 %)</b>

***‘Please note this does not apply to occasional involvement in difficult cases but to a formal or structured direct clinical input to supporting DISN management of all inpatients with diabetes’***

# Survey of UK inpatient diabetes services - questionnaire

- Section 1**      **DISN numbers, activity, casemix and referrals**      (18 questions)
- Section 2**      **DSN numbers and inpatient activity (8 questions)**
- Section 3**      **Inpatient activity data for diabetes.**      (12 questions)
- Section 4**      a) **Use of protocols and guidelines**      (14 questions)  
                     b) **Use of inpatient DTSQ**      (1 question)  
                     c) **Inpatient diabetes referrals to specialist team** (9 questions)
- Section 5.**      **Written comments on inpatient services (ABCD website)**

# Distribution of Diabetes Specialist Nurse WTE (not DISN) in 239 UK Acute Trusts per 100,000 population (2005/6)



## Use of DSN in Acute Hospitals without a DISN (n = 113)

	Yes	No
Does the DSN team <u>routinely</u> contribute to the inpatient management of <u>all diabetes inpatients</u> ?	91 (79.1%)	24 (20.9%)
Do you feel a DISN ..... improve the inpatient management and quality of care .. diabetes patients ?	104 (94.5%)	6 (5.5%)
Have you ever had a DISN business case rejected ?	31 (28.1 %)	76 (71.9%)
Would you be interested in seeing/sharing successful business cases from other Trusts	100 (90.9%)	10 (9.1%)

## Comments from Consultants without a DISN (n = 43)

**“Inpatient diabetes management is poor despite energetic attempts at establishing a link nurse network and educating juniors”**

**“We have struggled for over ten years to get a DISN, which we think would be extremely important”**

**“We are desperate for a DISN we had hoped to use NHS money but needed this to continue one of our conventional DSN posts”**

**“We did business case, got the money, proved it was all-worthwhile and the reward was no money and the post lapsed”**

**“I have been trying to improve things for many years, and get zero response or support. We really need to take this to a national level and have basic standards of care which trusts are forced to implement “**

**“All kinds of problems! A DISN is an excellent solution. Our potential post is mired in local difficulties and the fact that the trust is in the red”**

## Comments from Diabetes Nurses without a DISN (n = 43)

**“We have been trying for twelve years to persuade the acute trust to employ a diabetes specialist nurse, the answer is that the pct staff do such a good job”**

**“As a team we are aware that inpatient care time in hospital, reduction in costs could be improved and we had the resources to offer a DISN service to the wards and departments”**

**“We have been unable to get any money from our local PCTs for DISN”**

**“The third DSN who was dedicated to inpatient care left .. she has not been replaced”**

**“Inpatient management by non-specialists remains poor despite our best efforts”**

**“We are rarely referred patients on the day of admission unless the diabetes team are on that day. We do have a policy of visiting the medical ward dedicated to diabetes care every day, but this excludes other areas ...**



## Views of UK diabetes teams without a DISN : potential clinical value of a DISN to their service (n = 116)

	Mean score	% highest
Qualitative improvement diabetes care : SURG	2.4 (1.8)	44.0
Qualitative improvement diabetes care : MED	2.5 (1.6)	32.7
Improvement in inpatient DTSQ	3.4 (2.3)	35.6
Reducing excess bed occupancy : MED	3.7 (1.9)	17.7
Management of DKA and hypoglycaemia	3.8 (2.3)	25.2
Reducing excess bed occupancy : SURG	4.1 (2.2)	20.7
Reduction of DNS workload	4.8 (2.8)	21.4
Avoidance of litigation	5.9 (2.5)	13.1

Low mean score = high  
value; Scored 1 - 8

**'If you do not have a DISN – how many hours per week does the DSN team spend on inpatient diabetes care for patients not under the care of a Diabetologist ?**

<b>Mean hours per DSN team on inpatient care</b>	<b>15.0 (11) hrs per week.</b>
<b>Mean inpatient activity per DSN team per annum:</b>	<b>881 (782) inpatient contacts</b>
<b>Median hours per WTE DSN on inpatient care:</b>	<b>4.0 (4.4) hours per week</b>
<b>Mean inpatient activity per WTE DSN per annum:</b>	<b>311 (276) inpatient contacts</b>

## Estimates of total inpatient activity in 191 English hospitals by DISN and DNS.

	DISN	DSN
<b>Mean activity <u>per team</u></b>	<b>1242 (747)</b>	<b>881 (782)</b>
<b>Hospitals</b>	<b>107</b>	<b>84</b>
<b>Total estimated activity</b>	<b>135,378</b>	<b>58,463</b>
<b>* Patients</b>	<b>60,436</b>	<b>26,099</b>

**Estimated DISN/DNS inpatient total : 86,535**

**Estimated HES diabetes discharges : 247,583**

# Survey of UK inpatient diabetes services - questionnaire

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Section 5.	Written comments on inpatient services (ABCD website)	

## Awareness of Hospital diabetes bed occupancy if data available for last financial year (1.4.04 – 31.3.05)

		n (%) aware
<b>Median diabetes LOS (days)*</b>	<b>5.4 [6]</b>	<b>20 (8.3%)</b>
<b>Discharges with diabetes (n)</b>	<b>2639 (2635)</b>	<b>15 (6.2%)</b>
<b>Percentage with diabetes (%)</b>	<b>8.1 (8)</b>	<b>14 (5.8%)</b>
<b>Bed days due to diabetes (n)</b>	<b>13,033 (10,757)</b>	<b>14 (5.8%)</b>
<b>Percentage diabetes bed days (%)*</b>	<b>8.0 [6]</b>	<b>9 (3.8%)</b>
<b>Under recording of diabetes</b>	<b>20 (17)</b>	<b>12 (5.0%)</b>

Data as mean (SD) except \* as median (IQR)

## Awareness of diabetes bed occupancy

**NO**

**Is your Trust CEO aware of diabetes bed occupancy  
running at 10 – 20 % of total ?**

**47.9%**

**Would your Trusts IT department be able to provide  
you with inpatient diabetes data ?**

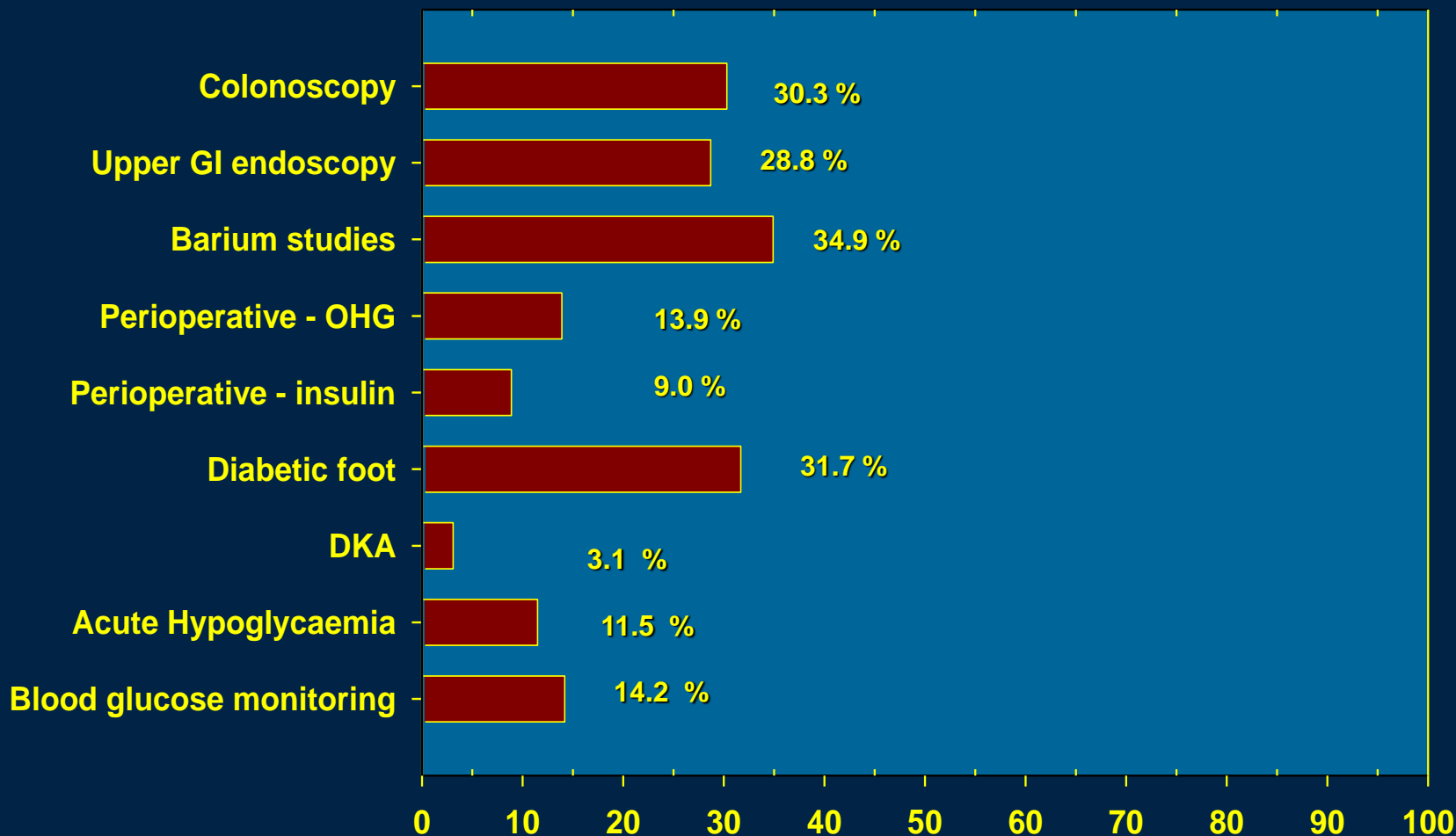
**43.3%**

# Survey of UK inpatient diabetes services - questionnaire

- |                   |  |                       |
|-------------------|--|-----------------------|
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|                   | <b>b) Use of inpatient DTSQ</b>                              | <b>(1 question)</b>   |
|                   | <b>c) Inpatient diabetes referrals to specialist team</b>    | <b>(9 questions)</b>  |
| <b>Section 5.</b> | <b>Written comments on inpatient services (ABCD website)</b> |                       |

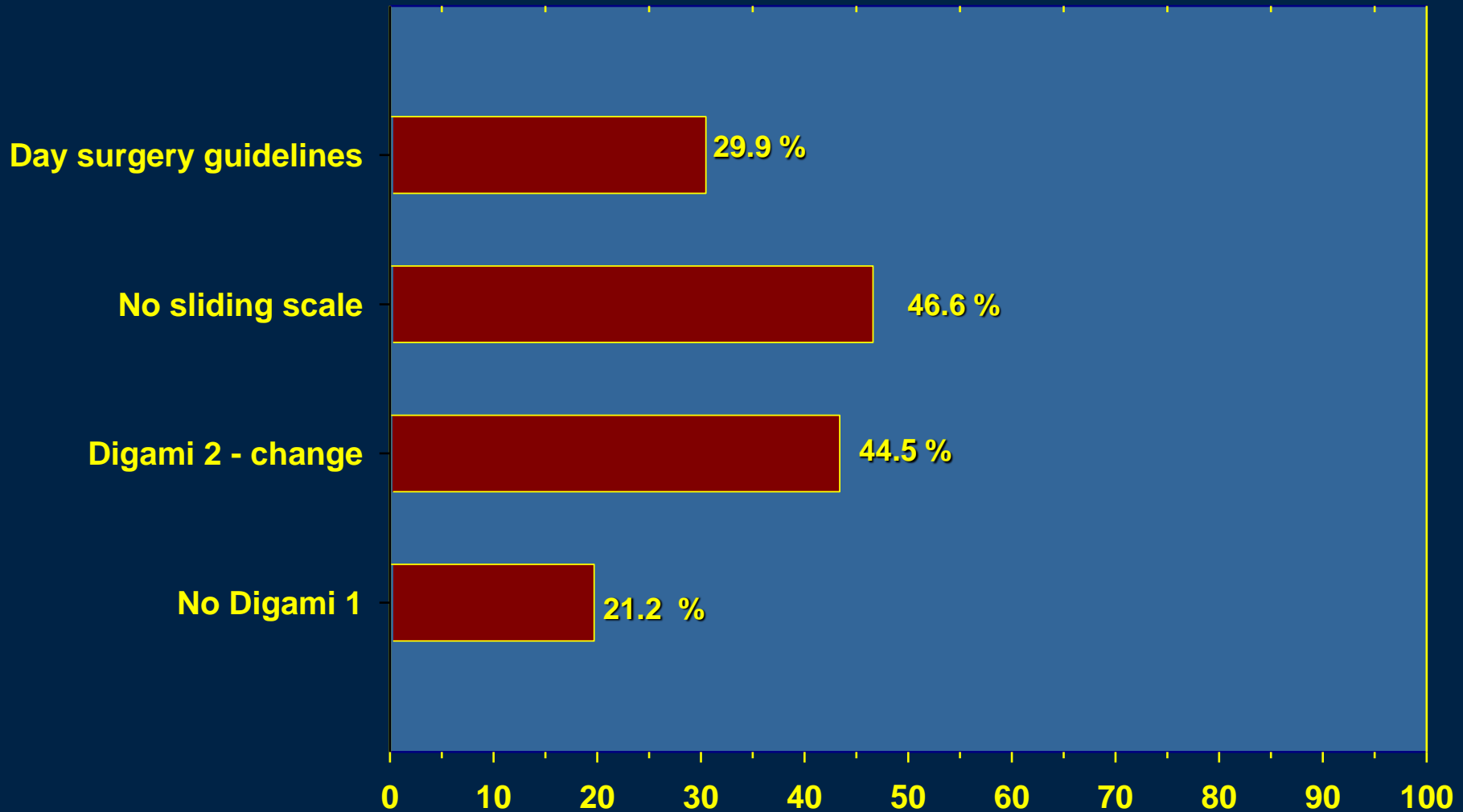
# Percentage of all UK hospitals (n = 239) with NO inpatient diabetes management protocol or guideline in key areas

86% prepared to share their guidelines on ABCD website





## Percentage of UK Trusts NOT using day surgery guidelines, 'sliding scale' insulin or DIGAMI protocols



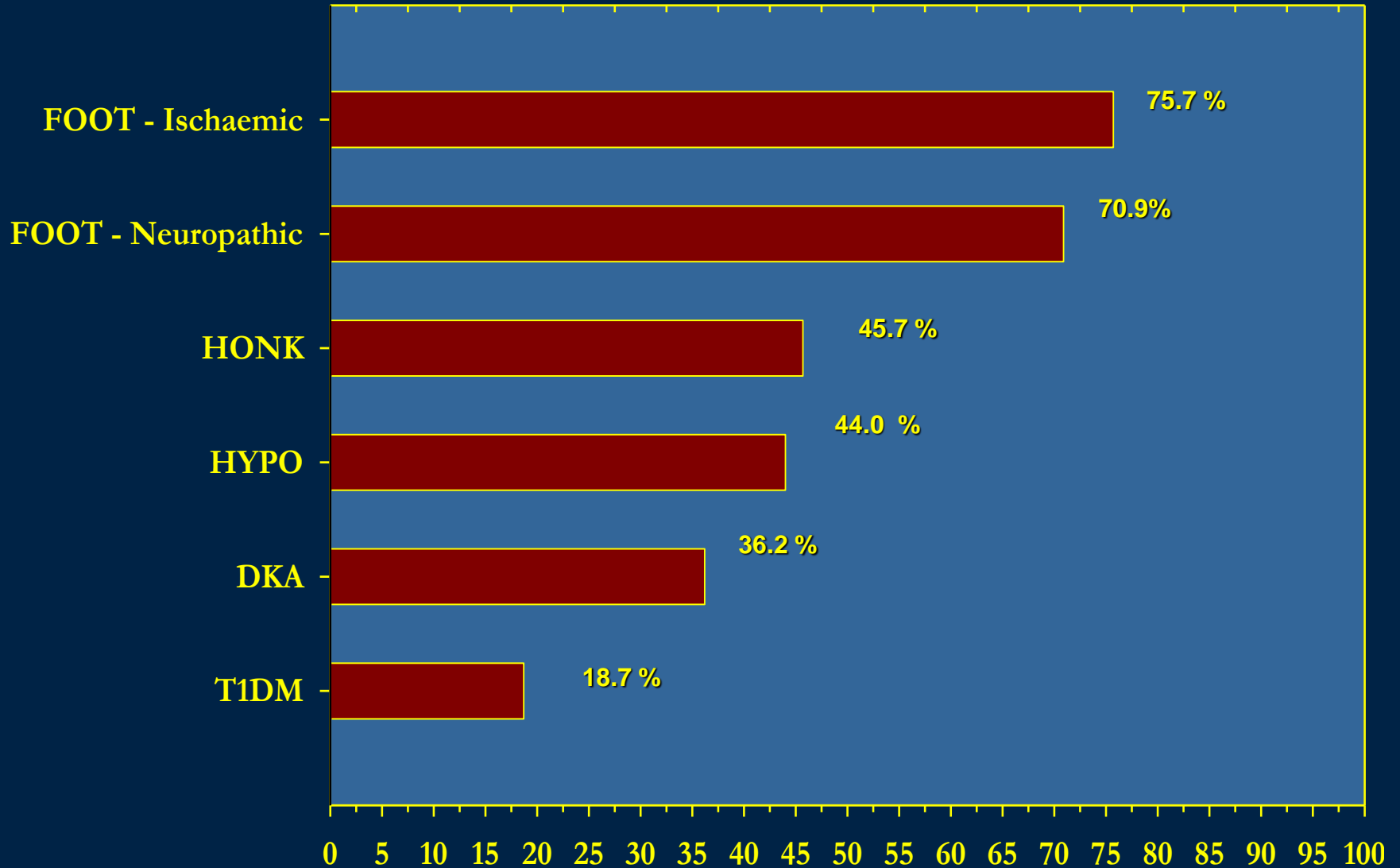
## Guideline use score for 182 UK Hospitals : 10 key inpatient management guidelines

Guidelines use	Hospitals
0 - 1	5 (2.7 %)
2 - 3	10 (5.5 %)
4 - 5	26 (14.3 %)
6 - 7	33 (18.1%)
8 - 9	66 (36.2 %)
10	41 (22.5 %)

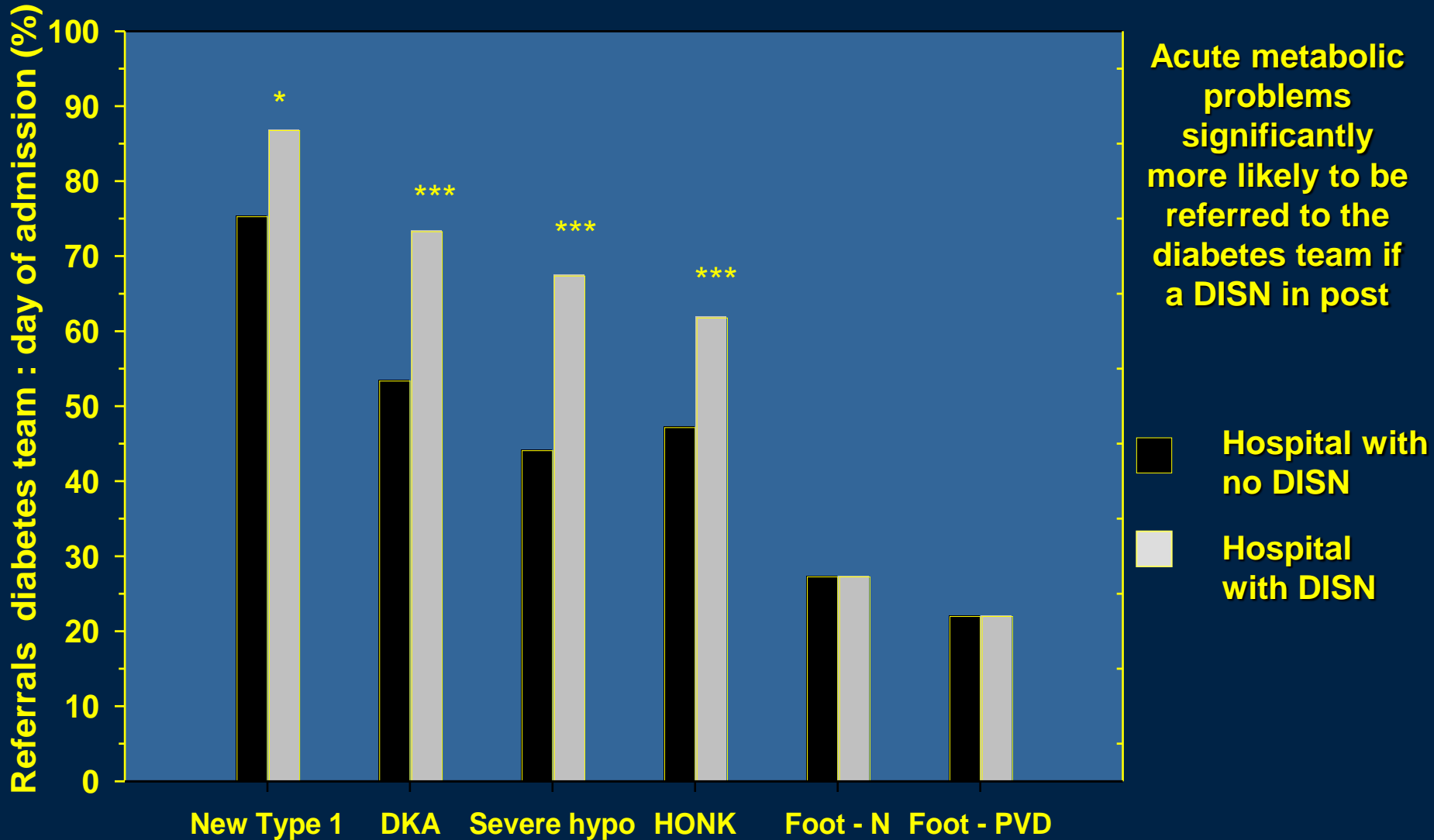
**Guidelines for : DKA, Hypoglycaemia, Day surgery, colonoscopy, barium studies, gastroscopy, perioperative management (insulin users or OHG users), immediate management of the diabetic foot, blood glucose monitoring.**

**High use sites do not differ from low use sites in : DISN use, DSN absolute or relative numbers, diabetes .population size**

# Percentage of all UK hospitals (n = 239) with NO referral of high risk diabetes admissions to the diabetes team on day of admission



# Referral rates to the diabetes specialist team within 24 hours of admission



\* p < 0.05 ; \*\*\*p < 0.001

## Inpatient cover in other areas for UK Hospitals

**YES**

**Do you have access to a dietitian for all diabetes inpatients ?**

**133/228 (58.3%)**

**Do you have access to podiatry cover for all diabetes inpatients ?**

**96/227 (42.2 %)**

**Do you use a inpatient diabetes treatment satisfaction questionnaire ?**

**48/238 (20.2%)**

# Survey of UK inpatient diabetes services - questionnaire

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## Conclusions (1)

- **ABCD/Sanofi – Aventis audit surveyed UK inpatient diabetes services in 92% of 262 identified hospitals in the UK.**
- **Half all UK Hospitals now have a DISN; the remainder would like a DISN, but 1/4 have had business case rejected.**
- **Number of acute inpatient beds main population discriminant for having a DISN**
- **Diabetes teams with a DISN and those without have different perceptions of usefulness of a DISN**
- **Diabetes teams without a DISN –  $\frac{3}{4}$  use DSN to provide inpatient services (mean 15 hours per week per DSN team), but  $\frac{1}{4}$  have no inpatient cover.**
- **Estimated inpatient coverage perhaps 30% of inpatient diabetes population.**

## Conclusions (2)

- **Audit produces useful data on casemix, activity, training, team working , workload for DISN and DSN (*available on ABCD website*)**
- **Surprisingly large gaps in use of inpatient management guidelines in UK,**
- **Prompt referral of high risk cases to the diabetes team is poor in UK, although DISN may be quality marker.**
- **Diabetes teams knowledge of inpatient diabetes activity is very low, with little assessment of inpatient diabetes treatment satisfaction**
- **Patchy access to inpatient podiatry and dietetic services**
- **High levels of frustration expressed by diabetes teams and Consultants about service provision**



## Potential value to ABCD members and diabetes teams

- **Data for use of DISN – increasing evidence of value in reducing excess LOS**
- **Sharing successful business cases for DISN**
- **Sharing protocols and inpatient management guidelines**
- **Hospital activity data available centrally through Northgate information solutions with no need for local contact with IT**
- **National direction for inpatient diabetes guidelines use and prompt referral criteria to specialist teams**
- **Inpatient diabetes services and excess diabetes bed occupancy - one of the few areas linking specialist diabetes teams to an Acute Trust.**

## Thanks to:

- **Esther Walden (DISN; Chair National DISN group, Norwich)**
- **Christine Jones (Co-ordinator National DISN group , Norwich)**
- **Claire Brennan (Audit nurse, Norwich)**
- **Consultant Diabetologists and diabetes nurses who returned data**
- **ABCD/ Sanofi – Aventis for funding**