

Insulin Pump Therapy Technology Implementation Project HOW TO WHY TO GUIDE IMPLEMENTATION PROJECT DATA

NHS Technology Adoption Centre

working in partnership with the

NHS Information Centre





KEY FINDINGS

- **Initiating insulin pump therapy requires a number of telephone support consultations for dose adjustment (and on occasion crisis intervention) to complement the face-to-face training on the day-to-day use of the pump.**
 - Telephone support is efficient and cost effective, and convenient for patients and their families. Telephone support already forms an essential part of most diabetes services; it is imperative that Trusts continue to maintain such services and plan for their continuing expansion.
 - It may be helpful to introduce a mobile phone rota to ensure support to patients and their families are available at the time of need, as is done at Birmingham Children's Hospital.



KEY FINDINGS 2

- **Where there is a strong support and education infrastructure in place, overall patient care and self management may be improved.**
 - *It is likely that in future electronic consultations will further complement such services. Implementation Trusts are already using electronic consultations, though on a small scale.*
- **Carrying out an analysis of your patient population before implementation is essential. In the Whittington Hospital for example, the diverse and transient population demands a very different service model compared to more static patient populations.**



BACKGROUND

- **Data was collected from the following NHS Trusts:**
 - Birmingham Children's Hospital University Foundation Trust
 - East Lancashire Hospitals NHS Trust
 - The Whittington Hospital NHS Trust
- **The data collected has been submitted to the NHS Technology Adoption Centre (NTAC) by individual hospital Trusts and analysed in-house.**
- **The NHS Information Centre for Health and Social Care have contributed to the data analysis process.**



IMPLEMENTATION SITES

- **Birmingham Children's Hospital University Foundation Trust successfully gained agreement from its lead PCT (Heart of Birmingham) to support the implementation of NICE guidance on insulin pump therapy for up to 15% of its patients.**
 - **340 patients have type 1 diabetes at the Trust with 34 patients (under the age of 18) currently on an insulin pump.**
 - **The Insulin Pump Therapy How to Why to Guide explains how the Trust was able to achieve this. The engagement of the Trusts commissioning and business managers however played a crucial part in successes gained.**



IMPLEMENTATION SITES 2

- **East Lancashire Hospitals NHS Trust has secured funding for insulin pump therapy through direct consultations and agreement with its two Primary Care Trusts for the entire health economy. The principle of the funding has been agreed on the basis of NICE 2008 guidance for insulin pump therapy. This replaced the need for a business case.**
 - 2243 patients have type 1 diabetes with 121 patients at the Trust (paediatric and adult) currently on an insulin pump.
 - The insulin pump therapy How to Why to Guide explains how the Trust was able to achieve this and what the approach to success was. The implementation team collaborated with all stakeholders, including commissioners, Head of Policy and Technology Analysis and Finance representatives across the entire health economy. This collaboration played a significant role in the achievements made.

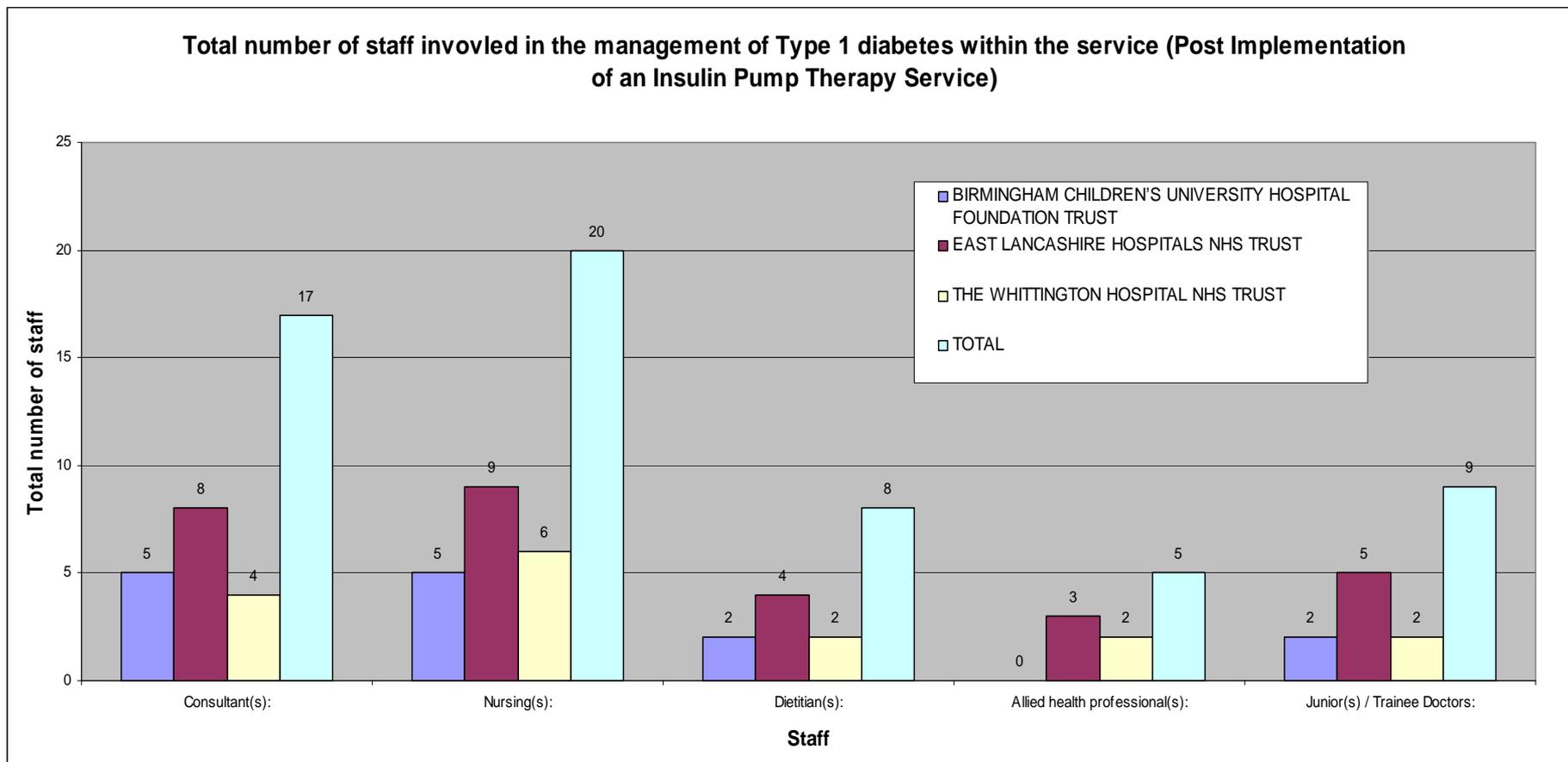


IMPLEMENTATION SITES 3

- **The Whittington Hospital NHS Trust successfully sought agreement on funding an insulin pump therapy service from its leading PCT, which was a significant development because of the multiple PCTs that commission services for the Trust.**
 - **536 patients have type 1 diabetes with 26 patients (paediatric and adult) currently on an insulin pump.**
 - **The Insulin Pump Therapy How to Why to Guide explains how the Trust was able to achieve this and details what was required in order to navigate around a complex PCT structure. However, investing time in preparing the mandate for change (which is detailed in the guide), was an investment that contributed to what the Trust went on to accomplish.**



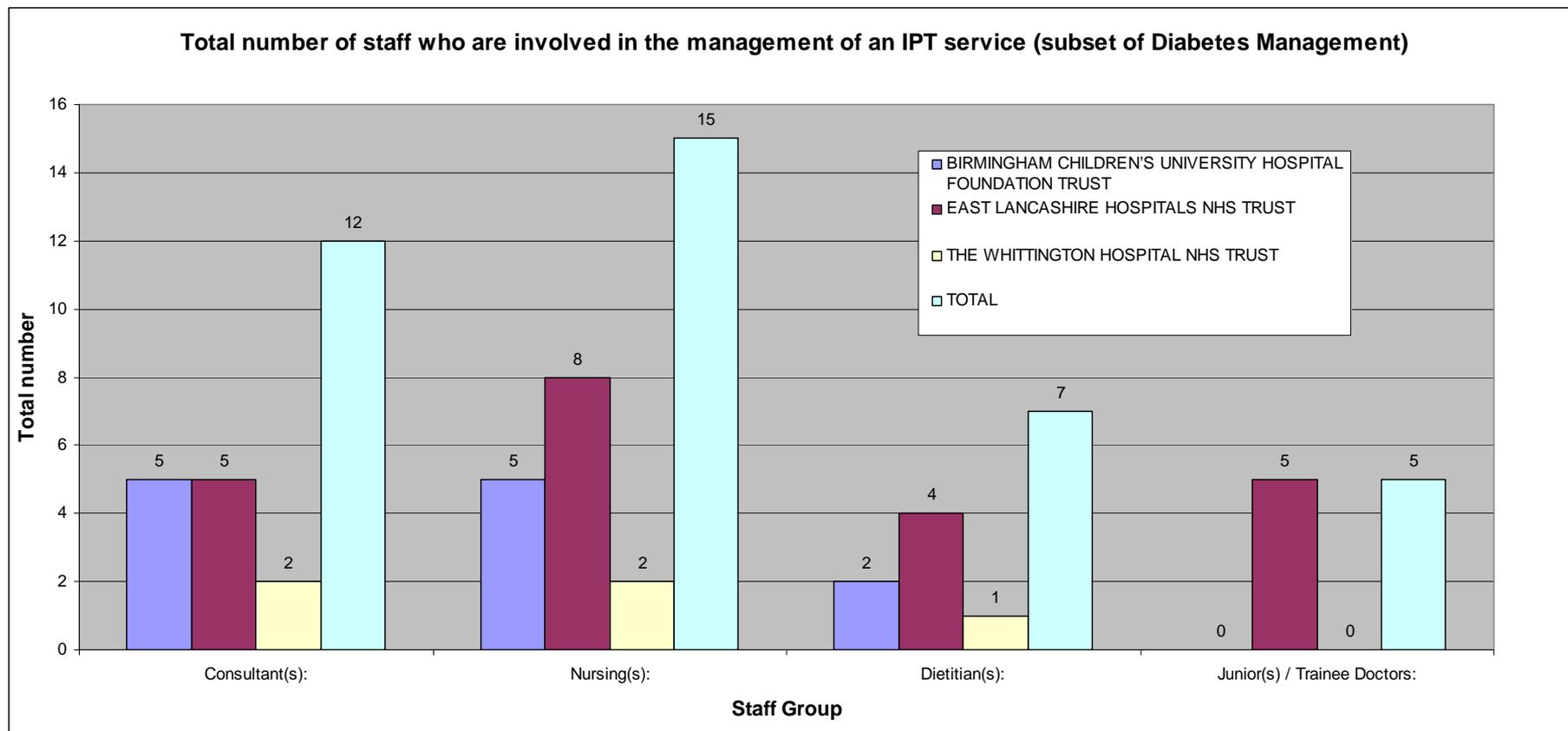
SERVICE OVERVIEW



Graph One: Total number of staff involved in the management of type 1 diabetes within the NTAC implementation sites.



SERVICE OVERVIEW 2



Graph Two: Total number of staff involved in the management of an IPT service within the NTAC implementation sites.



SERVICE OVERVIEW 3

- **The NICE guidance stipulates that a Consultant, Diabetes Specialist Nurse and Dietitian are essential in the management of an insulin pump therapy service and must be in place (and trained) prior to initiation of this service.**
 - **The data shows that whilst trainee doctors are included in a training capacity in the insulin pump service, the service is actually delivered as per NICE guidance with key personnel in place across all three sites which has facilitated service improvement.**

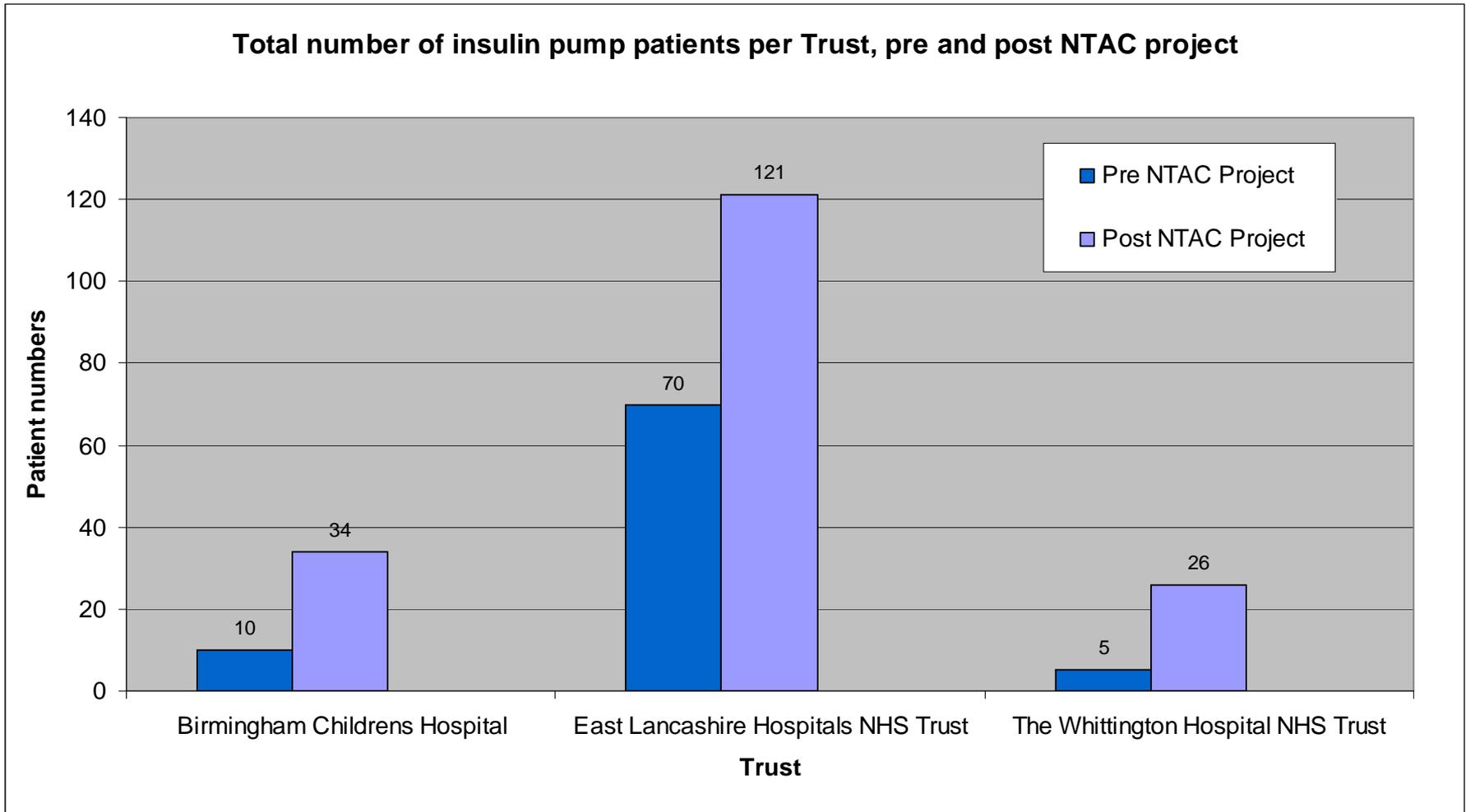


SERVICE OVERVIEW 4

- **At all three Trusts, senior clinicians took a lead role in facilitating service improvement.**
 - **Birmingham Children's Hospital incorporated the recruitment of a dedicated 'pump nurse' into their respective business case (template available on the How to Why to Guide) to ensure the effective delivery of this service in the long term.**
 - **At East Lancashire Hospitals NHS Trust the team reorganised its existing DSN service, making it possible to recruit a dedicated insulin pump therapy nurse on a part time basis.**



OVERVIEW OF PATIENT NUMBERS



Graph Three: total number of patients, per implementation site, who were placed onto an insulin pump as a result of the NTAC Project, compared to the total number of patients who had access to a pump pre project.



TOTAL NUMBER OF PATIENTS

- **Birmingham Children's Hospital University Foundation Trust**
 - 340 patients have type 1 diabetes with 34 patients currently (as at June 2010) on an insulin pump.
 - Over the 18 month implementation / project period, 24 patients have gained access to an insulin pump.
- **East Lancashire Hospitals NHS Trust**
 - 2243 patients have type 1 diabetes. 70 patients (3%) of patients with Type 1 diabetes were on a an insulin pump as at June 2008. On average 8-10 new patients were started on insulin pump therapy annually prior to 2008.
 - Over 24 months, 51 additional patients have gained access to insulin pump therapy (5.5%). The Trust is on target to meet the estimated 8-15% need over a 3-5 year period (correct as at June 2010).
- **The Whittington Hospital NHS Trust**
 - 536 patients have type 1 diabetes with 26 patients currently (as at June 2010) on an insulin pump.
 - Over the 18 month implementation / project period, 21 patients have gained access to an insulin pump.
 - **NB:** because there is quick turnaround of patients in this Trust (as people move out of its catchment area very frequently), the total number of pump patients changes regularly.



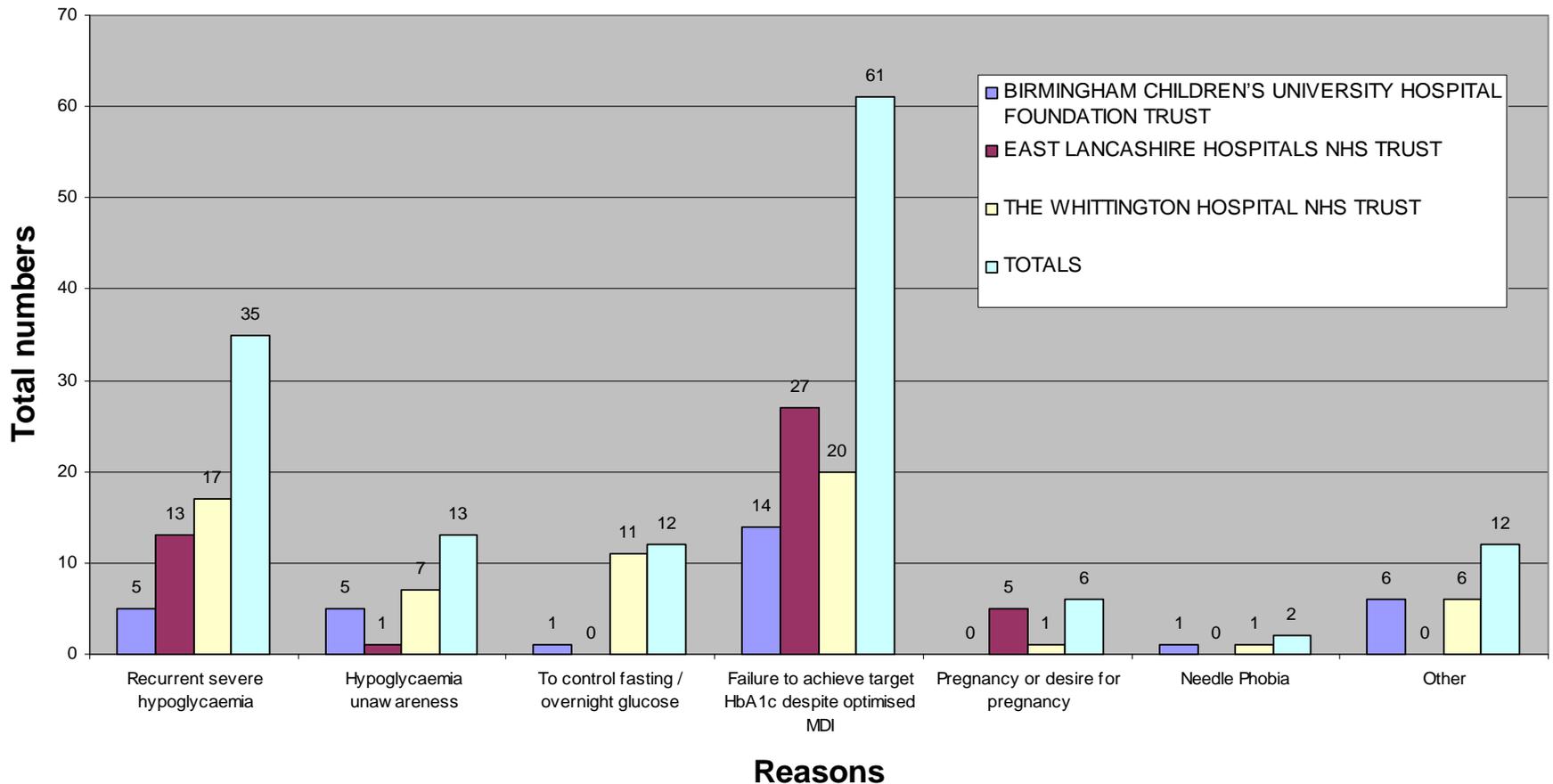
LESSONS

- **Carrying out an analysis of your patient population before implementation is essential. In the Whittington Hospital for example, the diverse and transient population demands a very different service model compared to more static patient populations such as those found in Birmingham and East Lancashire.**
- **This must include a baseline measurement calculated using the relevant national guidance. NICE has very specific criteria around insulin pump recommendations – IPT is not appropriate for all people with type 1 diabetes.**
- **Some Trusts may have a large number of patients in their catchment area with different responsible PCTs and as a result may need to engage with more than one PCT provider.**
- **During the implementation stage, uptake will be slower whilst the new infrastructure begins to take shape. Data supports this notion through the timescales taken to achieve success.**



REASONS FOR INITIATING IPT

All reasons for recorded for placing patients onto an insulin pump



Graph Four: All reasons recorded for placing patients onto an insulin pump in the NTAC implementation sites.

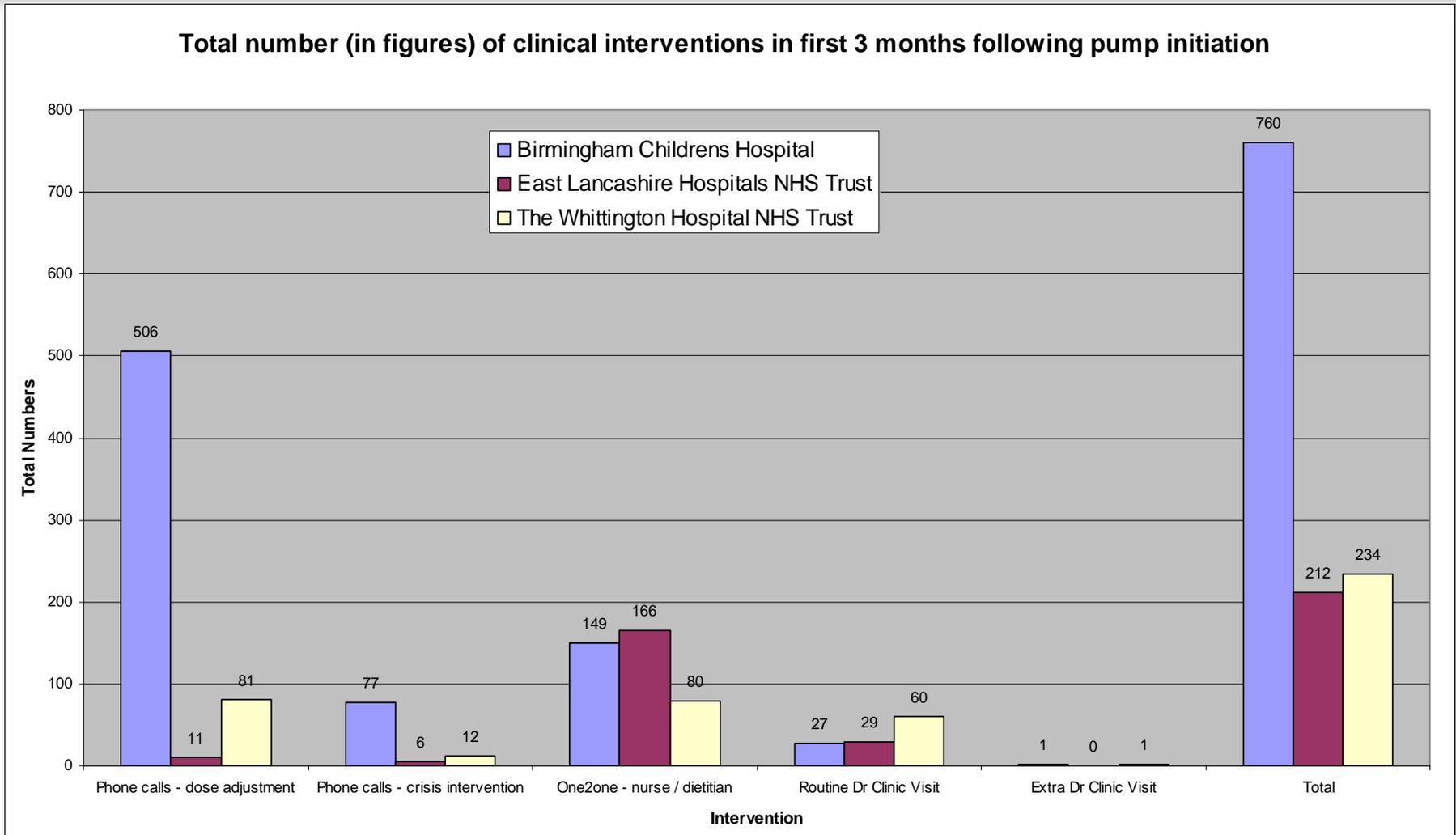


REASONS EXPLORED

- The reasons presented on graph 4 are the combined reasons given for initiating insulin pump therapy – in most cases there was more than one reason reported.
- 59% of patients in whom data was collected were commenced on insulin pump therapy solely as per the NICE guidance: failing to achieve their target HbA1c despite optimised MDI.
- 24% had 2 indications, 17% of patients had up to five indications for insulin pump therapy.
- NICE guidance was followed in relation to criteria for initiation of IPT in the majority of patients. However a substantial proportion of patients (41%) were deemed by clinicians to have sufficient other indications to benefit from IPT, in particular, problems around hypoglycaemia, and pregnancy.



CLINICAL PATIENT SUPPORT



Graph Five: total number (in figures) of clinical interventions for patients in the first 3 months of being placed onto an insulin pump.



SUPPORT EXPLORED

- **Telephone support was used extensively for dose adjustment and crisis intervention to complement the essential face-to-face insulin pump training e.g. telephone support accounted for 77% of the overall support given in Birmingham Children's Hospital, 40% of the overall support given in The Whittington Hospital NHS Trust.**
- **The data suggests that paediatric patients require more support compared to adults, which is important to consider when planning service delivery for this patient mix. In Birmingham Children's Hospital, the team responded to patient need by establishing a mobile phone rota.**
 - *Telephone support is efficient, cost effective and convenient for patients and their families. Telephone support already forms an essential part of most diabetes services; it is imperative that Trusts continue to maintain such services and plan for their continuing expansion; it is likely that in future electronic consultations will further complement such services.*



SUPPORT EXPLORED 2

- The proportion of patients needing support *in crisis* was relatively low (18% of the total support given across all 3 sites).
 - This accounted for 10% of the overall support given at *Birmingham Children's Hospital*, 3% of the overall support given at *East Lancashire Hospitals NHS Trust* and 5% of the overall support given at *The Whittington Hospital NHS Trust*.
- The low number of crisis interventions recorded from the NTAC implementation sites suggests that patient selection for insulin pump therapy is appropriate, patients adapt well overall to their new mode of treatment, and that the support provided in the planned pump therapy pathways works well.



SUPPORT EXPLORED 3

- **Specialist Nursing and Dietetic support was an important support mechanism for patients:**
 - This accounted for **20%** of the overall support given at *Birmingham Children's Hospital*, **78%** of the overall support given at *East Lancashire Hospitals NHS Trust* and **34%** of the overall support given at *The Whittington Hospital NHS Trust*.
 - **Telephone support (discussed in previous slide) in all three sites was provided by the diabetes specialist nurses and/or dietitian(s).**
 - **Nursing and dietetic time is essential in the delivery of an effective insulin pump therapy service and carefully planning workload capacity for these personnel is fundamental when implementing a pump service. It is therefore important to ensure a sustainable and practical support infrastructure is in place before and during the initiation of an insulin pump therapy service.**



SUPPORT EXPLORED 4

- **Medical Consultation visits at The Whittington Hospital were almost twice that at East Lancashire Hospitals NHS Trust, and significantly lower for the paediatric patients at Birmingham Children's Hospital.**
- **Birmingham Children's Hospital have the highest telephone support rate across all three implementation sites.**
 - **It is recognised that parents/guardians make the majority of phone calls where a child is on insulin pump, and so teams need to review the information support given to patients *and* parents/guardians when initiating insulin pump therapy.**



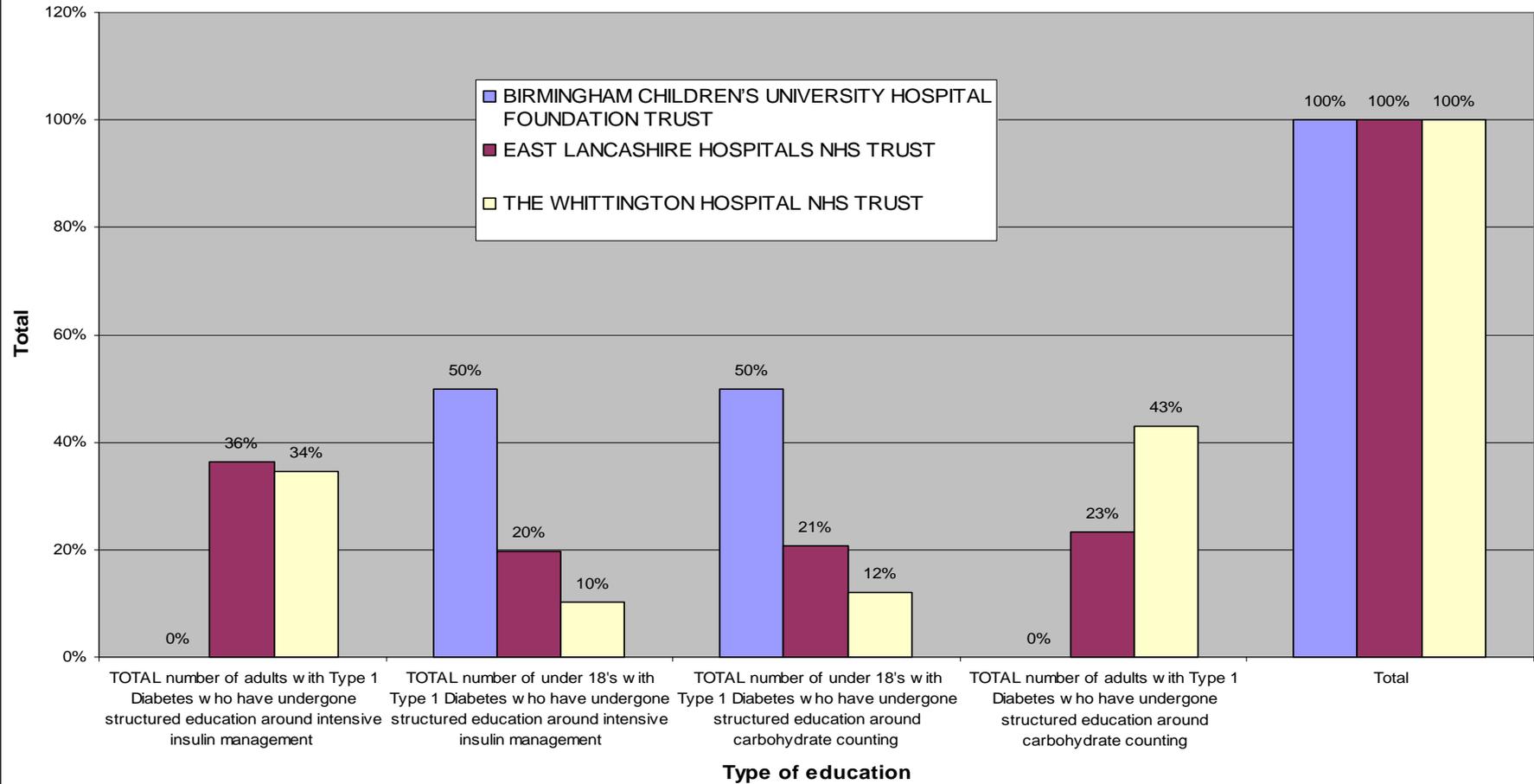
SUPPORT EXPLORED 5

- It may be helpful to introduce a mobile phone rota to ensure support to patients and their families are available at the time of need, as is done at **Birmingham Children's Hospital**.
- Strengthening telephone support services may result in further **efficiency savings** because there is potential for the number of face to face interventions to be further reduced.



PATIENT EDUCATION

Education surrounding intensive insulin management and carbohydrate counting



Graph Six: education surrounding intensive insulin management and carbohydrate counting.



PATIENT EDUCATION EXPLORED

- **100% of paediatric patients at Birmingham Children's Hospital received structured education surrounding intensive insulin management and carbohydrate counting.**
- **77% of patients at the Whittington Hospital and 59% of East Lancashire Hospitals NHS Trust received structured education surrounding intensive insulin management and carbohydrate counting.**
- **Currently at East Lancashire Hospitals NHS Trust patients are encouraged to attend the DAFNE Type 1 education programme before being considered for insulin pump therapy.**



PATIENT EDUCATION EXPLORED 2

- This shows that where there is a strong support and education infrastructure in place, overall patient care and self management *may be improved.*
- This could play a significant part in cost and efficiency savings as the risk of the need for crisis intervention appears to be significantly lower or lowered.
- NTAC recognise that this data however is a survey of relatively low numbers and would recommend further analysis of a larger sample in order to validate these findings.
- Education in all three implementation sites is currently being funded by each respective Acute Trust.



PATIENT EDUCATION EXPLORED 3

“I have always felt it is vital for the appropriate education to have been delivered on MDI therapy before transferring to pump treatment. In some cases this avoids the need for pump treatment.” – The Whittington Hospital NHS Trust

At East Lancashire Hospitals NHS Trust, “structured patient education is delivered as the DAFNE programme. Patients with Type 1 diabetes on basal bolus insulin regime are encouraged to attend this programme. Insulin pump therapy is offered to patients who have attended DAFNE and continue to have suboptimal glycaemic control despite good self-management skills and efforts”.



EDUCATION CASE STUDIES

Four exemplars relating to patient education surrounding IPT:

1. Two day pump education programme: paediatric patient:

- **Day One:** two hours and thirty minutes for saline start.
- Nine days later...
- **Day Two:** two hours for insulin start, one hour with diabetes Dietitian prior to pump education, followed by 1 home visit post pump start
- Two visits to infant school for teacher training then took place (post pump start).

2. Two day pump education programme: first paediatric patient to commence insulin pump therapy in paediatric department:

- Pump education involved: a one hour appointment with the diabetes Dietitian
- **Day one:** three hours with saline start.
- 7 days later..
- **Day two:** three hours (Insulin start)



EDUCATION CASE STUDIES 2

3. Two day pump education and training programme: adult patient:

- **Day One:** two hours and thirty minutes for saline start
- Five days later...
- **Day Two:** two hours and thirty minutes for insulin start.
- Patient came off of the pump for two weeks (after being on it for three months) [patient's request] to go away on holiday.

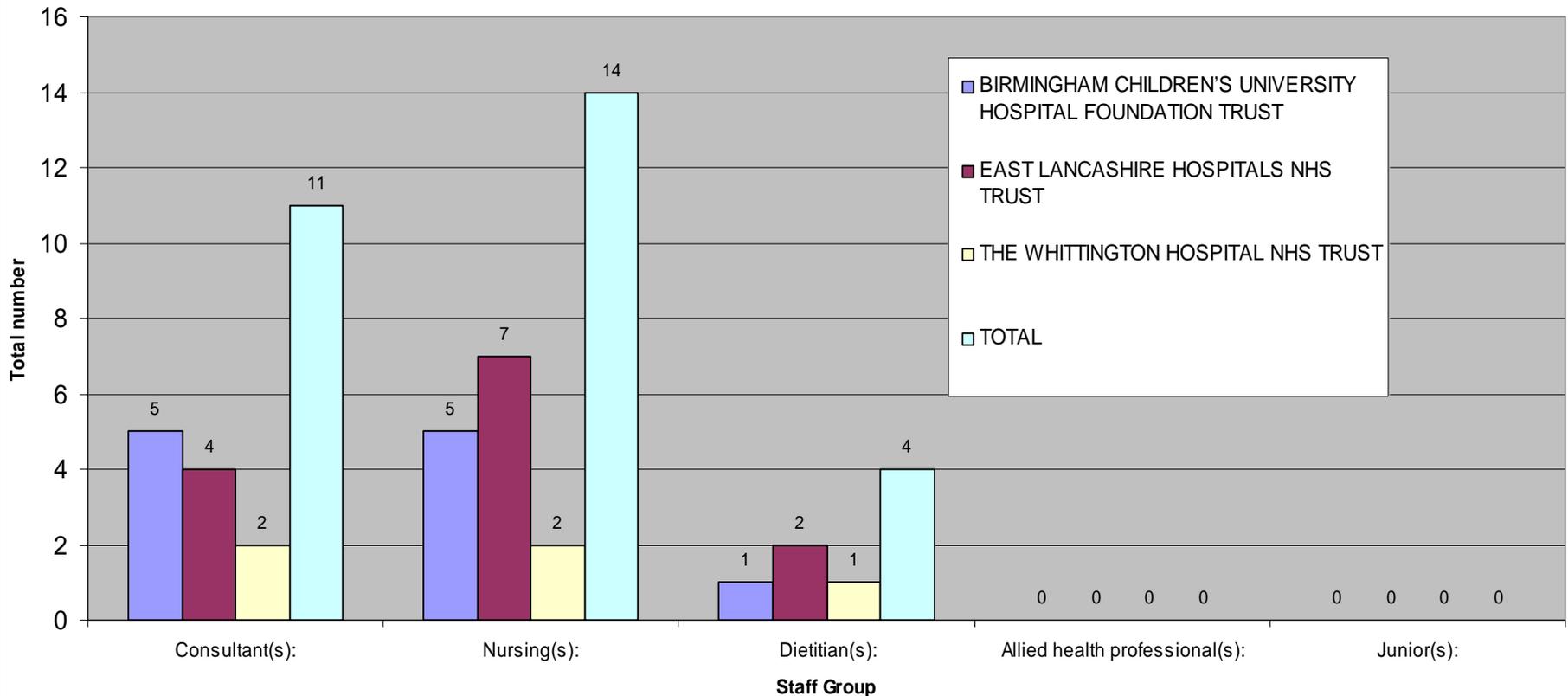
4. Two day pump education and training programme in day care unit: adult patient:

- **Day One:** two hours and thirty minutes for saline start
- Seven days later...
- **Day Two:** two hours and forty five minutes for insulin start followed by lunch in the hospital restaurant.



HEALTHCARE PROFESSIONAL TRAINING

Total number of staff involved in the management of diabetes who have had insulin pump therapy training



Graph Seven: total number of staff involved in the management of diabetes who have had pump training



HCP TRAINING 2

“One of the consultants (adult service) had been trained at a major pump centre during specialist training” – **The Whittington Hospital NHS Trust**

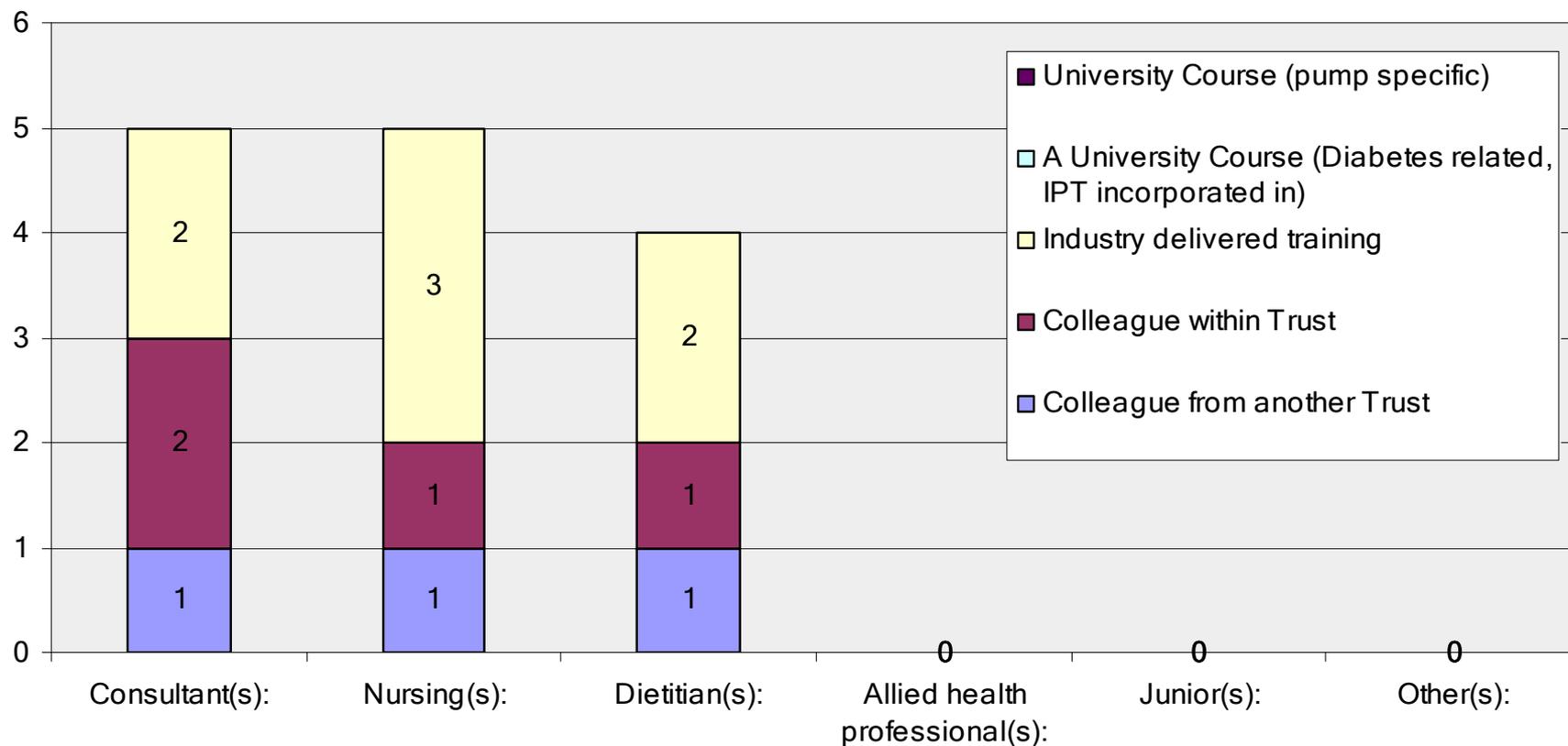
“DSNs and doctors not previously involved in insulin pump therapy have received training. A regular MDT pump meeting is being established. Next step is to improve awareness of pump therapy among other Trust staff and in primary care” – **East Lancashire Hospitals' NHS Trust**

“For some members of staff, it took too long to offer them pump training. For a long time...we relied too heavily on only 2 members of the nursing staff...and this resulted in delays when these nurses were on leave. We resolved this by supporting other nurses with training and the consultants getting more involved particularly out of hours” – **Birmingham Children's Hospital**



WHO DELIVERED TRAINING

Training providers to healthcare professionals following initiation of insulin pump therapy



Graph Eight: Training providers to healthcare professionals following initiation of insulin pump therapy



TRAINING

- Training of healthcare professionals differs across all 3 professional groups, for example, Consultants appear to rely on colleagues more than any other profession.
- A greater percentage of the training delivered across all 3 sites was provided by industry partners for example, more nurses were trained by industry than any other healthcare professional.



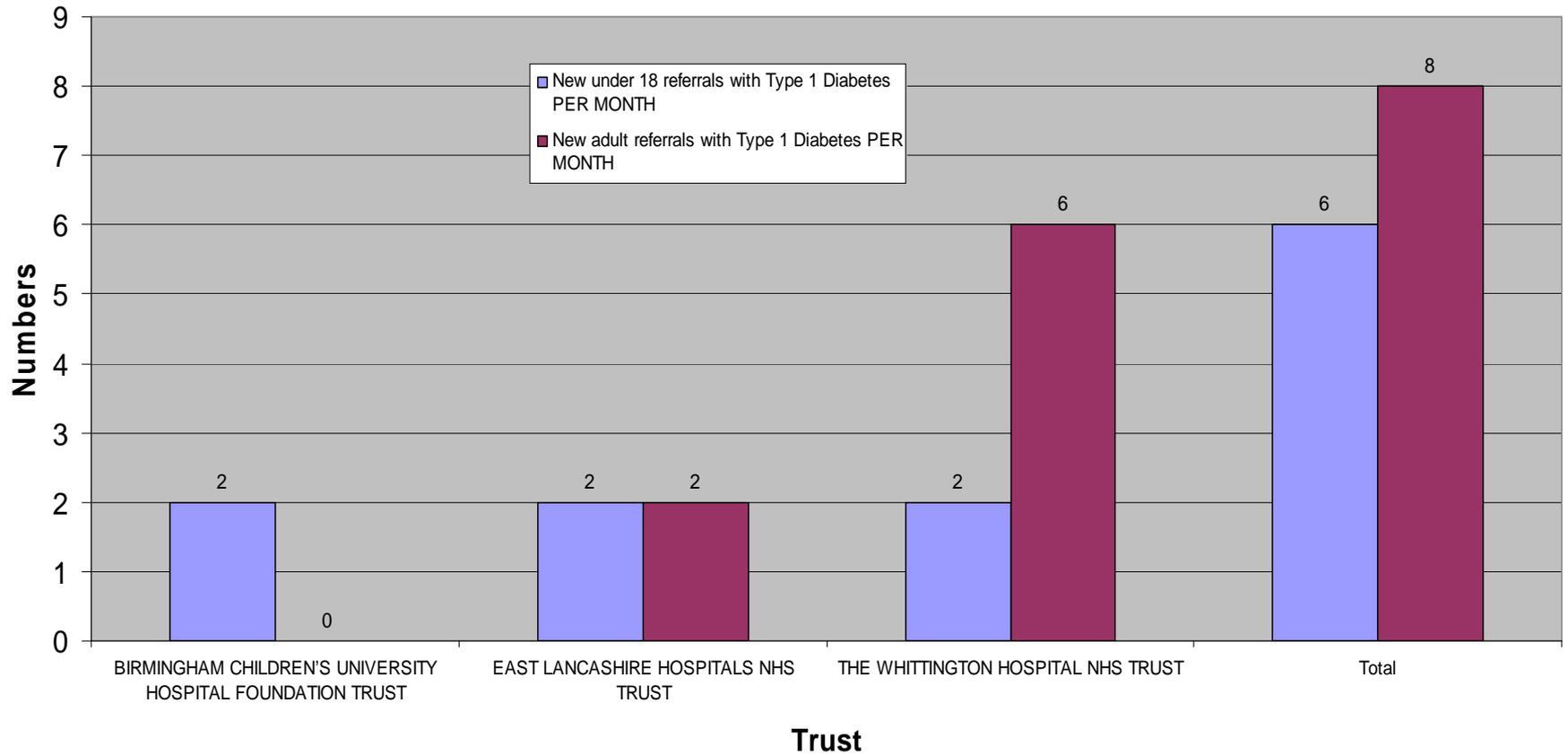
TRAINING, EDUCATION AND CLINIC DATA

- *“We now run the training over 2 days, we run a pre pump saline trial routinely. We can offer training in tandem (2 families together). We have developed structured education materials to use” – Birmingham Children's Hospital*
- *“Pre project we had a service developed historically over more than 10 years with very small numbers of new patients annually and a minority of the team involved. Since...we have employed a part time specialist pump nurse, we have trained up most members of the team, we have audited our service, developed a structured pump pathway, and instituted dedicated multidisciplinary insulin pump therapy clinics” – East Lancashire Hospitals NHS Trust*
- *“We now have a separate pump clinic...currently two monthly but this may increase. Previously I held a pump clinic every three months. We have been able to arrange sufficient clinic space to run adult and paediatric pump clinics in parallel – one adult and one paediatric consultant, one adult and one paediatric pump-trained DSN and one dietitian who supports both services” – The Whittington Hospital NHS Trust*



NEW REFERRALS PER MONTH

Total number of referrals with Type 1 Diabetes PER MONTH



Graph Nine: total number (in figures) of referrals with type 1 diabetes per month



NEW REFERRALS EXPLORED

- **The data supports the notion that the number of referrals depends on the overall case mix.**
- **Adults at the Whittington Hospital show a variation in the number of referrals per month which may support the notion that it has a more transient population.**
 - **Demographics may also have an impact.**
- **This is consistent amongst all other patients across all three sites, which suggests that the adult population at the Whittington is not stable and/or has a different demographic.**
 - **Therefore Trusts may need to think about conducting a demographic analysis prior to initiation of IPT, as the outcomes will heavily impact on the support required to set up and delivery an effective IPT service.**



NEW REFERRALS EXPLORED 2

“There is [now] space for 6 follow up and 1-2 new referrals (adults) per clinic. New referrals are from other members of the diabetes team and criteria are according to NICE guidance.

Patients will be seen by the pump nurse and consultant to discuss pros/cons of pumps and assessment as to suitability.

Pump start is separate from the pump clinic and is done by the pump nurse and field educator from the pump company. We show all of the available pumps to patients.”

– The Whittington Hospital NHS Trust



DISCLAIMER

- *The NHS Technology Adoption Centre (NTAC) collected data from the three clinical sites who were involved in the Insulin Pump Therapy Project as part of their implementation process.*
- *All data presented in this report is valid and correct as at the date of publication (June 2010).*
- *This project was initiated in October 2008.*