

# Diabetic Ketoacidosis (DKA) Rates in Children and Young People with known Type 1 Diabetes (T1DM) 2010-2015

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## Background

- DKA in those with known diabetes is an avoidable life threatening complication associated with poor diabetes control (high HbA1c) and outcomes.<sup>1</sup>
- Best Practice Tariff (BPT)<sup>2</sup> for those under 19 years of age, was introduced into the UK, in April 2012, with the aim of improving care and outcomes in those with diabetes including decreasing DKA admission rates.
- From April 2014 BPT has included the cost of hospital admissions, where the primary diagnosis is diabetes.
- From age 19 there is no BPT and thus no specified criteria that must be met regarding the minimum level of contact and support to be given by the diabetes team. This is coupled with the fact that those aged 19-25 years are at an especially vulnerable time of life.

## Aims

- To review DKA admission and readmission rates per year, pre and post BPT introduction, in Children and Young People (C&YP) with known T1DM under paediatric, transitional and adult care.

## Methods

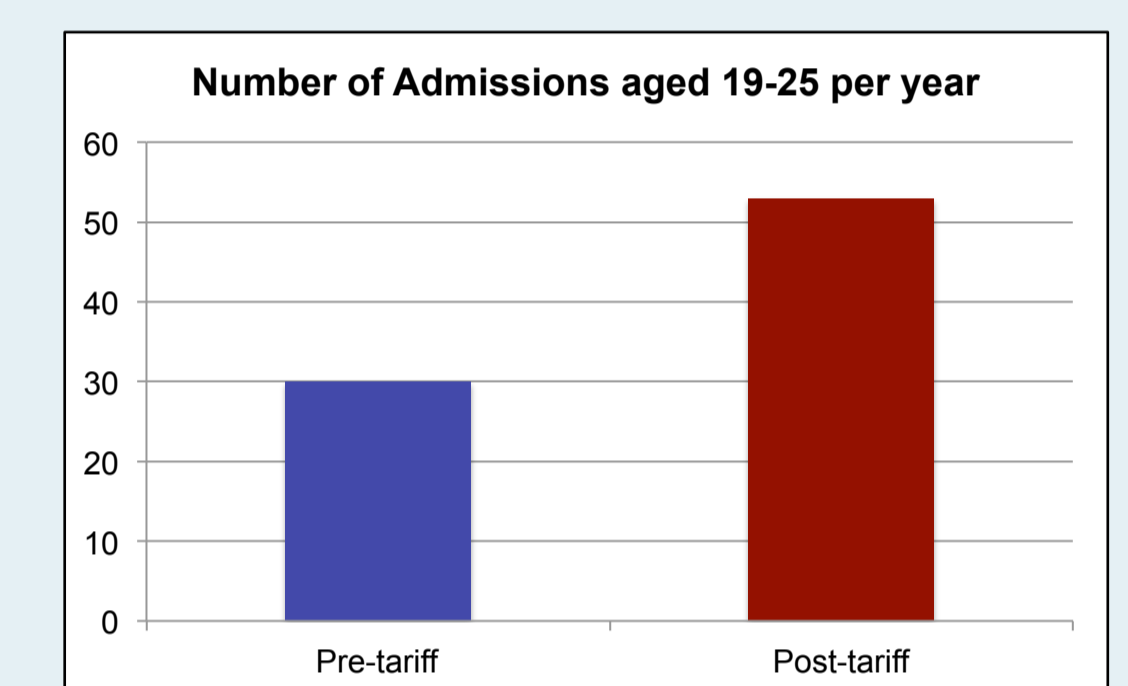
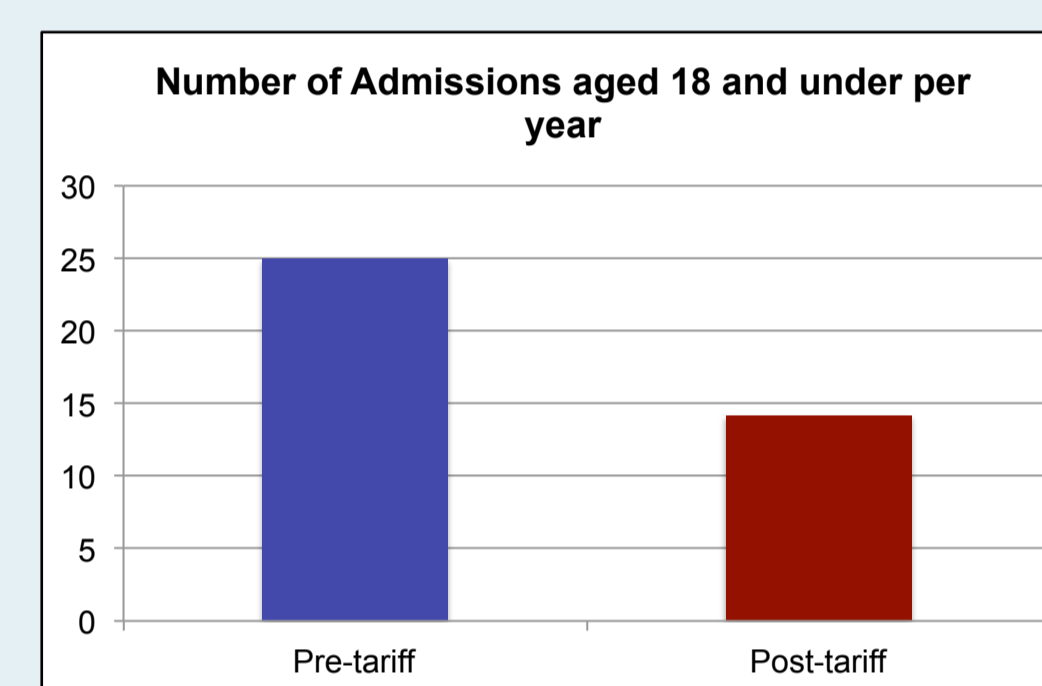
- A retrospective audit was carried out looking at DKA admissions in C&YP with T1DM between the ages of 0-<19 and 19-25 years, between January 2010 and April 2015.
- The data were split into two groups: Pre-BPT (January 2010 to March 2012, 27 months) and Post-BPT (April 2012 to April 2015, 37 months).
- DKA admissions per year, readmissions (same child or young person admitted more than once) per year and mean HbA1c on admission, were calculated.
- Comparison was made between pre and post BPT data.

## Results

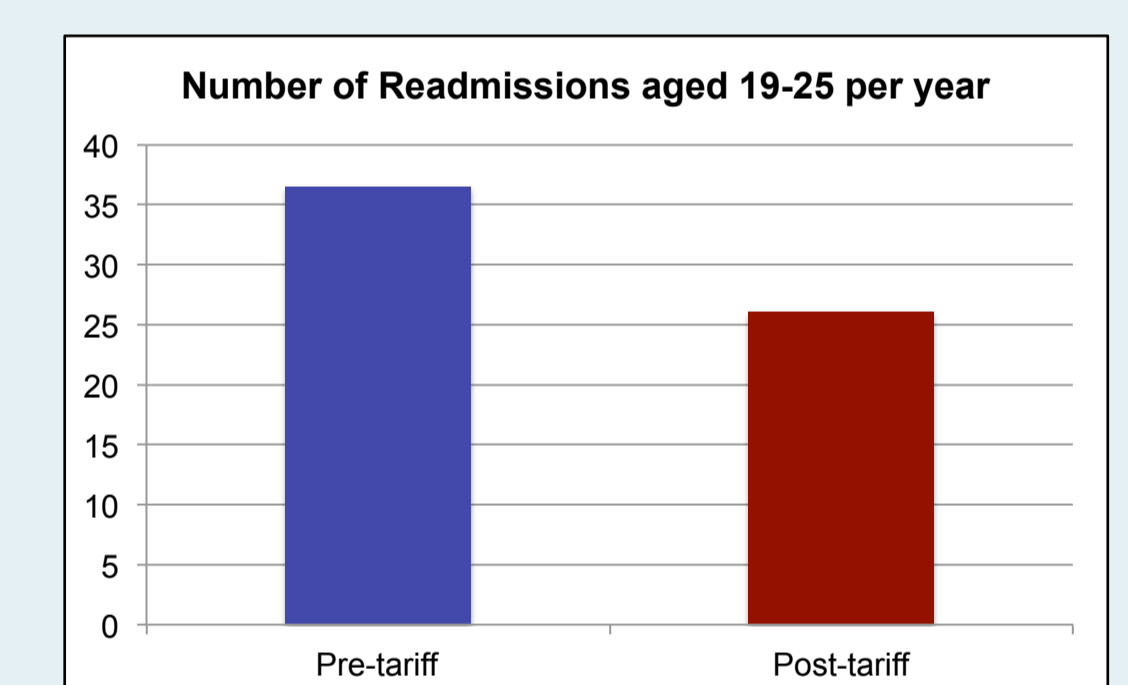
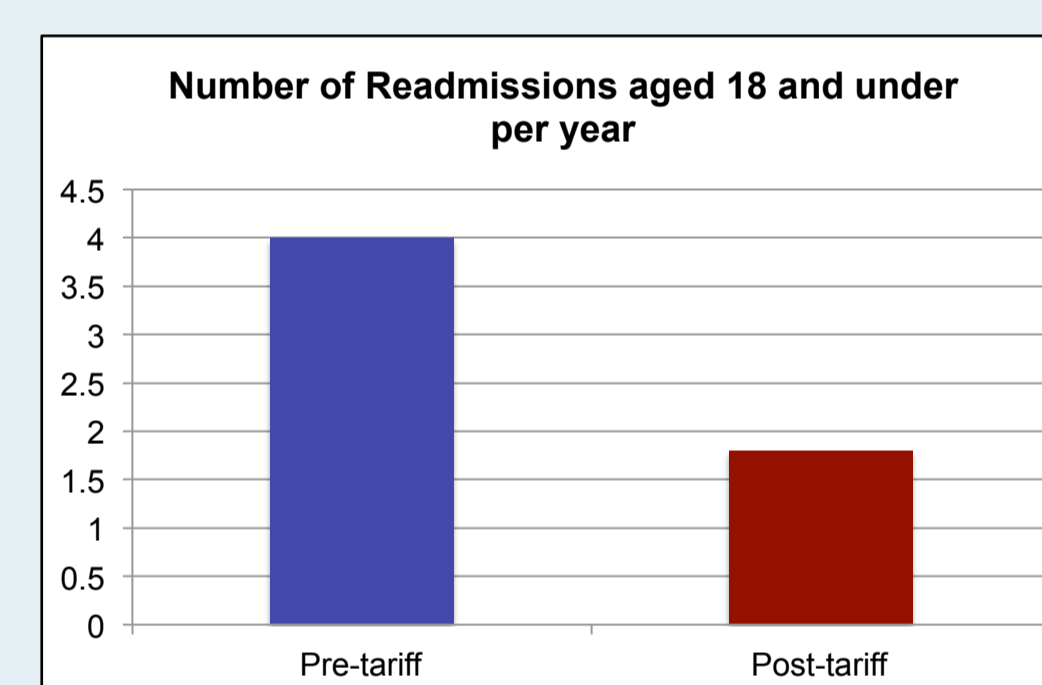
- There were a total of 97 DKA admissions (in 325 C&YP) for those aged 0-<19 years between Jan 2010 and April 2015.
- The clinic population number of C&YP under 19 years has been relatively stable at around 325 between 2010-2015.
- There were a total of 235 DKA admissions (in 346 C&YP) aged 19-25 years between Jan 2010 and April 2015.
- The clinic population number of YP aged 19-25 with T1DM has been relatively stable at around 346 between 2010-2015.
- Of the 97 admissions in the 0-<19, 50 were pre and 47 were post BPT.
- Of the 235 admissions in the 19-25, 60 were pre and 175 were post BPT.
- Of the 97 admissions 14 were readmissions in 12 C&YP 0-<19, 8 pre and 6 post BPT.
- Of the 235 admissions 159 were readmissions in 54 of YP 19-25, 73 pre and 86 post BPT.

## Results (cont.)

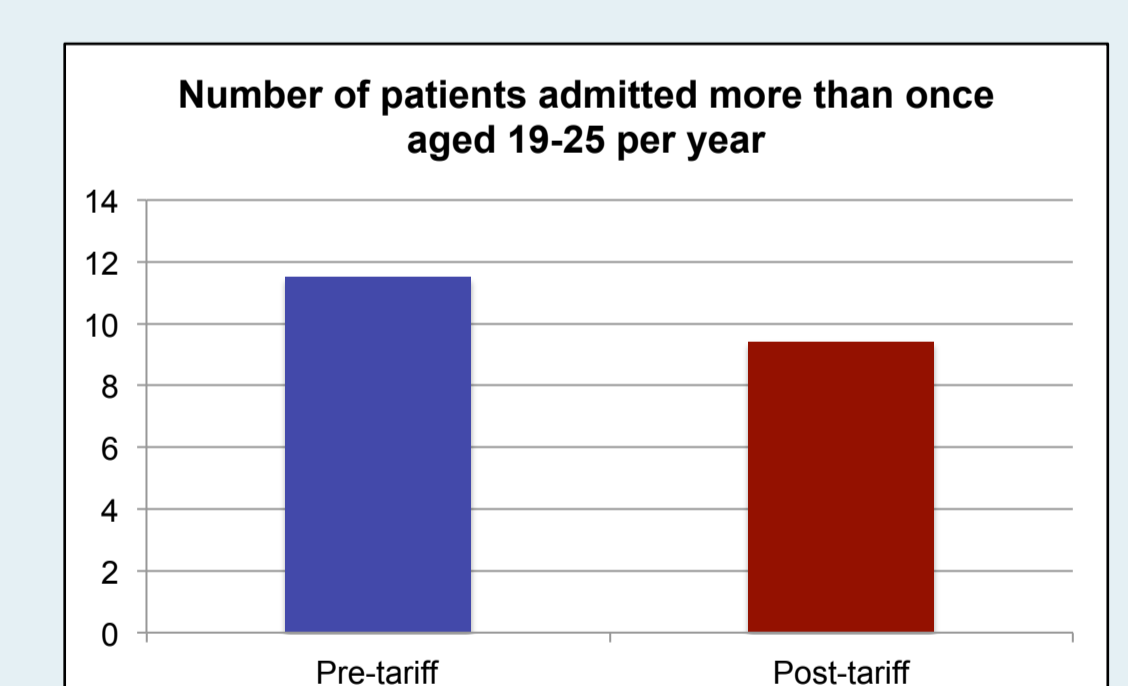
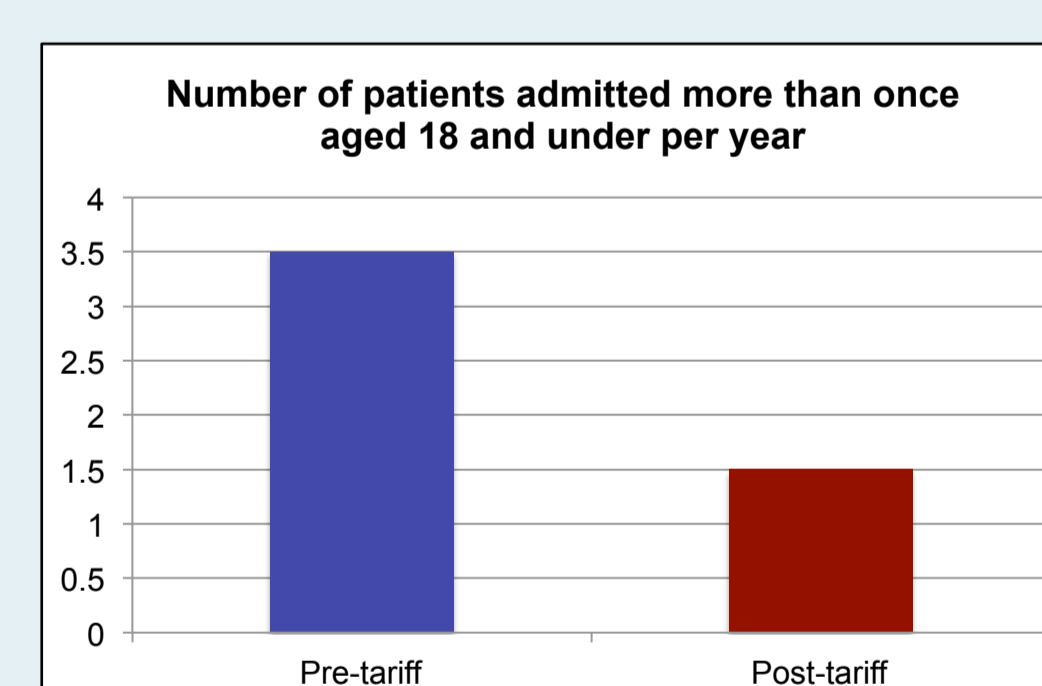
- There was a 43.2% decrease (14 vs. 25) in DKA admission rate per year post BPT for 0-<19 year olds, in contrast to a 43.3% increase for 19-25 year olds (53 vs. 30).



- There was a 55% decrease in the DKA readmission rate (1.8 vs. 4) per year in C&YP for 0-<19 year olds, in contrast to a 28.5% decrease in 19-25 year olds (26.1 vs. 36.5).



- There was a decrease in the number of C&YP aged 0-<19 and 19-25 admitted more than once with DKA, by 57.1% and 18.3% respectively (1.5 vs. 3.5 and 9.4 vs. 11.5 respectively).



- There was a decrease in mean HbA1c on admission for C&YP admitted in DKA from 105 to 94 mmol/mol for the 0-<19 year age group and from 109 to 102 mmol/mol in the 19-25 year age group.

## Conclusion

- There were lower DKA admission rates per year in C&YP aged 0-<19 years compared to those aged 19-25 years.
- Following the introduction of the BPT, the 0-19 year age group experienced a decrease in the number of admissions per year, readmissions per year and mean HbA1c, which is not seen to the same extent in those aged 19-25 years.
- We suggest that the standards of care stipulated by the paediatric BPT have had a role in the lower and more rapidly decreasing DKA admission rates in those aged 0-19 years, compared to those aged 19-25.
- Introduction of BPT for the 19-25 age group may improve DKA admission rates, HbA1c levels and outcomes in this vulnerable age group.

## References

1. National Paediatric Diabetes Audit Report 2011-12 Part 2. *National Diabetes Audit*. <https://www.diabetes.org.uk/NDA-reports>. (accessed 7 October 2015).
2. Randell T. Paediatric Diabetes Best Practice Tariff Criteria. *Diabetes UK*. [https://www.diabetes.org.uk/About\\_us/What-we-say/Specialist-care-for-children-and-adults-and-complications/Paediatric-best-practice-tariff/](https://www.diabetes.org.uk/About_us/What-we-say/Specialist-care-for-children-and-adults-and-complications/Paediatric-best-practice-tariff/). (accessed 7 October 2015).