

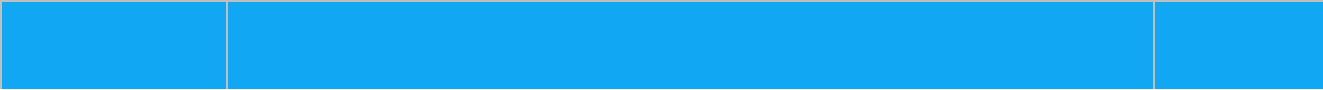
There are several healthcare checks recommended by NICE for children and young people with Type 1 diabetes (NG18, NICE 2015; NG19, NICE 2015) that should be performed at least once annually. The NPDA considers seven of these to be essential annual checks:

1. Glycated Haemoglobin A1c (HbA1c) (blood test for diabetes control)
2. Body Mass Index (BMI) (measure of cardiovascular risk)
3. Blood pressure (measure of cardiovascular risk)

Blood pressure outcome measures include data on young people aged 12 years and older with a valid systolic or diastolic blood pressure (BP) measurement. Acceptable systolic BP values were between 20 and 200 and acceptable diastolic BP were between 15 and 150.

As blood pressure varies with age and sex, data is converted to age and sex specific centiles using survey data between 1995 and 1998 from the general population aged between 4 and 24 years old (Jackson et al., 2007). A blood pressure between the 91st and 98th centile is classed as 'high normal' and a blood pressure above the 98th centile is classed as 'high' (Jackson et al., 2007).

Data were



A logistic regression model was used to estimate the effect of age, sex, ethnicity, duration of diabetes, and deprivation on the likelihood of achieving a HbA1c result below 58 mmol/mol (or above 80 mmol/mol). The output of the model was then used to calculate the predicted probability of an individual having a HbA1c value below 58 mmol/mol (or above 80 mmol/mol).

At unit level, the adjusted percentage with a HbA1c value below 58 mmol/mol (or above 80 mmol/mol) is equal to the sum of the observed number of patients with a HbA1c value below 58

	Missing refers to records that had a BMI recorded but the result was missing or recorded incorrectly	
	Percentage of young people aged 12 years and older recorded as 'current smoker'	Type 1 and Type 2
	<p>Outcome of assessment for need of Child and Adolescent Mental Health Services/psychological support:</p> <ul style="list-style-type: none"> Percentage recorded as referred and seen Percentage recorded as referred but no evidence of being seen Percentage recorded as no referral required <p>Missing refers to those who were recorded as being in need of psychological assessment but there was no indication that a referral was made</p> <p>Percentage of children and young people (excl. those who were admitted due to diabetic ketoacidosis (DKA) at diagnosis) admitted at le</p>	Type 1 and Type 2

Unit results are described within the report as being higher, similar to or lower than the national average based on whether they fall within or outside of 2 standard deviations from the mean. Negative outlier results are considered to represent an 'alert' if they fall outside of two standard deviations or an 'alarm' if they fall outside of three standard deviations, as per DoH definitions. These cut-offs are visible within the funnel plots within the unit summaries.

In 2016/17, a PDU was defined as an outlier based on their performance on 2 metrics:

- Adjusted mean HbA1c

- Overall health check completion rate

Given the variations in HbA1c associated with different demographic and social characteristics, it is appropriate to adjust HbA1c figures to take account of the characteristics of their patients or case-mix to allow for equitable benchmarking of individual PDU performance. The case-mix adjustments applied to the 2016/17 data considers the effect of age, sex, ethnicity, duration of diabetes and deprivation on mean HbA1c and the likelihood of having a HbA1c lower than the treatment target of 58 mmol/mol or higher than the upper limit of 80 mmol/mol. A summary of the output of the regression models used to construct the case-mix adjusted measures can be found on the NPDA website <https://www.npda.nhs.uk/>

care, multiplied by seven; seven is the number of key NICE recommended health checks each patient should receive).

For example, say if in PDU X, there are 80 young people with Type 1 diabetes aged 12 or older who completed a full year of care and of those 20 received all seven health checks, 30 received six

Data were reported for children or young people with Type 1 diabetes only. A child or young person was counted as having thyroid disease if they were recorded as being treated for thyroid disease and counted as having coeliac disease if they were following a gluten-free diet.

Department for Communities and Local Government. English indices of deprivation 2015. 2015. <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015>

Jackson LV, Thalange NK & Cole TJ (2007) Blood pressure centiles for Great Britain. *Arch Dis Child* : 298–303

Pan H, Cole TJ. (2012) LMS growth, a Microsoft Excel add-in to access growth references based on the LMS method (version 2.77). Harlow Healthcare, South Shields. Available at: <http://www.healthforallchildren.com/shop-base/shop/software/lmsgrowth>

Welsh Government. Welsh index of multiple deprivation 2014. 2015. <https://gov.wales/statistics-and-research/welsh-index-multiple-deprivation/?lang=en>

For further information on the audit or to view NPDA data, please visit:

The NPDA webpage on the RCPCH website - <https://www.rcpch.ac.uk/work-we-do/quality-improvement-patient-safety/national-paediatrics-diabetes-audit>
NPDA results online - <http://npda-results.rcpch.ac.uk/>

Data.gov.uk

Alternatively, feel free to contact the NPDA team at npda@rcpch.ac.uk or 020 7092 6157.