



EVERY CHILD

# Child Measurement Programme 2017/18

Supplementary report: Severe Obesity

## Summary

This short report summarises information on severe obesity (99.6th centile and above) in children aged 4 to 5 in Wales. This is the first time this information has been collated and presented as a report. The data identifies that 3.3%<sup>1</sup> (n=1,065) of children in this age group can be categorised as severely obese by single year 2017/18 in Wales. This is higher than the prevalence in either Scotland or England. Boys have a higher prevalence of severe obesity than girls in this age group.

When combined across five years (2013/14 to 2017/18) prevalence is 3.1%. This varies from 1.9% of children living in the least deprived areas of Wales, to 3.9% living in the most deprived areas of Wales.



## Background

The Child Measurement Programme (CMP) was introduced in Wales in 2011/12, when for the first time children attending reception year classes were measured in a standardised way. The Programme is a population surveillance programme and individual results are not routinely provided to parents. Deprivation is assessed using the Welsh Index of Multiple Deprivation (WIMD).

Each year since introduction the annual Child Measurement Programme Official Statistics release has been produced, providing information about prevalence by epidemiological thresholds – underweight; healthy weight; overweight; and obese. Analysis is provided at national, health board, local authority and Middle Super Output Area

(MSOA), with further analysis by sex, deprivation, ethnicity and rural/urban residence.

For more information see “How the programme works” on the Child Measurement Programme here [www.publichealthwales.org/childmeasurement](http://www.publichealthwales.org/childmeasurement) and specifically the document ‘*Child Measurement Programme for Wales: history, legislative framework and technical aspects*’.

While information on severe obesity (greater than or equal to 99.6th centile) has previously been made available to Health Board and Local Authority staff to assist them in the planning of services, it has not previously been collated and presented as a written report.



## Body Mass Index (BMI) and thresholds

The Child Measurement Programme in Wales uses the British 1990 growth reference (UK90) to categorise each child's BMI. This is the same growth reference used in the national child measurement programmes in both England and Scotland, making comparisons across and between the three countries possible. The prevalence categories used routinely in the CMP in Wales are based on epidemiological not clinical thresholds and are as below:

- Underweight: BMI less than but not including the second centile
- Healthy weight: BMI second centile up to but not including the 85th centile
- Healthy weight and underweight
- Overweight but not obese: BMI 85th centile up to but not including the 95th centile
- Overweight and obese
- Obese: 95th centile and above

There is no nationally accepted definition of morbid / severe obesity in children in common use, as there is in adults (BMI of 40+). However the use of the 99.6th centile threshold is gaining ground in the UK<sup>2,3,4</sup>.

## Results

All of the results of the Child Measurement Programme are available for the most recent academic year (2017/18) as well as by combined data for the last five years (2013/14 to 2017/18) and the information can be seen on our website

[www.publichealthwales.org/childmeasurement](http://www.publichealthwales.org/childmeasurement)

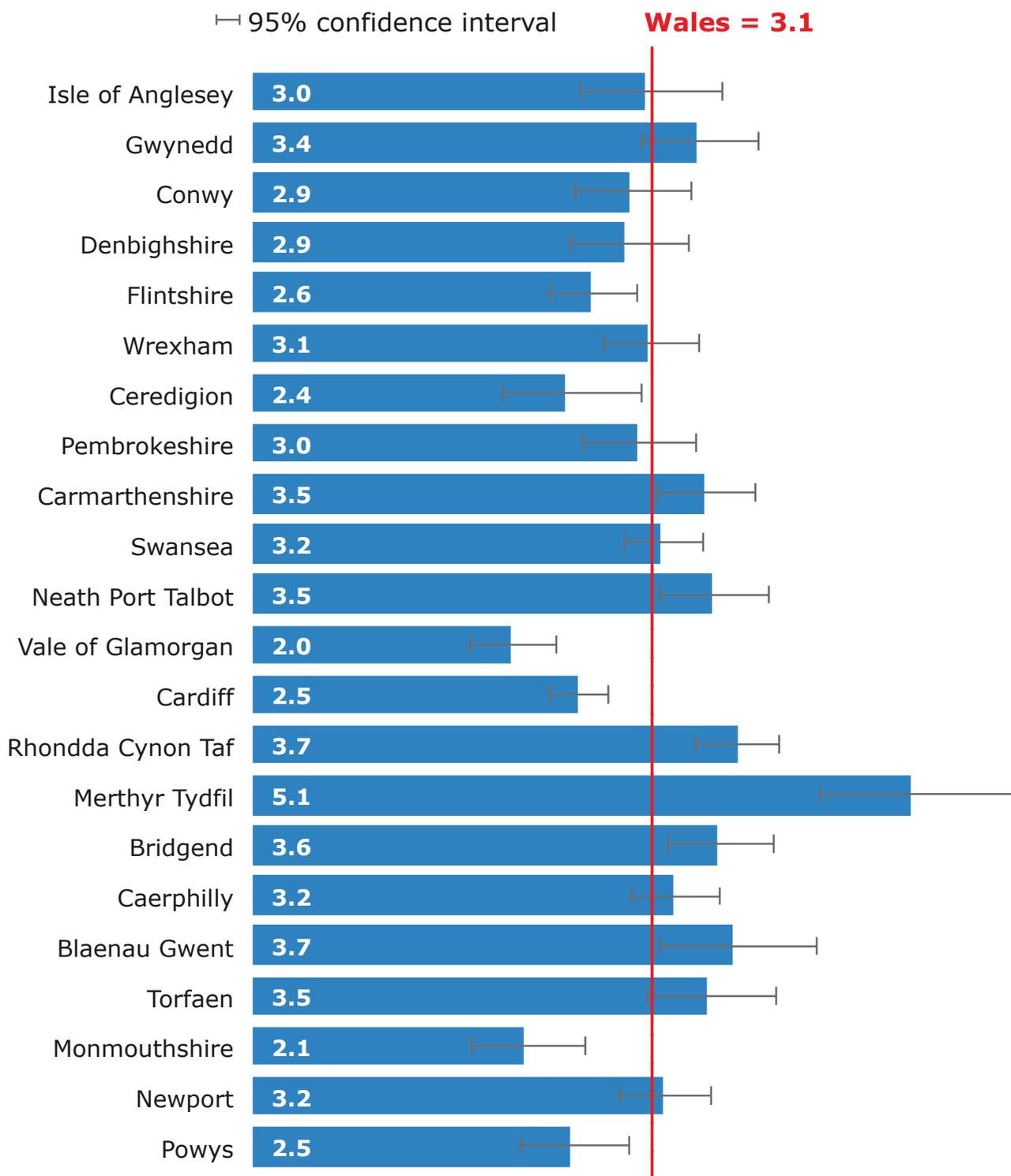
The number of children by single year in this category by local authority varies from 18 to 115 for the year 2017/18, giving a total of 1,065 children. Combining data for five years improves reliability. When combined across the last five years then the numbers vary across the 22 local authorities between 75 to 511 children in this category, giving a total of 5,009 children across the five year period. Severe obesity prevalence is highest in Merthyr Tydfil at 5.1% and lowest in the Vale of Glamorgan at 2.0%.



### Figure 1 – Five year prevalence by local authority

Percentage of children aged 4 to 5 who are severely obese, Wales local authorities, Child Measurement Programme for Wales, 2013/14 - 2017/18

Produced by Public Health Wales Observatory using CMP data (NWIS)



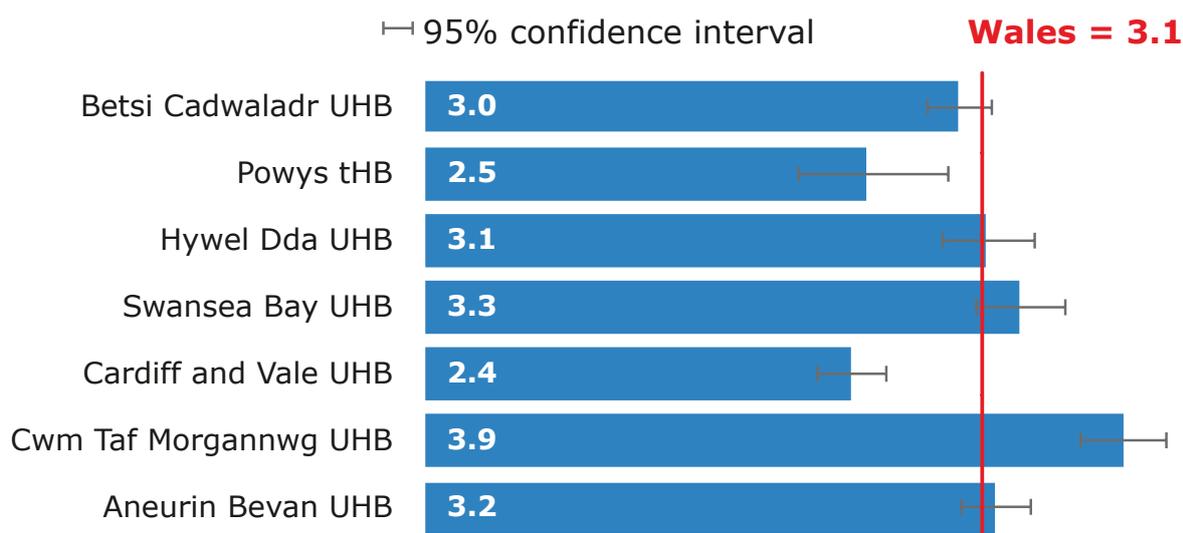
By Health Board (UHB), prevalence in Cwm Taf Morgannwg\* University Health Board (CTMUHB) is statistically significantly higher than the Wales average, while prevalence in Powys Teaching Health Board, and Cardiff and Vale UHB is significantly lower.



## Figure 2 – Five-year prevalence by Health Board

Percentage of children aged 4 to 5 who are severely obese, Wales health boards, Child Measurement Programme for Wales, 2013/14 - 2017/18

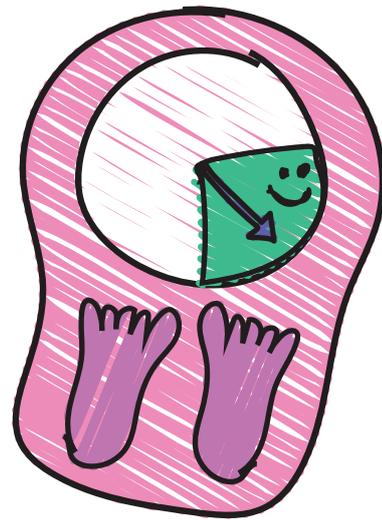
Produced by Public Health Wales Observatory using CMP data (NWIS)



\* Cwm Taf Morgannwg UHB will be established in April 2019, when the Bridgend Local Authority area will move from Abertawe Bro Morgannwg UHB (ABMUHB) into Cwm Taf UHB. The measurements taken in 2017/18 in Bridgend are included in the CTMUHB data. ABMUHB will be renamed Swansea Bay UHB when these changes occur.

# Deprivation

Severe obesity prevalence is significantly higher than the Wales' average in the two most deprived quintiles for both the single year 2017/18, and for five years combined.



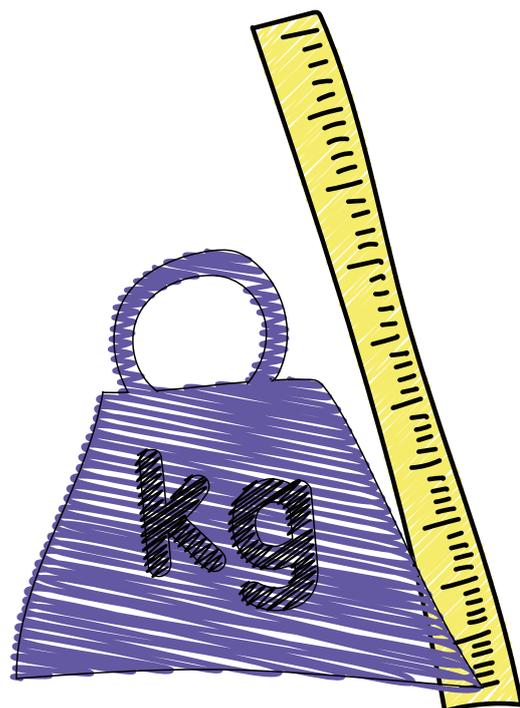
## Figure 3 – Severe obesity and deprivation

Percentage of children aged 4 to 5 years who are severely obese by deprivation fifth, Wales, Child Measurement Programme for Wales, 2013/14 - 2017/18

Produced by Public Health Wales Observatory using CMP data (NWIS), CHSP (ISD Scotland), NCMP data (HSCIC)



Deprivation is measured using the Welsh Index of Multiple Deprivation (WIMD) which was last updated in 2014, and is constructed using a range of indicators to assign a rank to each of the 1,909 Lower Super Output Areas (LSOAs) in Wales. There are pockets of deprivation right across Wales, although it is more concentrated in some areas.



## Sex

Prevalence of severe obesity has not previously been analysed by sex. This year for the first time information is available that shows that 3.6% of boys (n=598) and 3.0% of girls (n=467) are categorised as severely obese in reception year in Wales (see table 2). The difference between boys and girls is statistically significant. This result is similar to results from England in this age group, where significantly more boys than girls are also categorised as severely obese. This analysis will be provided going forward, and in future years will be combined across a number of years.

## Ethnicity

Eighty-one per cent of children categorised as severely obese in the last five years are white. When aggregated

across five years only 8% (402 children) in Wales who are in the category of severe obesity have an ethnicity recorded as Asian, black, mixed or Chinese or other. 562 children (11%) in this category have no information on their ethnicity recorded.

There is debate<sup>5</sup> about whether the use of the UK90 growth reference to assess growth in children who are not white is the most appropriate measure, as the UK90 is based on measurements taken of white children. More work is needed to understand to understand factors which lead to a higher proportion of black children in particular being classified as obese.

With this caveat in mind, children whose ethnicity is recorded as Asian, black or 'Chinese or other' have a higher prevalence of severe obesity than children who are recorded as white, and the difference is statistically significant.

**Table 1 – Analysis by recorded ethnicity, 2013/14 to 2017/18**

Produced by Public Health Wales Observatory using CMP data (NWIS)

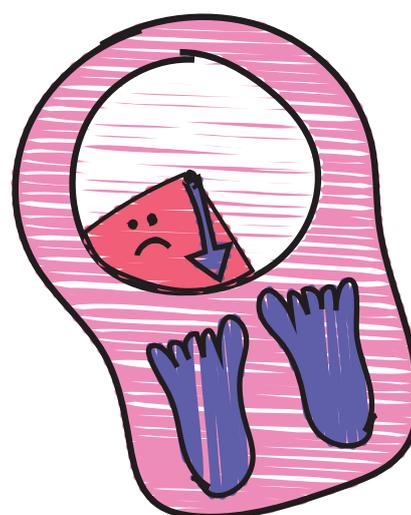
All children	99.6th centile and above		
	n	%	(95% CI) <sup>2</sup>
<b>Wales</b>	<b>5,009</b>	<b>3.1</b>	<b>(3.0 to 3.2)</b>
White	4,045	3.1	(3.0 to 3.2)
Asian	137	4.4	(3.7 to 5.2)
Black	46	4.6	(3.5 to 6.1)
Mixed	89	3.3	(2.7 to 4.1)
Chinese or other	130	4.5	(3.8 to 5.4)
Not known	562	2.4	(2.2 to 2.6)

1 95% confidence interval

## Comparison with England & Scotland

Results for Wales, Scotland and England for a single year are displayed in Table 2. Severe obesity prevalence in Wales is significantly higher than in England and appears higher than in Scotland, however the confidence intervals for the results from Scotland are not publicly available. Both Public Health England and the Scottish NHS Information Services Division (ISD) use the same definition of 'severe obesity' in their measurement programmes as is used in Wales: 'BMI greater than or equal to the 99.6th centile' on the UK90 growth reference standard.

In England the difference between boys and girls is statistically significantly above and below the England average respectively, and there appears to be a difference between boys and girls in Scotland but it is not known if this is statistically significant.



**Table 2 – Comparison with Scotland and England – children aged 4 to 6**

2017/18 severe obesity prevalence (95% confidence intervals in brackets)			
	<b>Wales</b>	<b>Scotland</b>	<b>England</b>
% of children	3.3 (3.1 – 3.5)	2.6	2.36 (2.36 – 2.44)
% of boys	3.6 (3.4 – 3.9)	3.0	2.68 (2.63 – 2.74)
% of girls	3.0 (2.7 – 3.2)	2.1	2.11 (2.06 – 2.16)

In England the age range is the same as in Wales, however there are far more children in this age group (14,787 in reception year for 2017/18 in this category) than there are in Wales (n=1,065). The number of children measured in each of the English regions (except the north east) is also higher than that in Wales.

In Scotland 53,016 children participated in the programme in 2017/18 of whom 1,364 were categorised as severely obese. The age range of children included

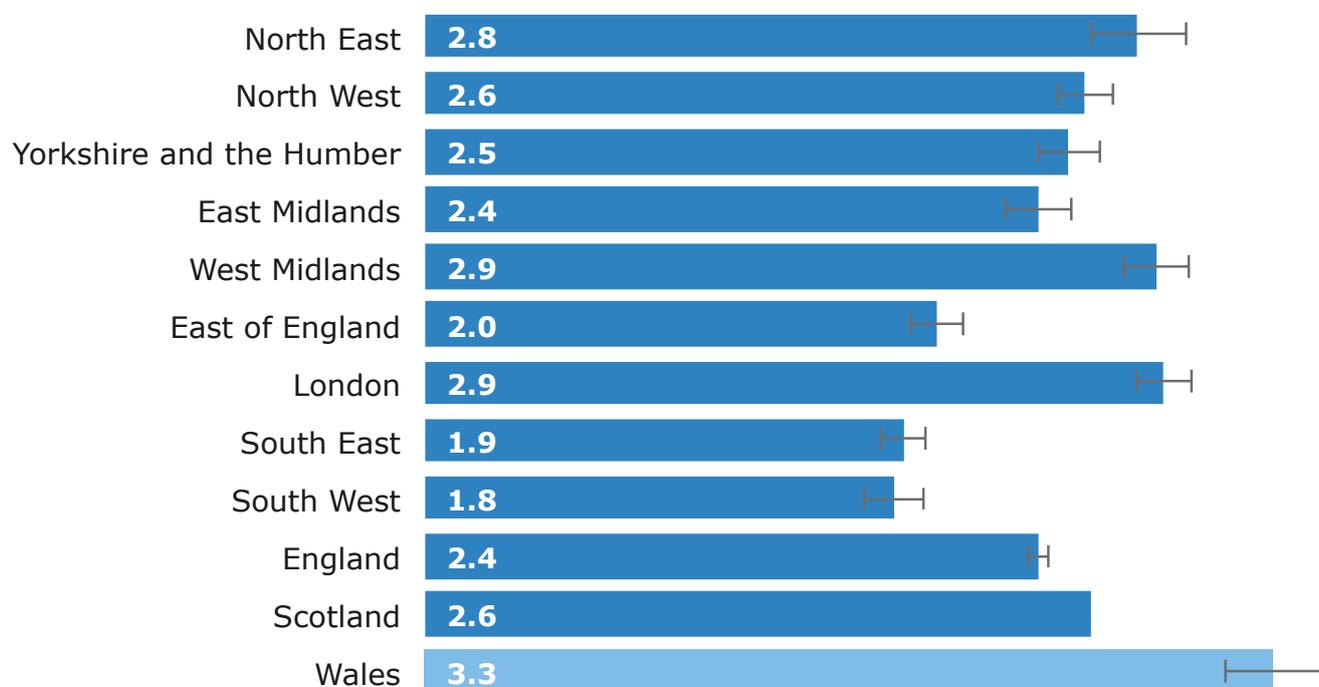
in the Scottish national measurement programme is greater than in England and Wales. Children start school later and are measured in Primary 1 in Scotland. The child's age at measurement ranges between 4.5 to 6.25 years.

BMI centile results are adjusted for age, so making a comparison between the Welsh and Scottish data is still valid as long as the difference in age groups between Wales and Scotland is noted and borne in mind.

#### Figure 4 – Wales, Scotland, England and the English regions.

Percentage of children in Reception or Primary 1 who are severely obese, Wales, Scotland, England and the English regions

Produced by Public Health Wales Observatory using CMP data (NWIS), CHSP (ISD Scotland), NCMP data (HSCIC)



In all three countries analysis by deprivation shows that severe obesity is higher in the most deprived areas of each country, however as the deprivation index used in each country is different, it is not possible to make any direct comparison.

## Discussion

The Child Measurement Programme is a population surveillance programme designed to follow patterns and trends in child growth, rather than as an individual screening programme. However it is possible using the information gathered to provide information on clinical as well as epidemiological thresholds.

What is known from previous work tracking the weights of children in Wales<sup>6</sup>,

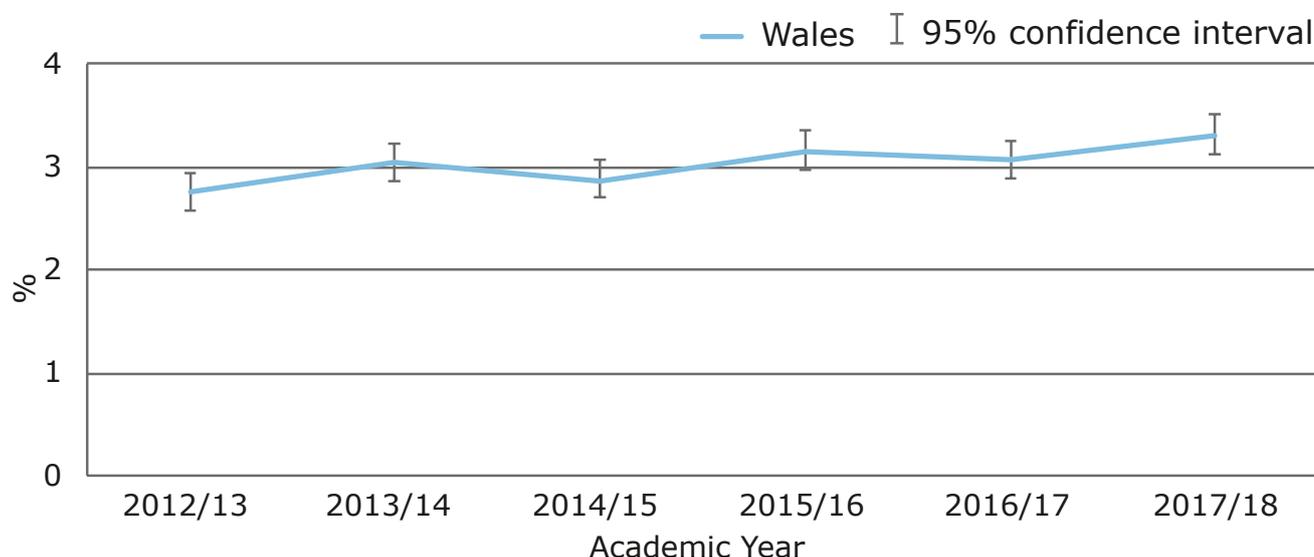
is that 82.5% of the children who were obese in reception were still obese by Year 4. There was no tracking of children in Wales who were severely obese, but the evidence suggests that most will still be obese or severely obese 4 years later. The National Child Measurement Programme in England have tracked<sup>7</sup> the weights of some children who were categorised as severely obese and found that *"Most children who were severely obese in Reception remained severely obese in Year 6 (57% of boys, 62% of girls)."*

In England prevalence of severe obesity in Year 6 (age 9/10) was 4.2% compared to the reception year prevalence of 2.4%. There is currently no second school year of measurement in Wales.

### Figure 5 – Six year trend in severe obesity in Wales.

Percentage of children aged 4 to 5 who are severely obese, trends over the previous 6 years, Wales, Child Measurement Programme for Wales, 2012/13 - 2017/18

Produced by Public Health Wales Observatory using CMP (NWIS)



The 99.6th centile is a clinical rather than epidemiological threshold which suggests that individual intervention may be warranted – this could be ongoing monitoring, assessment, support or treatment. NICE guidance<sup>8</sup> suggests that any child with a BMI on the 98th centile or above should be assessed for any co-morbidity. And Scottish guidance<sup>4</sup> also highlights the 98th and 99.6th centiles as key thresholds to indicate a need for assessment and possible intervention,

pointing out that the consequences of obesity in children is similar to that in adults – increased cardiovascular, metabolic and endocrine complications. While the CMP is designed for epidemiological purposes, each year the programme provides the data on clinical thresholds for use by the Welsh Health Boards and local authorities, to help them plan services.



## References

- <sup>1</sup> Public Health Wales: Child Measurement Programme annual report and data 7th March 2019 from <http://www.wales.nhs.uk/sitesplus/888/page/67762>
- <sup>2</sup> Public Health England (2018) '*NCMP Local Authority Profile - January 2018 update*' from <https://www.gov.uk/government/statistics/ncmp-local-authority-profile-academic-year-2016-to-2017-update>
- <sup>3</sup> NHS National Services Scotland, Information Services Division "*Body Mass Index of Primary 1 Children in Scotland – school year 2017/18*" 11th December 2018
- <sup>4</sup> Scottish Intercollegiate Guidelines Network (SIGN) (February 2010) "115 Management of obesity" NHS Quality Improvement Scotland <https://www.sign.ac.uk/assets/sign115.pdf>
- <sup>5</sup> Cole TJ et al. (2000) "Establishing a standard definition for child overweight and obesity worldwide: international survey" *BMJ* 2000; 320:1240
- <sup>6</sup> Public Health Wales / Health Intelligence Division "Report of Year 4 Child Measurement Programme Pilot 2012/13" 4th March 2015 from <http://www.wales.nhs.uk/sitesplus/888/page/87207>
- <sup>7</sup> Public Health England (March 2017) "Changes in the weight status of children between the first and final years of primary school: a longitudinal analysis of data from the National Child Measurement Programme in four local authorities in England between 2006/07 and 2014/15" London from [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/609093/NCMP\\_tracking\\_report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/609093/NCMP_tracking_report.pdf)
- <sup>8</sup> National Clinical Guideline Centre (November 2014) "Obesity Identification, assessment and management of overweight and obesity in children, young people and adults" Partial update of CG43 from <https://www.nice.org.uk/guidance/cg189/evidence/obesity-update-full-guideline-pdf-193342429>

# EVERY CHILD

## Child Measurement Programme 2017/18

### Supplementary report: Severe Obesity

Many thanks to the families and children who participated in the programme and to all the staff in Health Boards who have supported the programme across Wales.

7th March 2019



[www.publichealthwales.org/childmeasurement](http://www.publichealthwales.org/childmeasurement)

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