ORAL HEALTH CHILD POVERTY IN THE LIGHT OF POSITIVE CONSENT

Child Poverty – Milestones and targets

The Deputy Minister for Social Justice and Regeneration requested that targets and milestones be derived to measure progress in eliminating the effects of poverty on child health. In 2006, a range of targets were devised incorporating infant mortality, low birth weight, childhood injuries, teenage conceptions and dental caries.

Targets were based on quintiles of deprivation (initially using the Townsend index); by 2020 it was aimed to reduce the burden of ill health in the most deprived fifth to reflect levels of the middle fifth. Milestones for 2010 were devised, reflecting proportionate progress.

For dental caries there were four targets and four associated milestones (Table 1). Two targets were devised for five year olds using mean dmft (average number of decayed deciduous teeth per child) and %dmft>0 (proportion of children with at least 1 deciduous tooth affected by decay). Data from the survey of 2003-04 was used as the baseline. The remaining two targets were devised for 12 year olds using mean DMFT (average number of decayed permanent teeth per child) and %DMFT>0 (proportion of children with at least 1 permanent tooth affected by decay), with data from the survey of 2004-05 used as the baseline.

In 2009, Welsh Assembly Government requested that these targets be reworked using the WIMD as the deprivation indicator. Both WIMD 2005 and 2008 were used; the WIMD indicator which was contemporaneous to survey data collection was applied.

For child oral health surveys conducted in 2001-02 and 2003-04 WIMD 2005 was used to calculate the quintiles. For the 2005-06 survey both WIMD 2005 and 2008 were used. For the 2007-08 survey WIMD 2008 used to allocate children to deprivation quintiles.

The effect of introducing positive consent to the surveys of five year olds on the child poverty targets

For dental surveys of children conducted in school year 1 (approximately 5-years-old) custom and practice underpinned by specific legislation (Education Act 1944 and later the Education Reform Act 1996) meant that until 2005/6 letters were sent home to parents and children's teeth would be examined unless parents had responded to letters refusing participation by their children. This was commonly referred to as "*negative* consent". In 2006 new guidance was issued to the NHS in Wales, England and Northern Ireland requiring *positive* parental consent used for dental surveys of children in school settings.

Table 1 CHILD POVERTY TARGETS (original version derived using the Townsend index)

Dental caries in 5 year old children

Objective: Improve the mean dmft and the %dmft>0 for the most deprived fifth of the population to that of the middle fifth of the population by 2020.

Baseline: The mean dmft for the most deprived fifth of the population is 3.1 and for the middle fifth it is 2.4 (2003-04). Ratio 5:3 = 1.29.

The %dmft>0 for the most deprived fifth of the population is 61.8 and for the middle fifth it is 55.3 (2003-2004). Ratio 5:3 = 1.12.

Targets

Mean dmft 5 year olds: By 2020 the mean number of decayed, missing and filled teeth in those 5 year olds living in the most deprived fifth of the population will be 2.4.

Percentage of 5 year olds with caries: By 2020 the percentage of 5 year olds with caries in the most deprived fifth of the population will be 55.3%.

Milestones

Mean dmft 5 year olds: By 2010 proportionate progress towards the 2020 target would require a mean dmft of 2.9, being one third the required reduction by 2020.

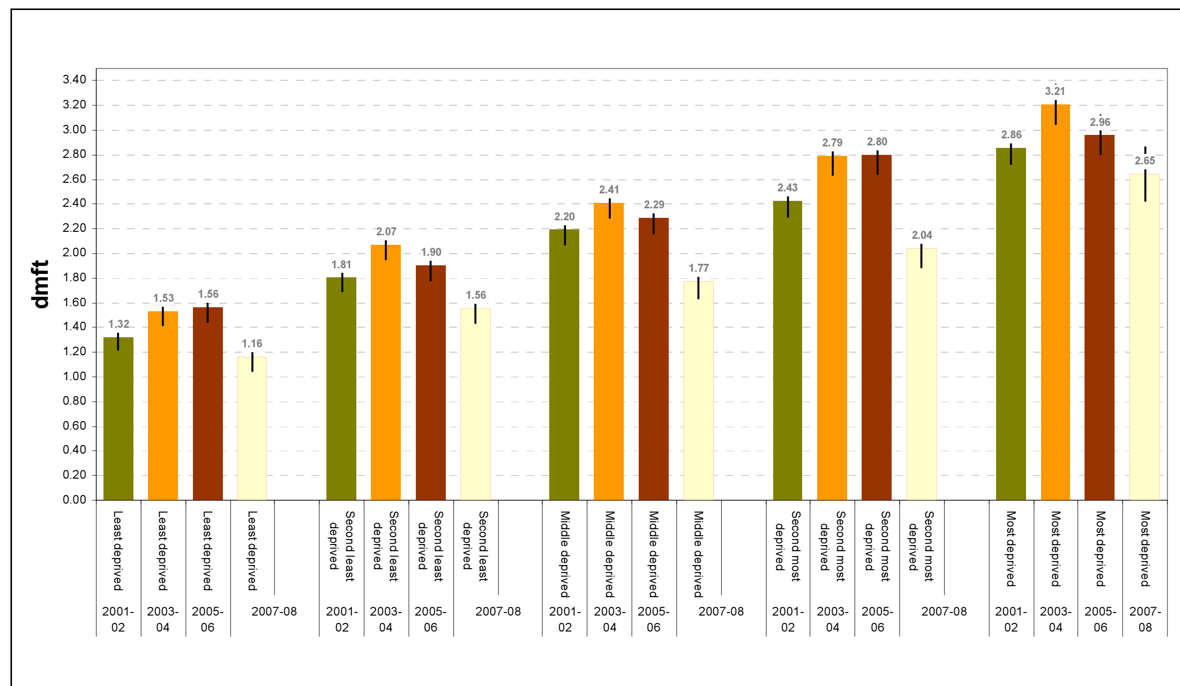
Percentage of 5 year olds with caries: By 2010 proportionate progress towards the 2020 target would require no more than 59% of children to have experience of dental decay.

The changed consent arrangements resulted in participation of about 55% of children compared with 85-90% in previous surveys. The potential problem of low response rates is non-response bias, the fact that non-responders may be different from responders and that because they do not participate you cannot be sure just how different they may be. Analysis of data collected before and after the changed consent arrangements strongly suggest that a disproportionate number of parents of children with decay have excluded their children from the 2007-8 survey which has impacted on the reported dmft indices.

The impact of changed consent on monitoring

The reduced participation of children with decayed teeth has serious implications for the monitoring of the Child Poverty Targets associated with the dental health of 5 year olds. The child poverty targets were set using data from the 2003-04 survey. We have been able to monitor progress towards the milestone using data from the 2005-06 survey – both these surveys were collected using *negative* consent. The 2007-08 survey (and any future surveys) of five year olds used *positive* consent.

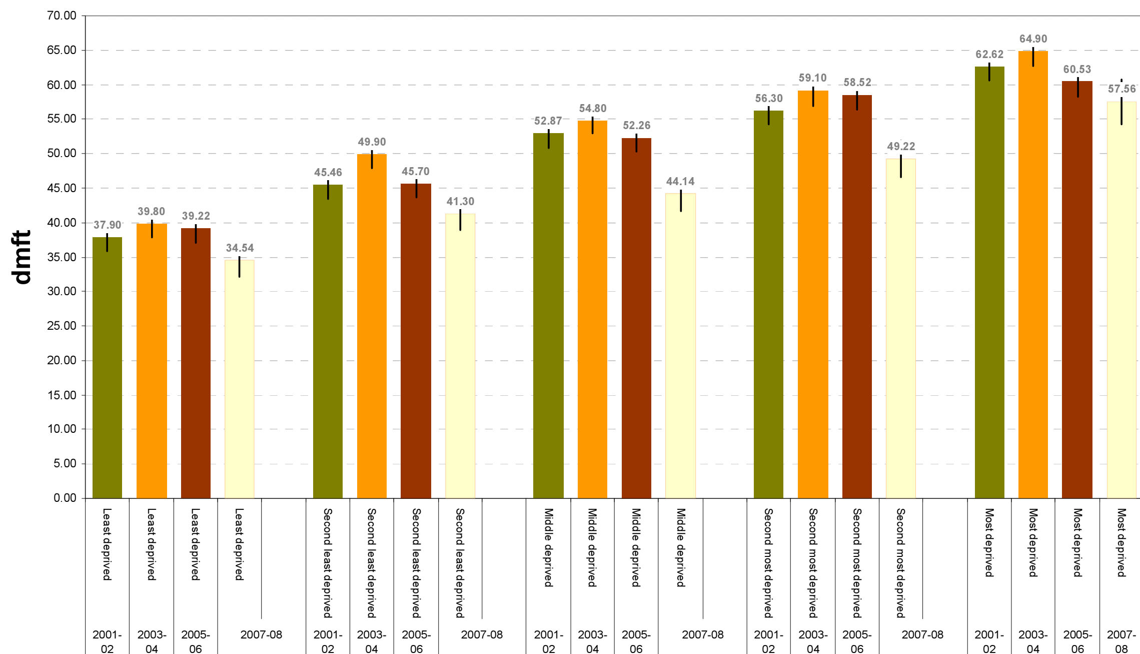
Figure 1: 5 year olds - mean dmft (-ve) surveys 2001-02 through 2005-06, mean dmft (+ve) 2007-08



Figures 1 and 2 present the average dmft and %dmft>0 by WIMD deprivation quintile. Using the WIMD derivation the target would be – to achieve an average dmft of 2.4 by 2020 for the most deprived quintile (N.B. this target was set using data generated from a survey using *negative* consent). In 2007-08 (using positive consent methodology) the average dmft for the most deprived fifth was 2.65.

If we were comparing data from surveys which used the same consent methodology then this would look like we have surpassed the milestone for 2010 and are set to more than achieve the 2020 target. The same applies for the target and milestones for the %dmft>0 (Figure 2).

Figure 2: Five year olds - %dmft>0 (-ve) surveys 2001-02 through 2005-06, %dmft>0 (+ve) 2007-08



It is important to acknowledge the significant reduction in both average dmft and the %dmft>0 between surveys conducted from 2001 through to 2006 (using *negative* consent) when compared with 2007-08 (using *positive* consent).

Estimating the impact of the change to positive consent

Crudely looking at the average dmft in 2005-06 and comparing with the average in 2007-08 there has been a 0.4 of a tooth reduction across Wales, ranging from 0.31 in the most deprived quintile to 0.76 (i.e. ¾ of a tooth reduction) in the second most deprived quintile. We have not experienced such a large reduction in dmft in Wales before (Table 2).

Table 2 A comparison of mean dmft for the surveys of 2005-06 and 2007-08

	5-05-06 *negative*	5-07-08 *positive*	Reduction in dmft
Least deprived	1.56	1.16	0.40
Second least deprived	1.90	1.56	0.34
Middle deprived	2.29	1.77	0.52
Second most deprived	2.80	2.04	0.76
Most deprived	2.96	2.65	0.31
Wales as a whole	2.38	1.98	0.40

Further, it is important to consider the ratio of the most deprived versus the least deprived (Table 3). The ratios for both mean dmft and %dmft>0, improved in 2005-06 and fell dramatically in 2007-08 – suggesting a widening of the inequalities gap, despite the reduction.

Table 3 The ratio of most deprived versus least deprived for mean dmft and %dmft>0 across survey years

	Least deprived		Most deprived		Ratio of most deprived: least deprived	
Year	dmft mean	%dmft>0	dmft mean	%dmft>0	dmft mean	%dmft>0
2001-02	1.32	37.90	2.86	62.62	2.16	1.65
2003-04	1.53	39.80	3.21	64.90	2.10	1.63
2005-06	1.56	39.22	2.96	60.53	1.90	1.54

2007-08	1.16	34.54	2.65	57.56	2.28	1.67

We need to be careful how we communicate this beyond our specialist user group - because the data are open for serious misinterpretation. We need to emphasise the distinction between dmft (collected using *negative* consent) and dmft (collected via *positive* consent); that they are two separate indicators and that it is not possible to undertake any trend analyses - until we have new dmft data (collected via *positive* consent methods) from future surveys.

Why it is important that we should set a new baseline using the 2007-08 data

Analyses have been undertaken to understand how the response rate varies, when using the positive consent approach, according to social deprivation and caries experience. There is sufficient bias to make direct comparisons with previous surveys inappropriate. In particular it is likely that those children with decay were less likely to participate, so reported indices will underestimate the true prevalence and severity of decay.

As a result the data collected in 2007/8 cannot be compared with data collected up until 2005/6. Since we are unable to obtain any information on the children who were not examined it is not possible to correct for non-response bias and produce an estimate of what data collected in 2007/8 would look like if previous consent arrangements had been used. Users of dental epidemiology data should not compare $d_3$mft data, collected using positive consent arrangements with $d_3$mft data which was collected using negative consent methodology.

Proposed new 5-year-old targets

We need to have a target for which we can monitor progress towards 2020. If we rebase the targets to the 2007-08 survey – we should have future survey data for 11/12, 13/14, 15/16, 17/18, 19/20. Admittedly the targets will be different.

Table 4 Old targets and new target proposals for 5-year-olds

	Negative Consent		Positive consent	
Most deprived fifth	2003/4	By 2020	2007/8	By 2020
Mean dmft	3.1	2.4	2.65	1.77
%dmft>0	61.8%	55.3%	57.6%	44.1%

For the new target, based on 2007-08 data, the goal would be to achieve a dmft of 1.77 for the most deprived group, who currently have an average dmft of 2.65 – compared with the original target, based on 2003-04 data, where the most deprived group were to achieve an average dmft of 2.4 by 2020 having an average dmft of 3.1 in 2003-04. Similarly the reported proportion of children with decay baseline and target (%dmft>0) need to be adjusted as outlined in Table 4.

Despite this reduction, both in the starting and the endpoints of the proposed new target (of approximately half a tooth) the inequalities slope is still evident and from a pragmatic point of view we really don't have an alternative.

RECOMMENDATION: TO USE THE 5-07-08 DMFT DATA AS A NEW BASELINE FOR THE CHILD POVERTY TARGETS

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