

Bibliography for Public Health Outcomes Framework indicators

1. Life expectancy at birth

Measure: The average number of years a newborn baby can expect to live if current mortality rates continue.

Key source: World Health Organization rationale for life expectancy at birth as a measure of the overall mortality level of a population; Available [here](#)

2. Healthy life expectancy at birth

Measure: The average number of years a newborn baby can expect to live in good or very good health if current mortality and morbidity rates continue.

Key source: World Health Organization rationale for use of healthy life expectancy as a measure of health status; Available [here](#)

3a. Mental well-being among children and young people

Measure: Measured as for national indicator to monitor the well-being goals of the *Well-being of Future Generations (Wales) Act 2015*.

3b. Mental well-being among adults

Measure: The Warwick-Edinburgh Mental Well-being scale (WEMWBS) is a 14 item scale with 5 response categories, summed to provide a single score ranging from 14-70. The items are all worded positively and cover both feeling and functioning aspects of mental well-being. Indicator covers persons aged 16+ measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key reference for indicators 3a and 3b: Government Office for Science. *Foresight mental capital and wellbeing project: making the most of ourselves in the 21st century. Final project report*. London: The Government Office for Science; 2008. Available [here](#)

This project concluded that

An individual's mental capital and mental wellbeing crucially affect their path through life. Moreover, they are vitally important for the healthy functioning of families, communities and society. Together, they fundamentally affect behaviour, social cohesion, social inclusion, and our prosperity (p10).

The project was based on a series of literature reviews commissioned from selected experts worldwide. An analysis of interventions which related to particularly important challenges identified in Phase 1 and chosen in close consultation with a range of stakeholders, both within and outside of Government. In the final phase the project team consulted extensively with stakeholders in order to agree a comprehensive plan of actions to take the work forward.

4. The gap in life expectancy at birth between the most and least deprived

Measure: The gap (in years) in life expectancy at birth (between the most and least deprived) as measured by the slope index of inequality (SII).

5. The gap in healthy life expectancy between the most and the least deprived

Measure: The gap (in years) in healthy life expectancy at birth (between the most and least deprived) as measured by the SII. Measured as for the national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key reference for indicators 4 and 5: Roberts J, Bell R. *Social inequalities in the leading causes of early death. A life course approach*. London: UCL Institute of Health Equity; 2015. Available [here](#)

This literature review and analysis of data from the World Health Organization's Detailed Mortality Database found marked social inequalities for the leading causes of early death across the life course. Common mechanisms behind this socioeconomic variation included differences in: access to resources (financial, social and natural); adversity; unemployment rates; housing quality; quality of work, the physical environment, social isolation, lifestyle behaviours, breastfeeding rates, disease awareness, use of health

information, and; access to care, uptake of preventive services, quality and appropriateness of care, and adherence to treatment, among other factors. The authors concluded that a sizeable proportion of the burden of disease and premature death is a result of social inequalities.

6a. The gap in mental well-being between the most and the least deprived among children and young people

Measure: The gap in mental well-being scores (between the most and least deprived).

6b. The gap in mental well-being between the most and the least deprived among adults

Measure: The gap in mental well-being scores (between the most and least deprived).

Key reference: Barry M, Friedli L. *State-of-Science Review: SR-B3 The influence of social, demographic and physical factors on positive mental health in children, adults and older people*. Government Office for Science 2008.

This literature review was commissioned as part of the UK Government's Foresight Project, Mental Capital and Wellbeing. The review authors reported findings from a range of studies showing that poor mental health is consistently associated with unemployment, less education, low income or material standard of living, poor physical health and adverse life events. They concluded that poor mental health is both a cause and a consequence of social, economic and environmental inequalities.

7. Children living in poverty

Measure: The percentage of children and young people living in poverty, as measured for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key references:

Cooper K, Stewart K. *Does money affect children's outcomes? A systematic review*. London: London School of Economics; 2013. Available [here](#)

This systematic review was undertaken for the Joseph Rowntree Foundation. The review authors concluded that there is strong evidence that household financial resources are important for children's outcomes and that this relationship is causal. They reported significant effects of household financial resources on wider outcomes for children, including cognitive, social-behavioural and health outcomes, as well as mediating factors such as maternal depression, the home environment and expenditure on children's items. The review authors stated that the evidence relating to cognitive development and school achievement was the clearest, followed by evidence on social and behavioural development. They found that the evidence about the impact of income on children's physical health was more mixed.

8. Young children developing the right skills

Measure: Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key source: World Health Organization statement on the importance of early childhood development. Available [here](#)

Key reference: Dyson A et al. *Childhood development, education and health inequalities*. London: UCL; 2009. Available [here](#)

The authors of this evidence review reported child's physical, social, and cognitive development during the early years strongly influences their school-readiness and educational attainment, economic participation and health. This review was commissioned to support the 2010 Marmot Review. It focused on evidence that had a direct bearing on the relationship between public policy, childhood, and health inequalities. No detail on method was included in the report.

9. School leavers with skills and qualifications (Level 2)

Measure: Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

10. School leavers with essential literacy and numeracy skills

Measure: Exact measure to be confirmed.

Key reference for indicators 9 and 10: Marmot, M. *Fair society, healthy lives*. London: Marmot Review; 2010. Available [here](#)

The Marmot Review noted that that higher educational attainment was associated with healthier behaviour. It reported that evidence from 1970 British Birth Cohort Study showed that those educated to degree level were more likely to be in full-time employment than those with lower educational attainment, and were less likely to smoke and be over-weight and more likely to exercise regularly and eat healthily. The Marmot Review also notes that rates of unemployment are highest among those with no or few qualifications and skills and that unemployment is associated with increased rates of limiting long-term illness, mental illness and cardiovascular disease. The Marmot Review was based largely on a series of commissioned task group reports for key areas and no detail on the methods used to produce these reports has been included.

11. People not able to afford everyday goods and activities

Measure: Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key reference: Benzeval M et al. *How does money influence health?* Project Report. York: Joseph Rowntree Foundation; 2014. Available [here](#)

This literature review explores the association between income and health throughout the life course and within families. The authors concluded that there is a strong theoretical consensus that money does matter for health and that the relationship is a positive one but the theories should not be seen as competing or mutually exclusive as there are a complex web of causal factors.

See also Key reference indicator 7: Cooper K, Stewart K. *Does money affect children's outcomes? A systematic review*. London: London School of Economics; 2013. Available [here](#)

12. People not in education, employment or training

Measure: Annual measures of those people Not in Education Employment or Training (NEET) for different age groups. Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key reference: UCL Institute of Health Equity. *Reducing the number of young people not in employment, education or training (NEET)*. Health Equity Evidence Review 3. London: Public Health England; 2014. Available [here](#)

This literature review commissioned by Public Health England concluded that spending time NEET has been shown to have a detrimental effect on physical and mental health. This effect is greater when time spent NEET is at a younger age or lasts for longer. The link between time spent NEET and poor health is partly due to an increased likelihood of unemployment, low wages, or low quality work later on in life. Being NEET can also have an impact on unhealthy behaviours and involvement in crime. These negative health effects do not occur equally across the population, as the chance of being NEET is affected by area deprivation, socio-economic position, parental factors (such as employment, education, or attitudes), growing up in care, prior academic achievement and school experiences. Being NEET therefore occurs disproportionately among those already experiencing other sources of disadvantage.

13. Gap in employment rate for those with a long term health condition

Measure: Gap between the employment rate for those with a long-term health condition and the overall employment rate in persons aged 16-64.

Key references:

Weber DJ et al. *Does poor health affect employment transitions?* York: Joseph Rowntree Foundation; 2015. Available [here](#)

This report is based on a literature review and analysis of data from the British Household Panel Surveys conducted between 1991 and 2008. This found that people who reported poor physical and/or mental health were significantly less likely than those in good health to be in work, to go from unemployment into employment and they are also more likely to go from employment into unemployment even when other variables that are known to affect labour market status were controlled for.

Waddell G, Burton AK. *Is work good for your health and wellbeing?* London: TSO; 2006. Available [here](#)

This systematic review looked for evidence to address the question of whether work is good for health and wellbeing. The review

authors reported that there is a strong evidence base showing that work is generally good for physical and mental health and well-being. They found that worklessness is associated with poorer physical and mental health and well-being. They also reported that work can be therapeutic and can reverse the adverse health effects of unemployment for healthy people of working age, for many disabled people, for most people with common health problems and for social security beneficiaries. The authors concluded that overall, the beneficial effects of work outweigh the risks of work, and are greater than the harmful effects of long-term unemployment or prolonged sickness absence.

14. A sense of community

Measure: Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key references:

Young AF, Russell A, Powers JR. The sense of belonging to a neighbourhood: can it be measured and is it related to health and well being in older women? *Soc Sci Med* 2004; 59: 2627–37

The Australian longitudinal study on women's health found that a better sense of neighbourhood was associated with better physical and mental health, lower stress, better social support and being physically active. This study used the [Duke Social Support Index](#).

Stafford M, McMunn A, DeVogli R. Neighbourhood social environment and depressive symptoms in midlife and beyond. *Ageing Soc* 2011; 31: 893–910.

This prospective study examined the relationship between aspects of the neighbourhood social environment and subsequent depressive symptoms in over 7,500 participants in the English Longitudinal Study of Ageing (ELSA). Neighbourhood social cohesion was found to be associated with reporting fewer depressive symptoms independent of demographic and socioeconomic factors and baseline depressive symptoms. Friendship quality and sense of control mediated this association. This study used items from [CASP-19](#) an individual level measure that catches quality of life across four domains – control, autonomy, pleasure and self-realisation.

15. People who volunteer

Measure: Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#)

Key reference: Jenkinson CE et al. Is volunteering a public health intervention? A systematic review and meta-analysis of the health and survival of volunteers. *BMC Public Health* 2013; 13: 773.

This systematic review reported observational evidence suggesting that volunteering may benefit mental health and survival but that the causal mechanism for this was unclear.

16. People who feel lonely

Measure: Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key reference: Holt-Lunstad J et al. Loneliness and social isolation as risk factors for mortality: a meta-analytic review. *Perspect Psychol Sci* 2015; 10: 227-37.

This meta-analysis reported that social isolation was associated with 29% increased likelihood of mortality; loneliness 26% and living alone 32%. The review authors reported that they found no differences between measures of objective and subjective social isolation and that results remained consistent across gender, length of follow-up, and world region, but initial health status has an influence on the findings. They further reported that results differed across participant age, with social deficits being more predictive of death in samples with an average age younger than 65 years. The authors concluded that overall, the influence of both objective and subjective social isolation on risk for mortality is comparable with well-established risk factors for mortality. The analyses controlled for initial health status and age and gender but, because of the study designs it included, cannot be considered to provide evidence of a causal relationship between social isolation and increased risk of mortality.

17. Quality of housing

Measure: Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key reference: Braubach M, Jacobs DE, Ormandy D. *Environmental burden of disease associated with inadequate housing. A method guide to the quantification of health effects of selected housing risks in the WHO European Region*. Geneva: WHO; 2011. Available [here](#)

This document includes a series of literature reviews that link housing conditions to health. The editors of the report conclude that the evidence presented shows that inadequate housing conditions are directly and indirectly linked to negative health outcomes. Inadequate housing conditions most often affect more vulnerable population groups including the very young, the elderly, and the sick, and these are the population subgroups most vulnerable to environmental risks.

18. Quality of the air we breathe

Measure: To be confirmed, depending on final indicator included within the national indicator to monitor the well-being goals of the *Well-being of Future Generations (Wales) Act 2015*.

Key references:

A report by the Committee on Medical Effects of Air Pollutants *Cardiovascular disease and air pollution*. Department of Health. 2005.

This report based on systematic reviews, meta-analyses and narrative syntheses concluded that exposure to air pollutants, both short and long term, is associated with increased risks of hospital admission and mortality.

Committee on Medical Effects of Air Pollutants. *Long term exposure to air pollution; effect on mortality*. London: HPA; 2009.

This second report from COMEAP quantifies the increased risks of long term exposure to air pollutants on all cause, cardiopulmonary and lung cancer mortality.

19. Physical activity in adolescents

Measure: The percentage of children aged 11/12 to 15/16 who were physically active every day (for at least 60 minutes each day) in the past week.

Key reference: Bull FC, Expert Working Groups. *Physical activity guidelines in the U.K. Review and recommendations*. Loughborough: School of Sport, Exercise and Health Sciences, Loughborough University: 2010. Available [here](#)

The evidence base underpinning these guidelines was contained within the final scientific report from a comprehensive 2-year review process on the health benefits of physical activity from the US Government published in December 2008¹ and a set of unpublished reviews completed in the UK in 2007 under the auspices of the British Association of Sport and Exercise Sciences (BASES). Using these two sources the available evidence on the relationship between physical activity and health outcomes or risk factors was synthesized. The expert working groups concluded that the cumulative body of scientific evidence continues to support the strong dose response relationship and benefits of physical activity across a wide range of non communicable diseases.

20. Adolescents who smoke

Measure: Percentage of children aged 11-16 smoking at least once a week.

Key reference: Centers for Disease Control and Prevention. *Preventing tobacco use among youth and young adults: A Report of the Surgeon General*. Atlanta: Centers for Disease Control and Prevention; 2012. Available [here](#)

This report is based on a systematic review. It concludes that the evidence is sufficient to support a causal relationship between; smoking and addiction to nicotine, beginning in adolescence and young adulthood; active smoking and both reduced lung function and impaired lung growth during childhood and adolescence; active smoking and wheezing severe enough to be diagnosed as asthma in susceptible child and adolescent populations; smoking in adolescence and young adulthood and early abdominal aortic atherosclerosis in young adults. The review authors report that the evidence is suggestive but not sufficient to conclude that there is a causal relationship between smoking in adolescence and young adulthood and coronary artery atherosclerosis in adulthood

21. Adolescents using alcohol

¹ Physical Activity Guidelines Advisory Committee. *Physical Activity Guidelines Advisory Committee Report*. Washington; 2008.

Measure: Percentage of children 11 to 16 drinking alcohol at least once a week.

Key reference: Newbury-Birch D et al. *Impact of alcohol consumption on young people. A review of published systematic reviews.* Research Report No DCSF-RR067. Newcastle: Institute of Health and Society at Newcastle University; 2008. Available [here](#)

This review of systematic reviews, undertaken for the Department of Children, Schools and Families and, identified the adverse consequences associated with alcohol consumption in young people. The review authors identified many adverse short and long term physical and psychological consequences. Alcohol use was associated acute and chronic health problems ranging from sleep disturbance to liver disease. It was associated with short term cognitive problems that could affect school performance as well as long term cognitive deficits. Alcohol consumption was also associated with an increased risk of mental health problems and compulsive behaviour for example risky sexual behaviour. It increased the risk of injury from assault or road traffic accidents and the risk of being a victim of crime or being involved in crime. Early exposure to drinking alcohol was associated with increased risk of drinking problematically as an adolescent

22. Adolescents drinking sugary drinks once a day or more

Measure: Percentage aged 11 to 16 drinking sugary drinks once a day or more.

Key references:

Keller A, Bucher Della Torre S. Sugar-sweetened beverages and obesity among children and adolescents. A review of systematic literature reviews. *Child Obes* 2015; 11(4):338-46

The authors of this review of reviews reported that the majority of the reviews that they identified concluded that there was a direct association between sugar sweetened beverage consumption and weight gain, overweight, and obesity in children and adolescents.

Malik VS et al. Impact of sugar sweetened beverages on blood pressure. *Am J Cardiol* 2014; 113(9); 1574-80

This systematic review included studies with participants aged over 12 years. The review authors concluded that consumption of sugar

sweetened beverages was associated with increased blood pressure which led to an increase in hypertension.

23. Adults eating five fruit and vegetable portions a day

Measure: Age-standardised percentage of persons aged 16+ who reported consuming five or more portions of fruit and vegetables the previous day.

Key source: Advice from the World Health Organization recommends eating a minimum of 400g of fruit and vegetables a day. Available [here](#).

The World Health Organization says that sufficient consumption of fruit and vegetables could help prevent diseases such as cardiovascular diseases and certain cancers. Globally insufficient intake of fruit and vegetables is estimated to account for 14% of gastrointestinal cancer deaths, about 11% of ischaemic heart disease deaths and about 9% of stroke deaths.

24. Adults meeting physical activity guidelines

Measure: Age-standardised percentage of persons aged 16+ who met physical activity guidelines in the previous week (at least 150 minutes of moderate/vigorous physical activity).

Key reference: Bull FC, Expert Working Groups. *Physical activity guidelines in the UK. Review and recommendations*. Loughborough: School of Sport, Exercise and Health Sciences, Loughborough University: 2010. Available [here](#)

The evidence base underpinning these guidelines was contained within the final scientific report from a comprehensive 2-year review process on the health benefits of physical activity from the US Government published in December 2008² and a set of unpublished reviews completed in the UK in 2007 under the auspices of the British Association of Sport and Exercise Sciences (BASES). Using these two sources the available evidence on the relationship between physical activity and health outcomes or risk factors was synthesized. The expert working groups concluded that the cumulative body of scientific evidence continues to support the strong dose response relationship and benefits of physical activity

² Physical Activity Guidelines Advisory Committee. Physical Activity Guidelines Advisory Committee Report, 2008. Washington, D.C.; 2008.

across a wide range of non communicable diseases. For chronic disease prevention and health promotion, the data from a large number of studies evaluating a wide variety of health outcomes in diverse populations generally supports a recommendation for adults of ≥ 150 minutes/week of moderate intensity physical activity.

25. Adults who smoke

Measure: Age-standardised percentage of persons aged 16 and over who reported being a current smoker (smoking daily or occasionally).

Key reference: Public Health Wales Observatory, Welsh Government. *Tobacco and health in Wales*. Cardiff: Public Health Wales NHS Trust, Welsh Government; 2012. Available [here](#)
This reports that smoking is estimated to be the cause of around 30 per cent of the total inequality in deaths rates between the most and least deprived areas in Wales. It is the greatest single cause of avoidable mortality in people aged over 35 and causes nearly one in five of all deaths. Smoking is estimated to cause around 27, 700 hospital admissions each year in Wales placing a considerable burden on the health service.

26. Adults drinking above guidelines

Measure: Age standardised percentage of persons aged 16 and over drinking above guidelines recommended by the Chief Medical Officers for Wales

Key reference: Public Health Wales Observatory. *Alcohol and health in Wales 2014. Wales profile*. Cardiff: Public Health Wales NHS Trust; 2014. Available [here](#)
Alcohol remains a major cause of death and illness in Wales. Around 1,500 deaths in Wales are attributable to alcohol each year (4.9% of all deaths). There were around 250 alcohol-specific deaths in males and 140 in females per year in Wales, based on the period 2010-12, and alcoholic liver disease accounts for the majority of these. Mortality rates are higher in Wales than in England. There were 10,200 alcohol specific hospital admissions in Wales in 2012/13. Data from the Welsh Health Survey 2012 (WHS) suggested that 42% of adults drank above guidelines.

27. Teenage pregnancies

Measure: The teenage conception rate among females aged <18 expressed as a rate per 1000 females aged 15-17.

Key source: Office of National Statistics rationale for measuring teenage conceptions because they may be associated with poor educational achievement, poor physical and mental health (for both mother and child), social isolation and poverty. Socio-economic disadvantage can be both a cause and a consequence of teenage motherhood; Available [here](#)

28. Smoking in pregnancy

Measure: The percentage of pregnant women who are smokers at 36-38 weeks. Wherever possible, data informing this indicator will be validated via carbon monoxide testing (i.e. CO-validated). Where not CO-validated, this will be the self-reported smoking status of the mother.

Key references:

National Collaborating Centre for Women and Children's Health. *Antenatal care routine care for the healthy pregnant woman*. London: RCOG; 2008. Available [here](#)

This guideline notes that smoking is a significant modifiable cause of adverse pregnancy outcome in women and its dangers have been widely established. The guideline reports meta-analyses that have shown significant associations between maternal cigarette smoking in pregnancy and increased risks of perinatal mortality, sudden infant death syndrome, placental abruption, preterm premature rupture of membranes, ectopic pregnancies, placenta praevia, preterm delivery, miscarriage, low birthweight and the development of cleft lip and cleft palate in children.

U.S. Department of Health and Human Services. *The health consequences of smoking—50 years of progress: A Report of the Surgeon General*. Atlanta: Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health: 2014. Available [here](#)

This report is based on a systematic review. One its major conclusions is that exposure to second-hand tobacco smoke has been causally linked to cancer, respiratory, and cardiovascular diseases, and to adverse effects on the health of infants and children.

29. Breastfeeding at ten days

Measure: The percentage of babies exclusively breastfed at 10 days following birth

Key reference: Victora CG et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet* 2016; 387(10017):475-90. Available [here](#)

The authors of this review of systematic reviews and meta-analyses conclude that children who are breastfed for longer periods have lower infectious morbidity and mortality, fewer dental malocclusions, and higher intelligence than those who are not breastfed; the evidence suggests that greater benefits accrue with increasing duration of breastfeeding; growing evidence suggests that breastfeeding might protect against overweight and diabetes later in life. The review authors also conclude that breastfeeding benefits mothers; it can prevent breast cancer, and might reduce the risk of diabetes and ovarian cancer.

30. Vaccination rates at age four

Measure: Percentage of children who received the following scheduled vaccinations at age four; four in one pre-school booster (against diphtheria, tetanus, pertussis and polio); Pneumococcal conjugate booster; Hib/Men C booster (against Haemophilus influenzae type b (Hib) disease and meningitis C disease); Two doses of MMR (against measles, mumps and rubella)

Key sources:

World Health Organization rationale for immunisation programmes. Available [here](#).

The World Health Organization estimates that 3 million lives are saved every year worldwide through immunisation. Illnesses such as diphtheria and tetanus are now rare because of immunisation. Polio was declared eliminated in Europe in 2002 through immunisation but the threat of other diseases such as measles and meningitis is still present in the UK today.

The Green Book (UK guidance on immunisation for health professionals) notes that whilst the primary aim of immunisation is to protect the individual receiving a vaccine, vaccinated individuals are less likely to be a source of infection for others reducing the risk of infection for unvaccinated individuals. When vaccine coverage is

sufficient to induce a high level of population immunity (herd immunity) infections can be eliminated. However, diseases could return if high coverage is not maintained. Available [here](#)

31. Low birth weight

Measure: The percentage of live-born babies whose birth weight is <2500g. Measured as for national indicator to monitor the well-being goals of the [Well-being of Future Generations \(Wales\) Act 2015](#).

Key reference: United Nations Children's Fund and World Health Organization, *Low birthweight. Country, regional and global estimates*. New York: UNICEF; 2004. Available [here](#).

Low birthweight is closely associated with foetal and neonatal mortality and morbidity, inhibited growth and cognitive development, and chronic diseases later in life.

32. Children age five of healthy weight

Measure: The percentage of children in reception year (age four to five years) who are of healthy weight.

33. Adolescents of healthy weight

Measure: The percentage of children age 11-16 who are of healthy weight.

Key source for indicators 30 and 31: The National Obesity Observatory (now Public Health England) have summarised evidence on the possible health risks associated with childhood obesity. These include; type 2 diabetes; asthma; obstructive sleep apnoea; increased cardiovascular risk factors; risk of mental ill health and musculoskeletal problems. Available [here](#)

34. Tooth decay among five years olds

Measure: The average number of decayed, missing or filled teeth in children aged 5 years.

Key reference: National Institute for Health and Care Excellence. *Oral health: local authorities and partners*. PH55. London: NICE; 2014. Available [here](#)

This NICE guidance emphasises the importance of oral health to general health and wellbeing. Oral diseases are also associated with heart disease, diabetes complications, rheumatoid arthritis and pregnancy complications. Dental caries are one of the most common oral health problems in the UK. There is a socioeconomic gradient in oral health. The prevalence of dental caries tends to be higher in areas with greater levels of deprivation.

35a. Working age adults in good health

Measure: The percentage of adults aged 16-64 reporting being in good or very good health.

Key source: World Health Organization definition of health and rationale for the wider determinants of health; Available [here](#)

35b. Older people in good health

Measure: The percentage of persons aged 65+ who report their health as good or very good

Key source: World Health Organization definition of health and rationale for the wider determinants of health; Available [here](#)

36a. Working age adults free from life limiting illness

Measure: The percentage of adults aged 16-64 reporting they are free from limiting long term illness (LLTI).

36b. Older people free from life limiting long term illness

Measure: The percentage of persons aged 65+ who report they are free from LLTI.

Key source 36a and 36b: Self reported LLTI has been used for the Census as a measure of the health of the population. Available [here](#)

Key reference 36a and 36b: Cohen G, Forbes J, Garraway M: Interpreting self reported limiting long term illness. *BMJ* 1995; 311:722. Available [here](#)

This cross sectional study found that self reported LLTI was strongly associated with physical limitations on activity but was less strongly influenced by scores on scales of social and mental wellbeing.

37a. Life satisfaction among working age adults

Measure: The percentage of persons aged 16-64 who rate their satisfaction with their life as 7 out of 10 or higher.

37b. Life satisfaction among older people

Measure: The percentage of persons aged 65+ who rate their satisfaction with their life as 7 out of 10 or higher.

Key source 37a and 37b: Organization for Economic Cooperation and Development. *OECD guidelines on measuring subjective well-being*. OECD Publishing; 2013. Available [here](#)

This document makes the case for using subjective measures of well-being at national level. It argues that being able to measure people's quality of life is fundamental when assessing the progress of societies. Subjective well-being (life satisfaction), that is how people think about and experience their lives, is seen as an essential component of overall quality of life.

38a. Working age adults of healthy weight

Measure: The percentage of adults aged 16-64 who are of healthy weight (BMI ≥ 18.5 and < 25)

Key references:

Kopelman P: Health risks associated with overweight and obesity. *Obesity Rev* 2007 8 suppl (1) 13-17. Available [here](#)

This paper is one of the short science reviews undertaken for the Foresight project (Reducing obesity; future choices). The author notes that overweight and obesity cause or exacerbate a large number of health problems, both independently and in association with other diseases, and are among the most significant contributors to ill health. The risks and diseases associated with increasing bodyweight include an increased risk of coronary heart disease, stroke and renal failure; low back pain and osteoarthritis; type 2 diabetes; increased risk of cancer particularly endometrial, breast and colon cancers; reproductive and urological problems;

respiratory problems; liver disease; gastrointestinal disease and psychological and social problems.

Cao S et al. J-shapedness: an often missed, often miscalculated relation: the example of weight and mortality. *J Epidemiol Community Health* 2014; 68 (7): 683-690

This reanalysis of a meta-analysis on the impact of overweight and obesity on all cause mortality³ reports that the relationship between weight and mortality is not linear and found that underweight (BMI <18.5 kg/m²) was associated with the highest risk of all cause mortality relative to normal BMI. This association was found in those studies that controlled for age, sex and smoking status and had the longest follow up.

38b. Older people of healthy weight

Measure: The percentage of adults aged 65+ whose body mass index is equal to or greater than 18.5 and less than 25.

Key references:

Chang SH et al. A systematic review of body fat distribution and mortality in older people. [Review]. *Maturitas* 2012; 72 (3): 175-191. Available [here](#)

This systematic review found that the optimal BMI range associated with the lowest mortality in the elderly was overweight (BMI 25kg/m² to <30kg/m²) or mildly obese (BMI 30kg/m² to <35kg/m²).

Winter JE et al. BMI and all-cause mortality in older adults: a meta-analysis. *Am J Clin Nutr* 2014; 99 (4): 875-890

This meta-analysis found that for older populations being overweight was not associated with an increased risk of mortality. However, there was an increased risk of mortality for older adults who were underweight (BMI <23.0)

39. Hip fractures among older people

Measure: The age standardised rate per 100,000 of emergency admissions for hip fractures in persons aged 65+

³ Flegal KM et al. Association of all-cause mortality with overweight and obesity using standard body mass index categories. *JAMA* 2013; 309:71–82.

Key reference: Scottish Intercollegiate Guidelines Network (SIGN). *Management of osteoporosis and the prevention of fragility fractures*. SIGN 142. Edinburgh: SIGN; 2015. Available [here](#)
This SIGN guideline notes that hip fracture in older people is a significant cause of morbidity and mortality. In addition some of the risk factors associated with hip fracture are preventable or treatable. These include low bone mineral density, alcohol intake, low BMI (<20kg/m²), smoking, physical inactivity and coexisting disease including diabetes and depression.

40. Premature deaths from key non communicable diseases

Measure: Age standardised mortality rate per 100,000 in persons aged 30-70 years from cardiovascular diseases, cancer, diabetes or chronic respiratory disease.

Key source: Data from the Global Burden of Disease Study shows that in 2013 the highest ranking causes of years of life lost because of premature mortality in the UK were ischaemic heart disease, lung cancer and cerebrovascular disease. The highest ranking risk factors for disability adjusted life years (DALYs) (the sum of years of healthy life lost because of premature death and years lived with a disability) were tobacco smoke, dietary risks and high body mass index. Available [here](#)

41. Deaths from injuries

Measured: Age standardised mortality rate per 100,000 from external causes.

Key source: World Health Organization rationale for the public health significance of deaths from injuries as an avoidable cause of mortality. Globally injuries account for nine per cent of all deaths. Available [here](#).

Data from the World Health Organization show that in the UK in 2015 injuries accounted for three per cent of deaths in children under 5 years. In the European Region in 2012 2,421 years of life were lost per 100,000 years as a result of death from injuries. Available [here](#)

42. Deaths from road traffic injuries

Measure: Age-standardised mortality rate per 100,000 from road traffic injuries.

Key source: In the UK in 2013 the Global Burden of Disease Study found that deaths attributable to road traffic injuries were ranked

the fourteenth highest cause of years of life lost because of premature mortality. Available [here](#)

43. Suicides

Measure: The age-standardised rate of deaths from intentional self-harm aged 10+ and from intentional self-harm or injury/poisoning of undetermined intent aged 15+ per 100,000, males and females aged 10+.

Key source: In the UK in 2013 the Global Burden of Disease Study found that deaths attributable to self harm were ranked the tenth highest cause of years of life lost because of premature mortality (YLLS). Deaths from self harm accounted for 280.3 YLLS per 100,000 (all ages, age standardised). Available [here](#)

Method

This bibliography was developed using literature searches to identify existing sources which provide some evidence as to why the indicator is important for monitoring population health and well-being. Where high level sources such as published systematic reviews or evidence syntheses/statements/guidelines from recognised (for example, expert body) sources (for example, evidence syntheses based on systematic reviews) were available, these were selected. Where no such sources were found for a specific indicator primary studies have been included. Sources have not been selected on the basis of an evidence review following systematic review principles and an explicit methodology, set out *a priori* in a protocol, which is transparent, repeatable and which aims to minimise bias. This means that the sources and references included here should not be considered to provide an objective, reliable synthesis of the totality of the available evidence base. No critical appraisal of the included sources has been conducted; systematic reviews or evidence reviews following systematic review principles would normally include critical appraisal of their primary sources but the reliability of any primary sources we have included remains unchecked.