Answers to Questions on Notice

Recent peer-reviewed articles indicating that the direct health costs of lifetime health for obese and overweight people are greater than for healthy people

There are two very recent (2014 and 2015) peer-reviewed articles that estimate lifetime health costs of obesity (1,2). These studies are particularly pertinent to the Committee as they take the history of obesity in childhood into account. Relative to a normal weight child, both studies found overweight and/or obesity increased lifetime health costs.

One study estimated healthcare costs of overweight and obese children over the adult lifecycle, in Germany (2). The authors developed a two-stage Markov cohort state transition model[1]. When compared with normal weight adults, lifetime excess costs are higher among adults who had been overweight or obese at any point during childhood; 3.7 times in men and five times in women. The expected lifetime excess costs were higher for women, primarily due to higher life expectancy and higher healthcare expenditures.

The other peer-reviewed article is a literature review containing six studies (1). The authors reviewed the literature to identify the best current estimate of the incremental lifetime per capita medical cost of an obese child in the United States (today) relative to a normal weight child. Based on this analysis, an obese child relative to a normal weight child who maintains normal weight throughout adulthood ranges between $16,310 and $19,350, with three of the four studies clustering closer to the upper bound estimate. If one considers eventual weight gain among normal weight youth, estimates range between $12,660 and $19,630. Thus the costs are considerably less for the normal weight child.

In response to the van Baal et al paper (3) cited by the Hon Dr Peter Phelps, we note that the study has a number of methodological flaws. These flaws include the calculation of the average healthcare costs and that the validity of the results relies strongly on key assumptions that are not demonstrated. The analysis assumes that the cost of an incidence of the 22 key diseases is independent of the risk factors being tested. Likewise, remaining healthcare costs, which account for 85% of healthcare spending in the Netherlands, are assumed to be uncorrelated to risk factors. Given that this latter class of spending dwarfs the former, the importance of demonstrating the lack of correlation is particularly important and has not been preformed. The incidence and prevalence of numerous co-morbidities with obesity argues, in fact, that one might reasonably expect to find that the annual health costs are higher in the obese and that the cost of treatment in the last months preceding death may be quite different from the non-obese. Furthermore the article makes no mention of patient contributions to the healthcare system including those derived indirectly through increased participation in the work force and increased cumulative taxation. The analysis therefore presents a skewed picture of the true financial effects of prevention on the healthcare system.

[1] At stage 1, the distribution of body mass index (BMI) categories was tracked from childhood (ages 3-17) to adulthood (age 17 and up). Based on these results, it was distinguished whether adults had been normal in weight or overweight/obese as child. At stage 2, age-specific and lifetime costs from age 18 onwards were simulated in two further Markov cohort models, one for each of the two BMI groups. Model parameter values were obtained from the German Interview and Examination Survey for Children and Adolescents, the German Microcensus 2009 and published literature.

How the revenue generated by the sugar sweetened beverage tax is raised and the type of programs that will utilise it

The World Health Organization has very recently published guidance on this area in the report Fiscal policies for diet and prevention of non-communicable diseases (4). The earmarking of tax revenues is used in many countries, including in connection with taxes for health promotion. Earmarking may be aimed at strengthening health promotion actions, for example, by funding education campaigns or healthy food subsidies, or at limiting the regressive impact of taxation (when the impact is indeed regressive). In all cases, earmarking will improve the transparency of the taxation process and use of revenues, which will increase the acceptability of the tax by politicians and the general public. When the objective of the tax policy is health, rather than solely economics, it may be easier to discuss earmarking for health in that context.

How the revenue generated by the sugar-sweetened beverage tax will assist in subsidising healthy food

Vulnerable populations, including low-income consumers, young people, and those most at risk of obesity, are most responsive to changes in the relative prices of foods and beverages. Well-designed taxes targeting non-core foods with close, healthier (untaxed) substitutes may result in greater behaviour change and would minimise tax regressivity. There is potential for taxes to be further supported by complementary subsidies targeted to low-income populations. Low-income populations have the largest health benefit from taxes, because their pre-tax sugar-sweetened beverage (SSB) consumption is high and post-tax reductions in consumption are relatively large. The benefits for these populations are even higher if tax revenues are used for targeted obesity prevention and health promotion programmes and if targeted subsidies for healthier options exist. There is likely to be little tax avoidance and evasion in response to an SSB tax. The strength of governance and presence of informal distribution networks have a greater effect than tax and price levels in driving tax avoidance and evasion (4).

The evidence for meaningful health effects is strongest for taxes on SSBs, with suggestions that SSB prices would need to be raised by 20%, or more. Such taxes lead to more than proportional reductions in SSB consumption and net reductions in caloric intake, and thus contribute to improving nutrition and reducing overweight, obesity and non-communicable diseases. Similarly strong evidence shows that subsidies for fresh fruits and vegetables, that reduce prices by 10-30%, are effective in increasing fruit and vegetable consumption. While evidence is mixed on the net effect of fruit and vegetable subsidies on net caloric intake and weight, overall diet quality improves, with a resulting improvement in health outcomes. Greater effects on the net energy intake and weight may be accomplished by combining subsidies on fruit and vegetables and taxation of target foods (4).

Countries that have implemented mandatory marketing regulations and what have they done

A 2011 briefing paper from the Parliament of Australia, Social Policy Section provides an overview of regulation covering Ireland, Scandinavia, United Kingdom, Canada, France and the United States of America (5). The Québec Consumer Protection Act (QCPA) is held as a model internationally, subject to some modifications to improved effectiveness in controlling cross-border leakage (6). Since 1980, the QCPA has prohibited all commercial advertising (not just foods and beverages) directed at children under 13 years of age. The Act also withstood a Supreme Court challenge in 1989. QCPA has some limitations which the international consensus statement (6) is designed to address: ‘Child-directed' means that children may still be exposed to advertising as long as the advertisement is not

considered to 'appeal' to children. The Act only protects children during peak viewing times (with children at least 15% of the viewers). The international consensus recommendations are for a regulatory system prohibiting commercial marketing of foods and beverages to children and suggest that effective regulations must set minimum standards, monitor compliance, and enact penalties for non-compliance (6).

Detailed breakdown of the $2.7 billion financial costs

The value of $2.7 billion is a 2008 estimate of the cost of obesity in NSW, as shown in Table 1 (7). Please note that in 2007-2008, according to the Australia Bureau of Statistics, 61% of Australian adults were either overweight or obese (8), in 2011-12 (the most recent statistics), this has risen to 62.8% (9).

Table 1. Costs of obesity by state or territory ($ millions) in 2008

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	Australia
% Population	32.7%	24.8%	20.0%	10.1%	7.5%	2.3%	1.6%	1.0%	100.0%
BoD	16,318	12,358	9,961	5,020	3,750	1,168	803	513	49,896
Health System	641	485	391	197	147	46	32	20	1,959
Productivity	1,187	899	724	365	273	85	58	37	3,629
Carers	619	469	378	190	14	44	30	19	1,893
DWL	238	180	145	73	55	17	12	7	727
Other indirect	25	19	15	8	6	2	1	1	76
Total financial	**2,709**	**2,052**	**1,654**	**833**	**623**	**194**	**133**	**85**	**8,283**
Total inc. BoD	**19,027**	**14,410**	**11,614**	**5,853**	**4,373**	**1,362**	**936**	**598**	**58,179**

Abbreviations: ACT Australian Capital Territory, BoD burden of disease, DWL deadweight loss, NSW New South Wales, NT Northern territory, QLD Queensland, SA South Australia, TAS Tasmania, VIC Victoria, WA Western Australia

The "Total financial" figure is comprised of direct financial costs to the Australian health system related to obesity and co-morbidities (which includes the costs of running hospitals and nursing homes, GP and specialist services, the cost of pharmaceuticals, allied health services, research and other direct costs such as health administration); other financial costs (which include: productivity losses – short and long-term employment impacts and premature mortality; carer costs – the value of community care services provided primarily by informal carers; and deadweight loss from transfers – taxation revenue forgone, welfare and other government payments; and other costs – aids, equipment and modifications, transport and accommodation costs, respite and other government programs and the bring-forward component of funerals). These values are obtained from the costs of obesity, detailed in Table 2.

In order to estimate the economic costs of obesity in the Australian states and territories, 2008 population shares (according to the Australian Bureau of Statistics, NSW accounted for 33% of the population) were applied to the economic costs in Table 2.

Table 2. Cost summary of obesity ($ millions) in 2008

	Individuals	Family/ Friends	Federal Gov't	State Gov't	Employ-ers	Society/ Other	Total
Type 2 diabetes							
BoD	1,269	0	0	0	0	0	1,269
Health System	23	0	54	25	0	15	116
Productivity	277	0	162	0	3	0	442
Carers	0	456	23	0	0	0	479
DWL	0	0	0	0	0	76	76
Other indirect	6	1	0	0	0	0	7
Transfers	0	-18	18	0	0	0	0
Total financial	**305**	**439**	**257**	**25**	**3**	**90**	**1,119**
Total inc. BoD	**1,574**	**439**	**257**	**25**	**3**	**90**	**2,389**
CVD							
BoD	11,263	0	0	0	0	0	11,263
Health System	84	0	198	93	0	54	428
Productivity	334	0	138	0	0	0	472
Carers	0	217	90	0	0	0	306
DWL	0	0	0	0	0	184	184
Other indirect	0	0	0	0	0	0	0
Transfers	-16	-39	55	0	0	0	0
Total financial	**402**	**178**	**480**	**93**	**0**	**237**	**1,390**
Total inc. BoD	**11,665**	**178**	**480**	**93**	**0**	**237**	**12,653**
Osteoarthritis							
BoD	1,172	0	0	0	0	0	1,172
Health System	44	0	102	48	0	28	221
Productivity	164	0	397	0	0	0	561
Carers	15	0	0	0	0	0	15
DWL	0	0	0	0	0	47	47
Other indirect	9	0	0	0	0	0	9
Transfers	0	0	0	0	0	0	0
Total financial	**233**	**0**	**499**	**48**	**0**	**75**	**855**
Total inc. BoD	**1,405**	**0**	**499**	**48**	**0**	**75**	**2,027**
Cancer							
BoD	3,542	0	0	0	0	0	3,542
Health System	21	0	50	23	0	13	107
Productivity	136	0	80	0	2	0	218
Carers	0	2	1	0	0	0	3
DWL	0	0	0	0	0	51	51
Other indirect	19	2	2	0	0	1	24
Transfers	-21	-2	24	0	0	0	0
Total financial	**154**	**2**	**157**	**23**	**2**	**66**	**403**
Total inc. BoD	**3,696**	**2**	**157**	**23**	**2**	**66**	**3,945**
Total							
BoD	17,246	0	0	0	0	0	17,246
Health System	172	0	403	189	0	109	873
Productivity	911	0	777	0	5	0	1,693
Carers	15	674	114	0	0	0	804
DWL	0	0	0	0	0	358	358
Other indirect	34	3	2	0	0	1	40
Transfers	-37	-60	97	0	0	0	0
Total financial	**1,095**	**618**	**1,393**	**189**	**5**	**468**	**3,767**
Total inc. BoD	**18,340**	**618**	**1,393**	**189**	**5**	**468**	**21,013**

Abbreviations: CVD cardiovascular disease, BoD burden of disease, DWL deadweight loss,

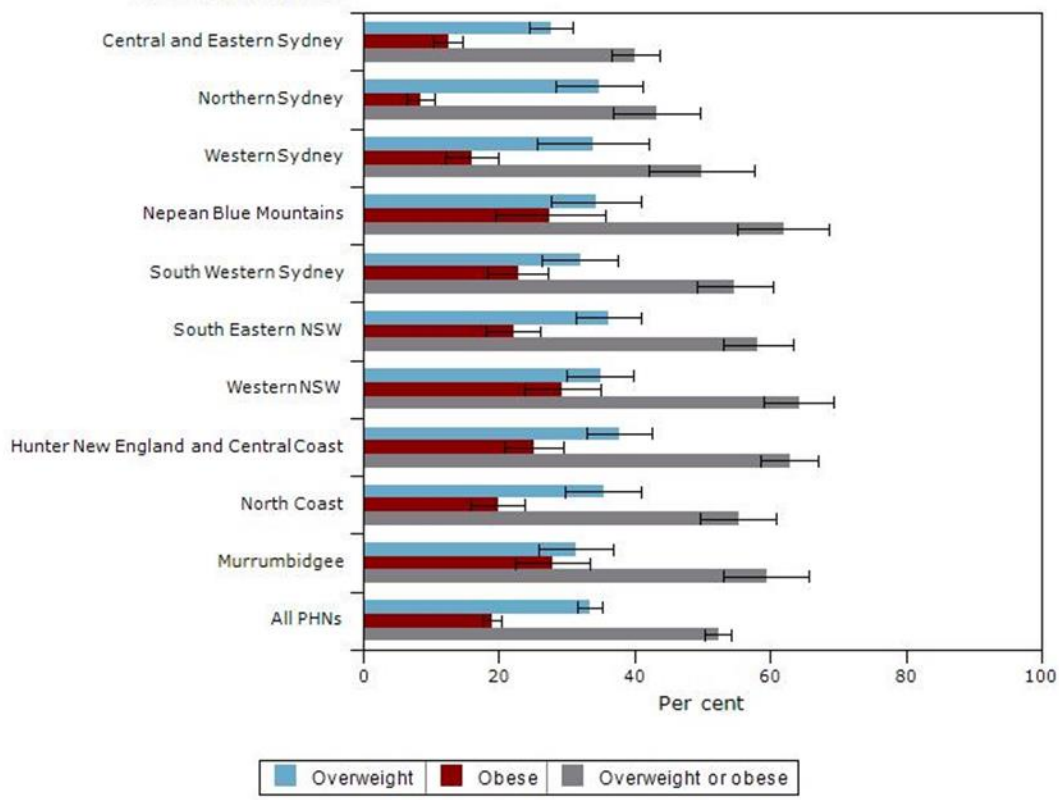
The unit costs were updated to 2008 by inflating direct health costs per case by the Australian Institute of Health and Welfare health inflation of 3.1% per annum over 2005-2008; productivity losses and carer costs per case by 12.10%, based on the Australia Bureau of Statistics Wage Price Index; and other financial costs per case by 10.6%, based on the Reserve Bank of Australia's Consumer Price Index.

The relationship between overweight and obesity by socio-economic status

Australians who live in remote or outer regional areas in Australia are more likely to be obese. Around 1 in 5 adults in these areas are obese compared to around 1 in 7 in inner cities (10). Data from the 2015 NSW Population Health Survey (Table 3) shows a higher prevalence of overweight and obesity in the western suburbs of Sydney (61.9% in the Nepean Blue Mountains Primary Health Network), in regional/rural areas (62.9% in the Hunter New England and Central Coast Primary Health Network) and particularly in remote NSW (64.3% in Western NSW Primary Health Network), as compared to Central and Eastern Sydney Primary Health Network (40.1%) (11).

Alternatively, using Socio-Economic Index for Areas (SEIFA) , in 2012 Australian adults living in areas with the most disadvantage were around twice as likely to be obese than those in the areas with least disadvantage (10). SEIFA ranks areas according to relative advantage or disadvantage. It is based on a range of characteristics of the population living in the area including income levels, education levels and English proficiency.

Table 3. Overweight or obesity by Primary Health network, persons aged 16 years and above, NSW 2015



Maps that provide data for overweight and obesity prevalence according to differences in socio-economic status of the household or neighbourhood can be accessed at: http://www.worldobesity.org/resources/overweight-obesity-economic-status/. Socio-economic status is calculated using measures of occupational or employment status of the head of household, household income levels, or neighbourhood deprivation using indicators such as numbers of households claiming welfare benefits and child support payments.

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