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Public policy and the market for dental services

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Abstract – Social inequality in access to oral health care is a feature of countries with predominantly privately funded markets for dental services. Private markets for health care have inherent inefficiencies whereby sick and poor people have restricted access compared to their healthy and more affluent compatriots. In the future, access to dental care may worsen as trends in demography, disease and development come to bear on national oral healthcare systems. However, increasing public subsidies for the poor may not increase their access unless availability issues are resolved. Further, increasing public funding runs counter to policies that feature less government involvement in the economy, tax policy on private insurance premiums, tax reductions and, in some instances, free-trade agreements. We discuss these issues and provide international examples to illustrate the consequences of the differing public policies in oral health care. Subsidization of the poor by inclusion of dental care in social health insurance models appears to offer the most potential for equitable access. We further suggest that nations need to develop national systems capable of the surveillance of disease and human resources, and of the monitoring of appropriateness and efficiency of their oral healthcare delivery systems.

Key words: health policy; health services accessibility; oral health

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Despite the improvement in oral health among children and younger adults in the postfluoride era (1) in many industrialized countries, marked social inequalities in oral health remain. Affluent, better educated, families have less disease than poorer, less-educated families, but access to care for the prevention and treatment of oral diseases is determined, in large part, by individuals' ability to pay. Hence, access tends to be greatest in those groups with fewer needs (2, 3). Worse, in developing countries, the oral health needs among all economic classes often overwhelm national oral healthcare resources (4).

Public funding of health care provides a means of overcoming the divergence between ability to pay for care and need for care and offers the opportunity for improving both efficiency (increasing oral health gains produced from available oral healthcare resources) and equity (removing barriers to access to services associated with individuals' income or wealth).

However, over the last quarter century much attention has been given to reducing the role of governments in the everyday life of populations. The rationale for this trend has been two-fold: first as a response to perceived inefficiencies in the management and delivery of public services; and second, as a basis for supporting greater individual choice. Consistent with this trend, public health policy has looked towards more market-oriented solutions to the problems of allocating healthcare resources, either by privatization of services or the introduction of 'internal competition' within publicly funded services. This trend coincided with, or may have been driven by, political priorities for reduced public expenditures and associated tax cuts.

The increased emphasis on private markets and competition in health service delivery has often overlooked public goals for health care and hence the original rationale for public sector involvement. Individuals do not consume health care for its own intrinsic value, but instead for the expected impact

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on health. Hence, efficiency in the use of healthcare resources requires that those resources be employed in ways that make the greatest impact on the health of individuals and populations.

However, health care represents a combination of particular characteristics that results in private markets' inefficient use of healthcare resources – what economists call market failure. Individuals' capacity to purchase health care is least when their need for health care is greatest. Thus, under private markets, health care will be consumed by those in less need and hence less 'ability to benefit' from care. Further, while income supplements could be used to deal with problems of ability to pay among the poor, health care incorporates characteristics of uncertainty, externalities and asymmetry of information between consumer and producer, that means income supplements alone are insufficient to address market failures in health care (5). Private markets for oral healthcare services are not 'immune' from the market failures associated with medical care, and like medical care markets, they make no pretense of attempting to achieve allocations of services that reflect relative needs for care.

Despite these observations, in many jurisdictions oral health care has received little attention from governments with public policy often being limited to the regulation of providers. As a result, large parts of the population have to 'purchase' services from private providers (dentists) through 'out of pocket' payments or private insurance. The relative scarcity of publicly funded oral health care has been largely attributed to 'affordability' for governments and in most countries oral health care falls well down the list of governments' funding priorities.

Canada provides an interesting example of the priorization of healthcare services by public policy. Under the Canada Health Act (CHA), the federal government sets standards for provinces to meet in order to qualify for federal transfer payments for health care. The legislation is largely aimed at physician and hospital-based services. Comparisons of self-reported utilization rates from national survey data showed that the probability of visiting a family physician is independent of household income. This contrasts with the observed probability of visiting a dentist (not covered by the CHA and hence not publicly funded) which is positively associated with household income (2, 6). However, total spending on oral health services in Canada ranks second only to expenditure on cardiovascular diseases (7).

In this paper, we briefly point to the context of demography, disease and development in which policy needs be considered. We question the lack of public policy on access to oral health services. We identify national goals for access to oral health and consider whether these goals have been supported by public policy. Finally, we consider the requirements to actively support oral health care for all and identify potential financial and legal implications for policy development aimed at improving the oral health of populations through improving access to oral healthcare services.

Setting the policy agenda – the context

Policy development for oral health must not simply respond to the problems of the past and present but also anticipate the challenges of the future as defined by trends in and interactions among demography, disease and national development.

Demography

The major demographic trend is the world-wide ageing of the population brought about by falling birth rates and decreases in premature death. The Population Division of the United Nations estimates that the proportion of the world's population over age 60 will increase from 10% in 2000 to 30% by 2150. The proportion over age 80 is estimated to increase from 1% to 10% over the same period (8). Compounding the issue further is the trend in industrialized countries for older people to retain more natural teeth (9, 10) increasing the need for treatment of dental caries and periodontal diseases in older populations.

However, in almost all societies, older adults are disadvantaged with respect to access to both care (11, 12) and oral health which suggests that even in developed countries the care delivery systems are unprepared to meet the needs of the future elderly (13, 14). This has led to a recent review (15) and at least two recent conferences (16, 17) examining policies to meet the current and anticipated needs of the elderly. Finding new funding and delivery systems will be necessary to reach the elderly, especially those who have low incomes and limited mobility (18).

Disease

In 2006, the United Nations AIDS program (UNAIDS) estimated that over 4 million people worldwide became newly infected, bringing the

total of those living with HIV to about 40 million. The pandemic does not pass over healthcare workers, so to the extent that they are infected and eventually unable to work, the capacity of the healthcare system is diminished. Those affected with HIV often have worse oral health and higher needs (19) so policies need to recognize the additional resources required to treat them. Oral healthcare policy also needs to consider the role of oral health care providers in programmes to reduce the epidemic (20, 21).

As for more conventionally defined oral conditions, oral cancer, a disfiguring disease with often fatal outcomes, is the sixth most common cancer in the world (22). World-wide, oral cancer is determined by the ageing of the population, tobacco and alcohol use, plus, in some cultures, the chewing of the areca nut.

In the United States of America (USA) and most other developed countries, dental caries in children and adults has been declining (1). However, more recent reports from the United States (23) and Australia (24) point to evidence that decline may have levelled-off or reversed. Among developing countries, the trend may be towards higher prevalence and severity (25). In the majority of countries, 100% of adults have been affected, and those who are dentate remain susceptible to both coronal and root caries. However, for low income countries to adopt the model of diagnosing and treating caries in the industrialized world would require expenditures that exceed total health expenditures on children in these countries (26).

Trends in the periodontal diseases are difficult to document because of the changing understanding of the diseases, and the lack of comparability of more recent indices with those used in the past. One study from the USA shows that when using a standard case-definition, the disease has declined in prevalence over the period 1988 to 2000 (27). Generally, reviewers hold that the more severe forms of the disease are confined to a minority of the population but that milder forms of periodontal diseases are highly prevalent in all regions of the world (25).

In addition to the diseases discussed above, dental malocclusion, oral mucosal lesions, noma and oral trauma add to the burden of illness of oral diseases. All contribute to pain, reduced function, stigma and diminished quality of life.

Development

With development comes the increasing expectation of improved health care and more sophisticated health services delivered through a private market approach. Irrespective of whether this arises from imposed economic reforms or the adoption of increasingly liberal political philosophies, this trend is observed even in countries that formerly have had oral health care distributed on the basis of social needs (e.g., nations in the former Soviet bloc (28) and others (29)). However, experience in an affluent country demonstrates that this model is unlikely to be sustainable (30).

Setting the policy agenda – access and oral health goals

The 1978 Declaration of Alma Ata (31) established an international benchmark for governments by defining health as a fundamental human right and providing explicit recognition that governments have a responsibility for the health of their people which can be fulfilled ' . . .only by the provision of adequate health and social measures...'. An essential element of this responsibility was ensuring access to primary health care to all members of the population at a cost that community and country could afford.

At the national level, oral health goals range from concern with levels of oral health in the population to providing the opportunity for individuals to use services. For example, Australia's national oral health plan specifies goals for: (a) improving oral health status across the Australian population by reducing the incidence and prevalence of oral disease, and (b) reducing the inequalities in oral health status across the Australian population (32). In contrast, the UK's oral health plan for England sets out a vision for people to 'continue to enjoy a standard of oral health which is among the best in the world', but limits the goal of oral health policy to 'reducing inequalities by enabling people to take control of their own oral health' (33). So, while Australia sees its goals being achieved through the reduction of the incidence of disease, the UK seeks to achieve goals through a non evidence-based enabling approach, putting in place the conditions under which (it is hoped) the behaviour and actions of individuals and communities acting independently will lead to the desired public outcome.

The World Health Organization' s (WHO) global oral health goals for 2020 outline the framework for goals and objectives but avoid specifying specific levels for targets that member nations should aim

for (34). Countries with measurable oral health goals include the United States (35), Northern Ireland (36) and South Africa (37). For example, the US report on Healthy People 2010 specifies a goal of reducing ' the percent of 2–4 -year-old children with caries experience from 18% (1988–94) to 11% (2010)...'. and describes strategies or actions (38) for adoption. Canada's oral health strategy (39), however, specifies only the areas in which goals should be developed. None of these documents identifies measurable goals for access to care.

Areas for potential development of policies on access to oral health

Gaps between needs for care and service delivery can be addressed by policies aimed at reducing needs for care, or at improving access to care for those with needs, or at a combination of these approaches.

Reducing needs for care

Oral health levels have improved over time in many countries, with at least part of these changes being the result of attempts to manage needs for care through improved diets, oral hygiene and especially the use of fluoride in toothpastes and water supplies. Further improvements in oral health status though behaviour (e.g. reduced tobacco use) and dietary changes and improvements in oral hygiene are dependent on the widespread adoption of such changes across the population and especially among high needs groups. The potentially higher cost per unit benefit of water fluoridation in settings with sparse populations or several water treatment points may be the price that has to be paid to ensure universal coverage of population-based primary prevention methods.

Improving access to care

Despite the need for population-based primary prevention policies, prompt access to effective primary care is essential for secondary prevention. Policies aimed at improving access to health care tend to focus on the affordability of services, ensuring that the prices of services are not a barrier to individuals receiving the care that they need. However, access also depends on care being available and acceptable to individuals. Availability refers to individuals being able to find providers able and willing to deliver services that the patient needs while acceptability refers to the services being provided in ways that are sensitive to the characteristics (e.g. gender, cultural and religious factors) of the individuals. Policies that remove the price barrier to care will have limited impact on access to care if providers are unwilling to locate in some areas of a country or unwilling to deliver services to patients at the rates of remuneration offered under publicly funded programmes. Hence, improving access to care as a means of achieving stated oral health goals will require policies that recognize and explicitly address this interdependence.

Affordability

Two broad policy approaches have been used to sever the link between needs and inability to pay - direct provision of services through a public health agency and the subsidization of the costs of using private providers. Under either approach, policies can be applied universally within a population (i.e. covering the whole population on equal terms) or aimed at, and limited to, target groups (e.g. children, the elderly, low income families). Policy developments concerned with the affordability of oral health care have tended to avoid universal programmes, instead targeting policies on either high-risk groups and/or those with financial hardship.

For example, in Australia and New Zealand substantial public funds are allocated to school-based dental therapist programmes while provision of care for adults is largely left to the private sector with little if any public subsidy. In the Nordic countries, Public Dental Services are funded to provide services to children free at the point of delivery. Even where universal public programmes for dental care have been adopted, such as in the United Kingdom following the introduction of the National Health Service, over time public funding has become increasingly focused on targeted groups with an increasing proportion of the cost of services for nontargeted groups being passed on to the patient (40).

A major problem with non-universal systems is that the publicly funded sector is competing with the privately funded sector for the time of providers who work in both. In the absence of any constraints on either prices or the range of services in the private sector, public sector provision may become unattractive to providers faced with sufficient private demand for their services.

In some publicly funded healthcare systems the impact of this 'leakage' to the private sector has been limited by the use of the economic power of governments as the sole (or predominant) funder of healthcare providers. Where providers have no substantial private market for their services, they are effectively 'captured' by the public system. The Social Health Insurance (SHI) systems of Western European countries provide examples of attempts to use the public sector's 'market power' to deploy oral healthcare resources in accordance with public goals. For example, under the German SHI, health care, including oral health care, is funded through state approved sick funds (41). Membership in a sick fund is compulsory for all salaried employees with payments to the funds based on both employee and employer contributions. Nonworkers (e.g. children, spouses, the unemployed) are covered by sick funds without contributions. Although the highest earners have the option of switching to a private insurance plan, this option is limited to the top 10% of earners. Because the SHI covers virtually all services (implants are not covered), there is only limited opportunity for providers to offer non-SHI services.

Availability

A major challenge for publicly funded systems is both distributing providers and maintaining the commitment of providers to the system. A universal publicly funded system involves 'nationalizing' payments for those services funded under the system. Terms and conditions of service, including remuneration levels, are then determined by negotiations between government departments and the provider associations. Because providers retain the 'right of exit', failure to provide attractive terms and conditions will result in them looking elsewhere either as an alternative place of employment or as a means of supplementing incomes from the publicly funded system.

Where providers are able to work simultaneously in both publicly and privately funded systems, the opportunity cost of time spent delivering services under the public system is the foregone earnings of using the same time providing services under the private system. So publicly funded payments need to be set in the context of rates of remuneration in the private system if providers are to see the publicly funded sector as a viable part of their activities. However, tight public sector budgets may prevent this occurring. As a result, many non-universal systems have been unable to attract sufficient providers to deliver services under public programmes.

In a case study in one large Canadian city, programmes targeted to the poor were found to exist in name only, as few if any dentists were willing to provide services at the rates of payment provided by the public programmes (40). Similarly, the publicly funded school dental service in Australia experienced shortages of dental therapists while waiting times for dental care at publicly funded community or hospital dental clinics for adults on social security increased. This followed withdrawal of funds provided by the Commonwealth Dental Health Programme (42). The school dental service in New Zealand faced a similar problem as the therapists left for more attractive opportunities. In the UK, reports indicate that 40% of dentists are not accepting new NHS patients while others accept a new child patient only if the parents register for private treatment (40). Attempts to resolve shortages of dentists accepting new NHS patients through the use of salaried dentists in self-contained Dental Access Centres (DACs) have not provided the solution. DACs have insufficient capacity to address the needs of all those presenting for care and so the range and type of services provided have been limited (43). More recently the imposition of a new target-based contract for general dental practitioners providing services under the NHS has been associated with a substantial reduction in the numbers of providers and amount of time devoted to NHS activity and consequently increasing problems for patients trying to access NHS funded services (44).

In brief, success in achieving improved access to care for some is more likely to be enhanced by policies aimed at improving access to care for all. The SHI approach in which for all, or virtually all, of the population the cost of care is covered by SHI funds appears in theory to offer the best prospect of improving access to oral health care in ways that are sustainable over time. But in practice, moving towards this type of system may be limited by both financial and legal constraints.

In contrast, targeted programmes not only exclude large groups of the population from benefits of improved access but this exclusion also creates a separate market that competes for the same provider time and makes it more difficult to achieve improved access to services for those covered by the programme. In this way the design of the targeted programme provides the seeds of its own failure.

Financial and legal implications of improving access

Financing improved access to oral health care. Improving access to oral health care through SHI would require substantial additional funds. Even though a considerable proportion of these funds might come from SHI contributions of employees and employers, additional funds would be required to cover the costs of those groups not in employment (children, the unemployed, retirees). Moreover, improvements in access to care generated by the programme would imply increased use of services. For example, the estimated oral healthcare expenditure per capita in Germany was 2.5 times that for the UK in 2000.

These anticipated increased costs need not be a barrier to moving in this direction. For example, in some countries, the SHI contributions would simply replace private insurance contributions made by large parts of the population. Moreover, effective management of SHI may lead to reductions in provision of limited-effectiveness care and of treatment for purely cosmetic reasons, leaving available dental resources to be used more effectively. In addition, the replacement of private insurance with SHI would free up substantial funds currently absorbed by the favourable tax treatment of private dental insurance. Spencer estimated that Australian tax rebates for dental care insurance amount to twice the public funds spent on dental care to eligible adults (42). Because the value of the rebate depends on the marginal rate of taxation, the subsidy of dental care increases with income, from $12 per capita in the lowest income group, to over $60 per capita in the highest income group.

In Canada, employer-based private health insurance for dental and nonpublicly funded health care (e.g. drugs, eyeglasses) is widespread. Employer-paid premiums are a business expense for the employers and therefore deducted from business earnings but the premiums are not taxed as part of the employees' remuneration. Smythe (45) estimated that the annual value of these foregone taxes was $2.28 billion in 1994. Government estimates of just the foregone federal-level income taxes associated with the favourable treatment of private health insurance, amounted to $2.64 billion in 2006.

The private market, maintained by tax policy, takes no account of efficiency or equity in the use of oral healthcare resources. Smythe (45) found that only 20% of low income households had some form of private health insurance compared to over 90% of high income households. Also the value of the tax 'saving' is determined by the individual's marginal rate of tax, with the benefit representing greater monetary value for higher tax rate individuals than for lower tax rate individuals. After allowing for these differences, Smythe calculated that the value of the tax reduction was about $250 per household for the highest income households, an estimated 500 times more than that among the lowest income households. Removal of this special tax treatment for premiums would potentially generate substantial extra revenue that could be used to support publicly funded programmes to improve access to dental care services. Perversely, the poor, who pay consumption taxes, end up subsidizing the tax-free dental care of the rich, in order to make up the foregone income tax revenue.

Legal barriers to improving access to oral health care:

Ostry notes that policies aimed at improving access to health care must consider the broader policy environment including international trade agreements, such as the World Trade Organisation's General Agreement on Taxes and Services (GATS) and, in the case of North America, the North American Free Trade Agreement (NAFTA) (46). Both agreements restrict policy options for improving access to dental care services. GATS covers domestic regulation of trade practices by enforcing the provisions of free trade, through the use of fines and sanctions of national governments, once a market for services have been opened. Existing 'markets' for services within a country must be open to providers from outside of the country. Similarly, where a government opens up a market (e.g. through the privatization of service provision), that market must be accessible to providers from outside that country. Any 're-nationalization' of a market for services would contravene GATS. For Canadians, NAFTA is based on two free trade provisions; a 'national treatment' provision, under which, for example, United States' and Mexican providers of goods and services must be treated in the same way as Canadian providers of the same goods and services and an 'expropriation' provision', under which compensation can be claimed by US and Mexican providers of goods and services where service provision is expropriated by the Canadian government.

Any attempt to extend existing legislation or to introduce similar but separate legislation to include

dental care under the publicly funded healthcare system would potentially contravene these provisions, given that 40 of the 149 insurance companies selling private health insurance to Canadians in 2002 were from the USA (46). This would appear to restrict potential policy developments on publicly funded dental care to services for that part of the population without private dental insurance. Although this would focus policy on those groups currently experiencing the greatest problems with access to dental care, it would also mean that governments could not use their potential economic power found under the many publicly funded medical programmes or that of the SHI systems, but instead would be 'competing' with the privately insured for the services of dental care providers.

Oral healthcare policy – conclusion and recommendations

Dental diseases are important, both for the proportion of nations' expenditures spent on their diagnosis and treatment and for their impact on pain, reduced function and employability. Further, the relationships between oral and general health are increasingly recognized as being reciprocal (47, 48) giving prominence to including more oral healthcare services in public policy and publicly financed healthcare systems.

Despite the high national costs of dental services (7, 25) for the poor, the aged and minority groups, it is clear that the current preventive and care delivery systems, even in the most developed societies, are not responsive to their needs (49–51). The priority goal must be to achieve equitable access to appropriate primary oral healthcare services (18, 52). Unfortunately, dental public health infrastructures in many countries are non-existent or at best weak. Chief Dental Officers and systems for documenting the burden of illness and descriptions of care-delivery systems are lacking, even in developed countries (53), leaving few skilled managers and policy advisors.

From this overview of global oral health policy, policies that seem consistent with improving oral healthcare systems include:

- increasing the public subsidy of care for the poor, minority groups, the elderly; and disadvantaged groups such as those living with HIV/AIDS; and
- developing new, or adapting current national systems so that they will achieve oral health with improved efficiency.

Both of these policies would seem to be optimized through including dental care in a social health insurance model. In addition, we would encourage developing policies to:

- support the use of appropriate population-wide preventive regimens (providing fluorides, reducing common risk factors) where they are likely to reduce dental caries for children, adults and seniors; and especially
- develop and maintain national systems capable of the surveillance of both disease, and human resources and the monitoring of appropriateness and efficiency of the nations' oral healthcare delivery system.

This assessment and these recommendations for improvement may not find support among the dental professions. For example, the American Dental Association sees lack of access primarily as an issue of fee-for service payments being inadequate to induce private practitioners to provide needed services to disadvantaged populations (54) (pg 1675).

Our recommendations for change address a wider horizon and as such are consistent with the policy paper issued by the Public Health Association of Australia (55), and a much earlier paper developed by the Institute of Medicine in USA (56). They are also consistent with much of the *Oral health action plan for promotion and integrated disease prevention* recently issued by WHO (57) and the relevant recommendations endorsed by the Federation Dentaire International (58) and recommended to the 60th World Health Assembly (59).

References

1. Milgrom P, Reisine S. Oral health in the United States: the post-fluoride generation. Annu Rev Public Health 2000;21:403–36.
2. Sabbah W. Utilization of dental care services: an analysis of the Canada Health Survey, 1994. Faculty of Dentistry. Toronto, ON: University of Toronto, 1998;1–101.
3. Marmot M. Health in an unequal world (Harveian Oration)(Lecture). The Lancet 2006; 368: 2081–94.
4. vanPalenstein Helderman W, Mikx F, Begum A, Adyatmaka A, Bajracharya M, Kikwilu E et al. Integrating oral health into primary health care - experiences in Bangladesh, Indonesia, Nepal and Tanzania. Int Dent J 1999;49:240–8.
5. Evans RG. Stained mercy: the economics of Canadian health care. Toronto, ON: Butterworths; 1984.
6. Birch S, Eyles J, Newbold B. Equitable access to health care: methodological extensions to the analysis of

physician utilization in Canada. Health Econ 1993;2:87–101.
7. Baldota K, Leake JL. A macroeconomic review of dentistry in Canada in the 1990s. J Can Dental Assoc 2004;70:604–9.
8. United Nations. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. Long-range world population projections based on the 1998 revision. Available at: http://www.un.org/esa/population/publications/longrange/longrange.htm (last accessed 12 May 2008). New York: United Nations, 2000.
9. Gooch BF, Eke PI, Malvitz DM. Public health and aging: retention of natural teeth among older adults - United States 2002. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5250a3.htm (last accessed 12 May 2008).MMWR 2003;52:1226–9.
10. Mojon P, Thomason JM, Walls AW. The impact of falling rates of edentulism. Int J Prosthodontics 2004;17:434–40.
11. Manski RJ, Goodman HS, Reid BC, Macek MD. Dental insurance visits and expenditures among older adults. Am J Public Health 2004;94:759–64.
12. Lester V, Ashley FP, Gibbons DE. Reported dental attendance and perceived barriers to care in frail and functionally dependent older adults. Br Dent J 1998;184:285–9.
13. Holm-Pedersen P, Vigild M, Nitshke I, Berkey DB. Dental care for ageing populations in Denmark, Sweden, Norway, United Kingdom and Germany. J Dent Educ 2005;69:987–97.
14. Dolan TA, Atchison K, Huynh TN. Access to dental care among older adults in the United States. J Dent Educ 2005;69:961–74.
15. McNally M, Lyons R. The silent epidemic of oral disease: evaluating continuity of care and policies for the oral helath care of seniors. Oral health of seniors project: CHSRF final report. Available at: http://www.ahprc.dal.ca/oralhealth/WebPageReports.htm (last accessed 12 May 2008).
16. Jones J, Wehler CJ. The elders' oral health summit: introduction and recommendations. J Dent Educ 2005;69:957–60.
17. Petersen PE, Ueda H. Oral health in ageing societies: integration of oral health and general health: report of a meeting convened at the WHO Centre for Health Development in Kobe, Japan, 1–3 June 2005. Geneva: World Health Organization, 2005.
18. Holst D, Schuller A, Grytten J. Future treatment needs in children, adults and the elderly. Community Dent Oral Epidemiol 1997;25:113–8.
19. Patton ll, Strauss RP, McKiag RG, Porter DR, Eron JJ. Perceived oral health status, unmet needs, and barriers to dental care among HIV/AIDS patients in a North Carolina cohort: impact of race. J Public Health Dent 2003;63:86–91.
20. Petersen PE. Strengthening the prevention of HIV/AIDS-related oral disease: a global approach. Community Dent Oral Epidemiol 2004;32:399–401.
21. 5th World Workshop on Oral Health and Disease in HIV/AIDS. The Phuket declaration on oral health in HIV/AIDS 2004 – a commitment to action. Community Dent Oral Epidemiol 2004;32:401.
22. Day TA, Davis BK, Gillespie MB, Joe JK, Kibbey M, Martin-Harris B et al. Oral cancer treatment. Curr Treat Options in Oncol 2003;4:27–41.
23. Dye B, Tan S, Smith V, Lewis BG, Barker LK, Thornton-Evans G et al. Trends in oral health status: United States, 1988-1994 and 1999-2004. Washington DC: US Government Printing Office, Vital and Health Statistics, Series 11, 2007.
24. Al-Yaman F, Bryant M, Sargeant H. Australia's children: their health and wellbeing. AIHW Cat No. PHE36. Canberra: Australian Institute of Health and Welfare; 2002.
25. Petersen PE, Bourgeois D, Ogawa H, Estupian-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bull World Health Organ 2005;83:661–9.
26. Sheiham A. Oral health, general health and quality of life. Bull World Health Organ 2005;83:644–5.
27. Borrell LN, Burt BA, Taylor GW. Prevalence and trends in periodontitis in the USA: from the NHANES III to the NHANES, 1988 to 2000. J Dent Res 2005;84:924–30.
28. Kutzin J, Cashin C. Health system funding. In: McKee M, Healy J., Falkingham J., editor. Health care in central Asia. Available at: http://www.euro.who.int/document/Obs/0335209262.pdf (last accessed 12 May 2008).Buckingham: Open University Press, 2002.
29. Jaffar N. Oral health care in Malaysia: presentation to Community Dentistry staff, Faculty of Dentistry. Toronto, Canada: University of Toronto; 2006.
30. Enthoven AC. Consumer-choice health plan (first of two parts): inflation and inequity in health care today; alternatives for cost control and an analysis of proposals for national health insurance. N Engl J Med 1978;298:650–8.
31. World Health Organization. Declaration of Alma Ata. Available at:http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf (last accessed 12 May 2008). Alma Ata: World Health Organization, 1978:3.
32. National Advisory Committee on Oral Health. Healthy mouths, healthy lives: Australia's National Oral Health Plan 2004-2013. Adelaide: Australian Health Minister's Conference; 2004.
33. Department of Health. Choosing better oral health: an oral health plan for England. London: Department of Health; 2005.
34. Hobdell M, Petersen PE, Clarkson J, Johnson N. Global goals for oral health 2020. Int Dent J 2003;53:285–8.
35. US Department of Health and Human Services. Healthy People 2010, 2nd edn. With understanding and improving health and objectives for improving health. Washington, DC: U.S. Government Printing Office, November 2000, 2000.
36. Department of Health Social Services and Public Safety. Equality impact assessments, oral health strategy, general dental services, preliminary consultation. Available at:http://www.dhsspsni.gov.uk/eqia-preliminary-consultation.pdf (last accessed 12 May 2008).:Belfast, UK: Department of Health Social Services and Public Safety, 2001:23.
37. South African Department of Health. South African Oral Health Strategy. Available at: http://www.doh.gov.za/docs/policy/strategy.pdf (last accessed

12 May 2008).Johanessburg: Department of Health, Undated:15.
38. US Department of Health and Human Services. National Call to Action to Promote Oral Health. Rockville, MD: U.S. Public Health Service, National Institutes of Health, National Institute of Dental and Craniofacial Research, 2003.
39. Federal Provincial Territorial Dental Directors. Canadian oral health strategy. Available at: http://www.fptdd.ca/COHS.html: Federal, Provincial, Territorial Dental Directors.
40. Birch S, Anderson R. Financing and delivering oral health care: what can we learn from other countries? Journal of the Canadian Dental Association 2005;71:243–7.
41. Busse R, Stargardt T, Schreyogg J. Determining the 'health benefit basket' of the Statuatory Health Insurance scheme in Germany. European Journal of Health Economics 2005;6(Suppl. 1):30–6.
42. Spencer A. What options do we have for organizing, providing and funding better public dental care?Available at: http://www/usyd.edu.au/pdfs/colloquia2001/optionspaper.pdf (last accessed 12 May 2008). Sydney, NSW, Australia: Australian Health Policy Institute at the University of Sydney, 2001.
43. Goodwin N, Morris AJM, McLeod HS, Burke FJT, Hall AC. National evaluation of personal dental services (PDS) pilots: main findings and policy implications. Br Dent J 2003;195:640–3.
44. Anonymous. Patients feel the pain in NHS dental crisis. Available at: http://www.timesonline.co.uk/tol/news/uk/health/article2659300.ece. The Times. London, 2007.
45. Smythe J. Tax subsidization of employer-provided health care insurance in Canada: incidence analysis. A report for the Romanow Commission into the Future of Health Care in Canada. Edmonton: Department of Economics, University of Alberta, 2001:22.
46. Ostry A, Cardiff K. Trading away health? Globalization and health policy. 14th Annual Health Policy Conference on the Centre for Health Services and Policy Research. Vancouver, Canada: Centre for Health Services and Policy Research, College of Health Disciplines, University of British Columbia; 2001.
47. Rennie J (editor). Oral and whole body health. Scientific American. New York: Scientific American, Inc.; 2006: 50.
48. US Department of Health and Human Services. Oral health in America: a report of the Surgeon General - Executive Summary. Rockville MD: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health, 2000.
49. Mertz E, O'Neil E. The growing challenge of providing oral health care to all Americans. Health Aff 2002;21:65–77.
50. Manski RJ, Edelstein BL, Moeller JF. The impact of insurance coverage on children's dental visits and expenditures, 1996. J Am Dent Assoc 2001; 132: 1137–45.
51. McGrath C, Bedi R, Dhawan N. Who has difficulty in registering with an NHS dentist? - a national survey. Br Dent J 2001;191:682–5.
52. Gorbova M, John TM. Taking a bite out of policies: a look at the policies affecting our nation's dental health. J Pediatr Nurs 2004;19:51–7.
53. Widstrom E, Eaton KA. Oral health care systems in the extended European Union. Oral Health & Preventive Dentistry 2004;2:155–94.
54. Seldin lW. The future of dentistry: an overview of a new report. J Am Dent Assoc 2001;132:1667–77.
55. Public Health Association of Australia. Oral health policy. Available at: http://www.phaa.net.au/documents/policy/OralHealth.pdf (last accessed 12 May 2008).
56. Institute of Medicine Division of Health Care Services. Public policy options for better dental health: report of a study. Available at: http://www.nap.edu/catalog/9921.html (last accessed 12 May 2008). Washington: Institute of Medicine, 1980:167.
57. World Health Organization. Oral health: action plan for promotion and integrated disease prevention. Available at: http://www.who.int/gb/ebwha/pdf_files/EB120/b120_10-en.pdf (last accessed 12 May 2008). Geneva: World Health Organization, 2006:4.
58. Aerden M. Brief Statement to WHO Executive Board 120th Meeting. Ferney-Voltaire, France: FDI World Dental Federation, 2007:2.
59. World Health Organization Executive Board. Oral health: action plan for promotion and integrated disease prevention – Agenda item 4.6 Available at: http://www.who.int/gb/ebwha/pdf_files/EB120/B120_R5-en.pdf (last accessed 12 May 2008). Geneva: World Health Organization, 2007:3.