National Pharmacare, Reference-Based Pricing, and Drug R&D: A Critique of the National Forum on Health’s Recommendations for Pharmaceutical Policy

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In February 1997, the Canadian National Forum on Health (NFH) released its two-volume final report on health care in Canada (National Forum on Health 1997a,b). The report incorporates the views of the forum’s members, a review of public opinion research on health and social policy, and the responses of participants in focus groups. The NFH made recommendations on a number of aspects of health care, including home care, primary care, child poverty, aboriginal health, and a nationwide health

INTRODUCTION

In February 1997, the Canadian National Forum on Health presented its recommendations for a pharmaceutical policy for Canada. These recommendations include moving toward a universal coverage, publicly funded drug plan; support for reference-based pricing as a method of containing drug plan costs; and requiring that pharmaceutical companies turn over a portion of their research funds to the national research granting agencies. This paper provides a critical assessment of these policy recommendations, with a focus on whether they are likely to achieve long-term reductions in pharmaceutical and health-care expenditures in Canada.

En février 1997, le Forum national sur la santé a présenté ses recommandations pour une politique pharmaceutique au Canada. Ces recommandations suggèrent de se diriger vers un programme d’assurance-médicaments à couverture universelle et financé par le secteur public. De plus, elles supportent le “reference-based pricing” comme méthode de contrôler des coûts du programme et demandent aux compagnies pharmaceutiques de retourner une portion de leurs fonds de recherche aux agences nationales distribuant des bourses de recherche. Cet article présente une évaluation critique des recommandations en mettant l’emphase sur la possibilité qu’elles mènent à long terme à des réductions dans les dépenses relatives aux médicaments et à la santé au Canada.
information system. Some of the NFH's most important and controversial recommendations concern pharmaceutical policy and the establishment of a national pharmacare plan.

The purpose of this paper is to review and critique three of the NFH's pharmaceutical policy recommendations: (i) that prescription drug expenditures be insured wholly by the public sector on a “first dollar coverage” basis; (ii) that British Columbia's reference-based pricing drug reimbursement system be considered for adoption nationally as a means of containing drug expenditures; and (iii) that the pharmaceutical industry be obliged to finance a general health research fund. The paper will focus on whether these policy recommendations are likely to achieve long-term reductions in pharmaceutical and health-care expenditures in Canada.

The NFH's recommendations for pharmaceutical policy reform are described more fully in the next section. A critique of the NFH's recommendations on prescription drug insurance follows. Reference-based pricing and R&D financing are then discussed and conclusions are summarized in the final section.

The National Forum on Health's Recommendations on Pharmaceutical Policy

Drug expenditures in Canada have grown rapidly over the last 20 years: from $1.1 billion in 1975 to $9.2 billion in 1994, with prescription drugs accounting for $6.5 billion in 1994. Over this period, real per capita expenditures more than doubled. As a share of total health-care expenditures, pharmaceutical costs rose from 8.7 percent to 12.7 percent (Patented Medicine Prices Review Board 1996, p. 10).

The rise in drug expenditures is attributable to a number of factors, including demographics (an aging population), increasing consumption per capita, inappropriate prescribing (e.g., prescribing a drug for which there are less expensive substitutes), duplicate prescribing, and escalating prices for new drugs. Escalation in drug expenditures is one of the concerns that the NFH raises in its report. Other concerns include physician prescribing practice, incomplete and variable insurance coverage across the provinces, perceived inequities arising from the existence of private insurance plans for some individuals and lack of any coverage for others, marketing practices of drug companies, and doubts that Bill C-91 will contribute to greater availability in Canada of new and effective drugs.

In response to these concerns, the NFH made a list of eight recommendations (1997c, pp. 17-18) of which the following will be addressed here:

a That ... the Canadian federal-provincial health insurance system move toward integration of prescription drugs as a fully funded component of publicly funded health care.

b That the reform process begin with the implementation of comprehensive, population-based drug information systems ... [which can] support innovations in reimbursement policies such as extensions of bulk purchasing, the British Columbia reference-based pricing system, or developments in 'pharmaceutical benefits management systems' in the United States.

f That during the up-coming mandatory review of Bill C-91 in 1997, the commitments to increased funding for research made by the pharmaceutical industry at the time of its initial passage be converted into specific required contributions to a fund for health research broadly defined, at full arm's length from the industry, to be administered by the national research granting agencies and allocated through the normal peer-reviewed granting process.

h That the federal government, provincial governments, health care providers, private payers (employers, unions and the public) should begin dis-
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Discussions immediately to develop a plan to integrate prescription drugs as a component of publicly funded and administered health care as fiscal resources and management technology permit.

The NFH remarks at several points in its report that it does not expect these (and its other) goals to be accomplished quickly, particularly the integration of prescription drugs into public funding, that is, a national pharmacare plan. Nevertheless, given the present concern in Canada about the costs and quality of health care generally, and pharmaceutical expenditures in particular, now appears to be an appropriate time to discuss the NFH’s recommendations.

Some of the NFH’s recommendations appear well-founded, such as the development of a nationwide information system per Recommendation b. Other recommendations are open to debate. Three will be examined here: (i) to fund prescription drug insurance through the public sector (Recommendations a and h); (ii) to consider adopting reference-based pricing as a cost containment measure (Recommendation b); and (iii) to require pharmaceutical companies to finance a fund “for health research broadly defined” (Recommendation f).

P RESCRIPTION  D RUG  I NSURANCE

The NFH’s recommendations for prescription drug insurance include two components: that insurance be funded wholly by the public sector and that it provide universal and first dollar coverage. We discuss the source of funding first and then first dollar coverage.

Funding Prescription Drug Insurance

In recommending exclusively publicly funded prescription drug insurance the NFH does not advocate abolishing private insurance in so many words. But the following statements appear in its reports (italics added):

[1] to ensure that medically necessary prescription drugs are made available to all Canadian residents, without deductibles or co-payments ... requires finding a mechanism to transfer private health expenditures to governments so that they can be managed publicly (NFH 1997c, p.13).

[2] The absorption of currently operating private plans by a public system may involve transfer of funding sources as well as administrative apparatus (NFH 1997a, p.22).

[3] To finance pharmacare, we are proposing a shift, over time, from private spending (by individuals directly or through private insurance for health benefits) to public spending, either through tax increases or premiums or both (NFH 1997a, p.23).

Recommendations a and h also speak of integration of prescription drugs as a publicly funded component of health care. References to “integration,” “transfer,” “absorption,” and “shift” strongly suggest the elimination of private funding for prescription drugs. Private entities currently provide insurance for 44 percent of the Canadian population. Provincial plans cover another 44 percent, while 12 percent of the population has no coverage (NFH 1997c, p. 3). Why should the NFH want to eliminate a source of insurance coverage for nearly half the population, particularly a source that — unlike government plans — is purchased voluntarily? There are several traditional arguments for public funding of health care: (i) externalities associated with consumption (viz. health is a public good), (ii) health is a necessity, (iii) health is a right that should be provided equally to all, and (iv) informational asymmetries between physicians and patients. As will become clear, these arguments are central to the NFH’s thinking. We proceed by examining each in turn. Because these arguments apply not just to pharmaceuticals but to health care overall, the discussion goes beyond the NFH’s recommendations about pharmaceuticals to address the role of public and private health insurance in general.
(i) **Health is a public good.** The NFH is explicit that it views health as a public good (italics added):

[4] As a society, we decided that health is a public good and that the costs of treating illness should be broadly shared. To achieve this goal, we built a system we call ‘medicare’ (NFH 1997a, p. 9).

[5] While the term ‘health insurance’ is coupled with medicare, the publicly funded system does not really operate like an insurance scheme. Most insurance involves the pooling of risk in a population, all of whom hope never to experience the event that triggers a payout. Health care is different. It is expected that the population will use the services at regular intervals, and the service use is, in many cases, not a sign of a catastrophic or unwelcome bit of bad luck, but as an important and positive universal service. Medicare covers services that are in this sense more analogous to highways — public goods whose use enhances quality of life, wealth, etc. (NFH 1997d, p. 41).

These statements do not reveal what makes health a public good, or why this warrants exclusively public payment for health care. Evans (1984, pp. 60-63) identifies three motives for wanting good health in the population: a selfish motive, an altruistic motive, and a paternalistic motive. The selfish motive arises mainly from the desire for protection against contagion. While obviously important, paying for this protection accounts in modern times for only a small fraction of health-care expenditures, and thus cannot provide a justification for public funding of health care generally.

The altruistic motive derives out of a general concern for peoples’ well-being. In theory, this is accomplished most cheaply by income supplementation. In practice, it is done via in-kind health care, which suggests that altruism is not the primary motivation for public health-care funding. And altruism cannot explain a preference for exclusive public funding for the whole population, regardless of income.

Paternalism toward health care originates from the view that expenditures that contribute to good health are a merit good that should be encouraged. According to Evans (1984) it is the paternalistic motive that has largely driven health-care policy in Canada and established the principle that medically necessary care must be provided publicly. But this still does not explain why private payment for drugs should be discouraged, if not prevented. Indeed, Evans concludes that “If external effects in consumption were the only source of market failure in health care, the form of the public subsidy to individual use would not be a significant issue” (p. 65).

Some participants in the NFH focus groups indicated that they considered health care to be a national investment that boosts competitiveness and social stability (1997e, p. 10). If health care does in fact act this way, then it has positive external effects on production, which is another traditional justification for public payment. One response to this is that the most critical health product of all in maintaining people’s ability to work, if not also in forestalling social unrest, is food (McArthur, Ramsay and Walker 1996, p. 165). Yet food is largely paid for privately (as well as produced privately). A second possible response is to concede the point that good health confers positive externalities. But externalities, both positive and negative, are generated by consumption of many, if not most, goods and services. If the presence of externalities is deemed to warrant public intervention, then the externalities argument becomes an argument for subsidizing or taxing commodities throughout the economy (Block 1983; Friedman 1991). And as Williams observes “The externality argument, if pushed hard, is extremely intrusive...” (1987, p. 1067).

(ii) **Health is a necessity.** Another traditional argument for public funding is that health is a necessity. This argument too appears in the NFH report:

[6] being as healthy as possible is seen to be fundamental to the quality of life that is part of being Canadian (1997e, p.10).
To be sure, good health is essential to living a full life, and life may become unbearable if health degenerates too far. But food, clothing, housing, energy, and other goods and services are also essential to life — for people in good and bad health alike. If people have a right to good health, then why not also these other commodities that affect life expectancy? It is disputable whether health should be placed in some lexicographic sense above all else.\(^7\)

The question of whether health is in fact a necessity notwithstanding, health-care services that are deemed to be necessities in Canada (viz. physician and hospital services) must be funded publicly according to the *Canada Health Act*. The NFH considers prescription drugs to be a necessity, and thus a candidate for public funding. But the forum recognizes the difficulties in defining what is medically necessary (1997d, pp. 40-41),\(^8\) and acknowledges that any list of necessities will become rapidly obsolete as medical technology advances. Indeed, the NFH ends up recommending against such a list, though it remarks enigmatically that “A flexible definition ... may be useful in some jurisdictions” (p. 43).

The NFH also asserts without elaboration that “the status of drugs as an essential public good makes them prone to cost escalation without limit” (p. 11). But food, clothing and so on are also essential, yet their prices don’t inflate “without limit,” although they may rise temporarily during natural disasters. And as already noted, these commodities are typically both provided and paid for by the private sector.

*(iii) Egalitarianism and health.* The NFH appears to consider health to be like justice in the sense that it should be provided equally for all. This is apparent in quotation [7], and in the observation:

*Many people readily acknowledged that their commitment to egalitarianism is restricted to health care and that they are not troubled by wide discrepancies based on ability to pay or status in other areas of society... They see [health care] as something of a completely different character from housing or automobiles or vacations (1997e, p. 10).*

In addition, participants in the NFH focus groups expressed opposition to two-tiered health care with a private component, no matter how regulated or efficient, because it would compromise equality and fairness (p. 12).

This position stands in contrast with that of an American commission which dismissed equity as equality in health care in favour of “equity as an adequate level of health care.”\(^9\) The commission was against prohibition of a second tier of health care because “trying to prevent such inequalities would require interfering with people’s liberty to use their income to purchase an important good like health care while leaving them free to use it for frivolous or inessential ends.”\(^10\) Thus, the case for exclusive funding of health care on equity grounds appears to require extreme egalitarianism.\(^11\) An alternative position, consistent with that of the American commission, would be a commitment to *absolute* health standards for those with low incomes (Blomqvist 1995, p. 182).\(^12\)

*(iv) Informational asymmetries.* Health care differs from many commodities in that physicians (the suppliers) are more knowledgeable about the characteristics of the commodity, and when it should be consumed, than are patients (the buyers). This is the traditional argument for regulation of the medical profession to assure that health-care suppliers are adequately qualified and act as agents in the interest of patients.

Undeniably, most individuals lack sufficient knowledge to determine in many circumstances what drugs, if any, should be consumed, how frequently and for how long, what other health inputs should be consumed in conjunction with the drugs, and so
on. This is why these decisions are usually delegated to physicians. But this informational asymmetry has policy implications for prescribing practice, not for who should pay for the drugs. Moreover, health care is only one of many areas in which consumers’ interests are entrusted to others. Consumers also rely on the expertise and integrity of accountants, architects, lawyers, contractors, auto mechanics, college professors, and other professionals (Schweitzer 1997, p. 7). In addition, while doctors know more than patients about the effects of a given health-care intervention, patients are the best judge of the personal values they attach to the intervention. Forcing everyone to consume the same health-care package (neither more nor less) disregards differences in preferences, and violates consumer sovereignty.

Relative Cost Efficiency of Public and Private Insurance Plans

Having reviewed the traditional arguments for public funding of health care we now turn to consider the relative merits of public and private insurance in terms of cost efficiency. The forum points out (1997a, p. 12) that Canada’s public insurance plans have lower administration costs than private plans, as well as greater bargaining power vis-à-vis providers of health care.

Administration costs. Most of the literature reviewed for this paper supports the NFH’s claim that administration costs per capita are lower in public than private plans. One study (Palmer D’Angelo 1997, Section 6.0) estimates that the costs of processing and adjudicating health insurance claims range from 2 percent of drug plan payments for the provincial plans in Ontario and Quebec to 13 percent in the Atlantic provinces. By comparison, private plan costs average 8 percent of payments. The study concludes that a national pharmacare plan might reduce average administration costs in Canada from 3.5 percent to 2 percent of payments, or by $118 million. The study remarks, however, that economies of scale are probably exhausted in Ontario and Quebec, and that some smaller provinces have chosen to contract out claims processing to private firms. It should also be noted that private plans provide supplementary insurance, which is inherently more expensive than basic coverage.

Excess tax burden. Administration is an “overhead” cost that appears to give a cost advantage to public insurance. But funds for a public plan have to come from somewhere, which brings up excess tax burden as another type of overhead cost. The NFH seems implicitly to recognize this with the remark that it recommends universal coverage for prescription drugs,

[9] but only after effective cost and utilization control mechanisms have been developed to ensure governments will not incur undue fiscal hardships as a result of the expanded coverage (1997d, p. 37).

Estimates of the marginal cost of public funds (MCF) in Canada vary across jurisdictions, time periods, and methods of calculation. Dahlby (1994) has calculated the MCF for the personal income tax in Canada for a single individual with only labour income. Under his base-case assumptions the MCF in 1993 ranged from 1.40 in Alberta to 1.99 in Quebec, with a national average of 1.66. By contrast, Dahlby shows that if leisure is a normal good and other distortionary taxes are in place, then the MCF from a lump-sum tax (e.g., unemployment insurance premiums for workers with incomes above the contribution limit) is actually less than one because a lump-sum tax encourages greater labour supply, thereby contributing to income tax revenues.

Dahlby’s results indicate that the excess burden of a national pharmacare plan would depend very much on how it was financed. The NFH states (see quotation [3]) only that the additional financing would come “either through tax increases or premiums or both.” Current funding comes from a mix of taxes and premiums that varies from province to province. But it seems probable that, at the margin, additional funding would come predominantly through income taxes. Dahlby’s estimates then
suggest that any savings in administration costs from a national pharmacare plan could be overshadowed by the excess burden of paying for it.

**Volume discounts.** The NFH argues that public health insurance plans have greater bargaining power with health-care providers than do private plans, and that this advantage might be enhanced by creation of a national pharmacare plan. Public plans and hospitals have indeed reduced drug acquisition costs through volume discounts and restrictive formularies. But private plans can also exercise bargaining power by buying in bulk, as they do in the United States through the mediation of pharmaceutical benefit management organizations. Retail pharmacy chains may also procure drugs at a lower cost than independent pharmacies. Unfortunately, information on differences in drug acquisition costs between public and private plans is elusive. A national pharmacare plan might be able to extract deeper price cuts from drug manufacturers through creation of a national formulary. But the NFH indicates (1997c, p. 15) that it does not consider a national formulary to be necessary.

**Further considerations.** Cost escalation has been a long-standing problem for public and private sector drug plans alike. Costs have risen for a variety of reasons, including increased use of drugs, rising distribution costs, and new high-priced drugs. Corporate plans have been particularly susceptible to rising costs. They sometimes cover very expensive drugs to get employees back to work more quickly, and may take up payment for high-priced drugs that provincial plans no longer pay for. Private insurance providers may also face constraints on expenditure control that public plans do not. For example, private insurers in British Columbia have been reluctant to adopt reference-based pricing like ceilings on reimbursement, purportedly because of resistance from unions and employee groups (Fitz-James 1996).

While private drug insurance plans do appear to have some cost disadvantages relative to public plans, they have adopted a number of measures to contain costs (see Taylor 1996). And there are several powerful arguments for having private operators in the market. First, the profit motive provides a compelling incentive to control costs, whereas in public organizations this incentive may be muted or absent. Second, private operators serve as a benchmark for evaluating the efficiency of their public sector counterparts. And third, as Engelhardt observes, choosing between public or private insurance and/or between private plans forces people “... to think through, in advance of their actual need for health care, what type and scope of health care they want” (1992, p. 204). This choice is foreclosed, at least at the individual level, by mandatory and exclusive public insurance.

There are also reasons to favour decentralizing the public component of the health-care system, in contrast to the NFH’s national pharmacare plan, which would involve centralization. For one, rapid technological and demographic change militates against a cumbersome, bureaucratic system. Second, there are advantages in having a number of jurisdictions experimenting independently with ways to improve health care; for example, 50 states in the US (Engelhardt 1992, fn 8) or 12 provinces and territories in Canada. Third, slimming government reduces the number of items on the political agenda, allowing the political system to focus more efficiently on issues that belong in the political, rather than market, domain (McFetridge 1997).

**First Dollar Coverage and Demand-Side Cost Containment**

The second component of the NFH’s national pharmacare plan is universal and first-dollar coverage. This contrasts with existing provincial plans in Canada. In this subsection we summarize the provincial plans and identify some of the demand-side, cost-containment measures that they feature.

Table 1 provides a summary of the provincial plans. The extent of coverage is indicated in rows 1-3. Five provinces (British Columbia, Saskatchewan, Ontario, Manitoba, and Quebec) nominally
TABLE 1
Provincial “Pharmacare” Programs Across Canada

<table>
<thead>
<tr>
<th>Question</th>
<th>British Columbia</th>
<th>Alberta</th>
<th>Saskatchewan</th>
<th>Manitoba</th>
<th>Ontario</th>
<th>Quebec</th>
<th>Nova Scotia</th>
<th>New Brunswick</th>
<th>PEI</th>
<th>Newfoundland</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Do you have a plan for universal coverage?</td>
<td>yes, $600 deductible, 30% co-pay and $2,000 ceiling</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes, but with very high deductibles for high income residents</td>
<td>yes, not covered by a private group plan</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>2) Do you cover seniors separately from others? If so, how?</td>
<td>yes, seniors do not have to pay a premium or the $50 deductible on non-drugs</td>
<td>yes, seniors do not have to pay for universal coverage</td>
<td>yes, $100 deductible (income tested)</td>
<td>yes, $25 deductible per 3 months; co-pay of 25% of drug cost up to variable max per 3 months</td>
<td>yes, but only those who qualify through a means test</td>
<td>yes, seniors pay a max of $7/Rx + dispensing fee (df), no deductible or ceiling</td>
<td>yes, ingredient costs reimbursed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Do you treat any other groups separately (e.g., diabetics)?</td>
<td>yes, people with cystic fibrosis (CF)</td>
<td>no</td>
<td>yes, people with CF, renal disease, palliative care, special high cost drugs</td>
<td>yes, people with CF, diabetes, cancer, transplants, AIDS</td>
<td>yes, people with CF, AIDS, Gaucher’s Disease, renal, schizophrenia, organ transplants, growth hormone</td>
<td>no</td>
<td>yes, people with diabetes, CF, cancer, growth hormone, HIV, hemophilia</td>
<td>yes, people with CF, diabetes, transplants, AIDS, rheumatic fever</td>
<td>yes, people with CF</td>
<td></td>
</tr>
<tr>
<td>4) Is there a co-payment and/or deductible? Under what conditions?</td>
<td>seniors: as above; universal (plan E): $60 deductible, 30% co-pay and $2,000 ceiling</td>
<td>yes, 30% co-pay, max $25/Rx, no ceiling, deductible of $50 for non-drugs, except for seniors</td>
<td>standard deductible per person or family: $850 semi-annually; co-payment of 35% per prescription</td>
<td>deductible: 3% of adjusted family income over $15,000 or 2% of adjusted family income under $15,000</td>
<td>seniors pay $2 or $6.11 co-payment; others on Drug Benefit Program pay $2. Those with high drug costs pay deductible based on income</td>
<td>$25 deductible per 3 months; co-pay 25% of drug cost up to $187.50 per 3 months</td>
<td>yes, Family Benefits have 20% co-pay per prescription, to max of $150 per year; Income Assistance pay $3 per prescription</td>
<td>no deductible, but there are co-payments. Social Service recipients’ co-payment based on age</td>
<td>yes, seniors: max $7/Rx + df (no deductible, no ceiling); Social Assistance: no co-pay</td>
<td></td>
</tr>
</tbody>
</table>

Social Assistance: no co-pay or deductible; seniors pay professional fee
<table>
<thead>
<tr>
<th>Question</th>
<th>No</th>
<th>Yes</th>
<th>Seniors</th>
<th>Plan</th>
<th>Income</th>
<th>Cost</th>
<th>Benefit</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>Seniors</th>
<th>Drug</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>5) Do you apply “ability to pay” criteria for coverage?</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>senior</td>
</tr>
<tr>
<td>6) Do you pay pharmacies by “acquisition cost” or some other method?</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>plan</td>
</tr>
<tr>
<td>7) Do you use a provincial formulary?</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>formulary</td>
</tr>
<tr>
<td>8) Do claimants pay a premium?</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>yes, based on seniors pay $215/year</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>premium</td>
</tr>
<tr>
<td>9) Is private insurance integrated with any schemes?</td>
<td>yes, insurers will pay the client’s co-pay and deductible</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>schemes</td>
</tr>
<tr>
<td>10) What is the maximum dispensing fee?</td>
<td>$7.55</td>
<td>$6.93</td>
<td>$0-$10.50</td>
<td>$6.11</td>
<td>$7.00</td>
<td>$8.00, or $12.59 if ingredient cost exceeds $105</td>
<td>$7.34, $11.01 for extemporaneous preparations</td>
<td>$7.85, but only for the seniors’ plan</td>
<td>$3.50 (plus 10% of cost if ingredient cost exceeds $30)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 1This does not count the Social Assistance criteria for the corresponding benefit plan.

provide universal coverage, although because of deductibles many citizens do not receive any benefits. All other provincial plans cover senior citizens, people on social assistance, and special situations or disease conditions.

Co-payments and deductibles are shown in row 4. All provinces except Manitoba impose copayments for certain groups, and seven provinces also have deductibles. The size of co-payments and deductibles, the population segments to which they apply, and ceilings on co-payments all vary across plans. Three provinces impose ability to pay restrictions on coverage (row 5).

Row 6 indicates how pharmacists are reimbursed by the provincial plans. Two reimbursement policies have been adopted in most of the provinces. One is called Actual Acquisition Cost (AAC). Under BC’s former AAC system the pharmacist was reimbursed “…the actual acquisition cost of the drug, net of special rebates and other monetary and non-monetary inducements paid by drug firms to the pharmacist” (Gorecki 1993, p. 869). Four provinces currently have AAC policies.

The second reimbursement policy is variously called Least Cost Alternative (LCA), Best Available Price (BAP), and Maximum Allowable Cost (MAC). BC switched from an AAC to a BAP system in mid-1995. According to Gorecki, under Ontario’s BAP program “the government sets a single reimbursement price for an interchangeable drug, irrespective of the brand dispensed. This price, together with those brands considered interchangeable, is published in a semi-annual formulary…. For a group of interchangeable brands the government will reimburse the pharmacist up to the lowest brand-specific price, with brand choices being delegated to the pharmacist” (p. 869). No-substitution prescriptions are permitted in Ontario, but only if the physician completes some paperwork.16

All provinces except BC have drug formularies (Table 1, row 7). The formularies indicate which prescription drugs are eligible for reimbursement under the province’s drug plan. To be included on a formulary, manufacturers have to meet certain criteria that vary by province. As far as financing, three of the provincial plans are funded by premiums (row 8). The plans in British Columbia and Alberta are integrated with private insurance, as described in row 9. Finally, all plans incorporate a dispensing fee (row 10).

It is evident from Table 1 that no province provides truly universal or comprehensive insurance coverage of prescription drugs. By contrast, a national pharmacare plan would provide first-dollar coverage for everyone in Canada. Deductibles, co-payments, dispensing fees, and ability to pay restrictions, featured in the existing provincial plans, would disappear. First-dollar coverage exists nowhere else in the OECD, and goes against other recommendations that have been made for Canada.18 The main criticism of 100 percent coverage is that it leaves individuals with no private monetary incentive to restrain consumption. In the next subsection we consider some evidence on how sensitive drug consumption is to prices.

Prescribing Practice
Physicians write prescriptions and therefore physician prescribing practice is a crucial determinant of pharmaceutical demand. Evidence has accumulated that price is not an important factor for many physicians in their prescription decisions. There are several reasons for this. First, physicians themselves do not pay for the drugs. As agents for their patients, they should consider costs the patient will bear. But third parties often cover some or all of the patient’s bill, and out-of-pocket costs may in any case be far from a patient’s mind at the time a prescription is written. Second, reimbursement on a fee-for-service basis gives physicians an incentive to increase patient throughput, and prescriptions can be used as a signal to the patient that the visit is over. Physicians also appear to be sensitive to the time costs of writing prescriptions, a consideration discussed further in the section, “Reference-based
Pricing.” Third, physicians often lack full information about drug prices. Kolassa (1995) reports the results of a survey that reveal a strong tendency for physicians to overestimate the cost of cheaper drugs and to underestimate the cost of more expensive drugs. Fourth, both habit and brand loyalty are known to be strong factors in prescribing practice. Physicians vary in their propensity to prescribe generic drugs (Hellerstein 1998), which are usually cheaper than their brand-name counterparts. Fifth, physicians are influenced by pharmaceutical company marketing efforts, a concern addressed by the NFH in its Recommendation e. According to Anderson and Lexchin (1996) physicians consider commercial sources of information less useful than professional sources (medical schools, specialty societies that provide continuing medical education, scientific meetings, and journals), but a large majority admit to using commercial information in making their prescription decisions.

Various policies to improve prescribing practice have been implemented or proposed; see Anderson and Lexchin (1996) for a review. Among these are restrictive formularies and prior authorization policies. It has been argued that inappropriate prescribing practice is better addressed through education than by prohibitions on certain drugs. Physicians could be informed, or required to find out, about patients’ drug-plan coverage. Some innovative mechanisms for conveying information to doctors have recently been introduced in Canada.

**Price Sensitivity of Consumer Demand**

There is relatively little empirical information on how sensitive individual health-care demand is to out-of-pocket costs. The acclaimed Rand Health Insurance Experiment continues to be the most widely cited source. The study found an elasticity for overall health care with respect to a uniform price increase of -0.1 to -0.2. More recently Eichner (1997, 1998), using data from employer-funded insurance claims in the US, has obtained elasticity estimates ranging from -0.22 to -0.62. As far as drug demand, the Rand study found that annual outlays fell by 37 percent as the consumer share rose from zero to 95 percent (Leibowitz, Manning and Newhouse 1985).

Consumers can respond to higher out-of-pocket costs for drugs in two ways: by curtailing consumption (e.g., by not buying drugs prescribed by their doctor) and by searching for lower priced drugs. The incentive to search depends on various factors including the amount of retail price variation, availability of price information, the size of co-payments, and the frequency of purchase. A patient urgently requiring a one-time prescription is unlikely to search. But one who uses a drug on an ongoing basis to treat a chronic condition may well find searching worthwhile.

Several studies have examined the effect of user fees on drug demand. For the US, Smith (1993) found that an increase in co-payment reduced the number of prescriptions, but this was nearly offset by the higher ingredient cost per prescription, resulting in a demand elasticity of -0.1. Apparently, consumers reduced the average co-payment cost by purchasing in larger quantities. A larger price elasticity with respect to co-payment of -0.3 has been estimated for Britain (Hughes and McGuire 1995). Thus, co-payments can deter consumption.

Another way to increase consumer sensitivity to drug prices is at the pharmacy. In Germany, pharmacists are required to display drug prices (Schöffski 1996). And the Eastman Commission recommended that pharmacists in Canada be permitted to provide information on prices over the phone (Eastman 1985, p. xxix). The Eastman Commission also recommended (ibid.) removal of provincial restrictions on advertising of drug prices. This runs contrary to one of the NFH’s recommendations. Direct-to-consumer advertising has been permitted in the US since 1985, but continues to be debated in Canada. One concern is that harried physicians may simply acquiesce to patients, leading to more inappropriate prescriptions.
Supply-Side Cost-Containment Measures

The evidence reviewed above suggests that demand-side measures have only a limited capacity for containing prescription drug costs, although there appears to remain scope for increasing price sensitivity. Thus, introducing first, dollar coverage with a national pharmacare plan might increase drug consumption only moderately. Most European countries in fact rely little on demand-side measures. Instead, they have introduced various supply-side initiatives, including capitation, salaried employment, expenditure caps, global budgeting, and health planning. All have experienced lower rates of growth in healthcare costs than the US or Canada.27

Supply-side measures have also been adopted in the US in the form of explicit rationing through managed care organizations, which include preferred provider organizations and Health Maintenance Organizations (HMOs).28 HMOs, which integrate the role of payer and provider, are the most aggressive in terms of cost control. Patients purchase an insurance policy with an HMO. It contracts for service with groups of physicians and restricts patient visits to these groups. Physicians are reimbursed on a capitation basis and act as gatekeepers.

On balance, managed care organizations appear to have been successful in controlling health-care costs. But they have attracted criticism on several grounds, including the complexities consumers face in choosing between plans, restrictions placed on consumers’ choice of provider, limits on physician discretion, and possible losses in quality of care.29

Proposals for Reform of Health-Care Insurance Funding in Canada

We have reviewed arguments for a private sector role in funding health-care insurance. The case for allowing private insurance seems compelling on normative grounds. Private insurance also appears to be attractive from a cost-efficiency standpoint, though there is insufficient information to make a definitive case.

We conclude this section by mentioning two ways in which prescription drug insurance coverage could be extended in a mixed public-private system to the 12 percent of Canadians who currently lack it while retaining demand-side incentives for expenditure control. One recommendation, suggested by Palmer D’Angelo (1997) in response to the NFH’s reports, would be to have the federal government administer a prescription drug insurance plan to individuals who don’t qualify for any of the existing programs. A tax credit could be provided to the self-employed and small businesses that purchase private coverage.30 To curb consumption, consumers would be required either to make a 25 percent co-payment or to pay the dispensing fee.

A more revolutionary innovation for general health-care funding, proposed by the Fraser Institute (see McArthur, Ramsay and Walker 1996, pp. 188-94), would be to create individual Medical Premium Accounts (MPAs). MPAs could be funded by individuals, by government, or by government for low-income individuals. Part of the MPA would have to be used to buy insurance against catastrophic illness. The remainder would go into a personal account for discretionary spending on prescription drugs and other health-care items. Expenditures would be funded from the personal account until a deductible limit was reached, which would encourage cost control by the individual. And because health-care providers would be paid directly by patients, providers would be induced to act as agents for patients.

Reference-Based Pricing

Reference-based pricing (RBP) is a policy for containing drug plan expenditures. It involves establishing categories of therapeutically equivalent drugs and reimbursing patients for the cost of either the cheapest drug in the category or some average price. (As noted below, different jurisdictions have adopted different reimbursement prices.) Similar to generic substitution policies, RBP encourages substitution...
to cheaper drugs. But it differs from Best Available Price and Least Cost Alternative policies in that drugs in RBP categories need only be therapeutically equivalent, not chemically identical.

The NFH comes out in favour of a national RBP system for Canada. This position is understandable in that the progenitor of RBP, generic substitution, has proved to be highly successful in containing drug expenditures, both in Canada and abroad. Furthermore, the NFH claims (1997c, pp. 9, 16) that generic substitution will become less effective as the supply of generic drugs shrinks in response to the extension of patent lives granted in Bill C-91. But the NFH does not discuss international experience with RBP or mention its potential drawbacks. In this section we review the (rather sparse) literature on RBP, and review more fully the case for and against RBP.

Reference-Based Pricing in British Columbia
Reference-based pricing was introduced by BC Pharmacare on 1 October 1995 as a modification of BC’s newly created Best Available Price reimbursement system.31 Initially RBP was applied to two categories of prescription drugs: nitrates (used to treat stable angina) and H2 antagonists (used to treat certain upper gastrointestinal complaints and non-ulcer dyspepsia). Non-steroidal anti-inflammatory drugs (NSAIDs) were added on 27 November, and two categories of drugs used to treat hypertension in January 1997. BC Pharmacare reimburses the cost to the patient of the lowest-priced drug in the RBP category. Provision is made for “special authority” whereby a physician can apply to the drug plan to have some other drug fully reimbursed for a particular patient. Physicians are also free to prescribe more expensive drugs in a given category, but the patient is responsible for paying the difference between the price of the RBP drug and the prescribed drug.

BC’s program is controversial and drew strong opposition from some groups, particularly the Pharmaceutical Manufacturers Association of Canada. Unfortunately, there have been no published economic analyses of the program. The only published study we are aware of is Chappell et al. (1997) who report the results of a survey of seniors in BC, conducted from late 1995 to early 1996 by the University of Victoria’s Centre on Aging and School of Nursing. The survey found that seniors were generally in favour of the goals of RBP and confident in the information provided by BC Pharmacare. However, the survey was completed only four months after the inception of RBP. Only 19 percent of respondents had heard of BC’s program, unprompted, and many of them were unable to answer correctly more than half of the questions posed about it. Thus, the results of the survey cannot be taken as indicative of how well the program has actually operated.

Reference-Based Pricing in other Countries
Reference-based pricing was adopted by Germany in 1989; the Netherlands in 1991; and by Denmark, New Zealand, and Sweden in 1993. Denmark’s program resembles more a Least Cost Alternative than an RBP system. The various programs, and the characteristics of the national drug markets in which they were introduced, differ from each other and from BC’s program in various respects:

1. In BC the RBP price is set at the price of the cheapest drug in the group. The RBP price in Denmark is set at the average dosage unit price for the two lowest cost products in a group; in Sweden at 10 percent above the price of the cheapest generic drug; and in Germany, the Netherlands and New Zealand at assorted average prices for drugs in the RBP group.

2. Countries have different criteria for defining drug groups, including inclusion/exclusion of truly innovative products.

3. BC’s plan allows for two types of exemptions to the reference price reimbursement ceiling: blanket exemptions that cover certain types of prescribers and patients, and individual exemptions by special authority. Except for New Zealand, other countries do not permit exemptions.
4. Manufacturer drug prices in Canada are regulated by the Patented Medicine Prices Review Board (PMPRB). European countries that have implemented RBP do not control manufacturer prices. However, the minister of health in the Netherlands can impose a price ceiling on medicines (de Vos 1996). And wholesale and retail drug prices are regulated in Germany (Schöffski 1996).

5. Countries differ in the extent and patterns of drug use, as well as prescribing methods.

6. Pharmacists are reimbursed in various ways. For example, in Germany pharmacists are remunerated a percentage of the product costs. In the Netherlands, pharmacists are allowed to keep a fraction of any savings below the RBP price (Dickson 1992).

7. In some countries the introduction of RBP was followed soon after by other policies: in Denmark by a price freeze on non-RBP products; in Germany by price controls, drug budgets and co-payments; and in the Netherlands by discontinuation of co-payments.

Given all these differences between programs and jurisdictions, the experience with RBP in other countries is unlikely to parallel either that in BC’s program or a national program that might be introduced in Canada. Still, two common developments abroad deserve mention.

First, RBP appears to have been successful in that the RBP price effectively became a ceiling price in each country (Dickson 1992; Selke 1994). Patients in Germany proved reluctant to pay more than the minimum price, and doctors readily switched brands. Attempts by manufacturers to charge higher prices in Germany and the Netherlands proved short-lived. In New Zealand, too, prices of H₂ antagonists were reduced to the RBP level (Scott 1995; Moore and Scott 1996).

Second, despite the success of RBP programs at capping drug prices, drug expenditures continued to grow. In Germany and Sweden, companies recouped losses in their RBP markets by increasing sales elsewhere (Selke 1994; Ulriche and Wille 1996). Furthermore, the pace of generic substitution in the European countries that adopted RBP has been much slower than in the US, and has not been significantly enhanced by RBP itself (Bosanquet and Zammit-Lucia 1995).

The BC government claims that (as of October 1997) its RBP program had saved $74 million (Mullens 1997b). It is not clear how this figure was calculated. And neither the administration and compliance costs of the program nor the potential costs of inappropriate drug substitutions have been documented.

**Substitutability between Drugs within RBP Groups**

RBP differs from other drug cost control measures such as Best Available Price and Least Cost Alternative in that drugs within a group are not required to have the same active ingredients, and need not be bioequivalent. Opponents of RBP claim that lack of perfect interchangeability can induce adverse reactions in patients, as well as increases in non-drug health care costs.

**Inappropriate Prescriptions**

Drug substitution can induce adverse reactions, as well as patient non-compliance and patient destabilization. Indeed, a recent study concludes that deadly drug reactions are more common than is generally perceived (see Abraham and Taylor 1998). Unfortunately, published evidence on how RBP has affected the frequency of these problems is lacking. According to the BC government its program has not been a contributing factor. In support of this conclusion, the BC Ministry of Health cites the decision of Justice E.R.A. Edwards in a case brought against RBP by the Pharmaceutical Manufacturers Association of Canada and seven member companies: “The reference based pricing policy has
changed the pattern of prescription of drugs within each category without any evidence of widespread significant adverse health impacts on patients.”

Critics of BC’s RBP program were quick to identify situations where problems could develop. For example, in treating hypertension once-a-day diltiazem is superior to diltiazem tablets in terms of patient compliance, avoidance of hypotension, and persistence of drug effects. But BC’s program only reimburses for the tablets (Boulet and Tessier 1996). The cost of drug treatment for hypertension is small compared to the cost of the illnesses that can result, such as stroke and hypertensive and ischemic heart diseases. Only a few additional cases of adverse reaction would offset any budgetary savings. The additional time and monetary costs incurred by patients and physicians from extra visits should also be considered (Scott 1995; Moore and Scott 1996).

Substitution of Inputs
Ambulatory care, hospital care, and medicines are alternative inputs in providing health services, and substitution between them is possible in response to changes in policy in any one area. Substitutions did occur in some European countries after the adoption of RBP, but it is difficult to disentangle the effects of RBP from the effects of other policy changes that were implemented concurrently or soon after. BC government studies indicate that neither hospitalizations nor physician visits increased in response to the introduction of any of the five RBP classes (British Columbia. Ministry of Health 1997). Contradictory claims have been made by the Better Pharmacare Coalition. And a study by the Canadian Association of Retired Persons found that most doctors and pharmacies have had patients who experienced difficulties when their medications were switched (Canada NewsWire 1997).

Costs of Special Authority
BC’s RBP program allows physicians to apply for “special authority” to have patients fully reimbursed for drugs priced above the RBP level. BC Pharmacare has been receiving up to 400 special authority requests per day (Mullens 1997b). Reportedly, over 95 percent of requests are approved within 48 hours of application (British Columbia. Ministry of Health 1997; Chappell et al. 1997). But completing the authorization form is time-consuming for physicians, and because of the approval delay patients cannot obtain their preferred drug immediately.

Another consideration is that if special authority is not granted, patients can still pay the difference between their preferred drug and the base drug. This introduces an element of two-tiered health care that the NFH wants to avoid.

Potential Impacts of RBP on Drug Pricing
It is well beyond the scope of this paper to develop a model of how RBP could affect the pricing of drugs in Canada. Such a model would have to contend with a number of complicating features of the Canadian pharmaceutical market:

1. Brand-name drugs are produced by multinational companies with sales in many countries. Canada is a small player on the world market, accounting for less than 2 percent of total sales. Pricing of drugs in Canada may therefore be dominated by considerations external to the Canadian market.

2. Firms with new patented products follow different pricing strategies; see Schweitzer (1997, ch. 4). One, referred to as a “penetration strategy,” involves setting a low price initially to build market share and later raising the price appreciably. This is common for me-too drugs with limited therapeutic advantages. By contrast, a “skimming strategy,” typical for innovative drugs, entails a high initial price and slower growth over time.

3. Drug demand is comprised of market segments (e.g., retail pharmacies, hospitals) with different demand elasticities. Drug firms prices discriminate between segments and are alleged to
offer kickbacks to pharmacists (Anis 1992). Brand loyalty also differs across drug categories.

4. While on patent, brand-name drugs are protected from competition with generic drugs. Once off patent, entry of generic drugs may occur progressively over time.

5. Generic drugs are usually better substitutes for each other than for brand-name products. Entry tends to drive down prices of existing generic products more than prices of brand name drugs (Caves, Whinston and Hurwitz 1991).

6. Brand-name manufacturers typically raise the price of their off-patent drugs over time and allow their market shares to decline. Prices tend to increase more quickly for drugs devoted to chronic ailments than to acute ailments (Hudson 1992).

7. Brand-name firms have been introducing their own generic drugs into markets where they continue to sell their brand-name products, and have an incentive to account for the interdependence between sales of their products when setting prices.

8. Drug companies may lower drug prices in jurisdictions where RBP has been implemented in order to preserve their sales, while maintaining higher prices in non-RBP jurisdictions.

9. Only part of the Canadian population is covered by drug plans that would be subject to RBP (although this would change if a national pharmacare plan were adopted).

10. The PMPRB oversees manufacturer drug prices in Canada.

The international evidence reviewed above is that the introduction of RBP drove down prices where it was implemented. This may seem natural given that RBP effectively imposes a price ceiling. But oligopoly theory suggests that RBP may encourage firms to raise, rather than lower, their prices. This is because, by enforcing sales at the lowest price, RBP acts like a most-favoured-customer clause, which can act as a commitment device to soften price competition.

Evidence that an RBP-like policy did induce price hikes is reported by Morton (1997). The policy in question was introduced in the US under the Omnibus Budget Reconciliation Act (OBRA) of 1990. Under this legislation, Medicaid effectively mandated a most-favoured-customer clause on suppliers by offering to reimburse them the lesser of the lowest price offered in the drug class and 87.5 percent of the median price. The Office of the Inspector General acted as enforcer, so that firms could be confident that their rivals were not cheating. According to Morton, OBRA led to a 4.3 percent increase in the median price of branded products with generic competitors, although it had no discernible effect on the prices of on-patent drugs. Of course, because of differences in legislation and markets, these results are at best suggestive of how drug pricing might respond to the introduction of a national RBP program in Canada.

In summary, there is scant evidence on the efficacy of RBP, either in British Columbia or other jurisdictions that have adopted it. RBP appears to have had some impact on drug prices, but the effects are confounded by other changes in pharmaceutical policy that were implemented concurrently. Substitution between medicine and other health inputs also occurred, but interpretation of the shift is controversial. A problem in assessing the health outcomes impact of RBP in some jurisdictions is the lack of appropriate data.

Reference-based pricing is intended to concentrate drug plan purchases on drugs with the lowest prices and to encourage firms to lower prices. The PMPRB currently regulates both introductory prices and rates of change in prices of patented medicines (both on and off-patent). In principle, its mandate
could be extended to generic drugs as well, which would appear to usurp a role for reference-based pricing. But the NFH expresses scepticism about how effective the PMPRB has been in regulating patented drug prices (1997c, p. 16) and does not favour extending its authority to non-patented medicines. Nevertheless, there would be interaction effects between a national RBP policy and the current operation of the PMPRB that deserve careful evaluation. Clearly, more theoretical and empirical work is needed if reference-based pricing is to be seriously considered nationally in Canada.

R&D AND THE NATIONAL FORUM’S “FUND FOR HEALTH RESEARCH”

The NFH advocates in Recommendation f that the pharmaceutical industry’s research commitments under Bill C-91 be redefined as mandatory contributions to a fund “for health research broadly defined.” In this section we critique such a requirement.

Commercial Focus of Industry

The NFH is concerned that the drug industry’s research efforts and priorities are driven by “the prospects for development of profitable products and favourable marketing environments” (1997c, p. 7). Presumably the NFH would not prefer that companies focus on unprofitable products and unfavourable markets. To be sure, economic theory suggests reasons, such as business stealing externalities and product proliferation, why commercial and social gains may not be perfectly aligned. It is also true that “discover by design” technologies have made it easier for firms to create drugs that are close substitutes for existing products.

Unfortunately, little has been written about the orientation of corporate pharmaceutical research. Some insight is provided in a literature survey by Lexchin (1995). Lexchin addresses three questions: (i) What is the quality of industry-sponsored research? (ii) Is there evidence of bias in the type of research that industry supports? (iii) Does industry interfere with publication of results, for example, by delaying publication of studies with unfavourable results?

Bearing on the first question is a study by Rochon et al. (1994), who found that a higher proportion of articles in journal supplements were solely industry-sponsored than were articles in parent journals. The fact that quality scores were higher for articles published in parent journals than in supplements could be taken as evidence that industry-sponsored research is of lower average quality. However, a survey by Massie and Rothenberg (1993) concluded contrarily that a higher proportion of industry-funded clinical studies were adequately controlled and designed.

Regarding bias in industry-supported research, Lexchin found three studies that uncovered weak evidence that industry research is directed toward commercial interests and biased toward the funder’s products. Yet as one of the studies pointed out, association does not imply causation. The only article directed to the third question by Easterbrook et al. (1991), determined that industry-funded studies are less likely to be published, regardless of their results. However, many of these studies were not intended for publication.

Possible bias in industry-sponsored pharmaco-economic research has been addressed by Drummond (1998). Concern appears to be more widespread than about bias in clinical trials because of the greater discretion in pharmaco-economic analysis regarding methodology and assumptions. Nevertheless, hard evidence of actual instances of bias has been difficult to identify.

Given the proprietary nature of pharmaceutical research, it may seem surprising that companies publish their results at all. In a discussion of scientific research in general, Stephan (1996) identifies several motives for publication, including the desire to recruit young scientists, attract grants, and
enhance the reputation of the corporate laboratory. Firms also have motives to engage in basic research, including the belief that new products or processes will result, and the need to understand rapidly moving developments in the field.

In the case of pharmaceutical research, Schwartzman and Cognato (1996) have recently challenged the idea that basic research drives applied research. They argue that many drugs are developed “inductively,” and that empirical research following up on leads derived from general knowledge feeds back by generating new knowledge. In this view, industrial laboratories do perform much of the research that would normally be categorized as “basic.” Finally, it should be noted that development of similar drug products tends to have beneficial effects on price competition (Caves, Whinston and Hurwitz 1991; Grabowski and Vernon 1992).

Financing R&D
The NFH’s recommendation on pharmaceutical R&D funding is reminiscent of a proposal by the Eastman Commission to set up a pharmaceutical royalty fund under Canada’s former system of compulsory licensing of brand name drugs. Licensees were to pay into the fund royalties equal to a fraction of their sales revenue in Canada. This fraction was set at the worldwide ratio of R&D expenditures to sales (about 10 percent at the time) plus an additional 4 percent to cover the spillover benefits licensees would receive from the promotional efforts of patent-holding firms. Royalties from the fund were to be paid out periodically to licensees in proportion to their R&D expenditures in Canada, plus the 4 percent.

Because the NFH provides no details about its proposed fund for health research, a formal comparison of its fund and the Eastman Commission’s fund is not possible. Still, several points deserve consideration. First, the Eastman Commission’s fund would not have wrested control of R&D away from the private sector. Second, the commission’s fund was confined to pharmaceutical research. In contrast, the NFH’s fund would be devoted to “health research broadly defined.” Indeed, the NFH remarks (1997a, p. 18) that basic and clinical research receive far more emphasis and funding in Canada than does research on non-medical determinants of health. It seems possible, therefore, that the NFH advocates an implicit tax on the pharmaceutical industry to fund research on aspects of health care that are far removed from drug therapy. It is unclear why the onus for such research should be placed on the pharmaceutical industry rather than on any other industry, or indeed the public at large.

Third, the NFH proposes to administer the fund through the national granting bodies. At a time of languishing budgets for Canada’s three national granting agencies, such a proposal may have some attraction. But the case for such a plan would be stronger if there were evidence that public funding fills in the gaps left by the corporate sector. Yet as Palda (1989) has remarked:

No empirical investigation, however, has yet been undertaken in Canada to see if the degree of an industry’s (or a firm’s) inappropriability is correlated with the subsidizing generosity of the public purse (p. 5).

In principle, account should also be taken of the costs of administering and adjudicating research grants in comparison with the overhead costs of conducting research in-house at the pharmaceutical companies.

Fourth, pharmaceutical companies make large investments in R&D in order to discover new drugs, and additional investments to prove a new drug’s safety and efficacy. The cost of bringing a drug to market is estimated to be as high as US $500 million. Only a small percentage of a typical drug company’s products turn out to be winners in the sense of generating relatively large sales and profits. The returns on these products must cover the R&D costs incurred on the losers. Thus, divesting pharmaceutical companies of research funds may undermine...
their ability or willingness to engage in R&D, as well as forfeit economies in the pursuit of research. The recent enthusiasm for mergers between pharmaceutical firms has purportedly been driven by the hope of substantial cost savings in R&D. The empirical evidence on economies of scale in pharmaceutical R&D is, in fact, mixed. Henderson and Cockburn (1996) report evidence of diseconomies of scale in expenditure on individual research programs, but positive economies within firms due to shared inputs and internal spillovers of knowledge. They also detect economies of scope across individual R&D programs (economies that have increased over the last 20 years), as well as positive external spillovers between firms in the productivity of R&D programs.

Contrary evidence that broad scale economies are becoming less important is the proliferation of small biotechnology firms, to whom large firms have been contracting out increasing volumes of research. Thanks to technological advances such as “discovery by design,” large and diversified research portfolios may no longer be required to reduce risk to acceptable levels. As a result, biotechnology firms can focus on specific drug categories and stages in the R&D pipeline, thereby taking advantage of any economies of scale in their specialization.

Finally, in assessing the case for a large public sector role in pharmaceutical research it is worth noting that the mix of public and private spending varies appreciably across countries. In Germany, research-based drug companies fund R&D almost wholly out of their revenues, unlike firms in other research-intensive sectors of the German economy (Ulrich and Wille 1996). Yet Germany is one of the five most active countries in pharmaceutical research worldwide.

**Encouraging Pharmaceutical Research in Canada**

The Eastman Commission was pessimistic about the prospects of Canada becoming a centre for either pharmaceutical research or production. Since then, the political and economic climate in Canada has improved, due in part to the requirements for R&D stipulated in Bill C-22 and Bill C91.45 According to McRae and Tapon (1994), R&D expenditures in Canada increased from 3 percent in 1987 to 9.7 percent of sales in 1991. And the proportion spent on basic research rose from 19 percent in 1988 to 27 percent in 1990 and 1991.46 The generic industry in Canada is also increasing its R&D activity (Kingston 1996).

There remains a danger, however, that R&D by large pharmaceutical firms will be suppressed if they perceive an adverse change in the environment. The Eastman Commission was told that a number of R&D projects in Canada were not undertaken because of disapproval over compulsory drug licensing, the Foreign Investment Review Agency, and even the National Energy Program (Eastman 1985, p. 343; see also Hewitt 1984).

Furthermore, the pharmaceutical industry’s decisions about where to site R&D activities depend not only on policies toward research per se, but also on the market for sales of drugs themselves. Two of the National Forum’s other proposals, reference-based pricing and prohibitions of direct-to-consumer advertising, could impact adversely on the retail drug market, and thus on research. As the Eastman Commission remarked:

The innovating firm often ensures that some clinical trials take place in countries that will provide future markets so that prominent physicians may become familiar with the product and hasten its acceptability when it is marketed (p. 358).

More recently, in commenting on industrial policy in the UK, Towse (1996, pp. 22-23) has observed:

It has been argued that, if the UK is a good place to conduct R&D ... companies that want to be globally successful will invest here, irrespective of the difficulty of selling medicines to the [National Health Service]. However, these arguments...
do not recognize the importance of purchasing attitudes to investment incentives. The pharmaceutical industry is concerned about the opportunism of governments as purchasers who seek a free ride on innovation.47

Finally, various writers have espoused the view that, being a small player in the world market, Canada can free ride on the incentives that other countries provide for pharmaceutical research. This would appear to be inconsistent with Canada’s position on other global public goods, such as peacekeeping and environmental protection.

**Concluding Remarks**

This paper has critically examined several recommended changes to pharmaceutical policy in Canada put forward by the National Forum on Health. The NFH’s main recommendation is that prescription drugs be included as a fully funded component of the Canadian federal-provincial health insurance system. A national pharmacare plan has a superficial appeal in that it would replace the current seeming hodgepodge of provincial cum private coverage, based on age, place of residence, employment status, and income. But such a plan would constrain individuals to consume the same package of health services, prevent provinces from tailoring their insurance plans to local circumstances, and preclude the advantages of having provinces experimenting independently with ways to improve the quality and cost effectiveness of health care.

Furthermore, the NFH does not explain why expanded coverage of provincial drug plans, while retaining existing private drug plans, would not be sufficient to meet its equity objectives. And it does not show how a national pharmacare plan would reduce either the level of, or rate of growth in, pharmaceutical expenditures.

Second, the NFH favours the adoption of reference-based pricing for Canada. RBP was adopted in British Columbia in late 1995, and in New Zealand and some European countries earlier. Differences in the structure of the plans and the healthcare sectors prevent easy inferences about how well a national plan for Canada would operate. And there is scant evidence on how existing RBP policies have affected drug prices in the respective jurisdictions, how the rate of inappropriate prescriptions was affected, or how much substitution between pharmaceuticals and other health inputs occurred. A detailed pharmaco-economic evaluation of RBP in BC, and perhaps other jurisdictions, is needed before RBP can be seriously considered for Canada.

Finally, the NFH recommends that, in return for the patent protection that they receive, pharmaceutical companies be required to turn over some portion of their research funding to support “health research broadly defined.” This recommendation was criticized on three main grounds: that the onus for such research should not fall narrowly on the pharmaceutical industry, that such an obligation might undermine the incentives for multinational drug firms to conduct research in Canada, and that it is not clear that industry research is systematically biased toward drugs that offer no significant benefits to consumers.

**Notes**

The authors would like to thank Peter C. Coyte for comments on an earlier draft of the paper, and members of the audience at presentations at the Institute of Pharmacoeconomics in Edmonton, the Walter C. Mackenzie Health Sciences Centre in Edmonton, and the Canadian Law and Economics Association meetings in Toronto. Thanks are also due to Joe Gebran, Devidas Menon, David Bougher and Aslam Anis for helping us assemble materials in support of this research, and to Charles Beach and three anonymous referees for very helpful suggestions and references. Finally, thanks go to Don Schurman and Joe Gebran for encouragement in undertaking research on reference-based pricing. Financial support for the review of reference-based pricing and drug reimbursement plans in Canada was provided by the Institute of Pharmacoeconomics in Edmonton and is gratefully acknowledged.
Bill C-91 extended patent protection for new prescription drugs to 20 years, and eliminated Canada’s system of compulsory licensing. (See McRae and Tapon 1994, pp. 368-69.) Bill C-91 was passed in 1993, partly as a response to negotiations under the General Agreement on Tariffs and Trade and the North American Free Trade Agreement. It followed up Bill C-22 (mentioned in “R&D and the National Forum’s ‘Fund for Health Research’” following), which extended patent protection from seven to ten years, and created the Patented Medicine Prices Review Board (see “Referenced-Based Pricing” following).

Indeed, during the time since the report was issued, the federal government’s initially strong support for a national pharmacare plan appears to have waned somewhat (Coutts 1998).

For future reference or emphasis, some quotations are numbered in square brackets.

This should be qualified by the observation that the amount of redistribution that society wants to provide may depend on the need for care per se. As Fuchs (1987, p. 617) observes “It may be more efficient to combine the determination of need with the redistribution via the delivery of care than to separate the functions.” On this see also Evans (1984, p. 61).

One might retort that health care is like highways (as the NFH remarks in quote [5]) and highways are publicly paid for. But highways don’t have to be owned, operated, or paid for publicly, as growing experience in a number of countries has demonstrated; see Gómez-Ibáñez and Meyer (1993).

“Necessity,” as the term is used in this context, does not mean a good with income elasticity of demand less than one.

In this connection Fuchs (1987, p. 615) writes: “Despite claims that health is more important than any other goal and that human life is priceless, economists note that individuals make tradeoffs between health and other goals.”

See also Eddy (1991).


President’s Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, pp. 18-19, as quoted by Engelhardt (1992, p. 205).

A Rawlsian would not object if someone spends some of his/her own money on additional health-care necessities. Only an extreme egalitarian, who dislikes inequality per se, would be opposed.

The NFH observes that ethical considerations underlying health-care policy in Canada have not been dealt with consistently. While some countries have national ethics committees, the Canadian Medical Association’s is the only permanent body of this sort in Canada. The NFH concludes that “the present ad hoc approach in Canada of linking values with health policy issues is not acceptable” (NFH 1997e, p. 20).

These estimates are quite sensitive to the elasticity of labour supply. Dahlby conjectures that they would be higher for married individuals with children, for individuals with non-labour income, and if interprovincial labour mobility were accounted for.

Arguments in favour of decentralization are found in Blomqvist (1995).


There is some disagreement as to whether AAC or LCA/BAP is more effective in containing drug prices. Anis (1992) compared drug prices in Nova Scotia before and after the province switched from an LCA to an AAC system and concluded that AAC was superior. Gorecki (1993) compared the former AAC system in British Columbia with Ontario’s BAP plan and came to the opposite conclusion.

BC’s drug plan covers all products excluding those on an exception list.

For example, the Eastman Commission on the Canadian pharmaceutical industry recommended that “provincial governments ensure that public drug reimbursement programs require a significant contribution to each purchase by the consumer” (1985, p. xxix). Other recommendations are discussed in the subsection “Proposals for reform of health care insurance funding in Canada” following.

See for example Kolassa (1995) and Ryan et al. (1996).
A recent study by Mortimer (1997) suggests that physicians do not consider this cost, at least fully. Mortimer estimates prescription drug demand in the United States for four groups: Medicaid patients, Health Maintenance Organization plans, commercial plans (some of which have managed care benefits), and self-paid patients. Estimated drug price elasticities of demand turn out to be lowest for self-paid patients, even though they paid the full cost out of their own pockets. Mortimer interprets this as evidence of an agency problem between physician and patient.

Generic substitution policies, adopted by state and provincial governments as well as some private drug plans, were designed to encourage use of generic drugs.

The evidence on the effectiveness of restrictive formularies is mixed. A recent study by Walser, Ross-Degnan and Soumerai (1996) provides evidence that drugs excluded from formularies typically provide little or no therapeutic advantage compared to drugs that are included. Prior authorization policies require pharmacists to obtain advance approval before dispensing certain drugs, usually drugs for which there are less costly therapeutic alternatives. Smallley et al. (1995) evaluate the effects of a prior authorization policy involving non-steroidal anti-inflammatory drugs (NSAIDs) in Tennessee’s Medicaid program. They find that Medicaid expenditures on drugs declined during the two years after implementation of the policy.

BC Pharmacare has implemented a policy of “academic detailing” whereby Pharmacare representatives visit physicians to provide drug information (Mullens 1997a). Another innovation are journals that synthesize the results of studies published elsewhere to make it easier for physicians to stay abreast of research developments (Taylor 1998).

According to Health Economics (1996) co-payments and dispensing fees also encourage seniors in British Columbia to obtain large quantities of medication on visits to physicians.

The NFH remarks (1997c, p. 8) that Ontario’s initiation of co-payments will have at most a one-time impact on cost escalation. But this has been true of most efforts to contain cost escalation; see Newhouse (1992) regarding US experience. And even if a given measure has no effect on the growth rate of expenditures, its absolute effect will increase as growth continues.

According to The Economist (1997) “One survey found that 90% of doctors will prescribe a drug that a patient specifically asks for.”

For a review of the European experience see de Vos (1996) and Ulriche and Wille (1996).

Descriptions of these institutions and the impact they have had on health-care costs in the US are found in Birenbaum (1997) and Schweitzer (1997, ch. 3).

To the extent that quality is a problem it may derive from the fact that a large fraction of plans are employer-provided. This is encouraged by the US tax code, which makes employer-provided health benefits tax-free, but not individually funded plans. With individuals rather than employers as their customers, HMOs might have a greater incentive to compete on quality as well as price.

Such a measure was introduced for unincorporated businesses in the February 1998 federal budget.

The process by which the program was developed and implemented is described in Maclure and Postashnik (1997).

The PMPRB regulates both introductory prices and rates of change in prices. Comparisons are made with Canadian prices of other drugs in the same therapeutic class, and with median prices in a group of seven OECD countries. Anis and Wen (1998) have recently developed a model to predict the effect of PMPRB regulation on pricing of established drugs in Canada, as well as drugs sold abroad.

Some drugs were withdrawn from the German market because they proved unable to compete with the reference-price products (Health Economics 1996).

According to British Columbia. Ministry of Health, Pharmacare (1996, p. 1), the estimate is derived from “a multifactorial calculation which adjusts for inflation, utilization and population.”

An example of input substitution occurred in Germany in response to the imposition of financial penalties on physicians for exceeding a budget. According to Schöffski (1996) more than half the direct cost savings from the budget constraint were offset by the costs of additional referrals, hospitalizations and work days lost, extra travel by patients and doctors, and increased use of over-the-counter medicines.

It is unclear how much the time cost affects prescribing practice in BC. But two bits of evidence from other countries suggest that the effect could be significant. Under Germany’s RBP system, physicians who prescribe a drug that is more costly than the reference drug are required to inform patients of the financial implications. Most physicians are reportedly unwilling to spend the extra time, and so prescribe the reference agent (Knox 1993). In the US, states with permissive substitution laws employ two types of prescription pads. Pads employing the “two-line method” allow a physician to prohibit substitution without extra writing, whereas pads employing the “one-line method” (or “active substitution method”) require some additional action. According to Hellerstein (1998, p. 110) substitution was prohibited on 41 percent of prescriptions written on two-line pads, but only on 11 percent of prescriptions written on one-line pads. Hellerstein infers from this that small time costs can have a large effect on prescribing practice.

The usual explanation for why brand-name drug prices rise with entry (Caves, Whinston and Hurwitz 1991) is that firms give up the price-sensitive segment of their market and adopt profit-maximizing prices for the remaining inelastic segment. Perloff, Suslow and Seguin (1996) have developed a variant of this argument using a Hotelling spatial model in which the incumbent and entrant’s drugs are differentiated. Depending on the degree of differentiation, the symmetric duopoly Nash price equilibrium can entail higher prices than the monopoly price, as well as higher total profits and higher consumers’ surplus. The duopoly equilibrium price is higher because the demand facing each firm is less price elastic.

Price discrimination is constrained by at least three factors: Canada’s competition law, arbitrage opportunities for third parties, and the vigilance of drug plan managers on the lookout for the lowest price (Gorecki 1993).

In New Zealand, for example, changes in referrals and hospitalizations are difficult to measure because there is no patient register (Moore and Scott 1996).

Hillman et al. (1991) identify a number of possible biases, but do not provide statistical evidence.

Two proposals to establish research funds similar to the NFH’s have been made in the US. (We are grateful to an anonymous referee for bringing these plans to our attention.) In 1983, Andrusi Research Corp. suggested a royalty-financed fund for R&D on pharmaceuticals, to be administered either by the US National Institutes of Health or a “special foundation set up to receive the money” (Love 1994, p. 3). This idea is being promoted by the Center for Study of Responsive Law. More recently, several members of the US Senate proposed that 1 percent of health-care expenditure in the US be devoted to R&D on health care. Apparently, this measure was advanced in response to fears that the Clinton health-care bill would discourage corporate R&D.

The relative merits of the “institute system” of supporting research, which is prevalent in Europe, and the North American grants system are discussed by Stephan (1996).

Scherer (1993, pp. 105-06) summarizes a study of the returns and risks to pharmaceutical R&D by Grabowski and Vernon (1990) as follows:

Using detailed annual sales survey data covering 100 new chemical entities introduced into the United States between 1970 and 1979 and making a host of complex but plausible assumptions concerning time durations, foreign sales, gross profit margins, and R&D costs, Grabowski and Vernon (1990) found that seven-tenths of the new drugs had discounted quasi-rents well below R&D costs ... Of the sample’s revenues, 55 percent came from the top ten drugs, whose average discounted quasi-rents exceeded discounted R&D costs by a factor of five. Thus, new drug development resembles a risky lottery that throws out rich rewards to a few big winners while the majority of entries lose money.

As a referee has pointed out, Grabowski and Vernon’s study is limited to new chemical entities (NCEs), and further to NCEs that were developed wholly in-house, which account for about 40 percent of all NCEs. Yet the results of their study may not be representative for all drugs.

Pharmaceutical research has also increased in other countries in response to the introduction, or improvement, of patent protection (McArthur 1998).
The proportion was 22 percent in 1995 (PMPRB 1996).

The importance of government reputation in dealing with industry is also noted by Lippert (1998).

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