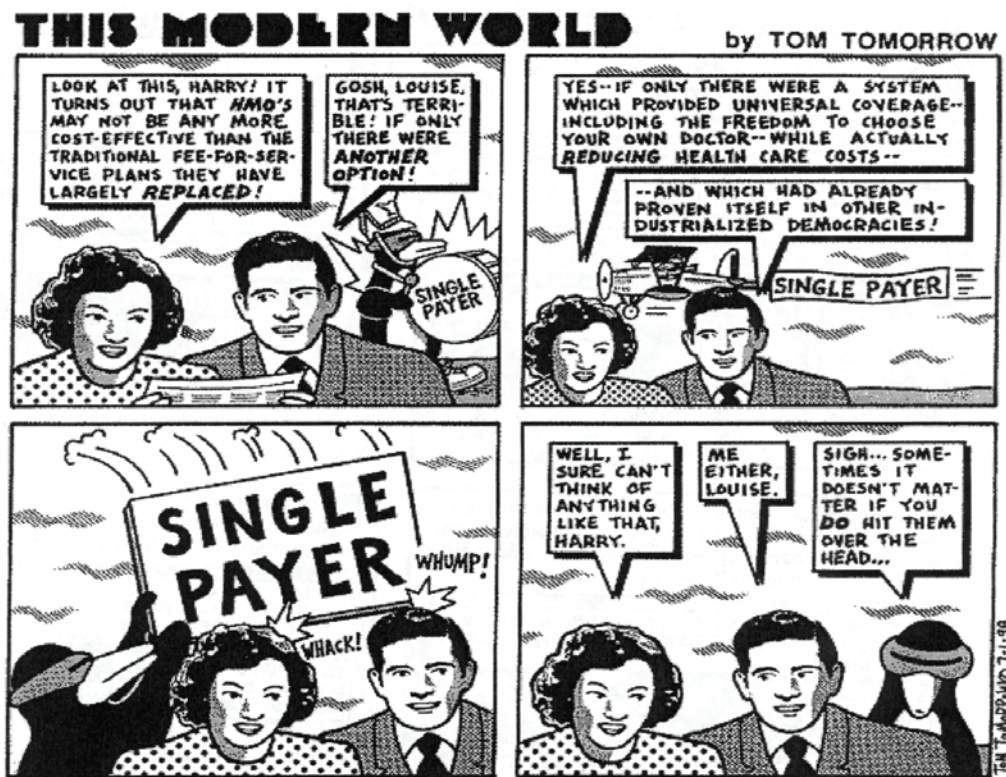


How other countries do it: international health systems

Talking Point 12

Every other industrialized, capitalist country has some form of non-profit national health care.





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International Health Systems for Single-Payer Advocates

By Dr. Ida Hellander

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Health care systems in the Organization for Economic Cooperation and Development (OECD) countries primarily reflect three types of programs:

1. In a single-payer national health insurance system, as demonstrated by Canada, Denmark, Norway, Australia, Taiwan and Sweden, health insurance is publicly administered and most physicians are in private practice. U.S. Medicare would be a single payer insurance system if it applied to everyone in the U.S.
2. Great Britain and Spain are among the OECD countries with national health services, in which salaried physicians predominate and hospitals are publicly owned and operated. The Department of Veteran's Affairs would be a U.S. single payer national health service system if it applied to everyone in the U.S.
3. Highly regulated, universal, multi-payer health insurance systems are illustrated by countries like Germany and France, which have universal health insurance via non-profit "sickness funds" or "social insurance funds". They also have a market for supplementary private insurance, or "gap" coverage, but this accounts for less than 5 percent of health expenditures in most nations.

Sickness or social insurance funds do not operate like insurance companies in the U.S.; they don't market, cherry pick, set premiums or rates paid to providers, determine benefits, earn profits or have investors, etc. In most countries, sickness funds pay physicians and hospitals uniform rates that are negotiated annually (also known as an "all-payer" system). Princeton economist Uwe Reinhardt calls Switzerland's "sickness funds" quasi-governmental agencies**

There is no model similar to sickness funds *** operating in the U.S., although they are often confused with the Federal Employee Health Benefit Program (FEHBP), which is simply a group of for-profit private insurance plans with varying benefits, rules, regulations, providers, etc. The 1993 Clinton health plan was an attempt to regulate private insurance companies in the U.S. to behave more like sickness funds, but the insurance industry defeated it.

Bottom line: The most important point for single payer advocates is that every country with universal coverage has a non-profit insurance system. No country uses for-profit, investor-owned insurance companies such as we have in the U.S. (although they do have a small role in selling "gap" coverage).

Notes:

* The three basic models are general outlines, and there are many examples of "mixed models" (e.g. although Sweden has national health insurance, the hospitals are owned by county government, a feature more common to countries with a national health service).

** Many countries are tinkering with how sickness funds operate (e.g. Germany). The most extreme change is in the Netherlands, which since 2006 has allowed the non-profit regional sickness funds to become for-profit insurance companies, and new insurance companies to form, in the hope that "competition" would control costs. After just one year of experience, the country has experienced 1) a wave of anti-competitive mergers of the insurers 2) emergence of health plans that "cherry pick" the young and healthy and 3) loss of universal coverage and the emergence of 250,000 residents who are uninsured and 4) another 250,000 residents who are behind on their insurance payments. All of the positive data from the Netherlands (on costs, infant mortality, quality, etc) is based on the system pre-2006 (personal communication, Hans Maarse).

*** In the film "Sick around the World" five nation's health systems are shown. The U.K. is an example of a single payer national health service. Taiwan is an example of a single payer national health insurance. Germany, Japan, and Switzerland use multiple "sickness funds" that are non-profit and pay uniform rates to providers ("all-payer")

The OECD regularly publishes a CD-ROM with 10+ years of comparative data for those interested in pursuing further research. It is available on the OECD website at www.oecd.org

Comparative studies of several nations' systems by Gerard Anderson at John Hopkins are on the Commonwealth Fund web site, www.commonwealthfund.org



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PBS Frontline Interview with T.R.Reid, Fall 2008

*T.R. Reid is a veteran foreign correspondent for The Washington Post, a commentator for National Public Radio and the author of nine books, including three in Japanese. He is currently working on his 10th book, titled *We're Number 37!*, in which he compares America's health care system to others around the world. It is scheduled to be published by Penguin Press in early 2009.*

How did you choose the five countries featured in this report?

Two of our choices, Britain and Japan, were pretty obvious. I had lived in both countries, I had doctors there and knew the systems. I could speak the language, sort of, in both places.

Beyond that, we were looking for examples of each of the established models of health care systems. The U.K. uses the Beveridge model; Taiwan has chosen the Canadian-style National Health Insurance [NHI] model; Germany, Japan and Switzerland use the Bismarck model. We went to three Bismarck countries on the theory that these private-sector systems are more relevant to America than a British-style National Health Service.

I got interested in Taiwan because Taiwan's Health Ministry did what our film does; it traveled the world studying health care systems. In the end, Taiwan chose the Canadian model. We went to Switzerland because it is a ferociously free-market economy with politically powerful insurance and drug companies. But still, the Swiss managed to revamp their system, making it cheaper and fairer. We thought that might inspire Americans to believe that change is possible here, too.

You and your family lived in London and Tokyo; what was your experience with the health care systems there?

Our American family used the health care systems in Japan and Britain with considerable satisfaction. Fortunately, we never had a heart attack or cancer, but for the normal family medical problems -- flu, measles, broken bones, earache, etc. -- we got excellent care, with little or no waiting. During a trip to South Asia, I contracted a mysterious tropical disease that left me sick as a dog. When I got back to London, our family doctor diagnosed the problem precisely and found a fast cure.

In Japan, the prices were low; in Britain, there was no price at all. There was no bill! I loved that part of British health care.

In Japan my local government, Shibuya-ku -- it's a part of Tokyo -- sent me a card every year on my birthday, urging me to get a comprehensive physical. I could go to any doctor or hospital in

Shibuya, and the whole thing was free. When I did it, they checked everything -- and I mean everything -- that a man my age might have to worry about. This was a terrific example of preventive medicine.

In your upcoming book about health care you write about the five countries in this FRONTLINE report, as well as a few others. What are some of the good ideas America could learn from other countries?

As we say in the film, the World Health Organization studied every health care system on earth and rated the world's richest country 37th in terms of quality and fairness. The top ranking in that survey went to France, so I went there to see what they are doing right.

The French private insurance system covers all 61 million residents of France, with excellent health results. There's no "in-network" or "pre-authorization"; you can pick any doctor or hospital in France, and insurance has to pay the bill. Doctors are required to post their prices on the wall of the waiting room, so the mystery of American-style medical billing is removed.

Everyone in France has a green plastic card, the *carte d'assurance maladie*. That card has completely replaced paper billing and medical records. The result: administrative costs of 3 percent, compared to 25 percent in the U.S.

While France has achieved 100 percent digital record keeping, the U.S. is years behind on this technology. President Bush has made it a national goal to have 50 percent of American health records in digital form by the year 2014. Who would have thought that France would clean our clock when it comes to high-tech innovation?

The Austrians, who seem to do everything with a clockwork precision, have a precise, modern health care system that is a model of careful organization and cost control. But I think Austria may be too small and not diverse enough to be a model for the U.S.

Canada's system is also pretty good. It has some notorious problems, including waiting lists, but I was impressed by Canada's relentlessly egalitarian approach to health care.

Yes, Canada is one country in particular that many Americans think about when they think of health care. Can you talk a bit about their system: how it's paid for, what works well, what needs fixing, and what we Americans get right and wrong when we talk about it.

Canada uses a National Health Insurance model; that means private providers but public financing. Everybody pays a premium to a single health insurer, run by the government. The Canadians call their system "Medicare," and in fact our system of Medicare for the elderly is a good example of the Canadian-style National Health Insurance model.

Canada's system started in a single province, Saskatchewan. The other provinces saw that it was working, and people demanded that it be expanded to the whole country. This suggests that if one American state set up a sort of Medicare-for-all system and it worked, then other states might demand the same kind of plan, and eventually we'd get a national system.

As we said in the film, the Taiwanese hired a professor at Harvard to study health care systems around the world and choose a model for Taiwan. In the end, they picked the Canadian model, on the grounds that it is cheaper and fairer than the for-profit insurance system used in the U.S.

Canada is fairly stingy in paying for health care; it spends about half of what we do, on a per capita basis. This leads to scrimping. That's why Canadians often have to wait to see a specialist or have elective surgery. Some Canadians respond by crossing the border to buy treatment in the U.S. But most Canadians accept the delays, because they are roughly equal for everybody. A scholar there put it this way: "Canadians don't mind waiting lines, as long as the rich Canadian and the poor Canadian have to wait about the same amount of time."

There was another recent documentary about health care around the world: Michael Moore's *Sicko*. Did you have that film in mind when you set out to make this report?

I thought Michael Moore did a good job in describing the shortcomings of the U.S. system. He didn't pay much attention to our strengths: the best medical education in the world, the most innovative research, the best equipped hospitals. He is an advocate and had a point to make.

But *Sicko* was disappointing when Moore went overseas. He seemed to feel that all foreign health care systems are the same, that they are all "socialized" and that they all work great for low cost. I'd say that's simplistic and wrong. We set out to take a more careful look at the different models in different countries. We saw their problems as well as their successes.

All five of these countries have achieved universal coverage for their citizens, but all five are grappling with rising costs as well. Is this simply a worldwide problem, or is there a fundamental difference between America's rising health care costs and those in other countries? Which countries may be better able to keep a lid on them, and why?

Health care costs are rising everywhere, largely because health care is getting better. Doctors routinely save lives now that would have been lost a decade ago. A lot of this is due to new technology, and new technologies cost money. We shouldn't complain about this. It's hard to imagine anything more worth our money than good health and longer, happier lives. But this is the reason all the countries we visited are struggling with rising costs for health care.

In countries where there is a single health care system -- and thus a single pool of money to pay for it -- it is somewhat easier to control costs. Britain's NHS often decides, for example, that it won't pay for kidney dialysis for a 90-year-old. That means somebody's grandmother will die, but at least Grandma and her relatives know that the money saved is going to be used to help some sick baby or some accident victim.

Limits like that are harder to impose in the U.S. because the money saved here doesn't necessarily help another sick person. If Aetna or United Health declines to pay for somebody's dialysis, the money saved is likely used for dividends to the stockholders or bonuses for the executives. That's a little harder to swallow for the relatives of the sick patient.

It was interesting to learn in the report that some of Switzerland's drug companies make one-third of their profits in the U.S. market. Are we subsidizing these other nations' prescription drugs, and what would happen if America clamps down on prices?

Yes, we subsidize the whole world. Americans pay more for pills than people in any other country. Sometimes, the same tablet made in the same factory costs \$1 in the U.S. and 20 cents in Britain. If we could negotiate lower prices in the U.S., the drug companies would then try to raise prices overseas to make up for the lost revenues.

The pharmaceutical industry spends billions on research. Drug companies say they would have to reduce R&D if Americans paid less for their drugs, but the companies spend more on marketing than they do on research. In Switzerland, when the government started negotiating lower prices for drugs, the companies cut their marketing budgets and maintained the level of R&D.

For the first time since 1992, health care is, according to a Kaiser Foundation poll, a top-three concern for voters, after the economy and Iraq. Do you think that reform is going to happen this time?

Yes. I am confident that we're going to do it. I think Americans are ready for fundamental change, for two reasons.

First, our system is so expensive and inefficient that we can't afford it anymore. It's a big competitive disadvantage for U.S. industry. Second, Americans are too decent and too generous to accept a system that leaves tens of millions of our fellow citizens without access to health care. [According to the Institute of Medicine,] about 18,000 Americans die each year because they can't get the medical treatment that would save their lives. That's morally unacceptable.

So I think both the fiscal and the moral imperative will drive us to major change in 2009.

You note at the end of the report that none of the 2008 presidential candidates' plans really encompass the ideas you found abroad. Do you think there's a distinctly American approach that can solve the problems in our system?

To me, the candidates all seem to be tinkering at the margins of a system that needs fundamental change.

What we've learned overseas is that successful national systems have settled on one model -- be it Beveridge, Bismarck or NHI -- for everybody. This is fairer, cheaper and far more efficient than our badly fragmented crazy-quilt system.

I don't think the systems we see in our film are un-American. The British system -- the Beveridge model -- is the same system used by the U.S. Veterans Administration. If this is un-American, why do we use it for America's military heroes? And the Canadian system -- the National Health Insurance model -- is the model for Medicare. If it were un-American, would we use it for 36 million elderly Americans?

This is not the first project you've done that looked at how other nations address social issues differently -- and often with better results -- than the United States. Has this approach drawn criticism that you're being too hard on America?

Anybody who dares say that other countries do anything better than America is liable to be called unpatriotic.

I wrote a book, *Confucius Lives Next Door*, pointing out that East Asian countries in the Confucian cultural sphere have much lower crime rates than the U.S., more stable families, almost no single mothers. And when I went on talk radio to promote this book, the hosts would say, "You hate America," or, "Well, if Asia is so much better, why don't you just move there?"

In fact, facing up to your country's problems and trying to fix them is a sign of love for your country. The person who really cares about his college, his company or his country is the person who recognizes its shortcomings and tries to improve things. And one excellent way to do that is to study how other colleges, companies and countries have dealt with the same problem.

There are many cherished elements of American life that we copied from other countries: the Interstate Highway System (Germany), text messages (Finland), sushi (Japan), and *American Idol* (Britain). So it can't be unpatriotic to suggest that we could cure our ailing health care system by borrowing ideas from overseas.

This report is about health care, but it's also a travelogue of sorts. What was the most memorable moment from your travels in making this report?

I heard Big Ben toll the hours; I rode the bullet train past Mount Fuji; I ate *leberwurst mit sauerkraut* in Berlin; I flew a fighting kite on a beach in Taiwan; I strolled the breezy shore of Lac Léman with the president of Switzerland. All in all, a lovely trip.

For me, the best moment came at a new hospital in the fishing village of Jinshan, on the east coast of Taiwan. We went there with Professor Bill Hsiao of Harvard, the guy who designed Taiwan's new health care system. In the hospital lobby, we met a woman, Mrs. Lee. She told me that her mother got breast cancer in the 1980s, when Taiwan had no [national] health care system and Jinshan had no hospital. Her mother died. In the late 1990s, the daughter, Mrs. Lee, also got breast cancer. By then, Jinshan had the new hospital and a health care system that gave Mrs. Lee treatment. She is now completely recovered.

I pointed out Professor Hsiao. I said, "Right over there is the guy who set up the health care system that treated your cancer." So Mrs. Lee walked shyly over to Bill Hsiao; she gave him just a tiny, almost imperceptible bow. I thought it was a moving way for someone to say, "Thank you for saving my life."

Case Study: Canada

Despite spending far less per capita for health care, Canadians are healthier and have better health outcomes and better measures of access to health care than Americans.



Access to Care, Health Status, and Health Disparities in the United States and Canada: Results of a Cross-National Population-Based Survey

| Karen E. Lasser, MD, MPH, David U. Himmelstein, MD, and Steffie Woolhandler, MD, MPH

Canada, with a system of universal health insurance, spends about half as much on health care per capita as does the United States, yet Canadians live 2 to 3 years longer.¹ Few population-based data are available on health habits and processes of care in the 2 countries that might explain this paradox. Blendon et al.² found that both US residents and Canadians were dissatisfied with their health care systems, that low-income US residents reported more problems obtaining care than their peers in 4 other English-speaking countries (Australia, Canada, New Zealand, and the United Kingdom), and that quality-of-care ratings were similar in the 5 countries.³ Among other studies, some,⁴ but not all,⁵ have found better health care quality in Canada. Socioeconomic inequalities in health, commonly perceived as pervasive in the United States, seem less stark in Canada.^{2,6–10}

We analyzed population-based data from the recently released Joint Canada/US Survey of Health (JCUSH) to compare health status, access to care, and health care utilization in the 2 countries. We also sought to explore whether universal health insurance can mitigate disparities in health^{11,12}—a question complicated by differences in race, poverty, and immigrant status in the 2 nations.

METHODS

Data Sources

The JCUSH assessed health status, disease prevalence, behavioral risk factors, health care utilization, and access to care in the 2 countries.¹³ Conducted jointly by Statistics Canada and the US National Center for Health Statistics, the survey was administered between November 2002 and March 2003. The JCUSH was a 1-time, random telephone survey (land line only) of noninstitutionalized adults in both countries. Very-low-income

Objectives. We compared health status, access to care, and utilization of medical services in the United States and Canada and compared disparities according to race, income, and immigrant status.

Methods. We analyzed population-based data on 3505 Canadian and 5183 US adults from the Joint Canada/US Survey of Health. Controlling for gender, age, income, race, and immigrant status, we used logistic regression to analyze country as a predictor of access to care, quality of care, and satisfaction with care and as a predictor of disparities in these measures.

Results. In multivariate analyses, US respondents (compared with Canadians) were less likely to have a regular doctor, more likely to have unmet health needs, and more likely to forgo needed medicines. Disparities on the basis of race, income, and immigrant status were present in both countries but were more extreme in the United States.

Conclusions. United States residents are less able to access care than are Canadians. Universal coverage appears to reduce most disparities in access to care. (*Am J Public Health*. 2006;96:1300–1307. doi:10.2105/AJPH.2004.059402)

populations, who may be less likely to own telephones, may be undersampled. The survey content was based on the Canadian Community Health Survey and the US National Health Interview Survey. The sample included 3505 Canadians and 5183 US residents. Using the computer-assisted telephone interview method, trained interviewers administered the survey in English and French for Canadian respondents and in English and Spanish for US respondents.

The JCUSH sample was designed to produce reliable national estimates for 3 age groups (18–44, 45–64, and 65 and older) by gender, with an oversampling of persons aged 65 years and older. Population estimates were derived from the 1996 Canada Census of Population and from the October 2002 US Current Population Survey. Poststratification adjustments for nonresponse were based on age, gender, and region for Canada and age, gender, and race/ethnicity for the United States. Response rates were 69.3% and 50.2% in Canada and the United States, respectively. The response rates were calculated by multiplying the proportion of valid

telephone numbers by the cooperation rate.¹⁴ The proportion of valid telephone numbers was 100% in Canada and only 80% in the United States; the cooperation rate was 69.3% in Canada and 62.7% in the United States. No information is available on the characteristics of nonrespondents. The data were released for public use in mid-2004.

Definition of behavioral risk factors and chronic illnesses. We used the World Health Organization (WHO) definitions of overweight (body mass index [BMI] ≥ 25 but < 30) and obesity (BMI ≥ 30). We defined sedentary lifestyle as no physical activity in the past 3 months. We used the JCUSH definition of current daily smokers—individuals who reported having smoked at least 1 whole cigarette and who smoked cigarettes every day at the time of the survey. The JCUSH defined depression as a 90% or higher likelihood of having had a major depressive episode in the past year, as determined from responses to a subset of questions from the WHO 1990 Composite International Diagnostic Interview.¹⁵ The JCUSH also asked respondents whether they had diabetes, asthma,

hypertension, arthritis, chronic obstructive pulmonary disease, or heart disease.

Definition of health status measures. The JCUSH administered the Health Utility Index¹⁶ to all respondents. The index is based on the Comprehensive Health Status Measurement System¹⁷ and provides a description of an individual's overall functional health on the basis of 8 attributes: vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain and discomfort. The JCUSH also administered an impact-of-health scale, based on the following question: "How often does a long-term physical condition or mental condition or health problem reduce the amount or the kind of activity you can do at home, at school, at work, and in other activities, for example, transportation or leisure?" The impact-of-health scale was adapted from the WHO's International Classification of Functioning¹⁸ and has been shown to have good validity and reliability (according to Andrew MacKenzie, MA, oral communication, March 2005).

Definition of access to care and health services measures. Respondents were considered to have an unmet health care need if they felt they had needed, but had not received, a health care service in the past year. In accordance with screening guidelines in both countries,^{19–22} we defined women aged 18 to 65 years with an intact uterus as eligible for cervical cancer screening and women aged 50 to 69 years as eligible for mammography screening. The guidelines stipulate that eligible women receive Papanicolaou (Pap) tests every 3 years.^{20,22} Unfortunately, for the question "When was the last time you had a Papanicolaou test," JCUSH offered response choices of: "1 year to less than 3 years ago" and "3 years to less than 5 years ago." Hence, women who had fulfilled screening guidelines by receiving a Pap test exactly 3 years ago could not be differentiated from those whose most recent Pap test was more than 3 years (but less than 5 years) ago. For this reason, we present results for Pap tests "1 year to less than 3 years ago" and "3 years to less than 5 years ago."

Guidelines in both countries also stipulate that eligible women receive mammograms every 2 years.^{19,21} When asked the date of their last mammogram, women were offered responses including: "1 year to less than 2

years ago" and "2 years to less than 5 years ago." Because it is not possible to determine precisely which women received mammography within the recommended screening interval (2 years or less), we present results for both response categories.

Respondents also were asked to rate the quality of the physician, hospital, and community-based care they received in the past year and to rate their satisfaction with such care. The satisfaction and quality questions used in the JCUSH have not been validated, nor have they been tested for reliability.

Statistical Methods

We used the SAS computer statistical package, Version 9.1 (SAS Institute Inc, Cary, NC). We performed χ^2 tests to compare differences in demographics, health status, and access to care between groups. In secondary analyses, we compared access to care and receipt of health services between US insured and US uninsured respondents, between US insured and all Canadian respondents, and between the US uninsured and all Canadian respondents. In analyses stratified by country, we also used the χ^2 test to compare health status, access to care, and receipt of health services between White and non-White respondents, between foreign-born and native-born respondents, and between respondents in the highest and lowest income quintiles. To derive accurate tests of statistical significance, we used SUDAAN statistical software (Research Triangle Institute, Research Triangle Park, NC; 1989), which adjusts for the survey's complex sampling design.²³

We used multiple logistic regression to analyze country (United States vs Canada) as a predictor of 5 access-to-care variables (having a regular medical doctor, having contacted any medical doctor in the past 12 months, needing but not getting medicines because of cost, having unmet health care needs in the past year, and having a dental visit within the past year) and as a predictor of perceived quality of care and satisfaction with health care. In these analyses, we controlled for gender, age, income level, race, and immigrant status. Income data were missing on 32% of respondents. Because respondents without income data differed demographically from other respondents, we

treated missing values for income as a separate group in the analysis.

To detect differences between the United States and Canada in the presence of disparities on the basis of race, income, and immigrant status, we included interaction terms between country and race, immigrant status, and income, respectively. Because the interaction terms between country and immigrant status and between country and income were statistically significant in many of the logistic regression models, we present data in multivariate logistic regression models stratified by country.

RESULTS

Demographic Characteristics, Behavioral Risk Factors, and Health Status

The demographic characteristics of respondents, according to country of residence, are shown in Table 1. The study population was representative of 206 million US adults and 24 million Canadian adults residing in households during 2002. United States residents were more likely to be non-White and native-born than were Canadians. United States residents had, on average, higher incomes and greater relative poverty rates (the proportion of respondents with income less than 60% of the median income) than did Canadians. With the important exception of having lower rates of cigarette smoking, US respondents were less healthy than Canadians, with higher rates of obesity, physical inactivity, diabetes, hypertension, arthritis, and chronic obstructive pulmonary disease (Table 2).

Access to Care, Receipt of Health Services, and Perceived Quality and Satisfaction

Table 2 also shows responses regarding access to care, receipt of health services, and perceived quality and satisfaction in the 2 countries. In unadjusted analyses, fewer US residents than Canadians had a regular medical doctor. United States residents were more likely to have forgone needed medicines in the past year. Compared with Canadian women, US women had higher Pap test rates (at both 3- and 5-year intervals). US women reported higher rates of mammography screening "within less than 2 years" but not within the past 5 years. US respondents were

TABLE 1—Demographic Characteristics of the Sample, by Country of Residence: United States and Canada, 2002

	United States (n=5183), % ^a	Canada (n=3505), % ^a	χ^2 P
Women	52.0	50.9	.38
Age, years			
18–40	43.3	43.6	.79
41–64	40.7	40.7	.97
≥ 65	16.0	15.6	.62
Race ^b			
White	72.3	82.1	<.0001
Black	12.0	...	
Other/multiple race	15.7	17.9	.02
Hispanic	11.6	...	
Foreign born	16.1	19.9	.0001
Formal education	50.8	49.2	.21
beyond high school ^c			
Household income, US\$ ^d			
0–19 999	12.9	13.5	.03
20 000–34 999	17.9	22.2	<.0001
35 000–69 999	35.5	39.6	<.0001
≥ 70 000	33.7	24.7	<.0001
Relative poverty rates:	22.9	18.8	.0002
less than 60% of median income			
Marital status:	64.7	65.4	.16
married/ common law/ partner			

^aPercentages were weighted to approximate the US population as determined from the October 2002 Current Population Survey, and to approximate the Canadian population as determined from the 1996 Census.

^bRace and ethnicity were self-reported. Because of small numbers, Blacks and Hispanics were not identified in the Canadian sample. In the United States, respondents of Hispanic descent were coded as Hispanic regardless of race (Black, White, or other race).

^cIncludes college degree or vocational training.

^dCanadian dollars were adjusted for 2002 purchasing power parity.

slightly more likely than Canadians to give a rating of excellent to their hospital care (but not to their physician or community-based care). United States respondents also were more satisfied than Canadians with their hospital and community-based care, but not with

TABLE 2—Health Status, Access to Care, and Receipt of Health Services, by Country of Residence: United States and Canada, 2002

	United States (n = 5183), % ^a	Canada (n = 3505), % ^a	χ^2 P
Behavioral risk factors			
Overweight	33.9	34.0	.94
Obese	20.7	15.3	<.0001
Sedentary lifestyle ^b	13.6	6.5	<.0001
Current daily smoker ^c	16.8	19.0	.02
Chronic illness prevalence			
Diabetes	6.7	4.7	.0002
Asthma	7.6	6.7	.17
Hypertension	18.3	13.9	<.0001
Arthritis	17.9	16.0	.02
COPD	1.9	1.0	.0003
Heart disease	5.9	5.5	.43
Major depression in past year ^d	8.7	8.2	.45
Measures of health status			
Health Description Index excellent or very good	58.9	60.4	.21
Health Utility Index ^e above lowest quartile	76.0	78.6	.01
Difficulty with activities sometimes or often	28.3	27.3	.37
Any cognitive problem	30.2	27.3	.007
Impact of health problems ^f sometimes or often	29.1	29.7	.57
Access to care/receipt of health services			
Regular medical doctor	79.6	84.9	<.0001
Needed medicines but could not afford them	9.9	5.1	<.0001
Papanicolaou test within less than 3 years ^g	88.9	79.0	<.0001
Papanicolaou test within less than 5 years	91.9	82.9	<.0001
Mammogram within less than 2 years ^h	88.8	81.3	.003
Mammogram within less than 5 years	96.3	94.9	.29
Contacted any medical doctor in past 12 months	82.5	83.4	.32
Dentist within past year	64.8	64.2	.60
With high blood pressure and received treatment in past year	92.4	89.5	.10
With asthma and received medication in past year	80.6	80.7	.98
With depression in past year and has consulted with a health professional	51.8	55.7	.36
Unmet health care needs ⁱ	13.2	10.7	.002
Because of long waiting time	0.7	3.5	<.0001
Because of cost	7.0	0.8	<.0001
Because of other reasons ^j	6.4	7.2	<.0001
Perceived quality of care and satisfaction with care			
Quality of health care received—excellent	41.9	39.0	.02
Hospital care	53.7	46.4	.001
Physician care	58.9	59.3	.81
Community-based care	46.9	41.5	.14
Satisfaction with health care received—very satisfied	53.3	43.7	<.0001
Hospital care	60.0	44.9	<.0001
Physician care	68.1	66.2	.19
Community-based care	60.7	50.5	.006

Continued

TABLE 2—Continued

Note. COPD = chronic obstructive pulmonary disease.

^aPercentages are weighted to approximate the US population as determined from the October 2002 Current Population Survey and to approximate the Canadian population as determined from the 1996 Census.

^bDefined as no physical activity in the past 3 months.

^cIndividuals who report having smoked at least 1 whole cigarette and now smoke cigarettes every day.

^dNinety percent or greater probability that the respondent would have been diagnosed as having a major depressive episode in the past 12 months if he or she had completed the Long-Form Composite International Diagnostic Interview.

^eThis index provides a description of an individual's overall functional health on the basis of 8 attributes: vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain and discomfort.

^fDerived variable on the basis of responses to the following question: "How often does a long-term physical condition or mental condition or health problem reduce the amount or the kind of activity you can do at home, at school, at work, and in other activities, for example, transportation or leisure?"

^gAmong women aged 18–65 years who had not undergone hysterectomy.

^hAmong women aged 50–69 years.

ⁱOn the basis of responses to the following question: "During the past 12 months, was there ever a time when you felt that you needed health care but you did not receive it?"

^jBecause of care not available in area, not available when required, felt would be inadequate, too busy, did not get around to it, did not know where to go, transportation problems, language problems, personal/family responsibilities, dislikes doctors/afraid, decided not to seek care, or other reason.

their physician care. Although more US respondents had unmet health care needs than did Canadians (13.2% and 10.7%, respectively), their reasons for having such needs differed. Seven percent of US respondents (and less than 1% of Canadians) had unmet needs because of financial barriers, whereas 3.5% of Canadians had unmet needs because of waiting times (vs less than 1% of US residents).

Table 3 presents data on access to care and receipt of health services according to country and insurance status (analyses limited to US respondents) and according to country and race. Across virtually all measures, uninsured US residents had much worse access to care, received fewer medical services, and rated the quality of their care lower than did insured US residents. The uninsured were also less satisfied with the care they received. The US uninsured fared much worse than Canadians on most of these measures, whereas the US insured fared slightly better than Canadians (results of statistical testing not shown). Non-Whites were more obese than were Whites in the United States, but the opposite was true in Canada. In both countries, non-Whites were more sedentary. Racial differences in access to care were less marked in Canada than in the United States. Yet among the approximately 8% of respondents who reported depression in the past year, non-Whites in both countries (and the US uninsured) were less likely to receive treatment than were Whites or the US insured. Unlike non-White US residents,

non-White Canadians were less likely to have received a Pap test within the past 3 years. Non-Whites in both countries had lower perceived quality of care and satisfaction than did Whites.

Unadjusted analyses of health status, access to care, and receipt of health services according to country, immigrant status, and income are available from the authors by request. These analyses revealed that the US foreign-born residents have worse access to care than do the US native-born residents, and that US respondents with incomes in the lowest quintile were less likely to have a regular medical doctor or to have contacted any medical doctor in the past 12 months than were US respondents in the highest quintile. Such differences in access were not present in Canada.

Multivariate Results

Table 4 presents the results of multivariate analyses of access to care, using logistic regression to examine the impact of income, age, gender, race, and immigrant status. US residents (compared with Canadians) were less likely to have a regular doctor, more likely to have unmet health needs, and more likely to forgo needed medicines. US respondents were also more likely to say that they were very satisfied with the way health care services were provided. At the same time, US respondents were more likely to report that they were somewhat or very dissatisfied with health care services (odds ratio = 1.27, 95%

confidence interval = 1.04, 1.54; data not shown in Table 4). In both the United States and Canada, respondents in the highest income quintile (compared with those in the lowest income quintile) had better access to care by most measures. The foreign-born respondents in both countries were less likely to perceive their quality of care as excellent than were the native born, although only in the United States were foreign-born respondents less likely to have a regular medical doctor, to have contacted a medical doctor in the past year, or to be very satisfied with their care. Non-Whites in both countries were less likely to be very satisfied with their health care than were Whites, although only in the United States were the former more likely to report unmet health care needs or to forgo needed medicines and less likely to have had a dental visit or to rate their quality of care as excellent.

DISCUSSION

Compared with Canadians, US residents are one third less likely to have a regular medical doctor, one fourth more likely to have unmet health care needs, and more than twice as likely to forgo needed medicines. Problems accessing medical care are particularly dire for the US uninsured. When they do receive medical care, US residents are more likely than Canadians to rate their satisfaction at the extremes (high and low) of the satisfaction scale. Health disparities on the basis of race, income, and immigrant status are present in both countries, but appear to be more pronounced in the United States.

Our analyses of quality of care and satisfaction are limited, because JCUSH questions were not tested for validity and reliability. In addition, the JCUSH contained no outcome data. We observed 1 quality problem in Canada—at least 17% and perhaps as many as 21% of Canadian women are not receiving recommended cervical cancer screening. This deficiency may reflect low reimbursement rates for this service in Canada. However, death rates from cervical cancer have long been lower in Canada than in the United States,¹ presumably reflecting past screening practices and population risk factors. The JCUSH data suggest

TABLE 3—Access to Care and Receipt of Health Services, by Country and Insurance Status (for United States Only) and by Country and Race: United States and Canada, 2002

	US Insured (n = 4565), % ^a	US Uninsured (n = 523), % ^a	χ^2 P	US White (n = 3826), % ^a	US Non-White, (n = 1127), % ^a	χ^2 P	Canadian White (n = 2890), % ^a	Canadian Non-White (n = 565), % ^a	χ^2 P
Access to care/receipt of health services									
Regular medical doctor	84.6	40.0	<.0001	82.2	72.7	<.0001	85.6	80.7	.02
Contacted any medical doctor in past 12 months	85.9	55.6	<.0001	84.3	77.8	<.0001	83.6	82.1	.48
Dentist within past year	68.0	39.5	<.0001	68.5	55.1	<.0001	64.1	64.5	.90
With high blood pressure and received treatment in past year	92.9	83.5	.15	91.8	93.8	.39	88.9	91.5	.49
With asthma and received medication in past year	83.9	52.3	.02	79.7	81.5	.78	82.7	68.3	.18
With depression in past year and has consulted with a health professional	55.6	36.2	.008	60.5	29.8	<.0001	60.5	33.3	.0003
Needed medicines but could not afford them	7.6	28.3	<.0001	8.3	14.4	<.0001	4.9	6.0	.32
Unmet health care needs ^b	10.2	36.3	<.0001	11.1	18.6	<.0001	10.8	10.2	.71
Because of long waiting time	0.7	0.9	.01	...	...	...	...	...	...
Because of cost	4.0	30.4	<.0001	...	...	...	...	...	...
Because other reasons ^c	6.1	8.7	<.0001	...	...	...	...	...	...
Perceived quality of care and satisfaction with care									
Quality of health care received—excellent	43.4	26.9	<.0001	45.6	31.9	<.0001	40.4	32.5	.002
Hospital care	55.1	38.0	.004	57.8	40.3	<.0001	48.4	36.4	.02
Physician care	59.6	49.5	.01	61.7	49.0	<.0001	61.6	49.6	.0003
Community-based care	52.6	22.7	.0001	56.3	29.6	<.0001	43.4	31.0	.05
Satisfaction with health care received—very satisfied	55.0	36.8	<.0001	56.6	44.2	.0001	45.5	35.0	.0001
Hospital care	61.7	40.9	.0009	64.2	46.2	<.0001	47.7	29.8	.0002
Physician care	68.7	57.7	.006	70.3	60.4	.0001	67.8	58.4	.004
Community-based care	66.1	36.5	.0005	68.0	46.5	.002	53.6	36.4	.009
Behavioral risk factors									
Weight									
Overweight	33.8	36.0	.40	33.4	35.6	.26	35.1	28.5	.007
Obese	20.8	20.3	.85	19.2	25.2	.0004	16.2	12.0	.01
Sedentary lifestyle ^d	12.7	20.7	.0003	11.6	18.7	<.0001	6.0	8.6	.05
Current daily smoker ^e	15.0	30.9	<.0001	17.5	14.6	.04	19.8	15.4	.02
Chronic illness prevalence									
Hypertension	19.2	10.0	<.0001	18.0	18.7	.66	14.3	11.2	.05
Asthma	7.5	7.8	.88	7.4	7.9	.70	7.0	5.6	.25
Major depression in past year ^f	8.0	16.8	<.0001	8.6	9.7	.34	8.3	8.3	.98
Screening history									
Papanicolaou test within less than 3 years ^g	90.6	77.2	<.0001	89.8	87.5	.19	82.1	65.5	<.0001
Papanicolaou test within less than 5 years	93.3	82.2	.0002	93.1	89.6	.04	86.4	67.9	<.0001
Mammogram within less than 2 years ^h	89.6	74.5	.06	88.4	89.3	.77	81.0	82.2	.83
Mammogram within less than 5 years	96.8	87.7	.11	95.9	97.7	.32	94.6	96.3	.53

^aPercentages were weighted to approximate the US population as determined from the October 2002 Current Population Survey and to approximate the Canadian population as determined from the 1996 Census.

^bOn the basis of responses to the following question: "During the past 12 months, was there ever a time when you felt that you needed health care but you did not receive it?" Reasons for unmet health care needs are not presented according to race because of small numbers.

^cBecause of care not available in area, not available when required, felt would be inadequate, too busy, did not get around to it, did not know where to go, transportation problems, language problems, personal/family responsibilities, dislikes doctors/afraid, decided not to seek care, or other reason.

^dDefined as no physical activity in the past 3 months.

^eIndividuals who report having smoked at least 1 whole cigarette and now smoke cigarettes every day.

^fNinety percent or greater chance that the respondent would have been diagnosed as having a major depressive episode in the past 12 months if they had completed the Long-Form Composite International Diagnostic Interview.

^gAmong women aged 18–65 years who had not undergone hysterectomy.

^hAmong women aged 50–69 years.

TABLE 4—Multivariate Analyses^a of Access to Care, by Country of Residence, Income, Age, Gender, Race, and Immigrant Status: United States and Canada, 2002

	All US Respondents Compared With All Canadian Respondents, Odds Ratio (95% CI)	Disparities Among Canadian Respondents, Odds Ratio (95% CI)	Disparities Among US Respondents, Odds Ratio (95% CI)
Regular medical doctor	0.66 (0.57, 0.75)†		
Household income, US \$ ^b			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		1.07 (0.73, 1.57)	1.23 (0.88, 1.71)
35 000-69 999		1.39 (0.98, 1.99)	2.21 (1.62, 3.01)†
≥ 70 000		1.71 (1.13, 2.60)**	2.58 (1.86, 3.57)†
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.73 (0.54, 1.00)*	0.51 (0.41, 0.65)†
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		0.98 (0.71, 1.35)	0.95 (0.76, 1.18)
Contacted any medical doctor in past 12 months	0.94 (0.81, 1.08)		
Household income, US \$ ^b			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		1.05 (0.71, 1.54)	1.12 (0.78, 1.60)
35 000-69 999		1.17 (0.82, 1.68)	1.65 (1.19, 2.31)**
≥ 70 000		1.51 (1.00, 2.27)*	1.72 (1.21, 2.43)**
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.90 (0.66, 1.22)	0.70 (0.54, 0.89)**
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		1.08 (0.78, 1.49)	0.89 (0.70, 1.12)
Self-perceived unmet health care needs in past year	1.27 (1.08, 1.48)**		
Household income, US \$ ^b			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		0.75 (0.51, 1.10)	0.57 (0.40, 0.80)***
35 000-69 999		0.57 (0.40, 0.82)**	0.37 (0.27, 0.52)†
≥ 70 000		0.36 (0.23, 0.57)†	0.25 (0.17, 0.37)†
Immigrant status			
Native born		1.00 (reference)	1.00 (reference)
Foreign born		0.74 (0.51, 1.08)	1.01 (0.75, 1.35)
Race			
White		1.00 (reference)	1.00 (reference)
Non-White		1.00 (0.69, 1.45)	1.45 (1.12, 1.88)**
Needed medicines but could not afford them	2.12 (1.73, 2.59) †		
Household income, US \$ ^b			
0-19 999		1.00 (reference)	1.00 (reference)
20 000-34 999		0.59 (0.38, 0.92)*	0.54 (0.39, 0.77)***
35 000-69 999		0.20 (0.12, 0.33)†	0.26 (0.19, 0.37)†

Continued

that Canada no longer enjoys greater satisfaction with its health care than does the United States.²⁴ It seems plausible that Canada's far lower health spending compromises aspects of care that affect satisfaction but not health outcomes (e.g., the attractiveness of the physical plant or waiting times for elective services).

Our finding that US residents have slightly higher rates of unmet health care needs confirms previous findings.^{2,25} As in previous studies,^{2,25} we found that barriers to care differed in the 2 countries: in the United States cost was the principal barrier, whereas in Canada waiting times were an issue. Canada's waiting times have received substantial press attention in the United States.²⁶ Nonetheless we found that long waiting times led to an unmet health need for only a small percentage (3.5%) of Canadians.

Racial disparities in health, present in both countries,^{27,28} were more extreme in the United States. In multivariate analyses, non-Whites in the United States, but not in Canada, were more likely to have unmet health needs, to forgo needed medicines, and to have lower perceived quality of care than were Whites. Yet non-White Canadians had lower Pap test rates and lower rates of treatment for depression than did White Canadians. It is possible that equalization of financial access may not ensure receipt of culturally conditioned services such as pelvic exams and psychiatric care. Comparing racial disparities in the 2 nations is complicated by the fact that each has a very different non-White population. The reasons for disparities involving Aboriginal Canadians and Asian Canadians may be different from those involving African Americans in the United States. Furthermore, the JCUSH did not provide language data on respondents; it is possible that the observed differences in both countries may in part reflect language barriers.

Income disparities may explain much, but not all, of racial disparities in health.²⁹ For Canadians, we, like others,³⁰ found income disparities in access to care. Like Katz et al.,⁹ we also observed that low-income Canadians have better access to medical care than do low-income US residents. Our study adds to others² in finding marked income disparities in perceived quality of care. Health disparities

TABLE 4—Continued

≥ 70 000	0.07 (0.03, 0.18)†	0.09 (0.06, 0.14)†
Immigrant status		
Native born	1.00 (reference)	1.00 (reference)
Foreign born	0.85 (0.53, 1.37)	0.79 (0.58, 1.09)
Race		
White	1.00 (reference)	1.00 (reference)
Non-White	1.15 (0.74, 1.79)	1.54 (1.19, 1.98)***
Dental visit within past year	1.01 (0.91, 1.13)	
Household income, US \$ ^b		
0–19 999	1.00 (reference)	1.00 (reference)
20 000–34 999	1.41 (1.08, 1.85)**	1.35 (1.03, 1.77)*
35 000–69 999	2.95 (2.28, 3.84)†	2.39 (1.86, 3.08)†
≥ 70 000	5.35 (3.88, 7.37)†	4.79 (3.63, 6.32)†
Immigrant status		
Native born	1.00 (reference)	1.00 (reference)
Foreign born	1.12 (0.89, 1.41)	0.93 (0.75, 1.15)
Race		
White	1.00 (reference)	1.00 (reference)
Non-White	1.00 (0.79, 1.27)	0.67 (0.56, 0.81)†
Quality of health care	1.11 (1.00, 1.23)*	
received—excellent		
Household income, US \$ ^b		
0–19 999	1.00 (reference)	1.00 (reference)
20 000–34 999	1.24 (0.94, 1.65)	1.08 (0.81, 1.44)
35 000–69 999	1.28 (0.98, 1.66)	1.35 (1.04, 1.76)*
≥ 70 000	1.85 (1.38, 2.50)†	1.82 (1.38, 2.38)†
Immigrant status		
Native born	1.00 (reference)	1.00 (reference)
Foreign born	0.68 (0.54, 0.85)***	0.69 (0.55, 0.86)***
Race		
White	1.00 (reference)	1.00 (reference)
Non-White	0.91 (0.71, 1.17)	0.70 (0.58, 0.84)***
Satisfaction with health care	1.47 (1.32, 1.63)†	
received—very satisfied		
Household income, US \$ ^b		
0–19 999	1.00 (reference)	1.00 (reference)
20 000–34 999	1.23 (0.93, 1.62)	1.26 (0.95, 1.67)
35 000–69 999	1.36 (1.05, 1.75)*	1.23 (0.95, 1.59)
≥ 70 000	1.97 (1.47, 2.63)†	1.74 (1.33, 2.26)†
Immigrant status		
Native born	1.00 (reference)	1.00 (reference)
Foreign born	0.86 (0.69, 1.08)	0.74 (0.60, 0.91)**
Race		
White	1.00 (reference)	1.00 (reference)
Non-White	0.75 (0.59, 0.96)*	0.75 (0.62, 0.89)***

Note. CI = confidence interval.

^aMultivariate logistic regression models control for gender, age, income level, race, and immigrant status.

^bCanadian dollars are adjusted for 2002 purchasing power parity. Respondents with missing income included as an income category, effect estimates not shown.

* $P \leq .05$; ** $P \leq .01$; *** $P \leq .001$; † $P < .0001$.

on the basis of immigrant status are also more pronounced in the United States than in Canada. Yet this comparison is problematic because the immigrant populations of the 2 countries differ. In Canada, many recent immigrants are Asian,³¹ whereas in the United States, Latinos are the largest immigrant group, followed by Asians. Unfortunately, the JCUSH contains no data on the country of origin or the date of immigration, precluding more refined comparisons of immigrant health.

The JCUSH is also limited by the different response rates in the 2 nations: 69.3% in Canada and 50% in the United States. The response rate reflects both the proportion of valid telephone numbers and the cooperation rate of potential respondents. The proportion of valid telephone numbers is higher in Canada because numbers can be verified to be working and residential by calling telephone companies; in the United States, numbers cannot be confirmed in the same way. US residents were more likely than Canadians to refuse participation in the survey, and to break off the interview once it was started.¹⁴ Cultural differences between US residents and Canadians may account for both their differential participation in the survey and for the nature of their survey responses.

Comparisons of access to dental care in the 2 countries are of interest, given that neither country has universal dental coverage. Unlike physician services in Canada, which are fully insured in every province, dental coverage varies from province to province. In Canada, income disparities were much more pronounced for dental care than for medical care and were of a similar magnitude to the US disparities.

Universal coverage attenuates inequities in health care and should be implemented in the United States. However, adequate funding to avoid waits for care is essential; otherwise, satisfaction with care may diminish. Moreover, universal coverage is not sufficient to eliminate all health disparities. We also must address inferior systems of care in institutions serving the poor and nonfinancial access barriers such as cultural and language barriers. Simultaneously, policies to address unfavorable social conditions that impact health are sorely needed. Such policies could include reduction of income inequality through tax reform, improved

housing, and expanded educational and employment opportunities for the poor. ■

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Contributors

K.E. Lasser completed the analyses and led the writing. D.U. Himmelstein and S. Woolhandler supervised all aspects of study implementation and reviewed the article. All authors originated the study, conceptualized ideas, and interpreted findings.

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A systematic review of studies comparing health outcomes in Canada and the United States

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ABSTRACT

Background: Differences in medical care in the United States compared with Canada, including greater reliance on private funding and for-profit delivery, as well as markedly higher expenditures, may result in different health outcomes.

Objectives: To systematically review studies comparing health outcomes in the United States and Canada among patients treated for similar underlying medical conditions.

Methods: We identified studies comparing health outcomes of patients in Canada and the United States by searching multiple bibliographic databases and resources. We masked study results before determining study eligibility. We abstracted study characteristics, including methodological quality and generalizability.

Results: We identified 38 studies comparing populations of patients in Canada and the United States. Studies addressed diverse problems, including cancer, coronary artery disease, chronic medical illnesses and surgical procedures. Of 10 studies that included extensive statistical adjustment and enrolled broad populations, 5 favoured Canada, 2 favoured the United States, and 3 showed equivalent or mixed results. Of 28 studies that failed one of these criteria, 9 favoured Canada, 3 favoured the United States, and 16 showed equivalent or mixed results. Overall, results for mortality favoured Canada (relative risk 0.95, 95% confidence interval 0.92–0.98, $p = 0.002$) but were very heterogeneous, and we failed to find convincing explanations for this heterogeneity. The only condition in which results consistently favoured one country was end-stage renal disease, in which Canadian patients fared better.

Interpretation: Available studies suggest that health outcomes may be superior in patients cared for in Canada versus the United States, but differences are not consistent.

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CANADA AND THE UNITED STATES ARE SIMILAR IN many ways, and until 40 years ago their health care systems were nearly identical. At that time Canada adopted a national insurance program (medicare). Simultaneously, the United States implemented its Medicare program for elderly people.

Although both nations continue to rely largely on private funding for drugs, they now differ substantially in both the financing and delivery of physician and hospital services.¹ With respect to financing, Canada has virtually first-dollar, universal public coverage of hospital and physician services. With respect to delivery, not-for-profit institutions provide almost all hospital services, and large for-profit organizations are almost entirely excluded from the provision of physician services. In contrast, the United States relies on a mixture of public and private insurance to finance health care, and leaves 16% of the population without coverage. Investor-owned for-profit providers play a substantial role.

The United States also spends far more on health care, i.e., approximately 15% of its gross domestic product versus about 10% in Canada. In 2003, Americans spent an estimated US\$5,635 per capita on health care, while Canadians spent US\$3,003.

How do these alternative approaches to health care financing and delivery affect health outcomes? Although a number of factors beyond the health care system influence the health of populations, for conditions amenable to medical treatment the health care system is a major determinant of outcomes.^{2,3} The choices the United States and Canada have made may influence access and quality of care, and hence morbidity and mortality. To inform debate on this issue we undertook a systematic review addressing the following question: Are there differences in health outcomes (mortality or morbidity) in patients suffering from similar medical conditions treated in Canada versus those treated in the United States?

Methods

Interested readers can obtain the detailed protocol for this review from the corresponding author. In brief, the formal search included papers and abstracts published up to the end of 2002. The process was standard for systematic reviews: definition of eligibility criteria; a broad search identifying possibly eligible titles and abstracts; selection of titles and abstracts that might possibly be eligible; selection of eligible reports from review of full documents; and abstraction of descriptive information, validity, and outcome data.

Eligibility criteria

We included published and unpublished prospective or retrospective observational studies comparing health out-

comes (mortality or morbidity) in Canada and the United States for patients of any age with the same diagnosis. We excluded randomized trials, studies that identified the patients on the basis of the occurrence of one of the adverse health outcomes of interest, and national disease-specific mortality studies that failed to define the population at risk (that is, those with the disease of interest). For instance, we excluded studies of national rates of death from cancers because lower mortality may be due either to a lower incidence of cancer or to better care for those with the disease.

The review process required many methodological decisions not fully anticipated in the initial protocol. These included issues regarding eligibility. For instance, we considered whether or not to consider low-birth-weight a disease. We decided not to do so because it has a wide variety of social and medical causes with associated differences in prognosis. On the other hand, we decided to include studies of the outcomes of pregnancy because we considered that prenatal and obstetrical care were potentially important types of care that we could legitimately assess. We discussed whether to include studies that evaluated critically ill patients with an array of diagnoses. We decided to do so on the basis that acute illness severity scores are very powerful predictors of outcome across a range of critically ill populations.

Only members of our team who were both blinded to the results of the studies in question and had expertise in the clinical issue at hand participated in these decisions.

Study identification

A professional librarian (N.B.) conducted a search for the studies in bibliographic databases that included EMBASE (1980–Feb. 2003), MEDLINE (1966–Feb. 2003), HealthSTAR (1975–Feb. 2003), EBM Reviews — Cochrane Central Register of Controlled Trials (2003, Issue 1) and Dissertation Abstracts Ondisc (1969–Feb. 2003). The search included an iterative process to refine the search strategy through testing of several search terms and incorporation of new search terms as new relevant citations were identified.

We further conducted a “cited reference search” in Web of Science on the relevant papers and used the “related articles feature” in PubMed. After reviewing 1,357 of the “related articles” and “cited reference” search results and finding only one potentially (but not ultimately) eligible article, we discontinued that part of the search.

Screening process

Our initial search identified 4,923 potentially eligible studies (Fig. 1). Teams of two reviewers independently evaluated titles and, when available, abstracts to determine whether or not the articles might meet eligibility criteria. If

either reviewer concluded that there was any possibility that the article would fulfill eligibility criteria, we obtained the full-text publication.

Assessment of study eligibility

Research staff masked the results (blacked out the results in tables and text) of all studies identified for full evaluation in the screening process. Teams of two reviewers independently assessed all studies identified for full evaluation and resolved disagreements by discussion. Reviewers never assessed the same report at the title/abstract stage and at the full report stage.

For papers deemed eligible, two data abstractors with access to the unmasked paper reviewed the eligibility decision. If the data abstractors had questions about eligibility, the pair of reviewers who initially adjudicated the full blinded paper was informed of the reason for the concern and, still blind to results, reevaluated their initial decision. Their decision after this second review was deemed final.

Methodological quality assessment and data abstraction

Teams of two reviewers independently assessed the methods and abstracted data from all eligible studies; they resolved disagreements through discussion. Information relevant to the methodological quality of the studies included the study design, the populations selected (criteria for diagnosis, similarity of patient groups in the two nations and the degree to which the studied population was representative of the wider universe of patients with the diagnosis), measurement of outcome (that is, the extent to which the outcome measures were defined similarly, and monitored similarly), loss to follow-up, and the extent of risk adjustment for confounders that might affect prognosis. Other data we abstracted included the geographic region in which the study was conducted, the period of observation, the number of participants, and the main outcomes.

We classified studies as being of high or low quality according to the following two criteria:

1. Did the investigators adequately adjust for prognostic differences? Specifically, we considered adjustment inadequate if either disease severity or comorbidity were not considered in the analysis. In the case of cancer, this decision resulted in only studies documenting cancer stage being rated as of high quality.
2. Did the investigators enroll a sufficiently diverse and representative population that it is plausible that the outcomes in patients studied are representative of the outcomes in the country at large? Studies might enroll similar populations, and adjust for prognostic differ-

ences, but only examine one delivery site in each country, or only sites in a single state. Such studies would fail the second criterion. We considered studies that enrolled patients from a number of regions, or from a very large population within a region, as meeting this criterion.

For each study, two reviewers blinded to outcome independently made the rating of high or low quality. If we identified apparently contradictory decisions across pairs of reviewers (for instance, if one set of reviewers rated a study using Canadian and United States cancer databases as high quality, and another team rated a different study using the same databases as low quality), we informed reviewers of the inconsistency. The reviewers resolved the issue through discussion.

In response to editorial suggestions, we further evaluated the issue of representativeness with more rigorous and explicit criteria. We considered studies as fully representative only if samples in both countries were drawn from similar population-based registries that included at least one entire Canadian province and at least two entire American states, or a random sample of patients from at least an entire province and two entire American states.

For all eligible studies, we sent the original authors our summary of the information abstracted from their article and asked them to correct and complement as they saw fit (11 authors, representing 16 studies, responded). When authors provided additional specific information or corrections, we incorporated these in our descriptive tables. For two eligible abstracts,^{4,5} we requested and received a complete description of the study from the authors.

Data analysis

When studies reported any outcome of importance to patients (morbidity, mortality, or quality of life) but did not state statistical significance, we calculated associated *p* values using a threshold of 0.05 for significance.

Because it was the most reliably and consistently measured outcome, we restricted the meta-analyses to the outcome of total mortality. When studies presented outcome data at 1 and 6 months, we included data at 6 months, reasoning that if outcomes differ at 1 but not 6 months this is likely to be of limited importance to patients.

The statistical analysis included each non-overlapping study that provided the proportion of patients who died either in Canada or the United States, along with the associated variance (or data that allowed its calculation). We pooled the results using a random-effects model. We assess heterogeneity in results using the Cochrane's *Q* test,⁶ and calculated the *I*².⁷ Relative risk was used as the summary statistic. When articles reported separate procedures (for instance, mortality for different operations; mortality for different cancers), we treated each patient population as if

Table 1: Summary of findings

	High-quality studies	Low-quality studies
Results favoured United States	2	3
Results favoured Canada	5	9
Mixed or equivocal results	3	16

it came from a separate study. Similarly, if an article reported major sub-populations within a patient group (such as low and high income), we treated these groups as coming from separate studies. We created funnel plots to provide graphical evaluation of publication bias and used a statistical technique suggested by Egger to provide a quantitative evaluation of the likelihood of publication bias.⁸

To try to explain heterogeneity in effect estimates from individual studies, we conducted meta-regression analyses in which an additive between-study variance component of residual heterogeneity was used in accordance with the random effects. The dependent variable was the log of the relative risk. The independent variables were based on the following *a priori* hypotheses explaining heterogeneity:

- overall study quality based on adequacy of adjustment for potential confounders and representativeness of the sample
- source of the data (primary data collection versus administrative database)
- whether care was primarily out-patient or in-patient
- the extent to which US patients had health insurance (in-hospital studies involving primarily those ≥ 65 years of age or any study undertaken in Veterans Administration facilities will have excluded most uninsured people)
- completeness of follow-up
- whether the US site included or was restricted to New England (hypothesized to have better outcome than in other areas of US)⁹
- the underlying health problem (renal failure, cardiology, cancer, surgery, and other)
- data collection before or after the median date of 1986 (we initially considered the key date for Canada before or after all provinces entered into Medicare [1970], and for the United States before or after the introduction of Medicare and Medicaid [July 1, 1966]; this choice, however, would have led to insufficient variability: almost all the data came from after 1970).

Results

As presented in Figure 1, of the 4,923 titles and abstracts identified, 498 appeared potentially eligible on initial review, and

42 of these proved eligible on review of the full article. We excluded three of these publications because the data overlapped substantially with those in another report that was eligible and included.¹⁰⁻¹² One study was reported in two complementary articles.^{13, 14}

Table 1 summarizes the results in terms of high- and low-quality studies, and whether results favoured the United States, Canada, or showed mixed findings or no difference. Tables 2 to 4 present key methods and results beginning with the highest-quality studies from population registries

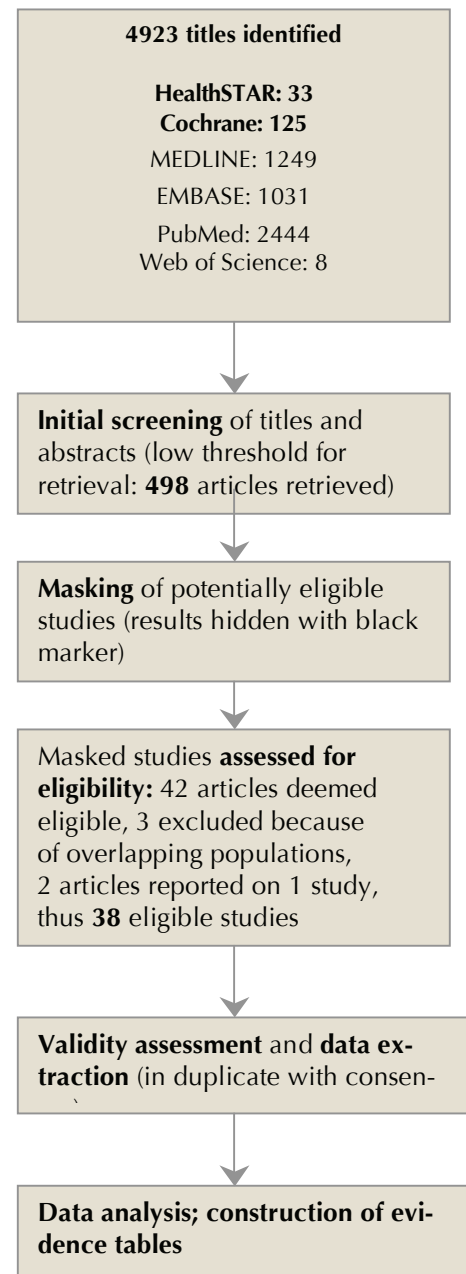


Fig. 1: Methodological steps in systematic review.

with adequate adjustment (unshaded); then the intermediate quality studies that were reasonably representative and had adequate adjustment (lightly shaded); and finally the low-quality studies in which the populations were unrepresentative or adjustment was inadequate (shaded).

Of the 5 studies that reported superior outcomes in the United States, we classified 2 as high quality (one of which utilized population registries) and 3 as low quality (Table 2). Of the 2 high-quality studies, one presents results from a population-based registry that showed higher 30-day post-operative mortality after hip fracture in Manitoba and Quebec in comparison to several American states.¹⁵ Canadians had longer wait times for surgery, longer post-operative lengths of stay, and higher inpatient mortality. Differences in mortality were not, however, attributable to differences in wait times for surgery. Furthermore, the increase in mortality did not persist over time, and Canadian outcomes proved superior for several other surgical procedures^{16, 17} (Table 4).

The second high-quality study was prospectively designed to examine outcomes of cataract surgery in a number of countries, including Canada and the United States.^{13, 14} The two reports of this study fail to describe the mix of insured and uninsured patients in the US sample.

The first of the low-quality studies favouring the US presented results from administrative databases in the United States and Ontario and showed similar survival in patients with colon and lung cancer and Hodgkin's lymphoma, but superior survival in American breast cancer patients.¹⁸ Another study using the same databases over a somewhat different (but overlapping) period showed similar results for breast cancer and Hodgkin's disease, but found an overall survival advantage for American patients in colon cancer and Canadian patients in lung cancer¹⁹ (Table 4). Two studies that used the same database but restricted their analysis to Toronto versus American cities that the authors considered comparable showed a significant advantage²⁰ or a trend²¹ toward superior survival in breast cancer patients in Canada versus the United States (Table 3).

Other low-quality studies favouring the United States include populations of patients with rheumatoid arthritis²² and patients after myocardial infarction (MI)²³. In the latter study looking at only one Canadian and one US hospital, more aggressive treatment in the United States was associated with superior functional status, but not with any difference in recurrent MI or death. Another much larger observational study also found greater use of invasive treatments in the US with superior functional status, but similar death and reinfarction (though higher stroke) rates²⁴ (Table 4). These results are not completely consistent across studies. Indeed, one study that included 14 American and 4 Ca-

nadian sites and over 2,000 patients demonstrated similar rates of invasive procedures in patients who experienced non-Q wave MI and unstable angina, with a lower rate of recurrent ischemia in hospital, at 6 weeks, and at 1 year in Canadian patients²⁵ (Table 3). The finding of similar rates of cardiovascular deaths in MI patients, with the exception of slightly lower death rates in American elderly patients in the first 3 months after MI,²⁶ does appear consistent²⁷ (Table 4).

Of the 14 studies that demonstrated superior outcomes in Canada, we classified 5 as high quality (3 from population-based registries, including all patients from at least one Canadian province and two US states) and 9 as low quality (Table 3). Five studies, two high quality (one from a population-based registry) and three low quality, showed consistently lower mortality in Canadian than American patients with renal failure (Table 3). These studies included administrative database studies of black patients receiving renal transplants,²⁸ of Manitoban and American patients receiving either hemodialysis or peritoneal dialysis,²⁹ and of the entire Canadian and American populations receiving peritoneal dialysis³⁰ or any dialysis.^{4, 31} Another study that almost certainly used similar data sources but did not report their methods as thoroughly also suggested lower mortality in Canadian than American patients receiving dialysis or renal transplants.³² The strongest study from a data collection and adjustment point of view (though with a small number of American patients and not drawn from a population-based registry), a prospective cohort study in which the investigators were responsible for data collection, showed lower mortality in Canadian patients undergoing peritoneal dialysis.³³

The most rigorous of the dialysis studies, taking into account both sampling and adjustment, used data from 5,192 patients in the US case-mix severity study (a random sample of all Americans who began dialysis in 1986 or 1987). The investigators complemented these data with clinical and administrative records from the Henry Ford Hospital in Detroit, Michigan, and review of charts of all patients (549) with end-stage renal disease treated in the province of Manitoba between 1983 and 1989.²⁹ Case-mix adjustment included age, sex, and a wide range of comorbidity (including diabetes, coronary artery disease, heart failure, respiratory disease, and cancer). After adjustment for both case-mix and treatment variables (including likelihood of transplant) the relative mortality rate was 47% higher in the US population (95% confidence interval [CI] 16%–87%). One could argue that treatment variables should not have been included in the adjustment. If so, the increased risk of death in the American population would have been even higher. By far the biggest treatment-related variable that

had an impact on mortality was dialysis (relative mortality 0.53 in those transplanted). Transplantation rates were 35% in Manitoba and 17% in the American sample.

A series of reports used the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) and the Ontario Cancer Registry (OCR) to compare cancer patients' outcomes. Two of these population-based studies also conducted chart reviews in a sample of Canadian patients to obtain staging information not available in the OCR database. These investigations showed lower mortality rates in lower stage supraglottic and glottic cancer in Canadian patients, along with lower rates of laryngectomy.^{34, 35} The stronger of these studies, focusing on patients with glottic cancer, supplemented electronic data from population-based cancer

registries with chart review, hospital discharge data, and clinical databases and was able to adjust for stage, age, and sex. Laryngectomy rates across all stages were 5% in Canada and 13.9% in the United States. Survival was similar in patients with higher-stage disease, but Canadian patients with lower-stage disease showed a statistically significant survival advantage in years 2, 3, and 4.

The other studies utilizing these databases are weaker because they do not adjust for cancer stage or severity. One set of reports compared Toronto to a number of American cities and suggested that poorer Canadian patients fared better than their American peers.^{20, 21, 36} These results were only partly consistent with a report from the entire SEER database and the entire province of Ontario that supported the finding of better outcomes in poorer Canadians than Americans, but also suggested that wealthier Americans with cancer may fare better than wealthier Canadians¹⁹ (Table 4). Another study that used the same databases and focused on head and neck cancer showed mixed results³⁷ (Table 4). Other mixed findings from studies using these databases are described earlier in the Results.^{18, 19} Three smaller studies of cancer patients that relied on chart review showed no differences in outcomes between Canada and the United States (Table 4).³⁸⁻⁴⁰

A high-quality population-based study that looked at the entire cystic fibrosis population in both countries showed apparent benefits in height and weight from Canadian care⁴¹ (Table 3). A second study restricted to one Canadian and one US institution suggested higher survival in Canadian cystic fibrosis patients.⁴² A study comparing AIDS patients in British Columbia to those in a number of American cities suggested lower death rates in Canadian patients; the only adjustment was for baseline CD-4 count.⁴³

Of the 19 studies that demonstrated comparable or mixed outcomes, we classified 3 as high quality (two using population-based registries) and 16 as low quality (Table 4).

We have described some of these studies in the context of studies included in Tables 2 and 3. High-quality studies relying on administrative databases of broad populations have shown equivalent mortality in Canada and the US in coronary artery bypass grafting,⁴⁴ lower mortality in Canada in a variety of low and moderate risk surgeries, and higher short but not long-term mortality in high-risk surgeries, including hip fracture repair.^{16, 17} Lower-quality studies have suggested a similar incidence of low-birth-weight infants,⁴⁵ no difference in outcomes in asthmatic patients presenting to emergency departments,⁵ no difference in outcomes in critically ill patients⁴⁶ or demented patients admitted to hospital,⁴⁷ and no differences in functional status in patients with rheumatoid arthritis.⁴⁸ A study that relied on volunteer call-in found that Canadian women with nausea and vomiting of pregnancy had more depression and more adverse effects on marital relationships, but fewer lost hours of paid work, less hospitalization, and less weight loss than did American women suffering from the condition.⁴⁹ A study that relied on an administrative database from one US and one Canadian hospital found higher intensive care unit (ICU) admission rates and longer ICU stays, but shorter overall hospital stays, in US patients hospitalized for trauma.⁵⁰

Statistical analysis

The statistical analysis was based on results of 83 populations in 23 studies that reported all-cause mortality with sufficient completeness for inclusion.^{15-18, 20-23, 25-27, 29, 33, 37-40, 42, 43, 46, 47, 50} In Figure 2, which depicts the distribution of the log of the relative risk against the precision of the estimates (the inverse of the standard deviation of the log RR), values to the left of 0 favour Canada and values to the right of 0 favour the United States. The pooled relative risk of dying in Canada versus the United States was 0.95 (95% CI 0.92 to 0.98, $p = 0.002$, heterogeneity $p < 0.0001$, $I^2 = 0.94$). The plot suggests some asymmetry, with a number of low-precision studies favouring Canada without corresponding studies favouring the United States. This is consistent with the statistical analysis, which suggested rejecting the null hypothesis of no asymmetry ($p = 0.02$). One possible explanation for this result is publication bias in Canada's favour.

Table 5 presents the results of the univariable and multivariable regressions. The results show no variables as significant in the univariable model, whereas several are significant in the multivariable model: study quality (higher-quality studies tend to favour the US); whether New England was included (inclusion of New England tends to an estimate of lower mortality in Canada); and disease category (renal failure, cancer, and surgery tended to favour

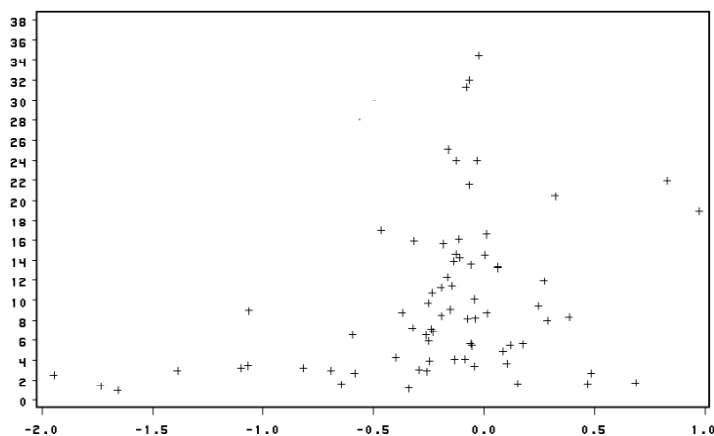


Fig. 2: Funnel plot for all-cause mortality, US versus Canadian studies.

Canada; cardiology and other studies tended to favour the US). Neither the univariate models, nor the multivariate model (despite apparently explaining 49% of the variance) were stable. For instance, omission of two relatively large studies that represented outliers resulted in very different results.

Interpretation

In this systematic review, we demonstrated that although Canadian outcomes were more often superior to US outcomes than the reverse, neither the United States nor Canada can claim hegemony in terms of quality of medical care and the resultant patient-important outcomes. In virtually all areas, study results have demonstrated some apparent advantages for Canada and others for the United States. In cancer, where a number of strong studies have used population-based registries, Canadian outcomes appear superior in head and neck cancer, and possibly for low-income patients with a variety of cancers; American women with breast cancer appear to have better survival rates than Canadian women. In data from population-based registries, Canadians enjoy better risk-adjusted survival after a variety of surgeries, but American outcomes appear superior after hip fracture repair and cataract surgery. Studies that do not utilize population-based registries suggest that Americans have, possibly as a result of more aggressive interventions, less angina after MI, but the benefit may come at the price of increased strokes and bleeding. There is one area in which Canadian outcomes appear consistently superior: end-stage renal failure. Even here, however, as we shall discuss, one cannot be certain that superior medical care is responsible for the differences.

The strengths and limitations of this systematic review bear on its interpretation. We established a team that included expertise in medicine, clinical epidemiology, health economics, health policy, and health services research in both Canada and the United States, developed explicit eligibility criteria, and conducted a comprehensive search that uncovered a number of eligible articles not included in a previous systematic review.⁵¹ We excluded studies, such as randomized trials of medical interventions in which Canadian investigators recruited some patients and American investigators others, in which care would be idiosyncratic or atypical of care in usual clinical practice. Our thorough examination of each study addressed issues of validity (selection of populations, adjustment for confounders, loss to follow-up) and generalizability (breadth of samples, including specifying studies that came from population-based registries).

Reviewers who determined eligibility and judged validity and generalizability were blind to the results of the study. In decision-making regarding methodologic issues that arose as the review progressed, we recused investigators who were aware of the study results. We made explicit *a priori* hypotheses regarding possible sources of heterogeneity, and tested these hypotheses in a thorough statistical analysis. Our results are consistent with those of a prior systematic review that completed its search (less comprehensive than ours) in 1997, conducted a limited assessment of study validity, and failed to conduct a formal meta-analysis.⁵¹

The main limitation of our review is in the uneven quality of the original studies, and the threats to validity that remain even in those studies of high quality. There were two key ways a study could fail to adequately address our question: either the population might be small or narrow, or the investigators might not carry out statistical adjustment for potential differences in underlying prognosis. Most of the studies we identified failed one of these two criteria (Tables 2–4).

Even studies that meet these criteria, and meet the more rigorous criterion of utilizing population-based registries, present challenges with respect to their interpretation. In general, a health care system can improve outcomes in two ways. One is to facilitate early entry to care, including preventive care, and thus avoid unnecessary morbidity and mortality. For instance, if access to primary care is easy and without financial obstacles, one might expect superior outcomes in hypertension (e.g., fewer strokes). Alternatively, a system might generate better outcomes by better treatment of serious morbidity once it arises. For instance, stroke patients may be more likely to receive early thrombolysis, thromboprophylaxis, and multidisciplinary rehabilitation.

If a health system does better in early identification and treatment, diseased patients in that system will appear less ill. Statistical adjustment for severity of illness is in general appropriate – one wouldn't want to attribute to better care what is in fact due to a better prognosis. The risk, however, is that the adjustment will obscure the benefits of early identification and treatment.

Such issues become relevant in comparisons of outcomes between Canada and the United States. For instance, the United States does a better job of screening women for breast cancer.⁵² To the extent that early diagnosis reduces breast cancer deaths, one would expect a survival advantage for American women. At the same time, any apparent increase in longevity may be largely, or even completely, due to the length and lead-time biases inherent in observational studies of screening.

A number of studies using the American National Cancer Institute's Surveillance, Epidemiology, and End Results Program (SEER) and the Ontario Cancer Registry (OCR) have addressed breast cancer outcomes. Although studies using these databases and examining Toronto versus a number of US cities suggest higher breast cancer survival in low-income Canadian women than in their American counterparts,^{20,21,36} several studies using the entire database have suggested superior overall breast cancer survival in American women.^{18, 19, 32} We rated these studies as low quality because of failure to adjust for disease stage. If higher screening rates or better self-detection in the US result in the identification of earlier stage histologic cancers that would have remained asymptomatic and dormant, studies would demonstrate superior survival despite equivalent medical care. On the other hand, perhaps there is a true American advantage that results from higher rates of screening⁵² or from superior care after diagnosis. The data do not allow assessment of the relative likelihood of these possible explanations.

These studies raise another important limitation of the current data. Canada has largely⁵³ (though not completely^{52, 54}) eliminated gradients in access to care by socioeconomic status that remain in the United States,^{55, 56} and this may contribute to Canada's smaller socioeconomic gradients in health outcome.⁵⁷ If this were so, one would expect that studies focused on poorer individuals would reveal superior outcomes in Canada, whereas differences might be obscured in studies of entire populations. Indeed, the cancer studies by Gorey and colleagues^{20, 21, 36} and by Boyd¹⁹ suggest this may be the case. At the same time, it is possible that being able to pay for better care might lead to better outcomes in those with high incomes in the US versus Canada. Indeed one of the studies in cancer patients suggested this possibility.¹⁹ Unfortunately, these are the only studies

that explore gradients in outcome across socioeconomic status.

Although the overall effect in the meta-analysis may be of some interest (a 5% reduction in relative risk of all-cause mortality in Canada versus the United States) the large variability in study results (heterogeneity $p < 0.0001$, I^2 94%, Figure 2) makes the pooled estimate difficult to interpret. Our primary reason for conducting the statistical analysis was, through meta-regression, to explore possible explanations of variability in results and provide adjusted estimates of relative risk. This exploration proved difficult to interpret. Although the multivariate model identified apparent sources of heterogeneity and provided adjusted estimates of relative risk (Table 5), the results were inconsistent between univariate and multivariate approaches, and both the univariable and multivariable models were very unstable. Thus, we do not feel confident that the statistical modeling has provided either a satisfactory explanation for the study-to-study variability in results or credible estimates of adjusted relative risk.

One group of patients fared consistently better in Canada than in the U.S., those with end-stage renal disease.^{4, 28-33} Whether in hemodialysis programs, peritoneal dialysis, or after receipt of renal transplants, Canadians survive longer. The larger proportion of Americans than Canadians who begin dialysis treatment confounds interpretation of this finding. Perhaps Americans fare worse because a larger number of sicker patients enter dialysis. On the other hand, it may be that the larger proportion of Americans on dialysis reflects a lower threshold to start dialysis, and thus a less sick dialysis population. The limited available evidence suggests that thresholds for dialysis are in fact similar in the two countries.⁵⁸ Furthermore, two high-quality studies that included extensive adjustment for comorbidity^{29,33} still show substantially lower mortality in Canadian patients, suggesting that imbalance in risk cannot explain superior Canadian outcomes.

Nevertheless, the weight of the evidence strongly suggests that Canadian end-stage renal patients truly have higher survival than those in the US. The explanation for this difference may lie in differences in the ownership of dialysis facilities. Virtually all Canadian dialysis care is not-for-profit, while for-profit providers deliver approximately 75% of American care for end-stage renal failure. A systematic review has shown a higher mortality in patients undergoing dialysis in for-profit centres.⁵⁹

Despite the limitations of the available studies, some robust conclusions are possible from our systematic review. These results are incompatible with the hypothesis that American patients receive consistently better care than Canadians. Americans are not, therefore, getting value for

money; the 89% higher per-capita expenditures on health care in the United States does not buy superior outcomes for the sick.

Canadian health care has many well-publicized limitations. Nevertheless, it produces health benefits similar, or perhaps superior, to those of the US health system, but at a much lower cost. Canada's single-payer system for physician and hospital care yields large administrative efficiencies in comparison with the American multi-payer model.⁶⁰ Not-for-profit hospital funding results in appreciably lower payments to third-party payers in comparison to for-profit hospitals⁶¹ while achieving lower mortality rates.⁶² Policy debates and decisions regarding the direction of health care in both Canada and the United States should consider the results of our systematic review: Canada's single-payer system, which relies on not-for-profit delivery, achieves health outcomes that are at least equal to those in the United States at two-thirds the cost.

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Phantoms In The Snow: Canadians' Use Of Health Care Services In The United States

Surprisingly few Canadians travel to the United States for health care, despite the persistence of the myth.

by Steven J. Katz, Karen Cardiff, Marina Pascali, Morris L. Barer, and Robert G. Evans

PROLOGUE: Over the past three decades, particularly during periods when the U.S. Congress has flirted with the enactment of national health insurance legislation, the provincial health insurance plans of Canada have been a subject of fascination to many Americans. What caught their attention was the system's universal coverage; its lower costs; and its public, nonprofit administration. The pluralistic U.S. system, considerably more costly and innovative, stands in many ways in sharp contrast to its Canadian counterpart. What has remained a constant in the dialogue between the countries is that their respective systems have remained subjects of condemnation or praise, depending on one's perspective.

Throughout the 1990s, opponents of the Canadian system gained considerable political traction in the United States by pointing to Canada's methods of rationing, its facility shortages, and its waiting lists for certain services. These same opponents also argued that "refugees" of Canada's single-payer system routinely came across the border seeking necessary medical care not available at home because of either lack of resources or prohibitively long queues.

This paper by Steven Katz and colleagues depicts this popular perception as more myth than reality, as the number of Canadians routinely coming across the border seeking health care appears to be relatively small, indeed infinitesimal when compared with the amount of care provided by their own system. Katz is an associate professor in the Departments of Medicine and Health Policy and Management at the University of Michigan. Karen Cardiff is a research associate at the University of British Columbia's Centre for Health Services and Policy Research. Also at the University of British Columbia are Morris Barer, professor and director at the Centre for Health Services and Policy Research's Department of Health Care and Epidemiology, and Robert Evans, professor at the Centre for Health Services and Policy Research's Department of Economics. Marina Pascali is a Dallas-based health care consultant.

ABSTRACT: To examine the extent to which Canadian residents seek medical care across the border, we collected data about Canadians' use of services from ambulatory care facilities and hospitals located in Michigan, New York State, and Washington State during 1994–1998. We also collected information from several Canadian sources, including the 1996 National Population Health Survey, the provincial Ministries of Health, and the Canadian Life and Health Insurance Association. Results from these sources do not support the widespread perception that Canadian residents seek care extensively in the United States. Indeed, the numbers found are so small as to be barely detectable relative to the use of care by Canadians at home.

FOR MORE THAN A DECADE anecdotal reports of waiting lists for elective procedures in Canada and of hordes of Canadian “Medicare refugees” crossing the border in search of medical care in the United States have provided emotive fuel for critics of the Canadian health care system from both sides of the border.¹ American opponents of universal public coverage have argued that global constraints on capacity and funding force many Canadians to cross the border in search of services that are unavailable or in short supply in their own country.² Some have gone so far as to suggest that the widening health care spending gap between Canada and the United States is partly the result of counting expenditures by Canadian Medicare refugees in the U.S. rather than the Canadian expenditure totals, although there is an extensive body of evidence showing that the sources of the spending gap lie elsewhere.³

The Medicare refugee story is harnessed in Canada to promote the message that the Canadian health care system (known as Medicare) is chronically underfunded; the refugees are but one prominent symptom. The Canadian “underfundists” are, however, divided as to the appropriate response. The many who support the fundamental principles on which Canadian Medicare is built argue that Canadian waiting lists and care seeking in the United States demonstrate the need for new public funds to increase capacity and services. While “evidence” in the form of Medicare refugees might be new, this debate about the level of public funding has been part of the dialogue between Canadian providers and provincial payers throughout Canadian Medicare’s history.⁴

But the putative refugees are also pawns in a debate driven by Canadian opponents of universal public funding, who wish to expand the role of private financing. This debate grew more intense during the 1990s as provincial payers increasingly constrained their health care budgets.⁵ News headlines suggesting that Canadians spend more than \$1 billion annually south of the border have been cited to bolster the argument that private funding would reduce the pressure on the public system, thus reducing both public waiting lists and the flow of Canadians heading south for care. As a bonus, that \$1 billion would stay at home.⁶

Unfortunately, this persuasive image of Canadian refugees survives in a virtual vacuum of evidence. How many Canadians actually head to the United States to

“Some provincial governments have imposed tighter limits on their financial liability for residents’ care received in the United States.”

.....
 seek medical care that they cannot obtain, or are unwilling to wait for, in Canada? What kinds of services do they receive? Where do they get these services, and how do they pay for them?

The paucity of answers to these questions is a result of large conceptual and empirical challenges facing researchers who attempt to fill in the gaps. Tens of thousands of Canadians enter the United States each year for a number of reasons unrelated to medical care seeking, such as holidays, business, education, or shopping. Any of these visitors might require medical care coincidentally while outside Canada. Thus, one must identify the context of Canadians’ medical care use in the United States to separate Medicare refugees from business travelers, “snowbirds,” and holiday seekers.

■ **Paying for out-of-country medical care.** As part of a more widespread strategy to reduce public health care spending during much of the past decade, some provincial governments have imposed tighter limits on their financial liability for residents’ medical care received in the United States. Payment limits for emergency hospitalizations in 2000 varied somewhat across provinces: Per diem payments ranged from as little as Can\$75 for residents of British Columbia to as much as Can\$570 in Manitoba and Prince Edward Island. Outpatient emergency services are generally reimbursed at provincial fee-schedule rates, which are far below fees in the United States.⁷ But several provinces such as Ontario and Manitoba have also limited payments for outpatient emergency visits to as little as Can\$50–\$100. These restrictions have motivated more Canadians to obtain insurance for health care expenses incurred while traveling for extended periods in the United States.

In selected circumstances, more formal arrangements have been negotiated between provincial payers and U.S. providers. Provinces have always reimbursed individuals, subject to preapproval and negotiated payments, who are required to travel to the United States to obtain highly specialized services not available in their home province. More recently, several Canadian provincial payers have established temporary contracts with U.S. providers for specific services available but subject to unacceptable delay in Canada.

■ **Research objectives.** In this study we attempt to quantify, across all sources of payment, the services provided to Canadians in U.S. regions located near the three most heavily populated Canadian provinces. Within these regions we examined data from two different types of sources: three states’ hospital discharge records and a survey of selected ambulatory care sites. In addition, we surveyed “America’s Best Hospitals” because they might serve as “magnets” for Canadians.⁸

■ **Analytic framework.** Canadians might receive care in the United States for a number of reasons: (1) Services are available in Canada but often involve extensive

wait times (wait-listed services). Examples often include magnetic resonance imaging (MRI), radiation oncology treatment, and selected surgical procedures such as total knee replacements, cataract surgery, and coronary artery bypass surgery.

(2) Leading-edge technology services are unavailable in Canada. Examples include gamma knife radiation and proton beam therapy for some cranial tumors and specialized programs to treat severe brain injuries.

(3) Services are available in Canada, but U.S. health care centers are more conveniently located for some Canadians (proximal services). Examples include some residents of rural border regions in Saskatchewan, Manitoba, New Brunswick, or western Ontario seeking primary care in U.S. settings; and some residents of urban centers such as Thunder Bay, Ontario, seeking secondary or tertiary care south of the border.

(4) Services are provided to Canadian snowbirds, who live in the United States during the winter months, or to other periodic business and leisure travelers to the United States (coincidental services).

(5) Services are available in Canada but are perceived by the patient to be of higher quality in specific U.S. medical centers such as those listed as one of “America’s Best Hospitals” (magnet services).

Across these categories, the sources of funding for care vary considerably. For example, patients in the fourth category will generally have their costs covered by varying combinations of provincial health insurance and private insurance. Services in the second category, approved by a provincial plan, would be paid in full by that plan at rates negotiated with the U.S. care center. Some services in the first and third categories may be provided under a contract between the provincial Ministry of Health and the U.S. providers. Other services in these two categories, as well as those in the fifth, require direct out-of-pocket payment by Canadian patients.

■ **Sampling strategy and data collection.** *From the American side.* Based on this framework, we developed a multiprong sampling and data collection strategy. We conducted a telephone survey in the fall and winter of 1998–99 of all ambulatory care clinical facilities located in specific heavily populated U.S. urban corridors bordering Canada (Buffalo, Detroit, and Seattle) that offered services that might be less available in Canada. These services included diagnostic radiology, ambulatory surgery, ambulatory eye surgery, cancer evaluation and treatment, and mental health and substance abuse treatment. Facilities performing these procedures were identified using a variety of federal, provincial, state, and local sources including local health care consultants and provider groups, the U.S. Federated Ambulatory Surgery Association, the American Hospital Association, the American College of Surgeons, and the SMG Marketing Group.

We performed a structured telephone interview of one or more key informants within the institution (typically senior personnel in billing, marketing, or public relations). Information collected included the number of Canadians who visited

the institution in the prior year and whether there were any obvious trends, the nature of referral there, type of services provided, and methods of payment.

To examine inpatient care provided to Canadians, we acquired statewide hospital discharge data for 1994–1998 from Michigan, New York State, and Washington State. To differentiate care-seeking admissions from those related to coincidental activity, we categorized admissions according to admission status (emergency/urgent versus elective) and principal discharge diagnosis. Also, we attempted to contact key informants at each of “America’s Best Hospitals” to inquire about the number of Canadians seen in both inpatient and outpatient settings.

From the Canadian side. We examined a number of different Canadian data sources to identify the extent of care seeking in the United States. We first analyzed data from the 1996–1997 National Population Health Survey (NPHS), a large survey representative of the Canadian noninstitutionalized population, that contained two questions pertaining to health care seeking in the United States. Respondents were asked: “In the past twelve months did you receive any health care services in the United States?” A positive response to the first question prompted a second one: “Did you go there primarily to get these services?”

An important potential source of Canadian patients for U.S. providers is formal contracts between them and provincial payers for specific diagnostic and treatment services. We identified the nature of these provincial contracts through personal contacts in the Ministries of Health of selected provinces. Finally, we spoke to the director of the Canadian Life and Health Insurance Association about the growth of out-of-country travelers’ emergency medical care insurance and insurance packages for services provided to Canadians in the United States on an elective basis. Unfortunately, one important source of Canadian data, provincial Ministry of Health expenditures specifically for out-of-country services, was insufficiently complete and comparable across provinces to be useable for this project. Remarkably, details such as patient demographics, types and dates of services, and location of U.S. providers are not being systematically tracked by most provincial Ministries of Health.

Study Findings, By Data Source

■ **U.S. ambulatory facilities survey.** Almost 40 percent of the facilities we surveyed reported treating no Canadians, while an additional 40 percent had seen fewer than ten patients (Exhibit 1). Fifteen percent of respondent sites reported treating 10–25 Canadian patients, and only about 5 percent reported seeing more than 25 during the previous year (generally 25–75 patients; none reported more than 100). These findings were fairly consistent across the service categories. The overall response rate was 67 percent, and it varied across type of clinical facility from 56 percent for ambulatory surgery centers to 80 percent for cancer centers.

If we extrapolate these findings (assuming that nonrespondents show a pattern similar to that of respondents), these facilities in the three large metropolitan ar-

EXHIBIT 1**Number Of Ambulatory Health Care Facilities Reporting Having Treated Adult Canadian Residents In Michigan, New York State, And Washington State In The Prior Year, By Number Of Canadians Seen, 1997–1998**

Facility type	None seen	Fewer than 10 seen	10–25 seen	More than 25 seen ^a	Response rate
Diagnostic (n = 68)	22	36	7	3	70.8%
Ambulatory surgery (n = 28)	14	9	5	0	56.0
Ophthalmology (n = 16)	5	2	6	3	61.5
Cancer centers (n = 24)	11	9	3	1	80.0
Total (n = 136)	52	56	21	7	67.3

SOURCE: Information obtained from authors' analysis of data obtained from telephone interviews with senior administrative staff in selected ambulatory health care facilities in Michigan, New York State, and Washington State in the fall and winter of 1998–99.

NOTES: Age 17 years and older. Number in parentheses indicates number of respondents.

^a Most facilities in this group reported 25–75 patients, and none reported more than 100 patients.

eas combined saw approximately 640 Canadian patients for diagnostic radiology services such as computed tomography (CT) scans or MRI and 270 patients for eye procedures such as cataract surgery over a one-year period. By comparison, the annual volume for CT scans and cataract extractions averaged about 80,000 and 25,000 procedures, respectively, in British Columbia alone during the mid- 1990s.⁹ In Quebec the annual volume during the same period for CT scans and MRI averaged 375,000 procedures and 44,000 procedures, respectively.¹⁰

We also sought to examine Canadians' use of mental health and substance abuse services in these same three U.S. catchment areas, because previous reports in the early 1990s suggested a cross-border flow of patients for these services.¹¹ Because these regions have large networks of community mental health clinics, most of which do not regularly see patients from outside their community catchment area, we could not readily identify providers that would be the most likely targets for Canadian referrals. Therefore, we approached all such facilities that we could identify. Using the American Hospital Association's guide to accredited freestanding substance abuse and mental health organizations, we identified thirty-two organizations in the Detroit area but only three in the Seattle area. We received responses to our telephone survey from twenty-three of the thirty-two organizations in Detroit (72 percent) and from all three of the Seattle sites. All but one reported seeing fewer than ten Canadian patients in the prior year, and none reported seeing more than twenty-five. In New York State the Office of Alcoholism and Substance Abuse collects data on treatment encounters at all centers in the state. From July 1997 through June 1998, 105,456 patients were seen, of which 246 were categorized as "other country."

■ **State hospital discharge data.** Over the five-year observation period from 1994 to 1998, 2,031 patients identified as Canadians were admitted to hospitals in Michigan; 1,689 to hospitals in New York State; and 825 to hospitals in Washington

State. During the same period, annual inpatient admissions to hospitals within the bordering provinces of Ontario, Quebec, and British Columbia averaged about 1 million, 600,000, and 350,000, respectively.¹² Thus, Canadian hospitalizations in the three U.S. states represented 2.3 per 1,000 total admissions in the three Canadian provinces. Furthermore, emergency/urgent admissions and admissions related to pregnancy and birth constituted about 80 percent of the stateside admissions. Elective admissions were a small proportion of total cases in all three states: 14 percent in Michigan; 20 percent in New York; and 17 percent in Washington.

Principal diagnostic categories. The distribution of diagnostic categories varied by the type of admission (emergency/urgent versus elective) and by state. Diseases of the circulatory system and injury and poisoning accounted for 37 percent of all cases in Michigan, 39 percent in New York State, and 50 percent in Washington State (50 percent, 23 percent, and 21 percent, respectively, of all cases within the elective admission category) (Exhibit 2). Within the circulatory system category, the most common principal discharge diagnoses in all three states were acute myocardial infarction, cerebrovascular disorder, heart failure, and conduction disorders and arrhythmias. In New York State, admissions associated with digestive disorders (such as cholelithiasis, gastroenteritis/colitis, and appendicitis) represented 13 percent of emergency/urgent cases. In Michigan, admissions associated with mental disorders (schizophrenic disorders, affective/depressive disorders, and substance abuse) represented 20 percent of emergency/urgent cases, and the

EXHIBIT 2

Acute Care Hospital Discharges For Adult Canadian Residents In Three States, By State, Admission Type, And Principal Diagnostic Category, 1994–1998

Principal diagnostic category	Type of admission					
	Michigan ^a		New York State		Washington State	
	Emergency/urgent ^b (n = 1,465)	Elective (n = 292)	Emergency/urgent (n = 1,224)	Elective (n = 333)	Emergency/urgent (n = 651)	Elective (n = 140)
Infectious and parasitic	2.2%	1.7%	2.1%	0.0%	2.2%	<1.0%
Neoplasms	2.6	1.7	3.1	19.8	2.2	19.2
Endocrine/metabolic	4.0	2.0	2.7	1.5	1.5	0
Mental disorders	20.4	13.4	6.5	5.4	4.4	20.0
Circulatory system	18.9	26.4	25.4	15.9	33.8	14.2
Respiratory system	8.1	6.2	7.9	<1.0	7.5	2.1
Digestive system	7.1	7.5	13.0	9.3	11.0	6.4
Genitourinary system	2.7	3.7	4.3	9.0	2.4	3.5
Musculoskeletal system	2.7	1.8	2.0	15.6	1.0	15.7
Signs/symptoms	6.8	7.6	9.4	2.1	8.9	1.4
Injury/poisoning	19.8	23.6	18.1	6.6	22.5	6.4
Other ^c	4.7	4.4	5.5	14.4	2.6	10.0

SOURCE: Discharge information based on authors' analysis of data obtained from New York, Michigan, and Washington statewide acute care hospital data sets for 1994–1998.

NOTE: Age 17 years and older; pregnancy and birth category excluded.

^a 152 cases in the Michigan database did not have an admission type.

^b Urgent cases were 9 percent, 13 percent, and 27 percent of the emergency/urgent category in Michigan, New York, and Washington, respectively.

^c Includes blood/blood-forming organs, nervous system, skin, congenital anomalies, and missing diagnostic information.

number of cases within this category was much greater than in either New York or Washington. However, we were unable to obtain further details from ministry or state sources. The remaining cases within the emergency/urgent category were distributed widely across principal diagnostic categories, and there was no consistent pattern across states. The distribution of elective cases across clinical categories was quite broad, with no consistent pattern across states.

■ **America's Best Hospitals.** Response from these institutions was low (eleven of twenty) and somewhat fragmentary. The numbers of Canadian patients seen in the prior year were generally very low: Six hospitals reported fifteen or fewer elective inpatients or outpatients; four hospitals reported 20–60 patients, and one hospital reported nearly 600 patients (90 percent outpatients and many related to proton beam radiation therapy for cancer).

■ **Results from Canada.** Several sources of evidence from Canada reinforce the notion that Canadians seeking care in the United States were relatively rare during the study period. Only 90 of 18,000 respondents to the 1996 Canadian NPHS indicated that they had received health care in the United States during the previous twelve months, and only twenty indicated that they had gone to the United States expressly for the purpose of getting that care.¹³

Formal contracts. Periodic formal contracts between provincial payers and U.S. providers have a long history, but a few such contracts have received considerable attention on both sides of the border.¹⁴ Most notable have been contracts for the provision of radiation therapy for cancer patients, in response to backlogs created by shortages of radiation technicians. For example, Quebec contracted with three radiation centers in Vermont and Maine in October 1999 for treatment of patients with breast and prostate cancer; 1,030 patients were treated during the subsequent year.¹⁵ Ontario contracted with three health care organizations in Michigan, New York, and Ohio in March 1999 to provide treatment for patients with breast and prostate cancer, and 1,416 patients had been referred as of 31 October 2000.¹⁶ This is equivalent to approximately 8.5 percent of all prostate and breast cancer patients treated with radiation therapy in Ontario during the same time frame.

Preapproval for stateside evaluation. A relatively rare occurrence is preapproval for stateside evaluation of rare disorders or for experimental treatments not yet available in Canada. These treatments are often eventually adopted in Canada but diffuse less rapidly than in the United States. It is during that window between U.S. and Canadian adoption that occasional referral to the United States occurs. Examples of this include gamma knife therapy (a cobalt source is used to generate gamma rays that converge on a focal point) for treatment of cranial problems and brachytherapy (insertion of radioactive seed implants) for prostate cancer. Typically, a province the size of Quebec (approximately 7.3 million persons) may approve about 100 requests per year.¹⁷ Finally, in some provinces, contracts have been established between the provincial payer and U.S. primary care providers to provide primary care to residents of sparsely settled rural areas near the U.S. bor-

“The anecdotal reports of Medicare refugees from Canada are not the tip of a southbound iceberg but a few scattered cubes.”

der. In New Brunswick (a province of 750,000 persons) this accounted for about 2,000 visits between 1996 and 1998.

Private insurance policies. Limits imposed since the early 1990s on out-of-province payments by provincial payers have motivated more Canadians to obtain travelers' insurance for emergency out-of-province medical care. For example, the number of individual policies sold to Canadians increased from 700,000 to 2,800,000 from 1992 to 1999. However, we found no evidence that there is a demand in Canada for, or a supply of, insurance policies for elective medical care services.¹⁸ Some private insurance firms have expressed interest in offering policies that would provide service in the United States if one had to wait more than thirty days on a Canadian waiting list; however, there has been no apparent demand for such policies to date.

Discussion

■ **A tip without an iceberg?** This study was undertaken to quantify the nature and extent of use by Canadians of medical services provided in the United States. It is frequently claimed, by critics of single-payer public health insurance on both sides of the border, that such use is large and that it reflects Canadian patients' dissatisfaction with their inadequate health care system. All of the evidence we have, however, indicates that the anecdotal reports of Medicare refugees from Canada are not the tip of a southbound iceberg but a small number of scattered cubes. The cross-border flow of care-seeking patients appears to be very small.

Our telephone survey of likely U.S. providers of wait-listed services such as advanced imaging and eye procedures strongly suggested that very few Canadians sought care for these services south of the border. Relative to the large volume of these procedures provided to Canadians within adjacent provinces, the numbers are almost undetectable. Hospital administrative data from states bordering Canadian population centers reinforce this picture. State inpatient discharge data show that most Canadian admissions to these hospitals were unrelated to waiting time or to leading-edge-technology scenarios commonly associated with cross-border care-seeking arguments. The vast majority of services provided to Canadians were emergency or urgent care, presumably coincidental with travel to the United States for other purposes. They were clearly unrelated either to advanced technologies or to waiting times north of the border. This is consistent with the findings from our previous study in Ontario of provincial plan records of reimbursement for out-of-country use of care.¹⁹ Additional findings from the current study showed that a small amount of cross-border use was related to proximal services, primarily in rural or remote areas where provincial payers have made arrangements to reimburse nearby U.S. providers. Finally, information from a sam-

ple of “America’s Best Hospitals” revealed very few Canadians being seen for the magnet referral services they provide.

These findings from U.S. data are supported by responses to a large population-based health survey, the NPHS, in Canada undertaken during our study period (1996). As noted above, 0.5 percent of respondents indicated that they had received health care in the United States in the prior year, but only 0.11 percent (20 of 18,000 respondents) said that they had gone there for the purpose of obtaining any type of health care, whether or not covered by the public plans.

■ **Was our net fine enough?** This study might have underestimated the number of Canadians seeking care in the United States, for several possible reasons. First, a number of institutions did not respond to our survey. Those institutions might have seen larger numbers of Canadian patients than did the institutions that responded. However, persons contacted at nonresponding sites suggested to us that in fact they simply had nothing much to report. Second, we may simply have asked the wrong institutions and collected hospital data from the wrong states. It is possible that Canadians found their way to more remote sites not identified as magnet institutions. Indeed, we know that many Canadians receive care in Florida and California, for example. However, these are predominantly coincidental services. We could determine no logical reason why Medicare refugees would go further afield or to less prominent sites. Finally, it is possible that surveyed providers and administrative data did not recognize Canadians because they were using local addresses. This would be a limitation on any study of U.S. providers, for which the only possible remedy would be a costly individual patient survey. However, we have no information that would suggest that Canadians who seek care in the United States are likely to have U.S. addresses.

On the Canadian side, the surprisingly poor quality of some of the provincial data leaves open the possibility that some patients heading south for contracted services reimbursed by the public plans may have been missed if they were cared for in facilities that did not participate in our stateside survey. However, earlier analysis of Ontario Health Insurance Plan (OHIP) data found that most spending for medical and hospital services received by Canadians in the United States during the early 1990s was related to the “coincidental” basic and emergency health care services typically used by Canadians traveling or temporarily residing in the United States.²⁰ Although the possibility of underestimating cross-border care seeking can never be entirely eliminated, we do not believe that its magnitude would be sufficient to challenge our conclusions.

■ **Why is cross-border care seeking so low?** Our results should probably not, on reflection, be surprising. Prices for U.S. health care services are extraordinarily high, compared with those in all other countries, and this financial barrier is magnified by the extraordinary strength of the U.S. dollar. Private insurance for elective services, being subject to very strong adverse selection, is, not surprisingly, nonexistent. Discussions with key informants in the Canadian private insurance industry

indicated that carriers correspondingly confine themselves to the coincidental services market. Furthermore, provincial governments have been lowering their rates of reimbursement and tightening preapproval criteria for cross-border care. In the absence of either source of health insurance coverage, it would be somewhat surprising if large numbers of Canadians were choosing to head south and pay out of pocket for care. In fact, one recent survey found that Canadians were not even prepared to pay out of pocket in their own country to reduce their own waits.²¹

■ **What about Canadian contracts with U.S. providers?** The numbers of true medical refugees—Canadians coming south with their own money to purchase U.S. health care—appear to be handfuls rather than hordes. But there are still the highly visible examples of Canadian provincial governments contracting with U.S. providers for specific services that are unavailable or in short supply in Canada. While these contracts have received extensive press coverage on both sides of the border, they have largely been short-term arrangements for a limited number of procedures for selected patients experiencing delays in several Canadian provinces.²² Do such purchases indicate that the Canadian health care system is inadequate to meet the needs of its citizens and is critically dependent on access to the better-resourced U.S. system?

Well, yes and no. In the case of highly specialized and leading-edge or experimental technologies, this contracting policy is obviously sensible. It would be impossible for a country one-tenth the size of the United States (much less individual provinces) to try to maintain the capability to offer every conceivable form of care, no matter how advanced or unusual. Purchasing such services from a small number of U.S. tertiary centers that offer them, as indeed many U.S. payers do, is the only reasonable option. As and if the technology matures and its range of applicability expands, it may be disseminated to Canadian centers.

Cross-border contracting for services to augment existing Canadian capacity for commonly used technologies raises somewhat different issues. An important cost containment strategy in Canada has been constraint on the capacity of diagnostic- and treatment-related technology. Tight capacity is particularly vulnerable to unexpected surges in demand for care or a sudden loss of supply attributable to, for example, a strike by critical support personnel. The consequence is increased waiting times that at some point may be perceived as excessive by providers, patients, or the public. Selective contracting with U.S. providers has been a response to these concerns.

A case for long-term contracts. As long as Canadian capacity remains tight for selected medical technologies while at the same time the United States continues to generate excess capacity, cross-border contracting appears to be a perfectly sensible approach to dealing with patient queues. It also offers a way of delaying capital investments in response to shifts in patterns of clinical practice until these have had time to establish themselves. As a purely economically motivated “make or buy” decision, it might even make sense to enter into long-term contracts for the

purchase of services in the United States, as long as these contracts were available at prices above U.S. marginal cost but below the Canadian average unit cost. Such contracts would reflect not a “failure” of the Canadian system but simply provincial governments’ behavior as a “prudent purchaser,” taking advantage of the opportunity to “buy” more cheaply than it could “make.” Americans would also benefit. As long as their health care system is organized to generate excess capacity, they are clearly better off if the excess capacity is sold to Canadians than if it is left to sit idle or used to generate unnecessary domestic servicing.

The case against. But there are other important considerations that would be raised by a long-term Canadian policy of importing health care services from the United States, even at favorable prices. First, patients may resist absorbing the monetary and nonmonetary costs of travel to the United States. Second, Canadian purchasers of U.S. services may be most vulnerable to loss of a contract or increased prices if U.S. domestic demand surges or supply decreases. Third, solving the problem of Canadian waiting lists by sending a regular wave of patients south would imply a major loss of income for Canadian providers. For all three reasons, this policy would be largely unacceptable to providers and patients, and, as a result, politicians would likely face an ongoing chorus of accusations that the system fails to meet the medical needs of their constituency.

■ **Phantoms in the snow.** Despite the evidence presented in our study, the Canadian border-crossing claims will probably persist. The tension between payers and providers is real, inevitable, and permanent, and claims that serve the interests of either party will continue to be independent of the evidentiary base. Debates over health policy furnish a number of examples of these “zombies”—ideas that, on logic or evidence, are intellectually dead—that can never be laid to rest because they are useful to some powerful interests.²³ The phantom hordes of Canadian medical refugees are likely to remain among them.

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Case Study: Taiwan

Taiwan's single-payer system (adopted in 1996) has improved access to care, controlled costs, and is a model of efficiency.

Health Care Abroad: Taiwan

By Anne Underwood

William Hsiao is a professor of economics at the Harvard School of Public Health and co-author of the 2004 book "Getting Health Reform Right." He served as a health care adviser to the Taiwan government in the 1990s, when officials decided to reform that country's health care system and to introduce universal coverage. He spoke with Anne Underwood, a freelance writer.

Q. Taiwan instituted universal insurance in 1995. What was the health care system like before?

A. Only a portion of the people were insured, including civil servants, employees of large firms and farmers. The military had its own system of coverage. But 45 percent of the population did not have insurance, and they faced financial barriers to access to health care. President Lee Teng-hui felt strongly that he wanted to do something concrete and visible for all the citizens. He thought of introducing national health insurance to touch the lives of all the people. There was a sense in Taiwan that health care is needed by everyone and a country has to assure everyone equal access.

Q. How did you become involved in the health care reform process?

A. The government initially appointed four Taiwanese professors to lead a task force of technical experts. But the four professors all had different ideas. It was like a wagon drawn by four horses, with each going in a different direction and nobody driving. After a year of this, government officials realized there was a problem. In addition, they wanted someone who understood health systems and health care abroad and what lessons other countries could offer to Taiwan. The domestic experts did not have much international experience.

I was invited to a three-day workshop, where they tested me. At the end, I was put in charge of the task force of four professors and 16 other technical experts. It turned out to be a big advantage that I'm not Taiwanese and had no aspirations of getting a job in Taiwan. At the end of the day, our recommendations and findings were perceived as more objective and free of self-interest.

Q. What was your assignment as head of this task force?

A. We had to design a national health insurance plan for Taiwan, based on international experience. Government officials wanted to understand how other advanced countries fund and organize health care and learn from their successes and failures, so I made a study of the systems in six high-income countries — the United States, the U.K.,

Germany, France, Canada, Singapore and Japan.

Q. And what was your conclusion at the end of this study?

A. We adopted a single-payer system along the Canadian lines. I did not invent it. I'm just in the transfer-of-knowledge business.

Q. Why did you choose the Canadian model?

A. Canada has a single-payer system with universal insurance coverage. It offers people free choice of doctors and hospitals, and it has competition on the delivery side between public and private hospitals. The quality of health services is very high, and people were very satisfied with the system from the 1980s through the mid-1990s.

Unfortunately, in the early-to-mid 1990s, Canada went through a severe recession for four or five years. The budget became very tight. The government underfunded national health insurance, which led to long waiting lines for elective surgery, MRIs and so forth. But when Canada adequately financed its N.H.I., it was a very good system.

Q. In Taiwan, can people choose any doctor or hospital they want?

A. Yes, any provider. Americans talk about choice. But in fact, insurance plans in this country restrict what providers you can go to. Canada gives its citizens more choice of providers. So does Germany. So does England. So does Taiwan.

Q. How comprehensive is the coverage?

A. It covers prevention, primary care and hospitalization, among other things.

Q. I've read that it also covers Chinese massage, acupuncture, traditional herbal medicine, mental health care, dental, vision and long-term care.

A. Yes, these services are covered. We tried to design a benefit package that would give people what they value. For many Taiwanese, that includes traditional Chinese medicine. Though Chinese medicine is not 100 percent proven to be medically effective, people believe in it. And some therapies have been proven effective. For example, when acupuncture is given in certain spots, it stimulates the brain to release opiates.

Q. The Taiwanese system also covers home care.

A. You need home care by visiting nurses for people who are chronically ill or bedridden. It's not rocket science to recognize this. Some people argue that the patients should

pay for home care themselves. But if people have to pay out of pocket, they might not ask for visiting nurse services and their illnesses may get much worse. Then they will need to be hospitalized.

Q. Is the system very expensive?

A. Expensive is a relative term. Taiwan spends 6 percent of G.D.P. on health care, compared to 16 percent in the United States.

Q. How much do people have to pay?

A. If you're employed, your employer pays 60 percent of your premium. The employee pays 30 percent, and the government subsidizes 10 percent. The government fully subsidizes the premiums for the poor and gives partial subsidies to veterans, the self-employed and farmers.

Q. How much is the typical premium?

A. The total insurance premium for employed workers is 4.6 percent of wages. That's much lower than in the United States, where the average is between 12 and 20 percent of wages for those who are covered by their employers.

Q. Are there co-pays, too?

A. Yes. The task force felt that service should not be totally free or else people might waste services. For example, we studied what happened in Taiwan when some insurance policies gave prescription drugs free to everyone. One-third of the drugs dispensed were never taken but thrown away. You can imagine, if you have free office visits, some people will say, "I have this little ache. I'll go see the doctor because it's free." We wanted to moderate this waste.

Q. How high are co-pays?

A. The charge is \$2 for a visit to a clinic and about \$4 to a hospital outpatient department. The co-pay for hospitalization is now 10 percent for the first 30 days and 20 percent for the days beyond 30 days. For prescriptions, it's 20 percent of the cost of the drug, but capped at \$6 for each prescription. Taiwan also sets a ceiling on the total co-pays, so patients won't face bankruptcy.

Q. How long did it take to implement this program?

A. Less than a year. Mr. Lee pushed through the legislation in four to five months, because an election was coming. Then he asked for the new system to be implemented six months after that — and they did it.

Q. What percent of the population is now insured?

A. Within the first year, Taiwan managed to insure 95 percent of the population. That increased that by another percent or so each year, until they reached 98 percent. They had trouble with that last 2 percent, because some were living overseas and others were homeless. The government literally sent people to find the homeless under bridges and enroll them. Now they have close to 99 percent enrollment.

Q. Has this translated into better life expectancy or lower complication rates from major diseases?

A. There is evidence of positive health results for select diseases, like cardiovascular disease and kidney failure. But overall, it's really difficult to say that national health insurance has improved the aggregate health status, because mortality and life expectancy are crude measurements, not precise enough to pick up the impact of more health care. That said, life expectancy is improving, and mortality is dropping. And everyone now has access to good health care.

Q. What does the system do particularly well?

A. In addition to covering everyone, it has a uniform system of electronic health records. Every patient has a Smart Card. When you go in for services, the physician puts the card into his computer. You give him the code to access your records, which are all stored on the card — what medications you've taken, what tests, along with the results, the last time you saw another physician. With a single, unified electronic system, it improves treatment and it also vastly reduces claims processing. Hospitals and doctors get paid in a week or two. It's a paperless system. That's why it keeps administrative costs down to 2.3 percent of the total premium. In the United States, it's more than 10 percent.

Taiwan was also able to control health-expenditure increases very well in the early years. Unfortunately, now that the government budget is tight, it is overdoing it.

Q. What are the system's weaknesses?

A. In the legislative process, compromises had to be made. First, the president yielded on payment reform, so Taiwan kept its fee-for-service payment system. Unfortunately, that encourages doctors and hospitals to give more treatment in order to boost their income.

Second, the Taiwanese system doesn't have a systematic way to monitor and improve quality of care.

Third, in the legislative process, they rejected a provision to adjust the premium automatically when the national health system depletes its reserves. In every country, health care costs are increasing faster than wages. When that happens, the premium has to go up. But that provision wasn't incorporated into the law. As a result, the system is running a deficit. National health insurance tries to cut the fees for hospital and physician services. But eventually these fee reductions will adversely affect the quality of health care.

Q. What's the most important lesson that Americans can learn from the Taiwanese example?

A. You can have universal coverage and good quality health care while still managing to control costs. But you have to have a single-payer system to do it.

<http://prescriptions.blogs.nytimes.com/2009/11/03/health-care-abroad-taiwan/>

INTERVIEW

Lessons From Taiwan's Universal National Health Insurance: A Conversation With Taiwan's Health Minister Ching-Chuan Yeh

Fourteen years of experience with national health insurance have produced important results that other countries might find of interest.

by **Tsung-Mei Cheng**

ABSTRACT: Taiwan established universal national health insurance in 1995, bringing overnight the then 41 percent uninsured under the umbrella of national health insurance (NHI). Financial worry due to illnesses is a thing of the past in Taiwan. As a result of successful cost containment, national health spending grew from the pre-NHI three-year average of 4.79 percent of gross domestic product (GDP) to only 6.1 percent today. Tsung-Mei Cheng explores with Taiwan's health minister Ching-Chuan Yeh, M.D., the ethical principles that underlie the NHI and how the NHI operates: financing, risk pooling, cost containment, provider payment, and the delivery system. Challenges for the future are discussed. [*Health Affairs* 28, no. 4 (2009): 1035–1044; 10.1377/hlthaff.28.4.1035]

Equity, Cost Containment, And Public Satisfaction

Tsung-Mei Cheng: Minister Yeh, you were appointed in 1995 as the founding CEO of the Bureau of National Health Insurance [BNHI], the government agency that runs the NHI [National Health Insurance]. Now, as minister of health, you supervise that agency. In the intervening fourteen years Taiwan's NHI has gained considerable international recognition. What do you see as its major achievements?

Ching-Chuan Yeh: First, we have the most egalitarian health system in the industrialized world. Access to basic health care is an inalienable right in our constitution. Residents living in remote mountainous areas and offshore islands, and the poor, get pretty much the same access and health care as the children of Presi-

dents Chen and Ma—everyone in Taiwan receives the same care in terms of access and service. Also, our cost is much lower compared to most OECD [Organization for Economic Cooperation and Development] countries.

Cheng: National health spending in Taiwan rose from 4.79 percent of GDP [gross domestic product] prior to the NHI's establishment (average for 1992–1994) to only 6.1 percent in 2007. The comparable increase in the U.S. was from 13.5 percent (average for 1992–1994) to 16.6 percent of GDP in 2007. How did Taiwan achieve such remarkable cost containment?

Minister Yeh: Basically, we should say it is thanks to the efficient services we have, including very low administrative cost, which was only 1.5 percent of total NHI spending in 2008. Having a single-payer system is the main rea-

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Tsung-Mei Cheng (maycrein@princeton.edu) is host and executive editor of International Forum at Princeton University in Princeton, New Jersey. Ching-Chuan Yeh, a physician, is minister of health in Taiwan.

son for our efficient services and also the low prices for health care we can achieve.

Cheng: Taiwan's public has been very satisfied with the NHI—in the 70 percent range since inception and 79 percent as of July 2008. The NHI is said to have been the most successful public policy in Taiwan. What explains this high public satisfaction?

Minister Yeh: One reason for the high satisfaction is that NHI's premium and copayment rates are very low, yet everyone can have "all you can eat," so to speak. Easy accessibility is another reason. Anytime you wish to see a doctor, you can. For example, if you decide to see an ophthalmologist, within ten minutes you can find one to see, even in the evenings.

Competition Through Patient Satisfaction, Not Price

Cheng: NHI benefits are indeed broad: inpatient and outpatient care, drugs, dental care, vision care, traditional Chinese medicine, and kidney dialysis. You can afford all this with spending of only 6.1 percent of GDP, of which the NHI itself is roughly two-thirds, or 4 percent of GDP. You mentioned your system can achieve low prices. What mechanism is used?

Minister Yeh: We achieve low prices through a uniform national fee schedule the government sets. We can also modulate price increases, or even freeze prices. So doctors and hospitals must achieve very high productivity to survive. But critics say at such low fees we must beget problems with our service quality. Of course we wish to raise the premium rate from the current 4.55 to 5.3 percent of salary or wage so we can enhance quality—for example, increase the hospitals' nursing staffs. But political resistance to any premium rate increase is so great that if you could get such a bill passed, you could win all kinds of elections!

Cheng: Has complete freedom of choice of providers enjoyed by Taiwan's public also provided effective competition among providers?

Minister Yeh: Absolutely! Providers in Taiwan must be mindful of patients' demands to stay competitive, and they do compete for patients. In Taiwan, patients can carry the cash represented by their insurance cards to any provider of care, not just to a smaller network of providers, as under U.S. private insurance. It is quality competition, not price competition; but it certainly is competition.

Cheng: Taiwan does not have American-style private health insurance. Do you see it coming someday either as an escape valve for the rich in Taiwan (as is the case in Germany and the U.K.) or as a way to reduce the government's burden by shifting cost to the private sector through private health insurance, as in Australia?

Minister Yeh: As long as there is the NHI, there will be no private health insurance

that will provide benefits that are identical to those provided by the NHI. Taiwan has only private supplemental indemnity health insurance; it covers specific diseases such as cancer or disasters like injuries from traffic accidents. It is a cash benefit, and the money is used to help pay for copayments, hire special nurses, and buy nutritional foods—not for genuine inpatient medical services, which are covered by the NHI.

Health Spending And Technology Adoption

Cheng: Published government statistics show that the NHI's expenditures have outpaced its revenues by an average of 2 percent since 1998, except for the brief period 2002–2004. Then there was a balanced budget because in 2002 the government raised the premium rate by 7 percent, from 4.25 percent to 4.55 percent of wage and salary. How does the government handle this financial imbalance?

Minister Yeh: As you pointed out, the NHI raised the premium rate only once in its fourteen-year history: from 4.25 percent to 4.55 percent in 2002. This is not a good thing. In the interim, we started a tobacco tax that gives us

"As long as there is the NHI, there will be no private health insurance that will provide benefits that are identical to those provided by the NHI."

an additional 4 percent of the total NHI revenue. We are thinking of further increasing the tobacco tax to yield yet another 2.5 percent of revenue for the NHI. In the end, 7.2–7.5 percent of the NHI's total annual revenue will have come from the tobacco tax. This is the easy part.

The bad part is that there has been a continuous shift toward increases in copayments, coinsurance, and extra charges. Extra charges have good and bad aspects: extra-charging the rich to cross-subsidize the poor is right—for example, charging more for private rooms. But increases in copayments by everyone are very bad, because they can be burdensome to poor people. Although we do make generous exemptions from copayments such as issuing waivers for cancer and serious illnesses, general household out-of-pocket spending has been increasing. I have trouble accepting that. Someday we will need fundamental financing reform. In Taiwan, nonpayroll income, including capital gains, accounts for more than 30 percent of total national income, and yet this large income segment is not subject to the NHI premium assessment. The NHI's premium collection is based on payroll income alone. So we are thinking of adding nonpayroll income to the premium base for the NHI as an additional source of funding.

Cheng: Is it not quite unique in the world that a health system such as your NHI has had only one premium rate increase in its fourteen-year history? Why has Taiwan's public been so stubbornly unwilling to allow premium rate increases, which the NHI Law permits? Do they have a point by arguing that there is too much waste in the system and the government should first deal with that before asking the public to pay more?

Minister Yeh: Of course they have a point. But as with any proposed increases in fees for public utilities like bus and taxi fares, electricity, etc., the public always hides behind the argument “better service and eliminate waste be-

fore you ask us to pay more.”

We need better public communication to convince the public and tell them, “You can't say we will increase policemen's pay only when all crimes in the country have been eliminated—when there are no thieves, no violence.” We need to tell the public they have only two choices: namely, to pay a little more and get good service, or else be prepared that the quality and accessibility of services will deteriorate or be reduced.

“Our adoption of new technology, including drugs, is often delayed by two years and at times five years compared to the U.S.”

Cheng: Taiwan spends roughly 25 percent of the NHI budget on drugs. Given that your overall spending is low, are new drugs and devices introduced in a timely fashion? How do you reimburse the very expensive drugs? Multinational pharmaceutical companies often allege that prices paid by the NHI are too low,

and they are unhappy about it.

Minister Yeh: The NHI introduces forty to fifty new drugs every year. So spending for new drugs per total NHI expenditure continues to rise. About one percentage point of the 3–5 percent annual growth in spending of the NHI is for new drugs.

Cheng: One hears often, nevertheless, that various new drugs are not covered by the NHI because they are expensive. Is this true?

Minister Yeh: There are some delays in coverage for new drugs. Our adoption of new technology, including drugs, is often delayed by two years and at times five years compared to the U.S., but not longer than that. In terms of target therapy drugs for cancer, the NHI covers thirteen of the total of seventeen drugs currently available in the world market.

Cheng: How about the wait for the adoption of high-price biologics?

Minister Yeh: The NHI does cover many of them, but we place certain restrictions on their use. The BNHI will pay subject to certain conditions. Admittedly, these conditions sometimes are too strict and physicians strongly oppose them. For example, there is now a debate over cholesterol-lowering drugs in the statin

family like Lipitor, which is very expensive. So the BNHI has set a limit on their use, such as that the patient's cholesterol must be above a certain level, or other ways to reduce the level, such as that lifestyle changes have failed.

Financing And Protection Of Disadvantaged

Cheng: Let us now turn to the financing of the NHI. Why did Taiwan adopt the premium model, rather than the general tax model used in, say, Canada's health system and the British National Health Service [NHS]?

Minister Yeh: Three reasons: first, previously existing social insurance schemes such as Labor Insurance, Government Employees Insurance, and Farmers Insurance were all premium based, so the public was familiar with that model. Second, the general tax model would not work in Taiwan, because the government's ability to levy taxes is poor—total tax revenue as a percent of GDP is currently 13 percent, down from a historical high of 18 percent. Finally, the Department of Health would have to compete for government budget allocation against other government departments such as defense, finance, education, and transportation; this may lead to unstable and insufficient funding for the NHI because the government's priorities may shift.

Cheng: What happens to those individuals or households who cannot afford the NHI premium?

Minister Yeh: The government pays 100 percent of the premium for low-income households—currently 1 percent of the population—and extends interest-free loans to the near-poor—2 percent of the population. I had proposed, in 2008, raising the tobacco tax from the current NT\$10 per pack to NT\$20 per pack and using part of the additional revenue as a subsidy for the near-poor.¹

Cheng: You mentioned that raising the tobacco tax is relatively easy in Taiwan.

Minister Yeh: Yes, because the antismoking campaign has been very successful in Taiwan, and the tobacco tax is regarded as a sin tax, so there is not much opposition.

Cheng: And did your proposal to increase the

tobacco tax pass the legislature?

Minister Yeh: Yes. It did pass, on January 23 of 2009. The new tax will be enacted June 1 of 2009. This will give the NHI an additional 4 percent of its total annual revenue, or NT\$16 billion (US\$485.9 million). I intend to use the new money for a variety of purposes. Namely, roughly a little less than half (NT\$7.2 billion, or US\$218.2 million) will go to NHI general revenue; NT\$2.16 billion (US\$65.5 million) for cancer research, prevention, and screening; NT\$1.44 billion (US\$43.6 million) for subsidies to the near-poor to ensure their coverage; and the rest to health care quality improvement, including health care in remote and mountainous areas and off-shore islands, care for rare diseases, suicide prevention, and narcotics addiction.

Cheng: I understand that, remarkably, over 98 percent of Taiwanese pay their premiums on time. How do you get such good compliance from the public?

Minister Yeh: The NHI's total premium revenue comes from three sources: government (25 percent), which will not default on premiums; employers (37 percent); and the public (38 percent). The BNHI is good at collecting premiums from the public—better than Taiwan's National Taxation Bureau. When people don't pay premiums on time, the BNHI telephones or sends notices to them immediately. Our citizens are very law-abiding, so compliance is very high. The "bad debt rate" is just around 1.5 percent. In the end, more than 98.5 percent of the premium is collected.

Provider Payment: FFS, Global Budgets, P4P, And Disease Management

Cheng: There is a consensus among health policy experts around the world that FFS [fee-for-service] is about the worst way to pay doctors, and yet it is also the most widespread method actually used around the world. Does Taiwan have plans to reform its FFS-based payment system?

Minister Yeh: We currently have FFS under a system of global budgets. Ideally, under global

budgets, FFS should be done away with. This is the goal. But it is very difficult to implement such changes. In reality, under our global budget system, fifty-three surgical procedures are under case payment (like your DRGs [diagnosis-related groups])—for example, the case-based global fee for total hip replacement is NT\$124,754 (US\$3,789).

Cheng: By “case payment” do you mean “bundled payment”—that is, a global fee for a fixed procedure? In the U.S. there is much talk of bundling the services going into the treatment of standard cases—for example, CABG [coronary artery bypass grafting]—and paying one global fee for the entire bundle of inpatient and ambulatory services, giving providers an incentive to practice cost-effective medicine across the

entire spectrum of delivery settings. But for that to happen, we must have patient-centered, clinically integrated care, which is still the exception in the U.S. Are you aspiring to that kind of system reform in Taiwan as well?

Minister Yeh: Our “case payment” is for inpatient services only and bundles fees for hospital and hospital-based physician services. It does not include fees for ambulatory services. We have developed our own version of DRGs but have not implemented them except for the fifty-three mentioned earlier.

Cheng: You mentioned that Taiwan has used sectoral global budgets to control health spending successfully. Health policy experts generally believe that such an approach can be useful in the short run, to break an upward trend in health spending, but that over the longer run this is a heavy-handed approach that inhibits a flexible adaptation of health care delivery to changes in technology—for example, shifts from inpatient to outpatient care made possible by new technology. Does Taiwan contemplate staying with the global budget approach forever?

Minister Yeh: We are aware that some scholars continue to challenge the global budget approach. The global budget approach is not as

bad as people imagine. We have five sectoral global budgets under one big overall global budget for the whole system: hospital, primary care, dental, traditional Chinese medicine, and kidney dialysis. Our hospital global budget includes hospital outpatient ambulatory care, and that part is almost 50 percent of the total cost of any hospital. So far this system has worked, even if not perfectly. Shifting patients from inpatient to outpatient care is effortless because both are under the same hospital global budget.

Cheng: Are there disease management programs [DMPs] in Taiwan? What payment schemes do you use for DMPs—pay-for-performance [P4P], or risk-adjusted capitation as in Germany and the Netherlands?

Minister Yeh: We have five P4P programs using the disease management approach—diabetes, breast cancer, asthma, tuberculosis, and hypertension; other programs are based on fee-for-service or case payment. Diabetes management and tuberculosis control are relatively successful because there are good indicators to measure outcomes by, for example, HbA1c for diabetes. Breast cancer P4P is considered so-so up to this point. There is no evidence as yet that P4P for asthma has made a big impact. Overall, however, the budget impact of these initiatives is still small. We need to take a much more aggressive approach to disease management. For that we need to overhaul our payment system, which is still largely based on fee-for-service payment to providers.

Health Information Technology: Toward A High-Performing System

Cheng: Everywhere around the world, electronic health information technology (IT) is now viewed as a necessary though not sufficient component of high-performing health systems. Denmark's health IT is ranked number one among OECD countries, yet according to a Danish scholar, Taiwan's health IT surpasses Denmark's. What do you see as the most successful aspects of Taiwan's health IT?

“All the data in our health IT system can be linked, so that we can know anything we choose to know about patients.”

Minister Yeh: There are two aspects to the NHI's health IT: one is the IC Card (Smart Card), a credit card-size card, which every insured has for accessing care, and the other is the wider IT system of which the IC Card is an important component. As all providers in Taiwan submit claims electronically based on the electronic patient records they keep, we can do very detailed profiling of both patients and providers. All the data in our health IT system can be linked, so that we can know anything we choose to know about patients, their utilization of health care, providers, and so on, quickly—usually within a day of service. We have complete profiles on utilization by patients' income level, geographic location, visit number, hospitalization number, etc. Thus, we are able to monitor our health system almost in real time.

Cheng: With so rich a database, do you do a lot of operations research, also called "health services research"?

Minister Yeh: This is where we fall short of our potential. We have so much valuable data, but there are not enough people asking the right questions as a basis for decision making.

Cheng: Does this have to do with your extremely low administrative budget: 1.5 percent in 2007?

Minister Yeh: Yes, this has to do with the budget. We have made our data, scrambled to protect patient privacy, available to academic researchers. Unfortunately, we do not have enough R&D [research and development] funding to incent researchers to ask the right questions; you need to have people doing strategic thinking. It is like in a war; winning or losing does not depend so much on the number of troops. Good commanders with good systems of information and operations staff are what are needed. We could do better here.

Cheng: Do you have an electronic medical record [EMR] or a personal electronic health record [PEHR]?

Minister Yeh: Not yet. At present, most hospitals have EMRs within their own walls, but interhospital communication still awaits standardization of nomenclature. But once we decide to develop a cross-system EMR, we can

accomplish it very quickly, because as a single insurer, we can have one single standard. We can go to a complete e-record in five years.

We are in the process of building the Picture Archiving and Communication System [PACS]—imaging switching center. I am aiming for its completion by the end of 2010. I expect to have all imaging done in the NHI electronically transferable within the entire Taiwan health system.

Cheng: What about a PEHR that links patients electronically to the health system? Does not the current NHI IC Card already feature important components of a PEHR, such as record of illnesses, diagnosis, prescriptions, allergies, etc.?

Minister Yeh: Yes, but I want our people to build quickly a more refined PEHR, one superior to the NHI IC Card we now use. I know it will be difficult because a more refined PEHR will first require us to upgrade our current IC Card to the second-generation IC Card. The present IC Card only has 36k of memory, which is not enough.

Preventive Care And Quality Of Care

Cheng: Many physician-leaders in Taiwan have voiced their concern about inadequate efforts at prevention, citing the time pressure on doctors. I have read that where the government did invest in prevention, as in cervical cancer prevention by Pap smear screening, patient outcomes have vastly improved. Is that a general finding?

Minister Yeh: Yes, it is. It is also true that at present, prevention is not as well done as it should be. We do a pretty good job with antismoking campaigns, but that is a different kind of prevention than the kind doctors typically think of. The current screening rate for breast cancer, ranging between 5 and 10 percent, is too low. Screening rates for oral cancer—another major cancer in Taiwan because of betel nut chewing—and colon cancer are also quite inadequate. We have to invest more in these activities.

Cheng: Do you believe that inadequate screening is in fact at least partly responsible for the

significant gap in five-year survival after diagnosis for colon, lung, and breast cancer in Taiwan compared to high-spending countries like the U.S., Germany, and Switzerland? For example, breast cancer five-year survival in Taiwan is 67.7 percent, compared to 87.6 percent in the U.S. and 73.3 percent in a fellow single-payer country, the U.K., which spends more on health care. I would imagine that as minister of health, you have these outcomes data in your sight. Are there any concrete plans to match the higher survival rates elsewhere?

Minister Yeh: Of course! To address this problem, I have designated a special sum from the tobacco tax revenue solely for screening of three major cancers in Taiwan: colon, oral, and breast. It would be great if within ten years the breast cancer mortality could be cut in half, just like we did with cervical cancer. The cervical cancer mortality in Taiwan was cut in half in the ten years from 1995 to 2005, even though its screening rate is not that high: 33 percent a year, with a three-year cumulative screening rate of only 60 percent. I am also optimistic about reductions in oral cancer mortality, because screening for it is easy. So our biggest problem is that we did not spend enough money on preventive screening.

Cheng: I have been told that once a cancer diagnosis is established in a patient in Taiwan, treatment (such as surgery) is done well and outcomes are excellent. Do you agree?

Minister Yeh: You put your finger on an important aspect of cancer care in Taiwan. Stage-specific five-year cancer survival rates in Taiwan are similar to those in high-spending countries. Although they are lower than in the U.S., they are better than in the U.K. What this shows is that our staging is too late, not that our treatment is inferior. The problem is, once again, that we do not have comprehensive and early cancer screening programs. This is due to inadequate funding for screening in the past few years.

When you look at survival after organ transplantation, we sometimes do better than the U.S. For example, because we do more liver transplantation here, we have much better outcomes than does the U.S. Kidney trans-

plantation results are also comparable to the U.S. But since we rarely do lung or heart-lung transplants, our outcomes are much worse.

Integrated Care And Care Coordination

Cheng: In all of the countries I have recently visited, there has been for several decades now a yearning among policy analysts for “integrated care.” Unfortunately, the providers of health care responded to that yearning merely by building vertically integrated health systems that include primary care outpatient practices, hospitals, pharmacies, home care agencies, nursing homes, and hospices. But these facilities were only legally and economically integrated. They never integrated patient care clinically in a patient-centered way. These systems are really just a bunch of silos owned by one system, with each silo doing its own thing and even billing separately. Let me first ask whether Taiwan also has had this faux systems integration.

Minister Yeh: We encourage vertical system integration, and it is happening. Big teaching hospitals have been integrating downward with small and medium-size community hospitals. What is behind the vertical integration? Hospital systems here are very competitive. Large hospitals and medical centers, in order to carve out their territory and guarantee their sources of patients who would be referred to them—that is, have a steady supply of patients—must reach out to remote, rural community hospitals to affiliate with them or even buy them. They invest in those hospitals so they can guarantee that all patients in the community will go to them.

Cheng: Do patients get better-quality care at the integrated hospital systems?

Minister Yeh: Yes, the quality of care is better at the integrated hospital systems.

Cheng: Is that because the vertically integrated systems actually try to give patient-centered, clinically integrated care, or is there some other reason?

Minister Yeh: Vertically integrated systems improve care continuity and thus produce better patient outcomes. In addition, they give

physicians in community hospitals opportunities for further training at larger hospitals or medical centers, making them better-trained physicians, whatever their specialties.

Cheng: In its book *Crossing the Quality Chasm*, the U.S. Institute of Medicine laments that American health care is highly fragmented, has poorly designed work-flow processes, and lacks even a rudimentary health IT infrastructure. Is Taiwan's health care as fragmented as is ours in the U.S.?

Minister Yeh: I am afraid so. It is human nature that we do not like to be cooperative. Taiwan is no exception.

Cost-Effectiveness Analysis In Coverage Decisions

Cheng: In the U.K., the National Institute for Health and Clinical Excellence [NICE]

performs technology assessment for the NHS based on cost- and clinical effectiveness of treatments. The NHS in turn makes its coverage decisions based on NICE recommendations. How does Taiwan make its coverage decisions?

Minister Yeh: Technology assessment in Taiwan is a touchy issue politically. Patients just don't care about cost-effectiveness, and politicians side with them. The argument is that everyone has but one life, and so what if saving my life costs more than saving other people's lives. This is typically how the average person thinks. What surprises me about the U.K. is that it could refuse to pay for kidney dialysis for the elderly. This would not be possible in Taiwan. Politicians here always ask the NHI to provide more and pay less. Do we pay for noneffective care? The most we can do is to ask that patients pay higher copayments, because the political price for rejecting coverage would be very high.

Cheng: So, in essence, the NHI's coverage decisions are greatly influenced by political interference?

Minister Yeh: Yes, greatly. NHI benefits are already very broad—we call it the “inclusive of

mountains and oceans” program. But now we must stop at providing shark fins and lobsters! Unfortunately, the problem is that it is not easy to say no in our political system.

Workforce: Is Length Of Physician Visit A Measure Of Quality?

Cheng: Does Taiwan have enough doctors and nurses? Taiwan's physician- and nurse-to-population ratios—1.7 and 4.5 per thousand people in 2005, respectively—are low compared to

higher ratios in OECD countries, especially for nurses. You train 1,300 doctors a year—the same number as twenty years ago, when the population was much smaller. How does this affect access to and quality of care in Taiwan?

Minister Yeh: In 1990 our population was twenty million. Now we are at twenty-

three million. But Taiwan's population will not exceed twenty-four million at maximum and also will begin to decline very rapidly after reaching twenty-four million because of our extremely low birth rate. So our problem now is not population size, but rather population aging. We have found that every year total NHI spending will increase by 1–1.5 percent as a result of population aging. It follows that we will need a growing health workforce. I do not think we have shortages of hospital beds. But we have too few nurses—4.5 nurses per 1,000 population, compared to 9.6 per 1,000 in wealthy OECD countries. Regarding doctors, there is no shortage, although at 1.7 doctors per 1,000 people, our physician-to-population ratio is lower than the 2.64 per 1,000 in wealthy OECD countries.

Cheng: Like Japan and South Korea, Taiwan is famous for its short physician visits and high utilization, averaging 12.4 visits per person per year (not including visits to dentists and traditional Chinese medicine). Is this a cultural phenomenon, or are there some other reasons? The World Health Organization [WHO] regards length of visit as a quality measure, based on evidence that longer visits result in better qual-

“Technology assessment in Taiwan is a touchy issue politically. Patients just don't care about cost-effectiveness.”

ity of care. Is this because doctors are under too much time pressure to see more patients?

Minister Yeh: There is no mistake that the high number of visits in Taiwan is a cultural phenomenon, as it is in Japan and Korea, where the number of visits is also high. Another reason is that any encounter with a doctor is counted as a visit. A visit to a provider just to look at a lab report counts as a visit.

Now I would like to ask, “What’s wrong with that?” In other words, seeing a doctor or going to a hospital is convenient for me; if I wish to see a doctor, I can see a doctor at any time, although the visit is short. I agree with what you said—that length of visit is regarded by the WHO as a measure for quality of care—but show me the evidence that quality is not good here. I also agree that there is a trade-off between accessibility and quality. In Taiwan, though, because patients have frequent contact with their doctors, doctors are familiar with their patients’ conditions and therefore do not need as much time for each visit as they would when they see new patients.

There is also the issue about the cost of longer visits. If you insist that every patient should be seen for fifteen or thirty minutes, it would cost a lot more—a doctor consultation is expensive. If you compare the total cost and total social cost-benefit ratios of fifteen- or thirty-minute visits with three-minute visits, you will find that a lot of people cannot afford visits and would be worse off as a whole with longer, more expensive visits. Would a system where visits are so expensive that many people cannot afford to see doctors or get treatment, as they are in the U.S., be a good system? I would argue that despite our “three-minute visits” and alleged inferior quality, if the patient has something serious, the doctor would still take the time to examine and treat the patient. Why don’t we look at the overall final outcome—how is the patient in the end? The WHO regards length of visit as a quality indicator, but over the long haul, is that efficient

from the point of view of societal welfare? Is that cost-effective? Suppose we changed our system and required each physician to spend fifteen minutes per visit; what would be the consequences of such a requirement?

Lessons For Other Countries

Cheng: What lessons for developing countries trying to establish universal health insurance do you think Taiwan’s experience offers?

Minister Yeh: First, you need a cadre of competent technocrats who can devise sound policy and then implement it. Second, you need a political system reasonably free from corruption. Third, you need a physical infrastructure capable of delivering on health policy. Fourth, you need a head of state with dedication to the idea and willing to lead.

Most importantly, you need a good health IT system at the very beginning, to have the data capacity as a basis for policy making. Our every decision is based on quantitative evidence generated by our IT system. Taiwan invested heavily up front on health IT, and we have reaped the benefits of our powerful IT system ever since. The savings our IT system has generated have paid for the setup cost of that system many times over.

Cheng: What about solid economic development as a platform for the establishment of universal national health insurance—is that not equally important?

Minister Yeh: You are right. A country must establish national health insurance during good economic times. It should be noted that there are associated cost increases in the several years prior to the establishment of national health insurance. Fortunately, Taiwan had good economic growth for many years prior to the NHI’s implementation; so we were able to absorb the cost increases associated with its establishment.

Cheng: The election of President Barack Obama and a Democratic Congress in 2008 has given the U.S. another opportunity at major health reform—it is well known that the U.S.

“Because we are a single payer, we can save a tremendous amount of administrative cost.”

has the highest health spending in the world (16.6 percent of GDP in 2007), and yet it leaves 15 percent (forty-six million) of its population uninsured. What, if any, of Taiwan's experiences with health reform may be relevant and useful for the U.S.?

Minister Yeh: My comments are that universal coverage improves equity, and contracting with all providers can improve access. Because we are a single payer, we can save a tremendous amount of administrative cost. As we discussed earlier, we also have a powerful IT system to help run the NHI efficiently. In the U.S. you have so many diverse providers, you could never hope in any way to integrate them into a coherent health system without an interoperable IT system. Precisely because we have a single-payer system, all of our hospitals must follow the rule set by the single payer—there is only one set of rules. In the U.S. you have so many private health insurers, each with their own rules and nomenclature, that you spend a lot of money just on administration. Your records and images cannot easily be electronically transferred, and the whole system is fragmented and inefficient as a result. To us, government administration of the NHI is most important.

Perspective On The U.S. System

Cheng: If you were to give a lecture on the U.S. health system to college students in Taiwan, what major strengths and weaknesses of that system would you tell them about?

Minister Yeh: I thought about this question long and hard and concluded that where your system is better than ours is in the adoption of high technology, which is faster than it is in Taiwan. For example, the introduction of new drugs occurs on average two years earlier than Taiwan. For some technology, the U.S. leads us by five years. You are also way ahead in R&D. The U.S. spends a lot on R&D, and on medical education. Taiwan has eleven medical schools, but the best of them are only as good as the average American medical school. American

medical education is the best in the world. We simply have not spent nearly as much in training our doctors.

Thoughts On The Single-Payer Approach

Cheng: Finally, what do you think are the strength and weaknesses of the single-payer approach, now that Taiwan has lived with it?

Minister Yeh: A single-payer system has a single risk pool, since everyone is mandated to enroll. This enables cross-subsidization among diverse groups with not only different socioeconomic status but also different health status. In addition, the single payer wields monopsonistic power in procuring services and products—hence low prices for health care.

Taiwan's example also shows that while there is no choice of insurers, people enjoy complete free choice of providers. The latter compels the providers to be competitive and efficient. Furthermore, the administration of the single-payer system is simple, as there is one set of rules for everyone, whether it is regarding clinical protocols, quality indicators, fee schedule, etc.

However, there are some drawbacks to the single-payer system. Our system does not give us much room for flexibility and innovations in financing. For example, because of the ever-present political interference, it is difficult for us to raise the premium rate, permitted under the NHI Law, to maintain a balanced budget for the NHI.

Cheng: Thank you so much for sharing your insights with us on Taiwan's remarkable health system.

Minister Yeh: You are most welcome. It has been my pleasure.

NOTE

1. NT\$, short for the new Taiwan dollar (yuan), is Taiwan's currency. At the time of this writing, the spot exchange value of a U.S. dollar was about 32.93 new Taiwan dollars, or yuan.