

Scanning For Profit:

A Critical Review of the Evidence Regarding For-Profit MRI and CT Clinics

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Summary of Findings

In June 2002 the Ontario government announced that it would allow 20 for-profit MRI and 5 for-profit CT scan clinics to open in Ontario. Currently all MRI and CT services in Ontario are provided by public hospitals. This radical change in policy will move key clinical services from non-profit governance and will introduce profit seeking and investor control.

To evaluate this policy change the Ontario Health Coalition examined the existing evidence of the effects of for-profit MRI-CT clinics on waiting times, cost and quality of care. The research included searches of major medical, economic and political data bases and interviews with health authorities, provincial and federal governments, government agencies, professional associations and private clinic operators.

Our study was unable to find any evidence supporting the contention that for-profit MRI-CT clinics reduce waiting lists faster than the public system, improve quality or decrease costs. However, evidence was found which indicates that:

1. Opening for-profit clinics would, at best, have a minimal impact on waiting times, and probably increase waits in the public sector. Alberta has stopped contracting out MRI

services and maintained utilization levels and shorter waiting times by increasing capacity in the public system

2. For profit clinics allow people to queue jump without respect to medical need. This is happening in Alberta, BC, Quebec and Nova Scotia.
3. There is a higher risk of poorer quality in stand alone for-profit clinics than in hospitals.
4. It is less expensive to expand services in the public sector than pay for-profit clinics to initiate new MRI services. Calgary's experience indicates that it could cost 21% to 25% more.
5. For-profit clinics, where doctors have a financial interest in the facility, have a higher incidence of medically inappropriate referrals, a greater number of referrals, and less service to the poor and elderly.
6. Over half of the for-profit MRI clinics in Canada have no official quality assurance or accreditation procedures. No official bodies are collecting demographic, patient health status, usage or ownership data on for-profit MRI-CT clinics in Canada.
7. For-profit clinics draw critical personnel away from the public health care system.

The government of Ontario has said that they would not open private facilities unless they proved to be faster, safer, cheaper and better. Our research indicates that opening these clinics would not achieve those objectives.

SCANNING FOR PROFIT: A CRITICAL REVIEW OF THE EVIDENCE REGARDING FOR-PROFIT MRI AND CT CLINICS ^a

For most Canadians access to health care is key issue. We want to know that we will have a hospital bed if we need it, that we can see a specialist in a timely manner and that we can have the necessary tests and treatments when required. Waiting times are one of the flash points in this concern.

Last June, largely in response to the fact that Ontarians are waiting excessive amounts of time for high tech diagnostic imaging (MRI and CT Scans) services, the provincial government announced that it would establish, 20 new MRI machines and 5 CT scanners through a competitive bidding process open to the for-profit sector. Prior to making this announcement Health Minister Tony Clement told the Romanow Commission said that he would only open private health facilities in Ontario if they were faster, safer, cheaper and better [1] .

In June 2002 the Ontario Health Coalition decided to examine the existing knowledge on the effects of for-profit MRI-CT Clinics on waiting times, cost and quality of care. The following report is the result of that research.

METHODS

The study made extensive use of existing data bases, interviews and searches of government web sites in the summer of 2002. The data bases searched were Medline 1966-July 2002; Cinhal 1982-June 2002; Health Star 1975-July 2002; Canadian Business and Current Affairs 1982-July 2002; EconLit 1969-July 2002; Humanities Index Feb, 1984-June 2002; Public Affairs International, 1972-July 2002; and the Social Sciences Index Feb. 1983-May 2002. Interviews were conducted with federal, provincial and regional authorities involved with diagnostic imaging, as well as representatives of existing for-profit MRI and CT clinics.

The one finding that stands out is how little research has been done on the impact of for-profit CT-MRI clinics on waiting times, costs, or quality of care. Despite the often lively public debate around these for-profit centres, no government or formal body is tracking the ownership, number of procedures, who pays for the services, what the results of the scans are, or what kinds of scans are done in private clinics. In short, no significant national or provincial public monitoring of these increasingly important medical services could be found.

Nonetheless, useful information was obtained. When coupled with larger studies, these findings provide some answers to what is likely to happen if for-profit MRI and CT clinics are opened in Ontario. The information found in this search is summarized in the following sections.

TO SCAN OR NOT TO SCAN

CT scans were first used on general patient populations in 1972, MRIs in 1984. Since that time increasing medical uses, patient concerns and the business needs of for-profit medical enterprises have fuelled an explosion of demand for high-tech, non-invasive diagnostic imaging.

These technologies have proved very useful in diagnosing a variety of pathologies. Surgeries that used to be warranted on clinical presentation can be avoided by using scanning equipment first^[2]. "In Germany, no major surgery is allowed without the benefit of MRI diagnosis"^[3]. It is now possible to treat acute strokes if a CT scan be arranged within three hours of the onset of symptoms to distinguish between a stroke caused by bleeding and one caused by a blood clot. These are just a few of the growing list of uses for MRI and CT scans. Physician demand for MRI services has also increased because of liability concerns^[4].

Physicians and hospital administrators have been subjected to "sophisticated targeting by the medical industries^[5]". These industries are among the biggest transnationals on the planet: General Electric, Phillips and Siemens. Their advertizing is matched by generous financial incentives to ease the capital costs of acquiring MRIs. For a price, support packages are available "so that physicians can focus on the medical aspects of the clinic while others handle the business side^[6]."

Direct advertising to patients and the general population has fed into the frenzy for more MRIs and CT scanners^[7]. The current extreme of this phenomena is the rising demand in the United States, by clinically healthy people, for full body scans- just to make sure that they are "OK". These 'worried well' are nurtured by an unregulated scanning industry that puts CT scans on flat bed trucks and drives around to malls and church lots offering a scan on the spot. CT 2000, one of these companies, "proudly calls itself the Wal-mart of scanning". It charges \$199 for a scan of one of three body parts or \$567 for all three^[8]. Two CAT scan clinics have recently opened in Vancouver, one at St. Paul's Hospital, offering a similar service where "paying customers [can have] computer enhanced X-ray studies of the whole body....long before symptoms arise^[9]".

The increase in demand, coupled with serious health care funding restrictions including cuts in funding to radiology services, has created a situation of lengthy waits for non-urgent MRI procedures and CT scans. MRI waits have been up to nine months in Ottawa^[10] and are growing province-wide^[11]. These waits can sometimes mean extended suffering, continued uncertainty, and poorer outcomes^[12]. Governments have let this pressure build to the point where patients are desperate.

Last year the Ontario provincial government exacerbated the problem by redirecting \$60 million of federal money targeted for diagnostic imaging equipment to for-profit companies. This money went to buy beds, bathtubs and diagnostic equipment that these companies would have bought anyway. The 60 million dollars would have covered the capital costs of the 20 new MRI and 5 new CT scanners that the provincial government now says they are unable to afford. Ontario was the only province to give this federal money, targeted for public sector diagnostic equipment, to non-diagnostic equipment in the for-profit sector^[13].

The expansion of MRI and CT services has not been without controversy. The lack of outcome studies on many uses of these technologies has raised questions about the necessity of the rapid expansion of MRIs^[14]. This study did not examine the literature on outcome analysis of CT-MRI use. It does take as a starting point that there are too few in Canada, but accepts that Canada may gain little benefit from increasing our per capita density of MRIs to that of the U.S. Sharon Scholzburg-Grey, president of the Canadian Healthcare Association is quoted as saying "if this were the case [higher levels of medical equipment necessarily leading to better patient outcomes] the outcomes for the U.S. health care system - which has more MRIs - would be better than for Canada, which they are not^[15]."

FOR-PROFIT MRIs AND CTs IN CANADA

Canada's first for-profit MRI clinic, in Calgary, opened in 1993. It was followed quickly by another in Vancouver. Today there are for-profit MRI - CT machines in four provinces: three MRI and one CT in BC; five MRI clinics, three with CT scanners, in Alberta; ten MRIs and six to eight CTs in Quebec; and one MRI in Nova Scotia. At least one public hospital, St. Paul's in Vancouver, offers CTs to patients for pay. These numbers are likely to change quickly. Millennium Technology Inc., of Richmond, BC, is

planning "to blanket [that] province with franchised MRI clinics, charging investors \$1.45 million for turnkey clinics that include desks, chairs, computers, decor, coat hangers and its own MRI machine [16]". Most clinics require that a patient have a doctor's referral to get a private MRI or CT scan. At least two for-profit clinics in Canada, both in BC, will perform CT scans on people without a referral.

Canada also has one for-profit positron emission tomography (PET) scanner operating in Vancouver and one more announced for Montreal. This is the next generation of scanning technology. A person can purchase one of these scans for about \$2,500.00.

Ownership

Most of the for-profit MRI-CT Scan clinics in Canada are privately held corporations, making it difficult to get information on ownership, profitability, linkages and investors. Lorne Paperny, a Calgary entrepreneur with strong historical ties to the federal Liberal party as a fundraiser and organizer, and little professional background in diagnostic imaging [17], is a principle owner of Canada Diagnostic Centres, aka, Western Canada MRI, Ottawa Valley MRI. and Ontario MRI. Quinte MRI owns one of the Quebec Clinics as well as centres in New York and the Cayman Islands. DiagnostiCare, recently taken over by CML, a Canadian multinational health care company, owns MRI clinics in Edmonton and Vancouver. While this company is publicly traded MRI services are a small part of their business and not separately reported out. Other clinics are operated as part of larger diagnostic imaging companies, such as Medical Imaging Consultants in Edmonton, or by groups of radiologists and doctors who have come together to set up a clinic to meet local demand and because it is profitable [18]. If nothing else, this raises significant conflict of interest concerns [19].

While there have been no privately owned MRIs in Ontario, for-profit interests have been involved in the market in two ways. Ontario MRI, affiliated with the Paperny group, has business relationships with MRI facilities in the Mississauga Queensway Hospital and Mount Sinai Hospital. Ontario MRI brokers the use of these facilities to third-party-pay customers like insurance companies and the Workers Safety Insurance Board.

For a short time, Medical Referrals International had an arrangement with the William Osler Health Sciences Centre in Brampton to contract the use of their MRI to private pay individual customers. Over a three month period 105 patients paid \$875 to use the hospital's MRI on 72 hours notice [20]. After a probe and expose in the Globe and Mail, the William Osler Centre terminated the relationship. Currently this company arranges for people to go to the United States for private scans [21]. VIP Doctors will also arrange for a person in Ontario to get a scan in the US. Their web site offers an extra service, "if you need to see a VIP Doc because your Canadian physician has not ordered the scan, the cost of the visit with the VIP Doc is C\$300 payable in advance [22]". The fee for these services is on top of the fee paid by the individual to the American MRI -CT centre. Once again conflict of interest has to be considered in these businesses.

Ontario has 43 publicly operated MRI facilities and about 95 CT scanners. In July 2001 Canada had 110 public MRIs. In 1996 Canada had the lowest number of MRIs per capita of any OECD country - 1.3 MRI units per million population, compared to 16.0 in the US, but closer to the 3.4 in the United Kingdom and 2.3 in France [23] .

WAITING LINES

There is wide spread public agreement that waiting times for non-urgent MRIs and CT scans are too long in Ontario. Despite the fact that waiting times and the opening of for-profit MRI and CT scan facilities have been major public issues, the search found no studies that examined the effect on waiting lists of opening for-profit MRI clinics. Regardless, the investigation came across numerous findings that shed some light on the relationship.

The first obvious point is that, over the last decade, the number of for-profit MRIs in Canada has grown, as has access for Canadians to private clinics in the United States, yet waiting lines have also increased [24] . This indicates that increasing access to private-pay MRIs and CTs does not by itself solve the waiting line problem.

The Calgary Regional Health Authority (CRHA) Experience

The above observation is reinforced by the experience of Alberta where the MRI scan rate was 10.4 per thousand in 1999/2000 with 5 private MRI Clinics operating. To increase the scan rate the government decided to contract publically paid scans to the for-profit clinics. Within a year the scan rate had increased to about 24 scans per thousand [25], indicating that the public was not prepared to utilize the private sector clinics until they were covered by public insurance. The effect on waiting times was dramatic. Within 3 months of contracting out these services the wait time in the CRHA had dropped from 200 days to around 50 days then rose, still during the period of contracting out, to about 70 days. In late 2001 the CRHA brought 3 new public MRIs into service and stopped contracting out. The waiting time has stayed in the 70 day range with the system only using the new MRI capacity. The waiting time has recently increased slightly "due to expanding population" to 75 days for elective scans [26] .

The Capital Health Authority (CHA) around Edmonton experienced a smaller drop in waiting times with contracting out. However, they were able to increase their utilization rate to 24 scans per thousand and to maintain this level with added public capacity. Steve Buick, a Public Relations Officer with the CHA, said, the CHA has "increased our [public] MRI supply by 50% in the last year without a significant drop in waiting times". This is due to a doubling in demand. The authority has brought on 4 new MRI machines in the last 3 years and stopped contracting out at the beginning of this year. After the contracting out ended the waiting times stayed within the same range of 80-100 days for non-urgent cases [27] .

The implication from this Alberta example is that, while the private clinics had the capacity to handle more patients and significantly affect waiting times, they were not

able to do so until the cost of the procedure was covered by public medicare. Subsequently, the decrease in waiting times and increase in utilization was maintained by simply adding capacity to the public system. There is a continuing problem with increasing demand which both health authorities predict will again lead to increased wait times unless there is more money spent to increase supply.

Queue Jumping and For-Profit Clinics

Before the government decided to pay for their services the for-profit clinics were unable to take advantage of the public demand. A partially explanation may be that only a small percentage of the population can afford to utilize the private option. While private clinics in Alberta and British Columbia would not give the exact number of scans, it is reasonable to deduce from the hours of operation that they perform about 2,288 scans per year [28]. The clinics said that between 40-60% of their clientele were direct pay, as compared to scans paid for by workers compensation or disability insurance. This would mean that in Alberta, one of the provinces most favourable to the private provision of health services with the highest per capita number of private MRI machines, about 5,740 scans are individually contracted every year. Many of these may be Americans who come to Canada because the scans are cheaper [29]. But even if all of them were Albertans that would still mean that significantly less than 10% of the 73,000 scans that Alberta's public system will perform in 2002 are done in the private system. It is likely that many of these privately purchased scans will also be at least partially paid for by personal or group extended-health-care insurance. The cost of the private scan is eligible for an income tax deduction under the medical expenses tax credit. For those that meet the income and expense requirements there is a potential reimbursement of \$120 in public money to offset the cost of their \$750 private scan.

Similarly, the number of Canadians going to the US to access private services is relatively small. Despite constant media attention to the existence of these services, and Canadian companies willing to facilitate the booking and travel to the States (often just across the boarder) the number of people using these services is small. Katz et al. estimated that in 1998-99 only 640 Canadians went to Buffalo, Detroit and Seattle for diagnostic radiology services [30]. This estimate is in a similar order of magnitude to the number of people (approx 350) that Medical Referrals International sends annually to the United States for MRIs [31]. Compared to the more than 480,000 MRI procedures performed each year in Ontario's public hospitals, this figure is minuscule.

Experience in the US indicates a similar finding. Certainly, people who are covered by insurance or are able to pay can gain almost instant access to MRIs and CAT scans. Those covered by Medicaid, a government insurance for certain targeted marginal populations, must wait weeks for services "if they need it" [32]. Dr Steven Amis, Vice - President of the Board of Chancellors of the American College of Radiology, said this wait time would vary from hospital to hospital and that no national record keeping is done. The wait exists, Dr. Amis added, because medicaid only pays "9 cents on the dollar" of the cost of an MRI. Then there is a significant percentage of the population who are not covered by any insurance and do not have the means to pay for the

service. The Commonwealth Fund 2001 International Health Policy Survey found that 22% of Americans did not get a recommended test or treatment because of cost^[33].

For-profit clinics in Canada may be creating a similar situation to that in the United States. Dominique Breton, a public relations officer with the Quebec Ministry of Health, said that patients in Quebec have a choice: "if they have the money they can buy a scan, or they can wait and get a scan in the public system at no cost^[34]." A poll of six MRI clinics found that only a doctors referral was needed to book a scan. There were no questions raised about the urgency of the need for the procedure. In all cases, the clinic's radiologist would send the results to the referring physician, who in turn, presumably would use the findings to gain access to specialists, further tests or whatever was required. This would put those who obtained a faster MRI through the private clinics ahead in both the MRI line up as well as the queue for followup tests or procedures.

A study on the first year of operation, 1992-1993, of the MRI at the Royal University Hospital in Saskatoon found that patients were unlikely to pay for the private option^[35]. After the facility opened, the government decided to stop paying for out-of-country MRIs and severely limited reimbursement for out-of-province MRIs. The number of people going out of country dropped to zero and out of province dropped by 80%. The study also found that waiting times for the public MRI peaked after 5 months at 50 -55 days and fell to a median wait time of 20 days. The authors hypothesised that the initial peak was due to pent-up demand for an MRI.

These observations indicate that it is not the existence of private MRIs that decrease the waiting time, but rather whether the service is covered by public medicare. It may be that the fee for this service is too large a user fee for most people with non-urgent high tech imaging needs. Generally, the public system does provide emergent and urgent scans in a timely manner. The key variable in determining access may be the number and operating hours of machines, and whether the cost for non-urgent cases is covered by public insurance. If this is the case, it raises the question of whether public health care dollars spent to improve access will do so more effectively in for-profit clinics or in the public system. Information collected, and presented in the following sections, will argue that our money is better used providing public sector MRI and CT access.

It is also worth noting that there is a considerable body of literature on how to manage waiting lines^[36]. While it is not the purpose of this report to discuss these studies, it is worth pointing out that waiting-line management within the public system, not just purchasing more machines, can lead to significant reductions in wait time. This is the experience of the Cardiac Care Network in Ontario^[37].

For-Profit Clinics and Public System Staff

The argument is often made that the severe staff shortage of radiologists and radiology technologists can be exacerbated by for-profit clinics; if for-profit clinics are opened they will have to steal staff from the public system, making it harder for the public system to

operate efficiently. There is considerable anecdotal evidence to support this position. The medical director of the first for-profit MRI clinic in Calgary, Dr. Dale Vellet, was attracted away from his job as the director of MRI services at University Hospital in London, Ontario. One Calgary hospital lost three of five diagnostic technologists to a new MRI clinic that offered signing bonuses of up to \$10,000^[38]. Similar pressures are being reported in Nova Scotia^[39] and technologists and radiologists working in Ontario's hospitals are already being approached by companies hoping to open up private clinics^[40]. The question of how these clinics are to be staffed has already been raised by the Ontario Association of Radiologists which says the system could currently use an extra 150 professionals^[41]. Even the Saskatchewan Ministry of Health is concerned about losing staff to Ontario if the 20 for-profit clinics open. Dr Amis, Vice President of the Board of Chancellors of the American College of Radiologists said the shortages in the US are severe and the expanding number of private clinics is drawing away academic staff. This makes the situation worse because they do not have enough staff to train new radiologists^[42].

Dr. Normand Laberge, president of the Canadian Association of Radiologists, suggested that private clinics may exacerbate the problem of waiting lines. In his view, governments may assume that the private clinics will "solve the problem" rather than governments being proactive and taking the steps necessary to provide timely access to needed diagnostic services^[43]. This sentiment is supported by studies in other health care sectors. The Consumers Association of Canada found that "waiting times for cataract surgery were highest in Calgary, where the government had a system of contracting all such surgeries to private clinics - double that of Lethbridge, where 100 percent of the cataract surgeries were done in public hospitals^[44]". Work in Britain obtained similar results; areas with the greatest concentration of private clinics also had the longest waiting lines in the public system^[45].

It is likely that the provision of for-profit services, where there is no public payment to the private company, will have very little effect on waiting lines. Or, put another way, private sector clinics do not reduce waiting time for most people but allow some people, likely those with a high disposable income, to jump ahead of the line. Simultaneously, for-profit clinics may increase public waiting lines because they may provide an excuse for government to do nothing to solve the problem. These clinics probably will exacerbate the problems in the public system by drawing off skilled professionals, increasing waiting lines and making it more difficult to use public resources efficiently.

QUALITY OF PRIVATE MRI CLINICS

There has been very little work done comparing the quality of MRI and CT Scans done in different kinds of facilities and under different forms of ownership. This is surprising considering that the provision of CT Scans from the back of roving flat-bed trucks in malls and church parking lots has caused concern at the American College of Radiology.

Who Owns the Clinics and Who is Watching Them

Quality concerns could also be raised on the basis of who owns the private centres. It is clear that, in a private market, people who are primarily entrepreneurs will play significant roles in these medical facilities. BC's first for-profit clinic was opened by Jim Nielsen, a former radio announcer [46] ; one of the partners in the Halifax clinic is a former tour boat operator and teacher; the Wellness Inc. CEO is an advertising executive; and the CEO of Quinte MRI is a retired physics teacher [47] .

In BC, the Diagnostic Accreditation Program of the BC Medical Association, an association run and controlled by doctors, demands that private clinics meet certain staff and equipment standards before the clinic can open. The clinic is then inspected 3-6 months after opening and, if it meets specific criteria, is given an accreditation for 5 years, at which time it will be re-inspected. Alberta has a very similar process, with accreditation at 4 year intervals. All of these accreditation and quality assurance programs are run by doctors' organizations who also have as members the doctors who have financial interests in private diagnostic imaging clinics. The conflict of interest involved in this situation also has to raise concerns about the

quality of monitoring.

Quebec and Nova Scotia have avoided this conflict of interest problem by not licensing the clinics. Morris Green, a spokesperson for the Department of Health in Nova Scotia stated "we do not monitor [private MRI] clinics [48] ". He made it clear there is a "little bit of buyer beware" and - outside of the normal provincial laws on occupational health and safety and labour - there are no special rules governing MRI clinics. The situation in Quebec seems to be the same. The College of Physicians referred the question to the Provincial Ministry of Health. A Ministry public relations person referred the question to the Public Health Laboratories, which do licence the CT machines, but not the clinics or staff. The spokesperson at the Public Health Laboratories said the College of Physicians should be asked about licensing MRI Clinics. The fact that no one in Quebec monitors the functioning of for-profit MRI Clinics was later confirmed by a Ministry spokesperson.

None of the provinces or the federal government appears to be tracking epidemiological data from the private clinics or basic data on the nature of the clinics; if they are, the results are well hidden and difficult for the public to access. How many scans are done? Why were the scans done? What kinds of conditions are being diagnosed and what are the findings? What are the demographics of the patients that use private clinics? Who paid? Who owns the clinics? Answers to these and other related questions provide information needed for determining population health, quality issues between for-profit clinics and the public system, health care access, and efficiency issues.

Quality in Stand Alone For-Profit Centres

A study of MRI quality in Washington State found that "for-profit centres had quality that was significantly lower than that of nonprofit centres when [the researchers] controlled for other factors [49] ". Jarvik et al also found that "in hospital location of the MR Imager

was another significant predictor of quality". The sample size in this study was small, and the authors indicated the tentative and preliminary nature of their results. These findings need to be taken seriously when considered in the light of two other recent studies. One is meta analysis that showed poorer health outcomes in American for-profit hospitals^[50] . The other analysed data from inspections of 13,693 nursing facilities and found that "investor-owned nursing homes deliver lower quality care than nonprofit and public facilities^[51] .

For-Profit Clinics and Inappropriate Use

Bryce and Cline found that for high capital cost services "the financial pressure of unused capacity may affect quality when it leads to unnecessary use of some services, as suggested by the case of MRI^[52]". Lipper et al found in a 1995 study on MRIs use in Virginia that "self referral [referral by physicians that had a financial stake in the clinic] for MR imaging leads to higher utilization^[53]". A study on referrals for the California Workers Compensation system looked at the medical necessity of the increased referrals for self-referring physicians and found "MRI scans to be medically inappropriate 38% more often when ordered by self-referring physicians^[54]". In the middle of the last decade the vast majority of free standing MR clinics in the US had some form of physician financial interest^[55] . This situation raised such concern in the US that in 2001 a federal regulation was enacted limiting the ability of doctors to refer medicare and medicaid patients to clinics, including MR and CT clinics, in which they or their family members had a financial interest^[56] . Many Canadian clinics have physician involvement in ownership

While it would be difficult to argue that Canada has an over supply of MRIs and CT scanners, many of the public ones we have are underutilised. Many do not work evenings or weekends, except for emergencies. Rankin in his 1999 review of MRIs in Canada found that "there is clearly room for expansion of service without capital expansion, but without adequate government funding this can only occur at the expense of some other hospital service^[57]". For example. The Capital Health Authority, in Edmonton, currently has 5 MRIs, two operate 80 hours per week and three operate 40 hours per week. The system is operating at less than half of its capacity.

These research findings suggests that better utilization of our public facilities would reduce the chance of inappropriate use of MR imagers and CT scanners. Inappropriate use means unnecessary tests for patients which expose them to extra risk. The added risk is greater for CT scans. "The radiation exposure of a CT exam can be several hundred times that of a chest x ray. Not only might this amount of radiation exposure give you a slightly increased chance of getting cancer, but also, if large numbers of healthy people now start to receive radiation exposure from whole_body CT screening for questionable benefit, the overall effect on public health could be detrimental^[58]".

Magnetic resonance imaging is assumed to be less risky, but the long term consequences are unknown of exposing the body to electromagnetic radiation up to 80,000 times stronger than the earth's geomagnetic field. False positives and false negatives, possible outcomes of any MRI or CT scan, carry their own set of extra complications. Limiting unnecessary tests improves the quality of our diagnostic imaging services by reducing the risk to patients.

At least, on the basis of existing evidence, it is not possible to say that for-profit MR and CT clinics will increase the quality of diagnostic imaging in Ontario. In fact, there is significant evidence that opening for-profit facilities will decrease the quality of our diagnostic imaging services.

THE EFFECTS OF THE PRIVATE SCANNING INDUSTRY ON PUBLIC COSTS

Two important questions relevant to the Ontario government's initiative were not directly addressed by any studies. The first, How will opening for profit clinics affect the costs of the public system? Secondly, Is it cheaper for the government to buy scans from the for-profit clinics or use the public system?. Numerous studies were found on the economic effect of underutilisation, misuse of facilities, and profitability, as well as public information on direct MRI costs. These sources provide partial answers to both questions.

For-profit Clinics, Underutilisation, and Inappropriate Referrals

Bryce and Cline, in their study of Pennsylvania's High Technology services, found that "if excess capacity were eliminated to generate an average utilization rate of 2,975 scans [per MRI unit per year -the state's minimum target volume], the cost per scan would be reduced by \$54^[59]". The 2001 report of the Alberta Government's Imaging Advisory Committee estimates that the base cost of an MRI will fall 10%, from \$263.59 to \$236.53, if the number of scans per machine per year is increased from 3,500 to 10,000^[60].

Cowley et al., state, "that [because] patient through-put is the single greatest factor in an MRI centre's profitability, these financial pressures create an environment conducive to inappropriate self referral^[61]". This and other studies cited above indicate that expanding private services may lead to increased overall cost through inappropriate or under use of facilities. Conversely, savings could also be found by providing the operating funds to hospitals to keep their machines running for longer hours. This would reduce the cost per scan, limit the number of inappropriate scans and have a positive effect on waiting lines.

Profitability

It is difficult determining how profitable individual MRI and CT clinics are. Dr. Amis said that professionals are leaving academic positions to run private clinics because they "make lots of money^[62]". He did not know exactly how much and he knew of no studies

on the profitability of the industry. American health care corporations that run large MRI chains are part of an economic category called 'health care facilities' which has had a relatively low average net profit rate over the last five years of 3.10%. However, these health care conglomerates usually provide a multitude of services making it difficult to know the exact financial status of their MRI and CT operations [63].

Profit figures that apply more specifically to MRI operations indicate a higher profit rate. Quinte MRI's web site projects a return on investment of 20-30%. An early study of American CT scanners estimated that in 1976 annual profits ranged from 11-65% of the original purchase price [64]. A court case in Maine determined that, between 1990-1994, a reasonable profit per MRI scan was \$425 [65]. Evens and Evens found that in 1991 the average profit of 42 American MRI units was \$500,000 [66]. While most of these studies are recent or Canadian, the overall tendency is to show that MR and CT units can be very profitable. The Quinte MRI advertizing shows that an expectation of substantial returns on investment exists.

The basic math indicates that there is considerable room for profit. The media estimates that an average MRI costs about 2 million dollars to buy and \$800 thousand a year to run. If a clinic can perform 10 MRIs a day at an average price of \$600, five days a week for 50 weeks a year then there is an income of one and a half million dollars a year to run. At this rate the MRI would be paid off in approximately three year leaving about \$700,000 a year above expenses. Clearly, if the price increases or the patient volume increases, a higher profit happens sooner. The expectation and possibility of significant profits creates the potential of a conflict between providing a service and making a profit.

Transnational Corporations and Canada's MRI-CT Clinics

Bryce and Cline also identify a major force in the expansion of for-profit facilities: manufacturers who offer financial aid to start up MRI clinics. There is good evidence that this is happening in Canada. Wellbeing Inc. is funding the bulk of its 100 MRI capital costs through a vendor buy back agreement. Wellbeing Inc. has ties to Seimans, a major transnational corporation which, in one of its divisions, makes MRIs. Millennium Technology Inc., as previously noted, is setting up a chain of MRI clinics based on their machines. The Halifax MRI has a financial arrangement with GE Medical Services [67]. Large companies like Seimans, Phillips, and General Electric all have health services divisions which facilitate the use of their high technology machines, such as MRIs. In general, these divisions are profitable. General Electric's medical service division had a 13% increase in second quarter 2002 profit to 401 million dollars on revenues of 2.21 billion dollars [68].

The bulk of research on health care economics shows that it is more expensive to run for-profit facilities than not-for-profit facilities [69]. A specific Canadian example recently sited to the Romanow Commission showed that "the Manitoba Government paid \$1000 for each cataract patient operated on at a private facility. But then the government bought the facility and is now doing the same procedure for \$700 per person, a

reduction of 30%" [70] . It has also proved more expensive to contract out eye surgery in Alberta [71] and British Columbia [72]. This makes intuitive sense because private companies have extra advertising costs, administration costs and the need to make a profit.

The Cost of an MRI

There is some public data on the relative costs of providing an MRI in for-profit clinics compared to the public system, though no systematic comparisons have been done. We know that what clinics charge the public varies considerably with a range from \$475 to \$850 for a basic scan. The use of contrast increases the price. Some of the lowest rates in Canada are found in Edmonton where a price war has broken out. At the Medical Imaging Consultants College Park MRI Centre, an MRI scan of a body part can be purchased for \$475. The clinic's manager said that their profit margins are "not very high at that price" [73]

A press release in May, 2000, stated that the Calgary Regional Health Authority (CRHA) paid \$486 for each contracted out scan, a cost "comparable to what the CRHA would pay to operate a free standing, ambulatory MRI facility" [74]. In a media story at the same time Dr. Chris Eagle, Executive Director for the Foothills Hospital, said that the average cost to the CRHA of using the private facilities was \$80 to \$100 dollars more per scan than those done in the hospital [75]. He said this "surcharge" was justified to reduce waiting lines. This would make the cost to the CRHA of performing a public scan \$383 to \$403 dollars per scan. Using these figures contracting-out the MRI scans to for-profit clinics cost the CRHA 21% to 25% more than performing the same service in a public hospital.

It is difficult to obtain firm figures on the cost of a public MRI scan. Alberta, for the last three years, has published a figure for the cost of MRI services within the provincial health care system. They prefer to use a blended average cost which includes the previous years' average cost adjusted up for inflation blended with the year of record's average costs mixed with some other small adjustments. The blended average costs were \$385 per scan in 1998-99, \$458 in 1999-2000, and \$617 in 2000-01. This shows a 60% increase in the cost of an MRI over two years. Rick Leischner, a Program Manager with the Costing Unit of the Alberta Ministry of Health and Wellness, said he was also "surprised" at the size of the increase. He said that they have no tools to do an analysis that would explain this figure. He did say that the published MRI cost is not a pure MRI cost. The costing is done on the basis of the "most responsible diagnosis". For instance, a patient who, as part of an emergency visit, had an MRI might be discharged with 'MRI' as their most responsible diagnosis. All of the costs of the emergency visit (initial doctors assessment, blood work, IV, etc.) would be included in the reported cost of an MRI [76]. The result of this costing method is that the published cost of an MRI in Alberta's public system is higher than their actual cost of providing an MRI scan.

All of Alberta's costs are well above what Saskatchewan spends on their public MRI services. Dianne Tucker, a Program Director with the Acute and Emergency Services

Branch of the Saskatchewan Department of Health, said that the average cost of a public MRI to the Saskatchewan government in 2001-02 was approximately \$300^[77]. Ms. Tucker cautioned that this figure is only an estimate and they are still working on an exact figure. Alberta's Imaging Advisory Committee estimates that in Alberta the base operating costs per scan are approximately \$250. This cost includes staff, professional fees, supplies and maintenance. It does not include overhead or capital costs^[78].

A request by the Ontario NDP through the Queen's park research services found that it was impossible to get a "reliable figure" on the cost of an MRI within Ontario's public system region^[79]. James Millar, the Director of External Communications at the CRHA, could not provide the current dollar value of an MRI to the authority and said that the cost would "not be a fair comparison [with the cost in a private facility] because we [the CRHA] are utilizing resources we already have region^[80]". The Canadian Institute of Health Information at this point collects no data on ambulatory services, including MRI scans.

Some of the difficulty in arriving at comparative figures between public and for-profit facilities is that there are many variables in the cost of a scan. The part of the body scanned, the general health of the patient, whether contrast is used, the community served, the administration costs and the amount of the time the machine is used will all affect the average cost of a scan.

Research from the United States indicates that patients at free standing private clinics are less ill and less complex than patients in hospitals region^[81]. This should reduce the for-profit clinic costs because their scans would be easier and take less time to perform. Seriously ill and complex patients often have difficulty holding still for the procedure, or have continuous intravenous or oxygen therapy all of which add to the time and staff required for each scan. For-profit clinics also tend to locate in urban and affluent areas region^[82]. This would leave the added costs of servicing rural areas and marginalised populations to the public system. The disproportionate number of easier scans in for-profit clinics would also skew the average cost higher for the public system. All of these factors would increase the cost of a public MRI, yet the evidence indicates that a public MRI costs less than one contracted out to a for-profit facility.

We know that administration costs in public hospitals are lower than investor owned facilities. Steward and Taft cite numerous articles from major medical journals that show that for-profit hospitals are more expensive to run than not-for-profit facilities region^[83]. Colin Leys, in his recent study of the British Medical System, cites research that before Margaret Thatcher started privatizing health care, administration costs in the British health system were 6% of total costs compared to 20% in the US region^[84]. He further found that administration costs in the last decade, with increased privatization, have doubled region^[85]. There is no reason to believe that this would not apply to for-profit MRI facilities since they have advertising, investor relations and profit as extra overhead expenses. This will increase the cost of for-profit MRIs.

The available cost data indicates that the MRI-CT industry, from manufacturer to for-profit delivery, is profitable, often highly profitable. For-profit clinics tend to underutilisation and unnecessary procedures, both increasing cost. There is certainly no data which indicates that contracting-out to the for-profit sector is cheaper. Instead, the evidence indicates it is cheaper to expand utilization in the public system rather than pay for-profit clinics to open MRI facilities. Based on published figures, it is likely that the public system, despite the fact that it would tend to handle the more costly scans, has a lower average cost per scan than for-profit clinics. The Calgary example indicates that contracting out could cost 21% to 25% more than providing the same service in the public system.

Simple math says that, before adding new public capacity, if you purchase 5,000 scans from for-profit clinics, at a 20% mark up, the government could have provided 6,000 scans in the public system for the same price. This number would be even higher if the government maximized the use of existing capacity in the public system before adding new capacity.

WHO WILL LIKELY BID FOR A PRIVATE MRI/CT CLINIC IN ONTARIO

CIBC World Markets, in their evaluation of Canadian Medical Labs (CML) called MRI operations a "high value modality" and referred to Ontario's plan to held a Request for Proposals (RFP) for MRI facilities, as a plus in the company's outlook region [86] . In a communique on the upcoming MRI and CT RFP, Millar Thompson, Barristers & Solicitors, Patent and Trade Mark Agents advised their clients in the health care sector that "this initiative offers very attractive opportunities for public private partnerships (PPP) region [87]." Which companies can we expect to take advantage of this attractive business opportunity opened up by the provincial government? Below are a few of the corporations that are likely candidates to be bidding in the RFP for Ontario's MRI and CT facilities.

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Canada Diagnostic Centres/Ontario MRI/Western Canada MRI/Lorne Paperny

Canada Diagnostic centres is a network centred around Lorne Paperny, a Calgary Business man with strong historical connections to the Federal Liberal party as both a fundraiser and organizer. Under the names of Canada Diagnostics, Western Canada MRI, Ontario MRI, and Ottawa Valley MRI it owns at least 3 MRI machines and two CAT scanners with clinics in Alberta, Vancouver and Quebec. It runs a third-party scan service in Ontario region [88] . Lorne Paperny has expressed an interest in opening a clinic in the Waterloo region [89] .

Canadian Medical Laboratories(CML)

CML is a Canadian multinational providing laboratory services, pharmaceutical, and diagnostic imaging. They recently acquired DC DiagnostiCare, "the largest provider of non-hospital based medical imaging services in Canada [90]". DC DiagnostiCare has two MRI centres, one in Edmonton and one in Vancouver. They used to have two in Vancouver but consolidated at one downtown site with a more modern unit [91]. CML, in its 2001 annual report, identified continued expansion of its diagnostic division as a goal. A spokesperson for the company said they were carefully considering the possibility of submitting an Ontario RFP [92].

Quinte MRI

Quinte MRI is a Canadian multinational which owns and operates MRI centres in Ogdensburg, New York; Laval, Quebec; Missouri; and the Cayman Islands. Opening soon will be clinics in Victoria and Surrey (both in British Columbia), Washington, Bermuda and Jamaica. The rate of return for their investors after year one is projected at 20-30% [93]. Syed Haider, Canadian CEO of Quinte MRI and a retired physics teacher, is quoted as saying that his company will "aggressively bid for at least 10 machines [94]".

RDS Diagnostics

RDS Diagnostics is a Toronto-based diagnostic imaging company owned by Gerald Hartman. It was formed in 1996, following an amalgamation of eight smaller Ontario firms. RDS operates diagnostic imaging centres around Ontario, including eight in the Kitchener-Waterloo and Cambridge areas. The owner is quoted in the Kitchener Waterloo Record as saying that he would like to open an MRI clinic in that area [95].

The Large American Chains

There are many major American companies, both publicly and privately controlled, that might be interested in expanding into the Ontario market. These would include: **Insight Health Services Corp**, ""the nation's largest provider of high technology imaging and image guided therapy services:" Insight has 67 fixed imaging centres and 92 mobile ones operating in 28 states [96]; **Syncor International Corporation** with 65 medial imaging centres in the US, and 19 in five other countries and Puerto Rico [97]; **Alliance Imaging Inc.** with 325 MRI systems in 43 states [98]; and, **Medical Resources Inc.**, with over 60 diagnostic imaging centres and a strong regional presence in the Northeast United States [99].

Ontario Public Hospitals

At least two hospitals, Kingston General and a consortium of hospitals centred in Cornwall, have expressed interest in submitting an RFP to acquire one of the new MRI units [100].

Wellbeing Inc.

Wellbeing Inc. is a new company that is planning on setting up the worlds largest chain of MRI screening facilities^[101] . Over the next three years they plan on opening 100 MRI facilities in Canada, the US and Europe that will focus on prevention and wellness - and will scan only well people. They will actively discourage people who are likely to have some sort of pathology. All the MRIs will be read at a teleradiology centre located in Toronto. They will be acquiring their machines through a vendor buy-back program, in other words the manufacturer of the MRIs fronts most of the capital costs. They may or may not bid on a clinic in Ontario. Since the company is only going to be appealing to healthy people, Valerie Mcllroy, the CEO, believes that they do not need government approval to open.

CONCLUSION

The available evidence on for-profit MRI and CT clinics is fairly clear. The existence of private for-profit facilities will likely increase health costs. They will, at best, have a marginal effect, and probably a negative effect, on the time most people wait for procedures. There is a documented risk of poorer quality in stand-alone for-profit clinics. Simultaneously, research indicates that proper utilization of, and adequate investment in, the public system will provide services at the cheapest cost, reduce waiting times most effectively, and provide the best quality assurance.

It is questionable what social or economic benefit can be derived from opening for-profit health care clinics that will likely detract from the public system, have little public accountability, escalate costs and increase risks to patients. This issue goes to the heart of our beliefs about medicare. Should health care be a commodity, even if it has poorer outcomes? Or, should public medicare be an essential part of our social fabric, nurtured, improved, and available to all when it is needed. The evidence indicates that the latter approach is practically, as well as ethically, preferable.

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