

# Men Having Sex With Men Donor Deferral Risk Assessment: An Analysis Using Risk Management Principles

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This article discusses issues associated with the lifetime deferral from donating blood of men having sex with men (MSM), in the context of well-established risk management principles, including ethical considerations associated with the risk-based approach to social policy matters. Specifically, it deals with the questions about the rationale for the existing policy in Canada of lifetime deferral for MSM, a rationale applied in practice by blood collection agencies and supported by the regulatory authority of Health Canada. We identify several alternative time frames for MSM deferral: sexual abstinence over either a 10-, 5-, or 1-year period or no deferral. Two options are selected for more complete discussion, namely, abstinence for a period of either 1 or 5 years before donation. The available evidence about estimated residual risk (RR)—that is, the risk remaining after various safeguards for blood are applied—strongly suggests that choosing a 1-year deferral period for MSM would almost certainly give

rise to an incremental risk of transfusion-transmitted infection (TTI), over existing levels of risk, for blood recipients. The report argues that, under these circumstances, such a policy change would represent an unethical type of risk transfer, from one social group to another, and therefore would be unacceptable. The evidence is less clear when it comes to a change to either a 10- or 5-year deferral period. This is the case in part because the current level of RR is so low that there are, inevitably, substantial ranges of uncertainties associated with the risk estimation. There is no firm evidence that such a change in the deferral period for MSM would result in an incremental level of risk, although the possibility of a very small increase in risk cannot be entirely ruled out. Under these circumstances, other social policy issues, relevant to the idea of changing the deferral period for MSM, become worthy of additional consideration.

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**S**PEAKING AT A US Food and Drug Administration (FDA) workshop on “Behavior-Based Donor Deferrals in the Nucleic Acid Test (NAT) Era,” on 8 March 2006, Jay Epstein, FDA’s Director of the Office of Blood Research and Review, stated, “In fact, our current risks are now so low that they cannot be measured directly and, hence, we rely on models to estimate the current RR, that is to say the risk after all the safeguards have been followed.” In this context, Epstein went on to say, “the question has arisen whether testing has become so effective that some risk-based deferrals no longer provide a significant added safety value.” At the same conference, FDA’s Alan Williams reiterated one of the agency’s fundamental principles for the blood safety regime, “Ensure that any *changes* in existing policy result in improved or equivalent safety.”<sup>1</sup>

Although the blood system uses a suite of behavioral criteria in its deferral program, one criterion in particular has been, for some time now, a source of protest and controversy. This is men having sex with men (MSM), and the lifetime deferral that is imposed for even one instance of such activity for the entire period since 1977. Although blood safety regulators in Canada, the United States, and Europe have not announced any plan to change MSM donor deferral policy, there are ongoing discussions about this issue, involving many professionals and stakeholders, at present.

Through a combination of donor selection, screening, and testing, the blood system seeks to reduce the risk of an infectious unit being transmitted to a recipient to the lowest achievable level (“As Low as Reasonably Achievable” [ALARA]). The donor screening process has been described by King et al<sup>2</sup> as “the first line of defense” in this process. Of course, for some risks the donor screening process is the only line of defense. For example, although it is now established that the infectious agent implicated in variant Creutzfeldt-Jakob disease (vCJD) (prions) can be

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transmitted in blood, there is as yet no test for this agent.

#### UNREPORTED DEFERRABLE RISKS, TESTING ERROR RATES, AND RESIDUAL RISK

There are several challenges to the efficacy of the donor screening process. One is unreported deferrable risks. Referring to 1998 data from the US Retrovirus Epidemiology Donor Study (REDS), Glynn, in Chiavetta et al,<sup>3</sup> states: "Overall, the level of unreported deferrable risk (risk that, if reported at the time of donation, would have resulted in deferral) was about 3.0%." Damesyn et al<sup>4</sup> remark that donors younger than 25 years "were significantly more likely to report a UDR [unreported deferrable risk]" than those older than 25 years. Data from the REDS study indicated that among male blood donors in the sample (25 000 in all), 1.2% acknowledged MSM activity since 1977.<sup>5</sup>

Another challenge includes the ongoing question of the extent to which donors do actually read and understand the screening materials and whether new forms of information presentation (in addition to standard written formats) could be beneficial, especially for young people. A related study compared the performance of the standard Donor Health Assessment Questionnaire (DHAQ) with an experimental alternative, using a computerized handheld tool, concluding that a "computerized questionnaire may improve the efficiency of the donor screening process."<sup>6</sup> Rugege-Hakiza et al<sup>7</sup> concluded that, despite these challenges, "the current screening process is actually very effective."

Then there is the challenge posed by testing errors. At the March 2006 FDA Workshop, Michael P. Busch gave an extended presentation on "Window Periods, Errors and Transfusion Risks in the NAT Era." Referring to 2 viruses of special concern (HIV and hepatitis C virus [HCV]), and the 2 types of tests now used (antibody or enzyme-linked immunosorbent assay and NAT), Busch calculated the risk that positive units could evade detection in the event that both tests failed sequentially: "You could then sum all these error relationships up and you are down in the range of 3 per billion for HCV and 0.1 per billion for HIV. So, the probability that errors in routine screening will result in release of a unit in our analysis is so remote as to be inconsequential.... So, from our analysis, we believe that errors are really minimally contributing to risk..."<sup>1</sup>

#### CURRENT RESIDUAL RISK IN CANADA

The risk that despite the application of various safeguards, an infectious unit will escape undetected into the blood supply is known as residual risk (RR). Canadian Blood Services has estimated RR by using what is called the "classic incidence/window-period method." The most recent published data (for the period 2001-2005) is: HIV, 1 in 7.8 million donations; HCV, 1 in 2.3 million; hepatitis B virus (HBV), 1 in 153 000.<sup>8</sup>

In this article, we examine the issue of whether the current MSM donor deferral policy could and should be changed, in the light of both the scientific information we have on the estimation of RR for donated blood, as well as a set of commonly accepted principles used in risk management practices.

#### RISK MANAGEMENT PRINCIPLES

##### *Evidence-Based Risk Assessment and Risk Estimation*

Risk management begins with the evidence of a hazard and then proceeds to estimate risk, which is an attempt to predict the degree of a health risk resulting from exposure to that hazard.<sup>9</sup> These 2 fundamental aspects of risk management (evidence and estimation) are equally important. Plausible evidence that a hazardous factor, such as virus, can cause an adverse effect on health is the original basis for every further step in the risk management process.

On the other hand, the extent to which those adverse effects will actually manifest themselves, for example, in a human population, under specific types and conditions of exposure, cannot be definitively characterized until after the effects have begun to be observed. At that point, risk estimation is used to anticipate and predict the likely range of effects, using a variety of assumptions (such as dose-response rates), so that proactive risk control measures may be put into place: "Done well, risk management is inherently precautionary, in the sense that it should make use of effective risk assessment to predict, anticipate, and prevent harm, rather than merely reacting when harm arises."<sup>10</sup>

Especially where low-level risks are concerned, evaluation of the evidence base in the process of instituting precautionary risk control measures always presents difficult challenges for risk management. A recent US government document, which proposes to issue technical guidance for the formulation of risk assessments, states: "Every risk

assessment should provide a characterization of risk qualitatively and, whenever possible, quantitatively. When a quantitative characterization of risk is provided, a range of plausible risk estimates should be provided. Expressing multiple estimates of risk (and the limitations associated with these estimates) is necessary to convey the precision associated with these estimates.”<sup>11</sup>

#### *Specification of Uncertainties*

A famous definition of risk, formulated by the economist Frank Knight in 1921, refers to risk as “measurable uncertainty.” In 1994, the US National Research Council issued the first in a series of reports emphasizing the importance of specifying the uncertainties in risk assessments.<sup>12</sup> This theme was reiterated 2 years later in another report which introduced the consideration of important associated dimensions of the issue of uncertainty while reiterating its main theme “Uncertainty is a critical dimension in the characterization of risk.”<sup>13</sup>

The first new element has to do with the need to specify the full scope of types of uncertainties that are pertinent to a particular risk management problem: “Because risk characterization requires providing information about the full set of factors of concern to the interested parties, it must address uncertainty not only about the physical and biologic impacts of the risk but also about the social and political factors inherent to the risk.” It is clear that this directive is applicable to something like the management of blood safety. The second is equally important, especially in contexts where members of the public and stakeholder groups need to be intensively involved in risk management decisions. It is derived from the fact that uncertainties are one of the things that worry people most, when they are thinking about risks to health. Therefore, it is advisable to go beyond the quantitative and qualitative representation of existing levels of uncertainty and to discuss how those levels may be reduced, if possible.

#### *Acceptable Risk, Especially in Cases of Involuntary Risk*

Tyshenko and Krewski<sup>14</sup> argue that the “concept of *acceptable risk* is tightly linked to perceived risk.” Most people use their own reflections on, and intuitive feelings about, their daily experiences to array the risks they perceive into hierarchies of escalating concern: “the experiential system is

intuitive, quick and largely inaccessible to conscious awareness, relying on images and associations linked by experience, emotion and affect (in cognitive science, ‘affect’ is used to mean the conscious subjective aspect of feeling or emotion).”

Risk acceptability—also sometimes referred to as risk tolerance—is also influenced by whether the risk is considered to be a result of “voluntary choice” (smoking) or is involuntarily imposed—and, within the latter category, whether it is a matter of a natural or human-caused hazard (a device). It should occasion no surprise to learn that people have a much higher tolerance for voluntary risk, and, within involuntary risks, for natural as opposed to manmade catastrophes.

Those who must receive blood or blood products for reasons of medical necessity are bearers of an involuntary risk, with respect to blood safety. And even at the best of times, there is very low public tolerance for involuntary risks of any kind that result from human acts, including policy choices. In a sense, there is almost no lower limit to the “appetite” for risk, or risk tolerance, in this domain for the public as a whole (there are always distributions of risk tolerance in populations; in general, for example, women are more risk-averse than men). For most members of the public, the formulation beloved of experts, *de minimus* risk, simply does not apply where involuntary risk is concerned. And, if one puts a (very low) number on the risk, it will soon become apparent that no number is low enough.

This absence of a lower threshold for risk acceptability in matters of involuntary risks presents many challenges for risk managers. One of the most serious of them is simply trying to conduct a reasoned conversation about very low risks, which are also always in the form of risk estimations. The risk number (or range) itself, combined with both uncertainty ranges and levels of confidence and all the complicated statistical manipulation that accompanies those numbers are extremely difficult to communicate.

So far as blood safety is concerned, the (very) good news is that tremendous advances in risk reduction have been made in the past 20 years. The bad news, in a sense, is that the RRs are now so low that they can only be expressed as complex estimations. At very low levels, the uncertainty ranges can be very broad, so that meaningful comparisons between small changes, one way or

another, are difficult to make. As we shall see, at least some aspects of the policy choices relating to MSM donor deferral are in that zone of risk estimation where it is difficult to say whether a change in policy would produce a meaningful, measurable change in RR.

#### *Risk Tolerance and The “Set-Point” for Risk Acceptability*

In his book *Target Risk*, Wilde<sup>15</sup> develops the notion of “risk homeostasis,” which is the idea that most people have a set-point for risk tolerance that operates very much like a thermostat does. Over time, we try to adjust our exposure to risk so that it falls within certain parameters where we are “comfortable” with the degree of risk we are experiencing. The set-point is another way of expressing the “appetite” for risk which each of us has at any time. The set-point can change over the lifetime of a person—most famously, young men have on average a higher tolerance for risk than do both older men and all women. Quite obviously, the average set-point for a particular risk, in a population or social group, also may change because of experiences, especially those which are associated with dramatic (frightening) results. For example, the risk tolerance for civilian nuclear energy changed considerably after the high-profile incidents at Three Mile Island and Chernobyl.

The same is true for donated blood, especially for the groups made up of those who depend on regular transfusions, or blood products. The catastrophic events of the early 1980s, involving large numbers of illnesses and deaths caused by transfusions of infected blood, undoubtedly altered the set-point or level of risk tolerance for these groups and also for society as a whole. Since that time, both society and special groups have become highly sensitized to the issue of blood safety. There is virtually zero tolerance for any change to the policies regulating blood safety that would increase, in however small an increment, the risk of transfusion-transmitted infection (TTI).

#### *As Low as Reasonably Achievable or “Continuous Improvement”*

*As Low as Reasonably Achievable* is a risk management principle that has been applied most extensively with respect to radiation risk, although it has many wider applications as well.<sup>16</sup> In a practical sense, it is virtually coterminous with the

management principle of continuous improvement (it is important to recognize, of course, that almost every innovation in risk reduction has some economic cost, and so the principle of relative cost-effectiveness also applies). Continuous improvement is, in the first instance, a desirable managerial mindset for risk managers but especially for those who manage “public” risks of a highly sensitive kind. Drinking water safety suggests itself immediately, as does blood safety. The mindset is one of a willingness to go beyond compliance with regulatory standards and continue to search for innovations for additional safety that can be implemented at low cost.

One other point is important here, however. Managers of public risks usually deal with situations where there are multiple sources of risk, and both drinking water and blood donations illustrate this situation well. To some extent, the multiple risks compete with each other for attention and resources. Thus, the calculation of relative cost-benefit and cost-effectiveness for incremental steps in risk reduction, when it has to be arrayed across many different risk factors, is not a simple one. Especially where the threat of new and emerging pathogens is concerned, a delicate balance in the allocation of risk control resources is essential. Thus, where a multiplicity of risk factors are being managed simultaneously, the ALARA principle applies in the first instance to the entire set, taken as a whole, and not to its individual members.

#### *Precaution*

As mentioned above, a precautionary approach is inherent in, and integral to, risk management itself. In a sense, it is a response to one of the major types of uncertainty, namely, that which results from incomplete knowledge. More precisely, precaution addresses a certain “zone” within the characterization of a risk where one is unsure about both the efficiency and the efficacy of expending a known amount of resources to achieve a hypothetical increment of risk reduction—without having a guarantee, at the time, that the expenditure is either necessary or sufficient.

There has been a great deal of discussion about precaution in the preceding decades, and during that time, many federal authorities, including Canada, have formally incorporated explicit references to a precautionary approach into their risk management strategies. Of course, the basic idea has been around

for much longer. For example, an editorial in the *American Journal of Public Health*, May 1984, stated (as cited by Krever<sup>17</sup>), “The incomplete state of our knowledge must not serve as an excuse for failure to take prudent action. Public health has never clung to a principle that complete knowledge about a potential health hazard is a prerequisite for action.”

The widespread acceptance of precaution at present, however, has given rise to yet another set of challenges. Simply accepting the view that precaution is an inherent part of good risk management practice is not enough because the first question is, How precautionary should we be in a particular case? There are all-too-many documented instances of insufficient precaution in earlier times.<sup>18</sup> However, it is less well understood that it is also possible to be unwisely and excessively precautionary: “Below a certain low level of hazard frequency, we simply cannot have a reliable idea of whether what we fear is actually there or not, unless we have resources and knowledge to pursue a series of increasingly effective sequential tests to provide meaningful evidence on extremely small risks... [T]he wisest course of action is to avoid trying to be more precautionary than our knowledge enables us to be.”<sup>10</sup> Later in this article, we shall have occasion to apply this principle to the issue of blood safety.

### *Equity*

Equity is, of course, an ethical principle, but it is also a specific concern within the domain of risk management itself. There are 2 aspects in this regard.

*Distribution of risk and excess risk.* Often, risks are distributed in a population “accidentally,” as it were, either by random occurrences (such as many natural hazards) or by inherent differences, such as genetic variation. However, they may also be either an indirect or direct result of policy choices. Facilities siting, such as for hazardous waste treatment, is an obvious case: those living in the vicinity bear some amount of excess risk, by comparison with the rest of the population, unless offsetting risk reduction measures were to be implemented (which is rare: where an offset is made, it is usually in the form of compensation). Occupational risk is also a policy area where excess risk is assumed to be tolerable.

In general, risk management decisions are always more difficult in those cases where risks are

unevenly distributed in a population and where the risks in question are involuntary. At present, there is increasing recognition of an obligation, in such cases, to give special consideration, in terms of stakeholder relations, to those who bear excess risk. Clearly, blood safety is one of those cases.

*Risk transfers.* Where there are different or competing interests within the framework of a risk management situation, it is advisable to take note of the possibility that either intended or unintended risk transfers may occur. For example, parents who smoke in the home and car are transferring some health risks (including the higher probability of a child becoming a smoker) to their children. Policy choices may—either directly or indirectly—also transfer a measure of risk from one group to another. For example, the choice to recruit members of the armed forces through volunteers, rather than a universal compulsory draft, will transfer risk from higher-income to lower-income social groups.

Both of these examples show that risk transfers often raise very important ethical issues. In the case of blood safety, it is evident that not all of the interests of donors, for example, are consistent with the interests of blood recipients (the clearest illustration is the case where a person who suspects that he or she may be HIV-positive seeks to donate blood as a way to be tested for the disease). Especially in highly sensitive areas of risk management, such as blood safety, policy issues must always be examined carefully in terms of their potential implications for risk transfers.

### *Tradeoffs*

*Risk-benefit.* There are many, many instances in which it is highly advantageous, for both individuals and groups, to assume an incremental risk in return for increased benefit where benefits clearly outweigh risks (net benefit). For example, the risk of being trapped, by a seatbelt which cannot be disengaged, in a burning automobile after an accident is outweighed by a large margin by the benefits of seatbelt use. Likewise, in the case of airbag deployment, the risk of injury from the airbag itself is outweighed (in most cases) by the benefits to safety in serious accidents. Risk-benefit tradeoffs are relatively easy to calculate where it is the same group or individual involved; when this is not the case, it may be a matter of unfair risk transfer.

Risk-benefit tradeoffs have been discussed, in the case of blood safety, most recently because of the study of Germain et al,<sup>19</sup> which concluded that the tradeoff between benefit (increased donations) and excess risk (in accepting MSM donors abstinent 1 year) was not advantageous (Germain et al did a double risk/benefit comparison, estimating the tradeoff associated with a change to a 12-month MSM deferral, with that of the current policy of accepting female partners of MSM after 12-month deferral, concluding that the latter was 5 times less risky for the same level of benefit).<sup>20</sup> However, it is questionable whether this type of issue should be put in risk-benefit terms: Is there *any* level of benefit that would justify the increased risk of infection? Is it not preferable to assume that Canadians would respond to any emergency involving an imminent blood shortage by mobilizing to increase low-risk donations? This issue should be more properly framed as one of a risk-risk tradeoff (see below).

*Risk-risk (relative risk).* The tradeoff discussed by Germain et al<sup>19</sup> could also be arrayed instead as one in which 2 equally serious risks have to be balanced against each other—an estimated increase in transfusion-transmitted infectious disease risk, on the one hand, vs the potential risk of inadequate supplies of blood, on the other. When one arrays the issue in this way, one can see immediately what the initial policy response would be, namely, one would first try to “manage” this set of relative risks by comparing the likelihood of reducing the second of the 2 risks by considering a variety of options, all involving, in the first instance, programs to mobilize additional donations from the set of low-risk donors, both repeat and first-time.

Provided that multiple options were available for reducing the risk in question (inadequate supplies of blood), risk managers would start with the lowest-risk option and proceed, if required to do so, to the relatively riskier ones. In the case discussed here, both risks are borne entirely by the same group of people, namely, those that require blood and blood products for reasons of medical necessity. Relative risk considerations are therefore appropriate in this context (if this were not the case, the situation would be one of risk transfer, already considered).

*Cost-benefit.* General models for cost-benefit tradeoffs, comparing options for ensuring blood safety, have not been well-developed as of this time.

## ETHICAL AND LEGAL PRINCIPLES IN RISK MANAGEMENT

### *Ethical Principles*

It is becoming increasingly common for risk regulators to devote some attention to the formulation of an ethical framework for risk management.<sup>21</sup> For purposes of illustration, we will note briefly here the principles articulated by the World Health Organization in its *World Health Report 2002*, which are 4 in number<sup>22</sup>: (1) autonomy: protecting the rights of the individual and informed choice; (2) nonmaleficence: do no harm or injury; (3) beneficence: produce benefits that far outweigh risks; and (4) justice: achieve an equitable distribution of risks and benefits.<sup>23</sup> In the conclusions to this article we will refer to the values of non-maleficence, beneficence, justice, and fairness.

### *Legal Principles*

This section summarizes the analysis of legal principles, relating to donor deferral issues, which was presented at the 2001 Consensus Conference, *Blood-Borne HIV and Hepatitis: Optimizing the Donor Selection Process*.<sup>3</sup>

- Discrimination based on group membership is prohibited in Canada by various statutes and codes, including categories used in blood donor selection, such as sexual preference, addiction, and place of birth.
- To establish a claim of unlawful discrimination, it is necessary to show that there is a stigma attached to being a member of one of these kinds of categories.
- Based on court decisions, the donor exclusion of MSM clearly carries such a stigma and, thus, would fall within the category of a prohibited discrimination, that is, an abridgement of protected rights and freedoms (section 15 of the Canadian Charter).
  - However, section 1 of the Charter states that “the rights and freedoms enumerated in the charter can be restricted on the basis that the limit is reasonable and demonstrably justified in a free and democratic society.”
  - The Supreme Court of Canada promulgated the “Oakes test” in 1986 to set criteria for

deciding whether a specific restriction of freedom is or is not reasonable and justified; the 3 tests are (1) sufficient importance of the objective (in this case, blood safety); (2) rational connection and minimal impairment: the impairment (denial of blood donations by MSM) is rationally connected to the objective and is the smallest degree of impairment that will safeguard the objective; and (3) Proportionate effect: “the risks of infecting patients with HIV are greater than the benefits granted to those who want to give blood.”

#### THE CURRENT DONOR DEFERRAL SYSTEM IN CANADA

Donor deferral refers to the practice of excluding blood donations from specified categories of individuals based on an established set of donor selection criteria. As such, it is one of a series of standard procedures that are designed to ensure the safety of blood and blood products, as follows:

1. Donor education and voluntary self-deferral (either before or after donating);
2. Health assessment at time of donation;
3. Administration of Donor Assessment Questionnaire before donating;
4. Application of donor deferral criteria;
5. Testing of donated blood before use (individual and batch tests);
6. Quarantine controls before distribution;
7. Monitoring and research for emerging blood-borne diseases;
8. Ongoing review of risk management strategies through regular liaison with other domestic and international agencies.

To borrow a term from the drinking water safety area, this may be called a “multibarrier approach”: the high level of safety of the blood supply which has been achieved, in Canada and elsewhere, in recent years is the result of the combined impact of all of these procedures.

#### *Judging the Suitability of Donors*

Application of the management practice of donor deferral is governed by the Donor Selection Criteria Manual (DSCM). The DSCM is a listing of many diseases, medical conditions, behaviors, and drug substances that may provide a basis for deferring a blood donor (the manual gives guidance on all

items in these categories where questions have been raised, and in some cases, it instructs personnel to accept the donation). The manual is continuously updated as new information is acquired by agencies responsible for blood safety. Donors may be deferred because of increased risk to their own health associated with donation (for example, donors with coronary artery disease), or increased risk to recipients (eg, history of hepatitis).

There are 2 basic categories for deferral: “temporary” and “indefinite.” The first, temporary, is a period that ranges from 1 day to 1 year, with some specific time frames in between (eg, 56 days in the case of exposure to West Nile virus). Many of the deferrals for prescription and nonprescription legal drug use and medical conditions fall into this category; the deferral is maintained for as long as the condition or drug use persists (there are some drugs with very long half lives and high teratogenic potential that result in longer deferrals.) On the other hand, many diseases and some types of behaviors give rise to an “indefinite” deferral, which is equivalent to a lifetime period.

There are, for example, something on the order of 400 specific diseases and medical conditions listed in the DSCM, which give rise to either temporary or indefinite deferrals. Randomly chosen examples of those designated for indefinite deferral are brucellosis, Chagas disease, cirrhosis of the liver, coronary disease, CJD, Crohn’s disease, immune deficiency, multiple sclerosis, and sickle cell anemia.

The questions asked of potential donors are designed to determine whether the donor’s blood may itself be unhealthy (eg, low hemoglobin level) or could contain an infectious pathogen (eg, West Nile virus) or harmful substance (eg, the residue of a prescription drug dangerous to pregnant women) and, thus, that the potential donation should not be accepted. More specifically, they are designed to estimate the chance, or likelihood, that this is the case—assuming that all of the prospective donor’s answers are truthful, of course. Taken as a whole, the set of questions probes for both direct and indirect markers of the likelihood that one or more factors, in the case of a particular donor, could compromise the safety of the donated blood or the safety of the donor (direct markers are evidence of specific disease states in the donor; indirect markers are, eg, “time spent in prison,” which is a surrogate measure for the likelihood of exposure to high-risk

activities in that environment.) According to one recent estimate from Héma-Québec, 20% of potential donors are excluded at the donor screening stage, including 3.2% who are rejected for high-risk behaviors.

*The Basis for Judgment: The Risk Assessment Methodology*

As mentioned earlier, the multibarrier approach to risk management, which characterizes blood safety, is designed to construct an interlocked series of management strategies that operate simultaneously. For each of these strategies, there are some circumstances under which any particular barrier may fail, for example:

1. Donor education and voluntary self-deferral (either before or after donating):
  - a. Potential donor is unaware of having a condition that would warrant self-deferral.
2. Health assessment at time of donation:
  - a. Symptom otherwise justifying deferral unreported or unobserved.
3. Administration of Donor Assessment Questionnaire before donating:
  - a. Potential donor accidentally gives incorrect information that would otherwise justify deferral.
  - b. Potential donor answers untruthfully on a question that would otherwise justify deferral.
4. Application of donor deferral criteria:
  - a. Criterion incorrectly interpreted or applied or overlooked.
5. Testing of donated blood before use (individual and batch tests):
  - a. False-negative test result.
  - b. Operational error in testing procedure.
6. Quarantine controls before distribution:
  - a. Accidental release of unit from unqualified donor.
7. Monitoring and research for emerging blood-borne diseases:
  - a. New blood-borne pathogen is unrecognized until after first infections occur.
8. Ongoing review of risk management strategies through regular liaison with other domestic and international agencies:
  - a. Scientific consensus on infectivity by blood of a known disease agent is not reached until after first infections occur.

In the operation of every barrier (except the first—voluntary self-exclusion) and its set of risk control strategies, there is an indispensable element of expert or professional judgment. This is clearest in the case of the administration of the DHAQ, but it is equally important in the others, such as the compilation of the DSCM and the scientific monitoring and consensus-building processes on new and emerging diseases. Errors in judgment are inevitable; they may result, for example, from lack of information (such as about the infectivity of a new pathogen), from an undetected weakness in the established screening procedures (misinterpretation of a question by a donor), or from a simple mistake by someone during a busy day.

Constructed of sequential steps, the multibarrier approach is designed to be robust in catching inevitable errors in judgment, but it cannot promise perfection in this regard. The blood safety system, like all other domains of risk management, cannot achieve a state of zero risk, that is, complete safety. Another reason is that all procedures come with an economic cost, which is ultimately reflected in the monetary price of a unit of blood, which, in Canada, is a cost to the provincially funded health care system. Each of the barriers represents an investment of a certain level of funding in the blood safety system, and there is not an unlimited supply of such funding for any specific purpose; each must ultimately be judged on its cost-effectiveness for the purpose it serves.<sup>24</sup>

On the other hand, the blood system today in Canada and elsewhere has achieved a level of safety that is, almost certainly, unprecedented in the period since blood transfusions have been generally available (there are, of course, many different types of risks associated with blood transfusion, most of which are not discussed here; for a comprehensive analysis, see the 2003 review by Kleinman et al<sup>25</sup>). Moreover, there is clear evidence of the application of a continuous improvement ethos in this system—which is consistent with the risk management principle known as ALARA—to operate with a level of risk that is “as low as reasonably achievable.”

*“Behavioral” Risk Factors in the Donor Screening Strategy*

As indicated earlier, there are 4 primary categories of concerns in the blood donor assessment profile: diseases, medical conditions, behaviors,

and drugs. Of the 4, the act of probing the category of behaviors stands out from the rest, for several reasons, for example: (1) it seeks to elicit a type of information about the donor that is essentially different from what is sought in the others; (2) it explicitly probes the types of social and personal judgments made by the donor in some very sensitive areas (sex, prostitution, illegal drug activity) which are regarded, by many, as giving rise to “moral” issues; (3) it implicitly calls attention to differences in lifestyles among the population; (4) it deals with activities of groups which represent minorities in the population; (5) and, with respect to male sexual activity, it confronts a “zone” in society that has traditionally been the subject of highly charged emotional confrontation, in social, family, political, and religious domains.

In this context, there is no reason to think that judgments about the evaluation of behavioral risk factors in blood donations could avoid controversy.

A noteworthy feature of the general category of deferrals for behavioral risk factors is the “even one-time” provision, with or without mention a specific year in which the type of activity was initiated. This feature appears in the following 5 instances of specifically behavioral risk: (1) having engaged in injection drug use; (2) having taken money or drugs for sex since 1977; (3) being an man who has had sex with a man since 1977; (4) having had sex with a person with AIDS or testing positive for HIV; (5) having had sex, since 1977, with a person who was born in, or has lived in, 1 of 8 named African countries.

The risk assessment basis for the geographical exclusion in this list (8 African countries), namely, the prevalence of a type of HIV that may be undetectable in testing, is different from all the others. For the other 3 categories (MSM, injection drug users, and prostitutes), the risk assessment is based on evidence about the increased prevalence of disease that is in turn related to certain types of behaviors: in all 3 cases, the prevalent infection rate for HIV, for example, has been and remains significantly higher than it is in the Canadian population generally. Thus, the basis for donor deferral in these cases is regarded as being a matter of “participating in high-risk activities.”

#### MEN HAVING SEX WITH MEN DONOR DEFERRAL: HISTORY AND ISSUES

The first transfusion-associated case of HIV in Canada was officially reported in May of 1985, by

which time hundreds of Canadians had already been infected with HIV through blood donations. Testing of blood donations began in November 1985. In January 1986, the Red Cross first began distributing a pamphlet about AIDS “to define unequivocally the largest group at high risk of contracting AIDS as “any man who has had sex with another man since 1977.”<sup>15</sup> The pamphlet was part of a strategy to encourage voluntary self-exclusion, however, and it did not form the basis of an active donor screening at the time of donation.

Although questions about risk factors for AIDS were being asked of potential blood donors for several years before 1989, it was only in 1989 that the DHAQ became an “official” document, the content of which was regulated by Health Canada, however. And only starting in 1989 was the following—rather incoherent—statement added to the DHAQ: “The following activities put you at risk for AIDS: intravenous drug use, living in an area where AIDS is common, regular treatment with blood and clotting factors, MSM, and sex with any of the above.” Potential donors were asked if any of these activities pertained to them, and if the answer was in the affirmative, they were deferred.

In 1997, the more specific question—“Male donors: Have you had sex with a man, even once, since 1977?”—was separated from this list, and the wording of this question has remained unchanged since that time. In 2004, the requirement for mandatory deferral on this basis was incorporated into the Canadian Standards Association Standard Z902-04, “Blood and Blood Components,” clause 5.3.9.2. [Table 1](#) compares Canada’s practice in this regard with some other countries.

#### *Challenges to MSM Donor Deferral Policy*

The beginnings of a challenge to the lifetime deferral for MSM, made from within the blood industry itself, began in the United States in 1997. The American Association of Blood Banks stated in 2002, “Since 1997, the American Association of Blood Banks has advocated that the deferral period for male to male sex be changed to 12 months.” This statement was amplified in March of 2006:

- “The American Association of Blood Banks, America’s Blood Centers, and American Red Cross believe that the current lifetime deferral for men who have had sex with other men is

**Table 1. International Deferral Criteria, MSM, 2005**

Criteria	Countries
Deferral based on specific activities	Italy ("risky activities")
1-y deferral since last exposure	Argentina Australia Japan Hungary
5-y deferral since last exposure	South Africa
10-y deferral since last exposure	New Zealand
Indefinite deferral, exposure since 1977 or lifetime exposure	Canada United States UK France Switzerland Holland Norway Denmark Sweden Germany Finland Iceland Hong Kong

medically and scientifically unwarranted and recommend that deferral criteria be modified and made comparable with criteria for other groups at increased risk for sexual transmission of TTIs. Presenting blood donors judged to be at risk for exposure via heterosexual routes are deferred for 1 year...

- "It does not appear rational to broadly differentiate sexual transmission via male-to-male sexual activity from that via heterosexual activity on scientific grounds... We think the FDA should consider that the continued requirement for a deferral standard seen as scientifically marginal and unfair or discriminatory by individuals with the identified characteristic may motivate them to actively ignore the prohibition and provide blood collection facilities with less accurate information."<sup>26</sup>

The most recent extensive public discussion of these issues took place in the United States on March 8, 2006, at the FDA Workshop on Behavior-Based Donor Deferrals in the NAT Era. The current clash of expert opinion in this area is nicely illustrated by the sharply divergent positions in 2 back-to-back presentations at the

workshop. The first was articulated by Cees van der Poel of Sanquin, the Dutch blood collection agency, speaking on behalf of the European Blood Alliance, who referred to the report of a Dutch government committee on the issue of whether the MSM exclusion was a violation of the antidiscrimination provisions of the Equal Treatment Act: "The verdict of that committee...is that...the purpose of the donor selection was not to discriminate but to prevent transmission of HIV and other infections. Homosexual men are disproportionately affected by the selection. That is true. But there is an indirect discriminatory distinction, however, objectively justified and not disproportional, in the interest of the recipient's blood."

Immediately thereafter, Dr Ronald Bayer, a bioethicist at Columbia University, made the following remarks: "Given the current testing technology, there is clearly a public health rationale for jettisoning the 29-year exclusion for MSM.... Indeed, it is hard to understand, given the goal of safety and the commitment to precaution that is embedded in public health practice, why anything more than a 1-year exclusion is justified.... What we cannot do because of this discussion is take refuge in science when, in fact, what we are responding to is political pressure."<sup>1</sup>

#### *The Current Position of Blood Regulators*

A representative of the European Blood Alliance, speaking at a March 2006 FDA meeting, stated that no changes to the MSM policy were being contemplated by the European Union because MSM continues to represent a high-risk activity. Although the United States FDA apparently will be listening to ongoing discussion of this issue at meetings of its Blood Products Advisory Committee, there is as yet no indication that the current policy will be changed.

Canada's federal regulator, Health Canada, was not officially represented at the FDA Workshop. The Health Canada Web site does not appear to contain any commentary on the reasons for the current regulations on MSM donors. However, the department's Biologics and Genetic Therapies Directorate presented a document on this matter for discussion at the May 5 to 6, 2004, meeting of its Expert Advisory Committee. The Expert Advisory Committee's Record of Meeting for its meeting of May 12, 2005, contains the following

statement: “MSM: As a follow-up to the May 5 to 6, 2004, Meeting where this issue was discussed, referenced publications were reviewed by all Committee members and the consensus was to maintain the status quo, that is, a lifetime exclusion of MSM, as is the case in Europe and the United States.”

#### RISK PROFILE—MSM

##### *Epidemiology—Canada*

The latest figures on HIV prevalence and incidence in Canada, for the period up to the end of 2005, were released in the August 2006 issue of *Canada Communicable Disease Report*.<sup>27</sup>

*HIV prevalence (range of uncertainty given in brackets).* At the end of 2005, 58 000 (48 000–68 000) were living with HIV/AIDS, a 16% increase over 2002. Percentages in the various exposure categories are the following: MSM, 29 600 (51%); MSM–injection drug use (IDU), 2 250 (4%); IDU, 9 860 (17%); heterosexual/nonendemic, 8 620 (15%); heterosexual/endemic (origin in a country where HIV is endemic), 7 050 (12%); Others, 400 (1%).

*HIV incidence (numerical range of uncertainty given).* In 2005, the estimated number of new infections was 2 300 to 4 500, slightly higher than in 2002 (by exposure category: MSM, 1 100–2 000 [45%] [42% in 2002]; MSM-IDU, 70–150 [3%]; IDU, 350–650 [14%]; heterosexual/nonendemic: 550–950 [21%]; heterosexual/endemic: 400–700 [16%]; others: <20 [1%]).

*Awareness.* “[W]e estimate that [in 2005] about 15 800 people (11 500–19 500) or 27% were unaware of their HIV infection.”

*Trends.* “The proportion of MSM among new infections steadily declined until 1996 and has increased since then.... The proportions of new infections attributed to the heterosexual/endemic and nonendemic exposure categories have increased steadily since the beginning of the epidemic.” Further, “this recent trend among MSM and MSM-IDU is associated with increases in risky sexual behavior.... Among the heterosexual exposure category, the observed trend is likely a result of the general evolution and spread of the epidemic as well as a recent change in the Citizenship and Immigration Canada policy on testing immigrants and refugees, which has resulted in more diagnoses.”

*Statistics: Percentage of homosexuals in population and relative prevalence of HIV/AIDS\*.* “Among Canadians 18 to 59 years of age, 1% reported that they consider themselves to be homosexual, and 0.7% considered themselves bisexual” (among men, the total for bisexual and homosexual combined is 1.8%).

The total Canadian population as of mid 2005 was about 32.8 million. Using epidemiology data (above), the prevalence rate for HIV/AIDS in male homosexuals/bisexuals in Canada is estimated to be 5.4% and, in the general population, 0.08%, for a ratio of 67:1.<sup>†</sup>

*Behavioral studies.* In “The Ontario Men’s Survey,” using data collected in 2002 from 5 000 homosexual and bisexual men, some of the findings relating to forms of high-risk activity are the following: (1) in the preceding 12 months, 75% had more than 1 male sex partner and 45% had more than 4; (2) 57% reported sex with at least 1 casual male partner in the preceding 3 months; (3) 40% had at least 1 event of unprotected anal intercourse in the preceding year.<sup>28</sup>

#### RISK ESTIMATION OF TIME FRAME OPTIONS FOR MSM DEFERRAL POLICY

The following analysis accepts, as the basis of the discussion of donor deferral issues, the 2 fundamental principles that provide the foundations

\* Statistics Canada, 2003 data, reported 15 June 2004; this is the first Statistics Canada survey to collect information on sexual orientation and these are the latest data of this type that are available.

† The calculation first subtracts the HIV/AIDS attributable to MSM (55%) from the total number of estimated cases before figuring the percentage for the general population; the method is similar to that used by Dayton for the United States.<sup>1</sup> The data are presented by Statistics Canada in terms of homosexuality, which is different from the categories used in the immediately preceding sections, which refer to MSM. As a category of sexual behavior, MSM refers to any man who has ever had sex with another man, even once, since 1977. It is likely that those individuals who are or have been exclusively male homosexuals or male bisexuals, and have been sexually active in the period since 1977, make up the largest proportion of those who are classified as MSM in the blood donor system. There are at least 2 other sets of persons which may be included in the MSM category: (1) male individuals who have, at one time or another, engaged voluntarily in homosexual acts but who do not consider themselves to be homosexuals and (2) those men who were involuntarily subjected to homosexual acts by another man (and, thus, are among the victims of sexual abuse).

of the current system of blood safety: (1) the primary basis for donor deferral rests on the assessment and estimation of the various types of risks to health associated with donated blood; (2) any changes to existing policies on donor deferral must result in an improved or equivalent level of safety by comparison to what now exists. In evaluating the acceptability of changes to the existing donor deferral policy, we refer to any change that meets these 2 criteria as having “passed the risk hurdle.”

#### *Change to a 10-Year Exclusion Period*

Reference is to the idea of accepting donors who report no MSM activity for the preceding 10 years or more. No data or studies have been found that are relevant to this time frame, so this option is not considered here, except in so far as a 10-year exclusion period would give an additional margin of safety by comparison with the 5-year period discussed below.

#### *Change to a 5-Year Exclusion Period*

Reference is to the idea of accepting donors who report no MSM activity for the preceding 5 years or more. Because there is some evidence in published studies relevant to this option, it will be considered in detail in the following sections.

#### *Change to a 1-Year Exclusion Period*

Reference is to the idea of accepting donors who report no MSM activity for the preceding 1 year or more. As noted above, this option has been the subject of much discussion and research, and it is considered further in the following sections.

#### *Change to No MSM Exclusion*

This option refers specifically to MSM, as defined; it does not necessarily rule out self-exclusion or exclusion on other criteria (IDU, etc). This option has been promoted by some advocacy groups, and has been justified on the grounds that testing is so nearly error-free that there is virtually no chance that an infectious unit of donated blood will enter the blood supply.

Without donor screening in place, the incremental change in risk for donated blood before testing would be proportional to the ratio between the increased prevalence of these diseases in whatever population subgroup was no longer screened out, in this case MSM, and the population as a whole. As

noted above, this ratio is estimated at 67:1 for Canada; in the United States, the estimated ratio is 60:1 (Andrew Dayton, 2006 FDA Workshop<sup>1</sup>).

However, 2 other ratios show that the incremental risk would be much higher because both current repeat donors, as well as current first-time donors, in fact, have lower risk profiles than does the population as a whole. US data (from the American Red Cross) for HIV prevalence in these 2 groups of donors have been compared with HIV prevalence in MSM “likely to donate,” which is estimated by Dayton<sup>1</sup> as follows: “We know that about 75% of MSM know their serostatus, and it is likely that these people will self-defer, so we assume that the effective prevalence of likely MSM donors is approximately 2%.” The ratio between HIV in MSM in comparison with current first-time donors is 200:1; in comparison with current repeat donors, the ratio is 2000:1 (Dayton<sup>1</sup>). This same source gives the latest calculations for testing and operational errors (window period, false negatives, and quarantine release), none of which is zero.<sup>‡</sup> Therefore, it is impossible to avoid the conclusion that the elimination of all MSM screening would result in a some increase, however small, in the risk of TTI.

This option does not pass the risk hurdle and thus is not further considered.

#### *Change to “Identifying Risky Sexual Behaviors”*

Some of those opposed to the policy of MSM donor deferral have argued that the blood collection system should be using a set of specified “high-risk” behaviors, rather than social groupings, as the basis of the donor screening process.

There are some apparently plausible aspects to this argument because on its face it seems to be consistent with the basic objective of donor screening, which is to identify individuals wishing to donate blood who are at high risk of being infectious. However, its advocates rarely make the effort to state the objections that can be made to this proposal and to provide a reasoned response to them. Two of the primary objections are the following:

1. The questions asked during screening procedures would have to focus directly and in detail

<sup>‡</sup> We acknowledge that there is a range of estimates for the sources of residual risk, such as testing errors. On this point, see also the presentations by Celso Bianco and Sharon O’Callaghan at the March 2006 FDA Workshop.<sup>1</sup>

on certain highly sensitive and intimate areas of actual sexual behavior. It is well-known that many individuals find it awkward to answer truthfully these types of questions. Second, nurses would be required to make a series of difficult, individual judgments in interpreting the prospective donor's answers. And finally, this procedure would raise serious practical issues in the administration of questionnaires in the settings of blood donor clinics, on account of the degree of intrusiveness involved in a more detailed probing of sexual behaviors.

2. The behaviors of individuals can and do change over time, sometimes more than once. Relying on a strategy for identifying risky behaviors as the basis for donor screening would inevitably give rise to difficult challenges, including ethical and policy dilemmas, for administrators of blood collection agencies. For example, suppose that an individual who had been accepted in the recent past as a blood donor then, at the next occasion, acknowledged participation in a high-risk activity that would lead to deferral. Would the agency not have a reasonable concern that this same type of deferrable behavior might have occurred earlier as well?

As noted above, the existing system of donor screening has succeeded in producing a supply of donated blood which, upon being tested, is known to have a very low risk of being infectious. There would be, understandably, great reluctance on the part of blood collection agencies and of blood and blood product recipients to take part in an experiment to see whether a radically different form of donor screening could yield a comparable or better level of safety.

Current blood donor deferral policy, like all public policy choices in all dimensions of social life, represents an inheritance from the past. It is possible to imagine that a different path might have been chosen in some earlier period. For example, at the time when dramatic changes were being introduced into the blood safety system, in Canada and elsewhere, in the mid to late 1980s, officials might have chosen to institute a donor screening system based on identifying risky sexual behaviors (this is only a hypothetical situation; we must also recall the tremendous pressure that the blood safety system was under during that time). Had they done

so, they *might* have found that, over time, and in conjunction with the introduction of new testing regimes, these innovations had resulted in an acceptable level of risk for blood recipients.

However, officials did not make such a choice at that time, and the evidence we have now is that the choices they did make have resulted in a very low (albeit nonzero) level of such risk. This is so, although new challenges, such as those represented by West Nile Virus and vCJD, continue to arise. Because of this "inheritance," it is difficult to imagine that the public would consent to engaging in a new experiment with blood safety, by changing the basis of all forms of donor deferral to the identification of risky sexual behaviors in individuals. Such a wholesale change could entail—at the very least, in the initial phases—significant incremental risks to the blood supply, simply because of the complex operational changes which would be required to implement it. Therefore, this proposal does not appear to pass the "risk hurdle." On the other hand, it may be possible, at some future time, to assemble more complete evidence about the degree of risk associated with making this type of change to the system.

#### *Change to Relying Exclusively on Testing for Assuring Blood Safety*

As testing procedures for blood safety become progressively better, in terms of sensitivity and specificity, it may seem that testing alone would provide an acceptable margin of safety and, thus, that all donor screening could be eliminated. However, this proposition overlooks the fact that blood must be drawn from donors, packaged, and handled by a variety of personnel before testing. There are several well-described risks (such as needle-stick injuries) of being accidentally exposed to contaminated blood that are inherent in these procedures. Consideration of employee safety (for blood services employees) alone is sufficient to rule out such an option.

#### FURTHER CONSIDERATION OF 2 CHANGE OPTIONS

##### *First Option: Change to a 1-Year MSM Donor Deferral Policy*

Many of those who advocate changing the blood donor policy of lifetime deferral for MSM

have pointed to a specific kind of allegedly pernicious effect resulting from it: “Many have expressed the view that such a policy (lifetime deferral for MSM), although it may have been justified in the early days of the HIV epidemic, is now overly cautious and has the unfortunate effect of stigmatizing homosexual men who would donate blood.”<sup>29</sup>

A social stigma may be defined as a “mark,” either a physical sign or a symbolic identifier, which is attached to a specific category of persons, within society as a whole; this type of “marking” almost always is associated with a pattern of unjust discrimination, and often persecution, against those persons.<sup>30</sup> Thus, the fact of being stigmatized carries with it the risk of being subjected to a hierarchy of adverse consequences, on a scale that runs from merely being shunned in social relations all the way to the horrors of violence and murder.

We accept the notion that both male and female homosexuality (and, to a lesser extent, bisexuality) has been stigmatized to varying degrees in Canadian society, although recently, important changes also have been occurring that have reduced this stigma significantly, and we recognize that, in the opinion of many within the homosexual community, as well as to others in Canada, the perpetuation of the lifetime deferral for MSM is a form of stigma (ie, unjust or unreasonable discrimination) for male homosexuals. Finally, we accept the idea that reducing all forms of stigma—unjust and unreasonable discrimination against specific groups of persons—is a *general benefit* to Canadian society as a whole.

However, we are not fully persuaded that, at the present time in Canada, there is good evidence to show that the lifetime MSM deferral for blood donation is an important contributing factor in whatever stigmatization of homosexual men remains in our society. Nevertheless, to the extent to which the contrary view prevails among certain individuals and organizations, we recognize that they could reasonably regard a shortening of the deferral period for blood donation as representing a reduction, or even the elimination, of part of the stigma against homosexuality, which still exists within Canadian society. Therefore, in the discussion that follows, we accept, for the sake of argument, the proposition that a shortening of the MSM deferral period would represent a benefit to a

specific set of persons, namely, male homosexuals and bisexuals.

In the foregoing discussion, we reserved 2 options, with respect to changing the MSM deferral policy, for further discussion. Here, we take up the proposed changing of the deferral period to 1 year (ie, MSM who have been sexually abstinent for at least 1 year before donating). The principal reasons for *not* making this change to the current donor deferral policy are as follows.

First, risk estimations in published studies show some very low incremental risk of additional units of infected blood entering the system, if MSM deferral periods were to be changed to 1 year (see further the discussion in the following section on the second option); therefore, this proposal does not pass the risk hurdle. Second, subsequent to any such policy change, all of the incremental risk would be borne by a single group, namely, those who require transfusions of blood for urgent medical reasons. Third, there is no reasonable justification for acceding to *any* increased avoidable risk of life-threatening illness to blood recipients.

Based on these considerations, it can be said that there is no reasonable way to balance the increased risk of illness to blood recipients on the one hand against the benefit to an entirely different set of persons on the other (viz, reducing the possible stigma imposed on male homosexuals by the current policy). Furthermore, there is no reasonable way to balance the increased risk of illness to blood recipients on the one hand against the general benefit to Canadian society as a whole from reducing the apparent stigma imposed on another identifiable set of persons by the current policy.

#### *Discussion: First Option*

Changing the existing MSM donor deferral policy to a 1-year period would be, in effect, a “rebalancing” of the existing, net risk-benefit calculus between 2 quite different sets of persons within Canadian society: the set of those who are, in any one period, the recipients of donated blood for health reasons, on the one hand, and the set of all men who have had sex with other men, even one time, since 1977, on the other. The result of this rebalancing would be as follows: (1) for recipients of blood, there is a small net increase in risk, with no increase in benefit (because there is no

deficiency in the supply of blood); (2) both for prospective MSM blood donors, and by extension for all homosexual men, there is a benefit in possibly reducing a social stigma, without any corresponding incremental risk.

The hypothetical benefit to homosexual men above may also be called a reduced risk of stigma, and when formulated in this way, one can see that changing the MSM donor rule to achieve this purpose would be, in effect, a covert risk transfer, that is, a transfer of risk from male homosexuals to recipients of blood. As stated above, we agree that reducing the stigma associated with homosexuality is an incremental social good, but we also maintain that it is a good that more properly should be achieved in some other way rather than through the specific change to blood donor policy under discussion here.

Thus, in this case, the possible benefit to one set of persons can only be obtained by imposing an increase in risk upon an entirely different set. Moreover, the benefit in question is of a qualitatively different kind from that of the risk; the 2 are incommensurable. It would be a violation of very important ethical principles to create such a benefit for the one by imposing a cost of this kind on the other. Moreover, there is another entirely different set of persons which would be a very small elevated risk under this policy change, namely, blood services employees (risks of needle-stick injuries and blood splashes). Thus, there would be a second type of covert risk transfer.

In saying this, we do not dispute the charge that the current policy is *prima facie* discriminatory. We also do not dispute the fact that the deferral period has the appearance of being arbitrary because what was once a deferral relating to specific behaviors for 10 years has now become one of 30 years. Moreover, it is conceded that the huge advances in testing regimes during this period have changed the risk profile of donated blood.

On the other hand, the existing policy was originally adopted for good and sufficient reasons, based on urgent health protection objectives. In the intervening years, many changes and improvements have been made in the combination of donor deferral policy and testing regimes; the net result is that the risk of TTI has dropped considerably in the 20 years between 1987 and 2007. At this point, the decisive question is whether the remaining RR at this time is so small that some very low

additional risk to blood recipients, resulting from a change to MSM donor deferral policy, could be regarded as acceptable. In view of the fact that receiving blood for health reasons is an involuntary risk, incurred by individuals because of medical necessity, it is difficult to understand how the imposition of additional risk could be justified.

The episode of transfusion-transmitted HIV and hepatitis C in Canada was rightly regarded by those who suffered the severe effects as a betrayal of their trust in the blood system. Organizations representing regular recipients of blood products are on record as strongly opposing any change to MSM donor deferral policy that represents any avoidable increase in RR of TTI. In such circumstances, were the change to be imposed on blood recipients without their consent, it would almost certainly be interpreted by them as a second betrayal of trust.

#### *Conclusion—First Option*

Taken by itself, and in the absence of any other changes to donor deferral policy, a shortening of the current MSM donor deferral period to 1 year would constitute a covert and unacceptable risk transfer *from* the male homosexual and bisexual community *to* the community of blood recipients. Such a transfer would be both unreasonable and unfair. The blood system can acknowledge the unfairness of the apparent stigma associated with homosexuality, but this is a broader social issue and must be dealt with in other arenas; responsibility for dealing with this broader issue cannot be imposed on the blood system.

#### *Second Option: Change to a 5-Year MSM Donor Deferral Policy*

We refer here to a set of hypothetical blood donors who would report no MSM activity for a period of 5 years before donation. Judged on the scientific studies completed to date, there is no clear evidence of an increased risk of TTI with a MSM deferral period of 5 years or more (although a very small increase in risk cannot be ruled out). In addition, a 5-year MSM deferral period represents a reasonable time frame, according to expert opinion, within which to detect any novel pathogens that may be especially relevant to the MSM group (recent novel

pathogens, including vCJD and West Nile virus, are not of this kind).<sup>§</sup> Therefore, this proposal appears to pass the risk hurdle.

There are also reasons in ethics and law for changing the policy in accordance with the most up-to-date risk estimations in that not to do so might be considered to be “unreasonably” discriminatory. Furthermore, there could be significant long-term benefits, resulting from this policy change, both to blood recipients and to Canadian society in general, in that there is a potential for a small, but nontrivial, increase in the repeat blood donor cohort in the short term. And, in the longer term, removing what is perceived, by increasing numbers of people, as an unreasonable discriminatory barrier to donation, may increase the level of overall public confidence and willingness to participate in the blood system. Thus, this policy change, if it is adequately supported by the current risk estimations, could be perceived as being appropriate in the light of changing public values and attitudes, as well as legal frameworks, with respect to homosexuality and the remaining stigma associated with it.

*Analysis: “Passing the Risk Hurdle”*

The decisive question is, do we have any clear evidence that there would be an increase in RR if the deferral period for MSM donors were to be moved from the current 30-year period to a 5-year exclusion period?

The actual level of RR is difficult to determine precisely. However, current measures to reduce the risk of transfusion transmitted infection, including

the use of sensitive chemiluminescent serological tests coupled with nucleic acid amplification testing, have resulted in enhanced safety of the Canadian blood supply. Chiavetta et al<sup>34</sup> estimated the transmission rate for HIV to be about 1 in 10 million donations in Canada in the year 2000. This is similar to estimates reported in the United Kingdom and lower than estimates from the United States.<sup>35-37</sup> More recent findings by O’Brien et al<sup>8</sup>, based on a comparison of predicted vs actual contaminated units, suggest a slightly higher risk (1 in 7.8 million) than that estimated by Chiavetta. However, within the limits of uncertainty, these 2 estimates are indistinguishable.

Germain et al<sup>19</sup> calculated the incremental risk if a 1-year donor deferral policy for MSM would be implemented. They estimated 1 additional HIV-contaminated unit for every 136 000 new MSM donations, representing an overall 8% increase in HIV risk (a change from 1:1 million to 1:925 000 U). Soldan and Sinka<sup>38</sup> estimated the increased risk of a 1-year donor deferral policy to be approximately 60% in the United Kingdom. These results suggest that a revised policy for MSM donors with a less than 5-year deferral period may be expected to lead to some increased risk of transfusion-transmitted HIV infection.

Using REDS data, Sanchez et al<sup>5</sup> recently estimated that the prevalence of reactive infectious screening tests among MSM donors who reported the practice within the last year to be 5-fold higher than among non-MSM donors in the United States. Although a similar increase in prevalence was seen among MSM donors who reported the practice within the last 1 to 5 years, there was no significant difference for donors who reported the practice more than 5 years ago. Sanchez et al came to the following conclusions: “unlike men with recent male-to-male sex experiences, screening test results for donors who last engaged in male-to-male sex more than 5 years ago were comparable with those of male donors not reporting male-to-male sex, although the prevalence of UDRs was significantly higher (2-6 times higher).” At the 2006 meeting of the FDA’s Blood Products Advisory Committee, Andrew Dayton commented, “For MSMs who have abstained for more than 5 years, they basically had an odds ratio of 1, suggesting that there may be something identifiable about a 5-year abstention that identifies a safe subset.”<sup>26</sup>

<sup>§</sup> It has been suggested that the case of human herpesvirus 8 may be relevant here, since a period of 20 years elapsed between identification of the virus (1986) and the first “compelling evidence” of its transmissibility in blood (2006).<sup>31-33</sup> There are 4 separate issues at stake here: (1) how long it takes for scientists to identify a previously unrecognized infectious agent; (2) whether and in what way this new agent is capable of causing harm to health (“novel pathogen”); (3) whether the new agent is transmissible in blood and may lead to transfusion-acquired disease; and (4) with respect to the specific topic of discussion in this article, whether the nature of the new agent and its transmissibility in blood is relevant to the policy of MSM donor deferral. All of these considerations, taken together, do not appear to suggest that the case of human herpesvirus 8 would cause us to qualify the statement in the text about the reasonableness of a 5-year “precautionary deferral” to take into account the matter of novel pathogens.

Both the screening and testing regimens now in place for known pathogens, as well as the enhanced epidemiological surveillance for new and emerging pathogens, provide robust barriers against the chance that infectious agents will enter the blood supply. The RRs now present in the blood supply are extremely low (RRs of TTI are already so low in Canada that they cannot be measured directly but can only be estimated using mathematical models. See further the Appendix [What is Risk Estimation?]) Although there is no clear evidence of an increased risk with a deferral period of 5 years or more, a small increase in risk cannot be ruled out. However, any incremental risk due to changing the MSM deferral period to 5 years could very well be so small as to have, in a statistical sense, no measurable impact on the current level of risk.

Therefore, would the policy change discussed here (changing the MSM deferral period to 5 years) pass the risk hurdle successfully? In the end, this is a matter of judgment, that is, a matter on which reasonable people may disagree. What we can say with some assurance is that, at the very least, it may provisionally pass the risk hurdle.\*\* It may be regarded as being “within the ballpark” for discussion. As a result, it is fair to ask if there may be other types of benefits that are likely to flow from making this policy change. These potential benefits are of 2 types: (1) a utilitarian benefit, namely, the possible impact on the size of the future donor pool and (2) a non-utilitarian benefit, namely, the potential social benefit attendant upon reducing the perceived stigma associated with homosexuality.

#### *The Future Donor Pool*

Some blood collection agencies, notably in the United States, have identified a concern that many persons among the next generation of prospective donors might be unwilling to donate because of a belief that current policy discriminates unfairly against MSM. Based on existing evidence, it does

not seem possible to estimate either how likely it is that this attitude will be a factor in future behavior or how large the pool of potential donors who fail to volunteer could be. What one can say is that the trajectory of events, especially the growing protests on US and Canadian college campuses, appears to be strengthening this concern.

Although Canadians are, on the whole, less likely to mount protests and legal challenges than their US counterparts, there is more than enough reason to be concerned here as well. This is because, although the Canadian currents are more subdued, they may well run stronger and deeper than the US trends. The best indicator is, of course, the state of the homosexual marriage issue as between the 2 countries. Although the individual rights-based legal system in the United States would seem to give the advantage to that country, the social consensus in favor of this practice—especially among young people—developed more quickly and solidified more quickly (into the “let’s move on, it’s no longer an issue for us” phase), in Canada. This is consistent with the more general values of tolerance, avoidance of “moralizing” about health issues (abortion is the best example), respect for multicultural diversity, and fairness, all of which have strong bases across the entire Canadian population.<sup>39</sup>

In addition, it is just these types of values that are held most strongly by younger people. This is why the concern for what might happen in the next generation, including the willingness to donate blood, is a legitimate and appropriate one for blood collection agencies and governments. This is a matter of utilitarian benefit: everyone who might need blood at some point in time in the future has an interest in the outcome.

The prevailing MSM donor deferral policy can only survive the test of these Canadian values so long as the “risk hurdle” appears to represent an unchallengeable trump card in the argument. Indeed, this does appear to be the case up to now. How long it will remain so is open to question.

#### *Perception of Stigma*

There are very few rules involving noncriminal personal choices in our society that carry, as a penalty for violating them, a lifetime ban on being able to perform one of the noblest of acts, namely, donating blood freely and without recompense. That the 30-year rule (and counting) should seem to

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\*\* As the foregoing discussion seeks to point out, what is at issue here is a double risk hurdle: first, residual risk for currently known infectious diseases of concern; second, the risk of encountering novel pathogens. The conclusion, namely, that the 5-year exclusion period for MSM appears to “provisionally” pass the risk hurdle, applies to both.

many to be unjust and blatantly discriminatory should occasion little surprise: is it conceivable that someone infected with HIV in 1977, because of a single act involving MSM, and still infected today, would be undiagnosed, would show no symptoms of AIDS and, in fact, would be still alive without the help of antiretroviral drug therapies? It seems impossible that such could be the case (although there may be rare exceptions). And then we could go on to ask: what if the year were 1978? 1979? And so forth.

The charge (or imputation) of engaging in immoral behavior—and the social stigma that almost always accompanies it—is a powerful and dangerous remedy for deviance in human societies. All too often in human history, murder and mayhem have been its accompaniment. The social values that counteract it—tolerance, respect for others, the individual rights philosophy, privacy—are still frail almost everywhere on earth and, even in our own country, are not always secure.

Here, we accept the premise that these social values are legitimate and that all individuals in society are better off where they are respected. We regard them as intrinsic goods that are intended to protect the dignity and worth of every person; they are among the preconditions for the maintenance of a good society and for individual self-fulfillment. We think that society and its agencies, including the blood collection system, should be always on guard against adopting rules that embody any kind of unreasonable discrimination, however unintentional, against allegedly deviant behaviors. The 30-year rule appears to fall into this category, and there are good reasons for thinking it should be changed (one of the strongest ethical imperatives for changing the current policy exists with reference to a specific social group, viz, individuals who have a remote history of sexual abuse).

This perspective compels us to conclude that, with respect to MSM deferral for blood donation, *we ought to accept no longer a period of deferral than what the risk hurdle can clearly support*, using an evidence-based argument with a little help from the precautionary principle. We should “avoid trying to be more precautionary than our knowledge enables us to be.”<sup>10</sup>

Earlier, we cited the 2004 Ontario Men’s Survey<sup>28</sup> to support the view that MSM remains a relatively high-risk activity, in general, and by comparison with what we know about heterosexual

behavior. This justifies a choice of a 5-year deferral period, as opposed to a 1-year period, because of a reasonable apprehension about the possibility of the emergence of new pathogens, undetectable at first, which may circulate in blood and may, such as HIV, be introduced and become established first in the male homosexual community.

We accept the view that current health surveillance methods make it unlikely that such a new pathogen would remain undetected for very long. We accept the views of qualified experts that a 5-year deferral period may provide sufficient protection against this threat and, thus, may be an appropriate precautionary barrier against the possibility of a new round of TTI.

#### *Conclusion—Second Option*

Thus, if it can be fairly said that there is no clear evidence of an increase in RR, then moving the MSM deferral period deserves further consideration by those who regulate and administer the blood collection system in Canada. It is possible that it may be determined, after such further consideration, which might include a wide public and stakeholder discussion, that changing the MSM deferral policy to a 5-year, or possibly 10-year, exclusion period would be regarded as satisfying the criteria for risk tolerance or risk acceptability in Canada.

If this were to take place, such a change in MSM deferral policy could be said to give rise to at least some of the attributes of “Pareto optimality” (also known as a “win-win” solution): considered over a period that stretches into the near future, the members of each of the 2 social sets of persons most immediately affected by these issues (MSM, blood recipients) would be better off, as would Canadian society as a whole, and no individual or group would be worse off.

We acknowledge that this is quite obviously a matter of judgment. First, we arrive at the conclusion that, on balance, blood recipients will be at least no worse off because of this change and may in fact be better off because (1) there is no clear evidence of increased risk and (2) there would be a lower risk that perception of unreasonable discrimination would result in a decrease in the pool of available healthy donors over the long term.

Second, we arrive at the conclusion that male homosexuals and bisexuals would be better off because the new exclusion period (5 or 10 years

sexually abstinent) is based squarely—and exclusively—on the results of a careful review of the scientific evidence, which is made up of studies of disease prevalence and of up-to-date estimations of the risks of infectious diseases in donated blood. Similarly, we argued against any shorter period of exclusion on the grounds that those other options did not satisfy either the demands of the risk hurdle or the ethical principles that ought to guide the formation of risk management policy.

#### GENERAL CONCLUSIONS

The 2 fundamental principles, relating to donor deferral, according to which the current system of blood safety is administered are: (1) the primary basis for donor deferral rests on the assessment and estimation of the various types of risks associated with donated blood; (2) any changes to existing policies on donor deferral must result in an improved or equivalent level of safety by comparison to what now exists. These principles apply equally to all donors and donor behaviors, including MSM. They are well supported both by established risk management procedures and by important ethical considerations.<sup>††</sup>

The specific risk management issues considered in this article, in the context of the 2 principles stated above, are the following: (a) What is the basis in risk estimation for the current MSM donor deferral policy, taking into account the MSM risk profile? (b) Based on risk estimation, what would be the net impact on RR, for TTI, if the lifetime MSM deferral period were to be changed to some specified shorter period?

The foregoing discussion suggests the following summary response to these 2 questions. The risk estimation for the current MSM deferral policy is arrived at in 2 steps. Step 1 is a calculation derived from 2 primary sources of evidence: (a) epidemiological data for extended periods on HIV prevalence and incidence rates in male homosexuals and a comparison of those rates with rates for other demographic groups and (b) data from behavioral studies of MSM indicating persistence

of certain types of high-risk sexual activities. The inference drawn from this data is that there would be a higher risk of blood infected with HIV and HBV and a comparatively lower incremental risk for HCV, from donations of MSM, by comparison with the current risk profile of both repeat and first-time donors.

Step 2 calculates, using 1 or more methods, the estimated RR after screening and testing. The estimation of RR, therefore, takes into account the possibility of one or more types of errors, such as (i) window period, (ii) false-negative results, and (iii) quarantine release of an infected unit (operational error).

Residual risk refers to various ways of estimating the risk that remains after the various types of protective barriers have been used. Using the window period method, RRs in Canada are currently estimated as follows: HIV, 1 in 7.8 million donations; HCV, 1 in 2.3 million; HBV, 1 in 153 000. To be sure, there are uncertainty ranges in these estimations, but there is also clear evidence—based on the true-positive results in tests—that there are a very small number of infectious donations which can escape the screening process and which are subsequently detected in testing. Because no technology or operational procedure performs perfectly at all times, it may be fairly concluded that, whatever the uncertainties, these RRs, although very small, are nonzero.

Changing the current MSM donor deferral policy in either of 2 ways—to no deferral at all or to a 12-month deferral—is estimated to increase the RR of TTI for blood recipients. To accept a change of either type would be a clear violation of the following ethical principles<sup>23</sup>: (1) nonmaleficence: there is a reasonable chance that harm could be done; (2) beneficence: any benefits do not outweigh the incremental risks; (3) justice: these changes would not be equitable, as between 2 social groups; and (4) fairness: these changes fail the test of fairness because a benefit to one specific set of persons would be purchased at the cost of transferring incremental risk to another, quite different set.

Based on the evidence and risk estimations reviewed in this article, it is not possible to state with assurance that changing the MSM deferral period to 5 years (sexually abstinent  $\geq 5$  years) would result in a measurable, incremental risk of TTI. The following points are relevant: (a) in the

<sup>††</sup> Many of the risk management principles, discussed in this article, for donor deferral policies to reduce the risk of transmission of HIV and other infectious diseases via blood transfusions may also be relevant for other risks, including prion diseases.<sup>40,41</sup>

2 published studies, normally cited during discussions about changing MSM deferral policy, Germain et al and Soldan only calculate RR with respect to a hypothetical 12-month deferral; (b) the only published study of 5-year deferral (Sanchez et al<sup>5</sup>) suggests that there may be no incremental risk in this case; (c) a 5-year deferral period may provide sufficient protection against the risk associated with new and emerging pathogens, although a further review of the consensus of expert opinion on this point may be needed. Quite obviously, using a 10-year, rather than a 5-year, MSM exclusion period would provide an additional margin of safety.

If it were to be agreed that, for example, change to either a 10- or 5-year deferral period would pass the “risk hurdle,” as defined above, then it would be reasonable to consider the possible, longer-term social benefits that may result from making such a change, including the lower risk that perceptions of unreasonable discrimination may compromise the continued availability of a sufficient pool of healthy blood donors in Canada. In addition, the change to either a 10- or 5-year exclusion period would provide a basis for collecting actual evidence of any changes to RR, as opposed to relying solely on the calculation of estimated risks.

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#### APPENDIX. WHAT IS RISK ESTIMATION?

Risk is the combined product of the expected frequency of an event as well as the expected consequences, in terms of harm, that will occur if the event takes place. Each of the 2 dimensions of risk can be framed in terms of either quantitative or qualitative expressions, or both. For example, frequency can be expressed as chance, say, one in a thousand or one in a million, and consequences can be formulated as deaths, injuries, or property damage, which then can be converted into economic terms, such as dollar costs (eg, in the form of insurance payouts).

**Table 2. Risk Matrix**

Consequence Frequency	Catastrophic	Critical	Marginal	Negligible
Moderate				
Low				
Very Low				
Minimal				
Negligible				

For the purposes of effective risk communication, qualitative expressions are often preferable. Table 2 gives an illustrative list of such expressions for both terms, and—in the form of a matrix—allows people to see how frequency and consequence can be combined into an overall judgment about relative risk.

However, when risk is expressed in quantitative terms, risk estimates may be expressed not as single numerical values but as ranges of values. This practice reflects that fact that risk estimates, by their very nature, are subject to several uncertainties.<sup>42</sup>

As noted above, the current expert estimates of transfusion-transmitted blood risks are normally framed in quantitative terms. These estimates are “RRs,” that is, risks that remain after safeguards such as donor screening and testing have been applied. For the 3 most serious infectious diseases, the most recent figures are the following: HIV, 1 in 7.8 million; HCV, 1 in 2.3 million; HBV, 1 in 153 000. For HIV, there is 1 chance in 7.8 million that a unit of blood transfused to a blood recipient will be infected with this virus.

However, these numbers alone do not tell the whole story. The expert estimations are usually accompanied by “confidence intervals” (CIs), one of the ways in which the range of uncertainty associated with a risk estimate is conventionally expressed. To illustrate this point, consider the prevalence of HIV in the Canadian population as a whole referred to earlier. At the end of 2005, it is estimated that there were about 58 000 Canadians living with HIV/AIDS, with an uncertainty range of 48 000 to 68 000. These estimates are shown at the extreme right edge of the diagram in Figure 1.

How are these figures determined? In this case, the experts (epidemiologists) start with reports of diagnoses made by physicians across Canada. HIV/AIDS is a “notifiable” disease in Canada, that is, a “disease deemed of sufficient importance to public health to require that its occurrence be reported to public health officials.” Estimation of HIV risk

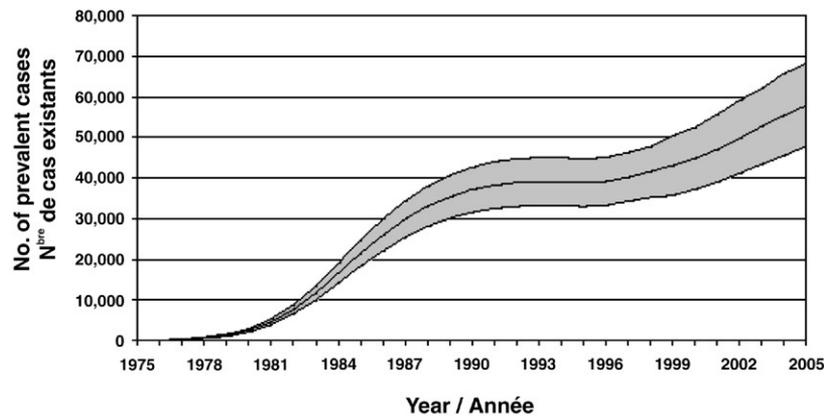


Fig 1. Estimated number of prevalent HIV infections in Canada, including range of uncertainty, by year (adapted from *Canada Communicable Disease Report* 32:165-175, 2006).

starts with a compilation of actual cases, as reported by physicians. However, this may not represent the “true prevalence” of the disease, for several reasons—for example, those living with HIV, a disease with a long incubation period, who are not yet symptomatic or diagnosed will not be included in this compilation; as a consequence, the actual prevalence may be higher.

Because of these and other sources of uncertainty, epidemiologists must use a variety of statistical techniques to estimate the true prevalence; the specific techniques that are used are referred to in technical publications.<sup>27</sup> This is where the CI is relevant: how certain can we be that the “true” number of cases has been indicated? In our example, the range of uncertainty (48 000-68 000) is the 95% CI, meaning, that we are 95% confident that the “true” number is neither higher than 68 000 nor lower than 48 000 (the numbers have been rounded to the nearest 1000; because the CI is not specified, it is assumed to be 95%.<sup>27</sup> The more confident we wish to be, the wider will be the range of uncertainty; eg, if we thought we wanted to be 99% certain about our result, the range of uncertainty would be wider than that stated here). Another way of stating this point is to say that we can be a great deal more confident that the true number of people living with HIV/AIDS in Canada is somewhere in the range between 48 000 and 68 000 than we can be that the number is precisely 57 780.

With this background on uncertainties in risk estimation, we now return to the RR number for donated blood in Canada, using just the HIV

number: our best estimate is that there is a 1-in-7.8 million chance that a unit of blood will be infected with HIV. The 95% CI gives us the following range of uncertainty: the chance in Canada that, at the time of transfusion, a unit of blood will be infected with HIV is about 1 in 20 million at the lower end and about 1 in 3.6 million at the upper.<sup>8</sup> We can be very much more confident that the true RR number is somewhere between 1 in 3.6 million and 1 in 20 million than we can be that the number is precisely 1 in 7.8 million.

Where estimates of risk are given for risks that are known to be very low, and especially when 2 estimates are compared, there is an inherent difficulty in giving a simple answer to the question as to whether one represents an incremental risk in comparison with the other. This point is illustrated in [Table 3](#), which gives side-by-side estimates of the RRs per million donations, for HIV in donated blood, calculated by 2 different methods.<sup>8</sup>

Table 3. Residual Risk and Uncertainty Range Calculated by 2 Different Methods

Method	RR per million	Uncertainty range (95% CI)
A. Incidence/ window period	0.13 (1 in 7.8 million)	0.28-0.05 (1 in 3.6 million to 1 in 20 million)
B. NAT-reactive, antibody-negative	0.20 (1 in 5 million)	1.04-0.03 (1 in 1 million to 1 in 33 million)

NOTE. Adapted from *Transfusion* 47:316-325, 2007.

If one looks just as the single risk number itself, it appears that method B yields a “higher” risk than does method A. However, when the uncertainty ranges are specified, it can be noted that the range under Method A fits within the range under method B: the 2 ranges overlap. Therefore, within the limits of uncertainty about these 2 estimates, it is difficult to conclude which risk is higher or lower than the other.

What is the “bottom line” here? Currently, the RRs for transfusion-transmitted infectious diseases in Canada are extremely low. As the risk becomes smaller and smaller, incremental risk becomes increasingly difficult to estimate. In a passage quoted earlier, it was suggested that, in any particular case where very low risks are concerned, we should not try to be more precise than the available evidence allows us to be.<sup>10</sup>

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