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Moving from a lifetime ban from donating blood on men who have sex with men

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May 2016

Preamble

- It is entirely defensible to impose a time-based ban on donating blood for transfusion after sexual encounters that carry a risk of becoming infected with transfusion-transmissible disease. The length of time of that deferral period must be sufficient to address any risk to patients receiving blood.
- It cannot be shown that the ***lifelong*** ban was ever necessary for prevention of HIV transmission by blood transfusion. Such data as are available indicate that it can be reduced to a shorter ban without increasing the risk of HIV transmission by transfusion.
- HIV transmission took place in Ireland from MSM prior to testing; a one year ban in Ireland at that time would have likely been effective, or at least as effective as a lifelong ban – if a similar infection were to arise again in the future a one year ban would likely perform equally well as a lifelong one.
- This in turn raises the question as to what the mechanism of current blood safety from emerging disease risk associated with sexual activity really is; understanding that mechanism in detail may be a more important step than anything else, and relying on an unnecessary or ineffective measure may be counterproductive.

1. Introduction

In January 2015 the IBTS presented a paper to the Minister of Health that outlined the options for a change in the lifelong ban on blood donation from men who have sex with men (MSM) (Appendix 1). This in turn was in reply to a request from the preceding minister to review the policy. In April 2016 the IBTS conducted an international colloquium on the MSM blood ban to progress the matter (Appendix 2). Key individuals from 7 countries (Australia, Canada, France, Germany, Spain, United Kingdom & United States) who have changed or are changing the ban from a lifetime one to a shorter deferral period, or a policy that avoids any specific questions about sex between MSM, presented the rationale behind their changes in policy, and the experience to date in their communities following a change of policy. (Appendix 3 gives links to the supporting literature from countries where formal processes to review the policy were conducted.) At the outset of the conference, the IBTS looked for countries to present and participate where the policy of a lifelong ban had not been changed, and where it was understood that this not changing was a recently-defined policy decision based on some systematic analysis. Germany was invited on that basis. However we were informed just prior to the conference that the German blood authorities were in the process of review with a view to a change. This was the basis on which they participated. In

addition delegates from Italy and New Zealand were invited, but were unable to attend; the New Zealand Blood Service generously shared detailed data on their experience following a change from a 10 year ban to a five year ban in 2008. Data from Italy were available in the published literature.

Beginning in 1983 the IBTS took measures to defer MSM from donating blood. This reflected much of Western opinion around that time – HIV was far more evident among gay men at that time, and was known to be transmitted by transfusion from gay men. The early measures consisted of information leaflets, and did not include either specific questions or donor interviews, and did not specify that men who have had oral or anal sex with other men, ever, even once, even with a condom should not donate, as subsequently became the explicit policy. HIV was also known in the 1980s to be transmitted through sex with sex workers, and men who had sex with female sex workers were also banned from donating blood, though for one year only. The efficacy of the ban has never been seriously questioned – there was clear evidence of a reduction in transmissions of HIV from blood transfusions in San Francisco after the ban was introduced [1], and this is generally accepted as evidence that it was necessary and effective. Whether a lifelong ban was more effective than a shorter deferral period has never been formally tested, and in any event any evidence that a lifetime ban was effective before testing was available could not easily be extrapolated to the situation after the advent of testing. A precautionary approach might dictate that the policy of a lifetime deferral for MSM is not broken now and therefore not in need of being fixed – the ban is in place, the incidence of HIV in the donor population is very low, there is no problem. It will never be possible to apply comparisons in precautionary weight, and any suggestion that the ban in place now might damage future blood supplies and future patients cannot be used to argue for removing the ban on a precautionary basis. Nevertheless introducing or maintaining a measure intended to reduce risk to some, that results in increased risk to others may be unethical and would require additional measures to protect those others, as well as evidence that the original measure is essential for the purposes intended.

An argument for removing or replacing the ban must be based on

1. Evidence that its removal does not worsen the reason it was introduced for – i.e. evidence that a shorter ban is as effective as a lifelong one in addressing the risk of HIV transmission.
2. Evidence that removing or replacing the ban does not otherwise expose patients to other risks ***that they would not otherwise be exposed to.***
3. A compelling reason for changing the ban – i.e. the potential realizable gain should outweigh the residual uncertainty.

This last point is of a different order to the two above:

It is possible to argue that the evidence in favour of a shorter ban is as strong as that in favour of a longer one;

It is possible to argue from the available evidence that a lifelong ban on MSM was never essential and is inadequate and ineffective on its own to address future risk. If a lifelong ban were necessary on probabilistic microbiological grounds, then a similar lifelong ban would be necessary for men who have sex with sex workers, women who have sex with men who have sex with sex workers, women who have sex with MSM, and so forth; without these additions an MSM lifelong ban cannot be effective on its own. It will not solve the problem it sets out to solve, and cannot be shown to prevent it. It might have a chance of delaying spread of an emerging infection through blood transfusion in Ireland – however it would be impossible to put any firm figure on such a possibility, particularly since Ireland would probably be one of very few countries with a lifetime ban. Ireland does deploy an effective measure against the spread of emerging unknown transfusion-transmissible infections: the non-acceptance of donations from individuals who have themselves been transfused. This policy addresses emerging risk from any source. Though it cannot be used in justification for removing any other strategy that would likely be effective, it does mitigate the risk around emerging infections. This is not a widely used strategy – France introduced it in 1997 to offset the risk of transfusion transmitted vCJD, followed by ourselves, and later the UK and the Netherlands.

Nevertheless it will always be very difficult or impossible to show that removing the lifelong ban or replacing it will make patient safety better, so that the reason for removing it, even if there are no sound reasons for keeping it, lies outside the strict realm of patient safety, at least in regard to safety of current recipients of blood transfusion.

For this reason while this paper discusses the uncertainty or risk in removing or replacing the ban, and what the future benefits to the mission of the IBTS might be, it must be left to some valid societal process to decide on the balance between the quantum of residual uncertainty and the value to the Irish people. The Board of the IBTS may constitute such a process – it is clearly appointed in the people's name,

and is accountable under the democratic process, and may be empowered to act as a governmental agency in the overall public interest.

2. Is there evidence that removing the ban does not worsen the reason it was introduced for – i.e. is there evidence that a shorter ban is as effective as a lifelong one in addressing the risk of HIV transmission?

In strict terms, no, there is *no direct evidence* that this is the case; instead evidence can be presented that *changing the ban from a long one to a shorter one* did not result in an increased risk of HIV transmission from blood transfusion. Data are available from four countries where the lifetime ban (a ten year abstinence ban in the case of New Zealand) introduced during the 1980s was subsequently changed to a shorter ban – one year in Australia, and the United Kingdom, 5 years in Canada and New Zealand. Between them, the four countries presented data on detected infectious disease markers in donors from a total of approximately 10,000,000 donations from before the period the change was made compared to a similar number of donations from the period after the change was made. As shown in Table 1 below there was no increase in the number of infectious marker-positive donations in any of these countries before and after the ban was altered.

Table 1 (from S. Marley, Select Statistics, Exeter, UK.)

Country	MSM Rules Change	Timeframe (before & after)	Data available	Pre Rate	Post Rate	Incidence Rate Ratio (IRR)	IRR 95% confidence Interval (CI)	p-value	Notes
Australia	Lifetime ban to 12 month deferral	±5 years	HIV-positive donations	24/4,025,571 (5.96 per million)	24/4,964,628 (4.83 per million)	0.811	0.459 to 1.433	0.4676	All "post" period HIV-positive donations non-compliant
UK	Lifetime ban to 12 month deferral	±3 years	Male – infected donations (HIV, Hep B, Hep C, HTLV & syphilis)	875/4,000,000 (93.75 per million)	295/4,000,000 (73.75 per million)	0.787	0.675 to 0.916	0.0020	
Canada	Lifetime ban to 5 year deferral	±2 years	HIV-positive donations	Not specified, reported as no change.	6/1,800,000 (3.33 per million)	,	,	,	Proposal to federal regulator Health Canada to reduce the MSM deferral period from 5 years to one year
New Zealand	10 year deferral to 5 year deferral	±5 years	HIV-positive donations	3/301,563 (9.95 per million)	1/284,120 (3.52 per million)	0.354	0.0425 to 2.769	0.3682	
			HBV incidence in returning donors	4/68,445 (58.44 per million)	1/52,352 (19.10 per million)	0.327	0.0167 to 2.209	0.3171	

It can be concluded that these countries have not seen evidence to date that changing the ban has increased the exposure to undetectable window period risk for HIV infection from blood transfusion for their patients. In the UK there is a decrease in overall incidence of infectious disease markers in male donors that exceeds the $p< 0.05$ threshold; whether this decrease can be attributed to the change in deferral policy cannot be determined, but it is encouraging that the observed change was in the direction of decreased incidence of disease. Nevertheless it cannot be concluded from these data that a similar benign or even beneficial result would occur in Ireland if we were to do the same. That would be cargo cult thinking [2]: doing what looks to be the same as others and expecting similar results without really understanding the cause and effect relationship. However the data do allow us to conclude that changing the ban can result in benign outcomes in similar cultures of blood transfusion and societal tolerance and mores to our own, and that we cannot easily defend continuing the ban on the basis that it would be dangerous to lift it – we have no data indicating that to be the case.

Instead the data can reasonably be interpreted as indicating that if we remove the lifelong ban and replace it with a shorter abstinence ban we could expect to see no difference in HIV risk. This is provided that we do so with care to communicate our intentions and rationale, with an effective mechanism to capture data that would indicate an unintended change for the worse in terms of disease risk, and provided we ensure that the measure could be reversed if necessary. (See Sections 8 & 9).

The observed effect of modulating the ban in the four countries above suggests that a lifelong ban does not *per se* provide a significant degree of transfusion safety over and above other measures currently in place. This relies on a broadly untested assumption, that the risk of an undetectable window period infection is proportionate to the rate of detection of infection in the donor population. There are several reasons why this assumption may not be true, and since it is the cornerstone of argument in favour of lifting the ban (there is no observable increase in detectable HIV infections, therefore there is no likely increase in risk of undetectable window period infections) it is important to explore it.

At its simplest, the assumption that the window period risk is proportionate to the detectable disease marker rate implies that a donor is as likely to present on any given day after they are infected as on any other, so that shortening the window period by improved (more sensitive) testing reduces the risk in proportion to the proportion by which the window period has been reduced. However it is entirely possible that the likelihood that an infected donor will donate on any given day in any given blood transfusion culture ***is not random***, so that they may be more or less likely to

donate in the presence of very recent infection than on other occasions [3]. Nor is it possible to determine whether donors are more or less likely to donate closer to risk activity, now or in the future. Nor is it possible to determine in advance whether or what seemingly unrelated cultural change might affect that. For example a misconception that the Blood Transfusion Service testing was cheaper, less intrusive and more sensitive (or quicker – both for access and results) than that available elsewhere, might drive at-risk newly infected donors to the BTS as a testing service. That this effect is real is certainly consistent with the Spanish data discussed in Section 6. It is also possible that this might disproportionately affect heterosexual donors in apparently secure monogamous relationships who sought anonymity and discretion. The net effect of this may be that shortening the window period from short intervals to very short intervals may have an exaggerated effect on safety, and that overall infection marker incidence or prevalence rates in donors do not extrapolate linearly to residual risk. NAT-only positive rates may be a closer estimate to the risk demographic. This would suggest that the data around infectious disease marker rates before and after changing the ban are of limited value – they do not map the real risk underlying undetectable infectious disease markers, which lies elsewhere – the likelihood that a donor who engages in activity that puts him or her at risk of getting a transfusion transmissible infection – in the present case HIV – will present to donate blood very close to the time of infection. This by definition is detectable only in finding positive markers in previous donors presenting again. One effect of this (Figure 1) is that by far the biggest driver of residual risk is the degree of voluntariness in blood donation – since the lifetime ban does not of itself affect that, changing it would not be expected to either. Only if it had an effect on voluntariness would it affect HIV risk, provided that there was a clear understanding of risk activity, and reasonable deferral periods in place and understood.

So while the accumulated data from the four countries above are encouraging, they may be missing any real effect, and they cannot be extrapolated to say that we would see the same effect, *since they may well simply show that the lifelong ban or otherwise was not important, and that the change was simply not accompanied by a change in the degree of voluntariness in the donation process in those countries.* By the same token, if we do not change the donor demographics in a similar way we should expect to see the same effect. However if we wish to measure any effect of changing the ban on safety, measuring incident or prevalent STI infections will unlikely be sufficiently sensitive. Instead a set of surrogate markers and testable supports for voluntariness (and perhaps associated non-compliance) needs to be developed and deployed.

Figure 1

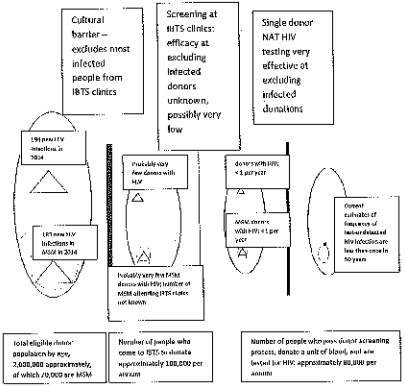

Figure 1. There are approximately 2,000,000 people in Ireland who could come to donate blood. Of these only approximately 100,000 (1 in 20) come in any given year. 80% pass the screening process, 20% do not. We have a very good estimate of the HIV status of those who pass the screening process – they are tested for infections. Less than 1 in 100,000 are positive for HIV. We do not know the HIV status of those who come to donate but who do not progress beyond the screening process. It is likely to be similar to the rate in those who pass through to donation, but we do not know that with any useful degree of certainty. The vast majority of reduction in prevalence of HIV in the population who donate compared to those who do not occurs outside the IBTS: people who put themselves at risk of HIV do not come to donate at IBTS facilities to any significant extent at present (in sharp contrast to Spain for example). The effectiveness of screening out at the IBTS those who do attend (as opposed to testing) and turning them away before a donation is taken is not known and may be low or very low (as it clearly is elsewhere). Thus the effectiveness of screening in achieving the aim of reducing the risk of HIV transmission may be low or very low. Instead the cultural mechanism by which people with HIV, and by inference people with behaviour that puts them at risk of HIV, although largely unstudied and perhaps poorly understood, is likely very

effective in reducing the number of people who test positive for HIV and may provide a significant degree of security against test-undetectable very recent infection. A person who deliberately comes to donate for non-altruistic purposes can easily pass through the cultural and screening filters; only testing has a reasonable chance of detecting the activity. Future work should focus on understanding and protecting this effective barrier rather than on trying to improve the in-clinic screening process.

3. Emerging infections

Blood transfusion provides a microbiological niche that can greatly favour the spread of a class of infections where the disease is unfamiliar or unknown to date, and the incubation period is long in both donors and recipients. HIV, hepatitis B, hepatitis C, vCJD, HTLVI/II comprise these diseases to date over the 70 or so years of modern transfusion systems. Among these only HIV was addressed by a ban on MSM donating blood, so that a lifelong ban on MSM donating was not intended, designed or validated to address the threat of unknown infections in the future, though it might address some. Blood transfusion services need to develop and deploy other strategies to reduce the possibility of emerging infections [4].

The MSM ban can be justified as a defence against emerging sexually transmitted diseases that fit into the category above – unfamiliar or unknown, no available test or surrogate marker, and a long infectious period that is unaccompanied by detectable illness or infection. It is justifiable to use defence measures that are at best only partially effective, but to achieve the intended effect of future blood safety they have to be accompanied by other means at our disposal to reduce the uncertainty around emerging infections. So that if the ban is explicitly addressing emerging infections, then a similar ban would need to be applied to women who have sex with MSM, and to people who have sex in exchange for money or drugs, and to people who have sex with people who have sex with sex workers, on the basis of current knowledge, and in the absence of rigorous analysis of the contribution of each category to the emerging risk. It could also be argued that similar deferral should apply to people with exposure to multiple heterosexual partners within a time period – banning one and not the other will blunt the effect of an MSM deferral on preventing emerging infections. While MSM, particularly younger men, may be more promiscuous as a class, there are 30 times more heterosexuals in the community. And it is impossible to exclude sexual risk entirely – we know that donors present with unsuspected positive markers, albeit rarely, from regular partners. If we accept a degree of uncertainty in one setting it is difficult to justify rejecting the same order of uncertainty in another. So given that we accept donations after one year for women having sex with MSM, or donors having sex in exchange for money or drugs, then it is

inconsistent to base a different policy for MSM on the same considerations of emerging infection risk. Similarly, since we are acting in the light of uncertainty around unknown transfusion-transmissible infections, the actions taken in response to rates of transmission in MSM communities of known disease must be consistent with the actions taken in heterosexual communities if they are to be effective in achieving their aim. We already accept a level of uncertainty on behalf of patients; changing the ban on MSM may not materially affect that level of uncertainty. In conclusion, using a lifelong ban on MSM is inconsistent to the approach to the other risks of sex worker exposure or female exposure to sex with MSM, unsupported by data, and disproportionate to other measures taken to address the same fear.

What therefore is the deferral based on if not HIV, and if it is not grounded in a consistent approach to microbiological threats? It appears to be, at its simplest, a fear that what happened in the late 1970s and early 1980s could happen again, and we had better not remove the measure that helped reduce the spread of infection then. This is not an irrational fear - it would be naïve to think that a new infection or mutant HIV strain could not arise in the same way, and an effective ban on MSM from donating for a very long period of time after their MSM event might reduce its spread by blood transfusion to some degree, though clearly not fully. A sexually transmitted infection spreads much faster in the MSM community, with complex dynamics [5]. While there are thirty times more heterosexual people, within the heterosexual community the risk is not homogeneously spread, so that the risk for casual or apparently low risk heterosexual sex is a minor part (http://www.hpsc.ie/A-Z/HIVSTIs/HIVandAIDS/SurveillanceReports) of the overall heterosexual risk – the rest being from sex abroad, or sex as or with sex workers. Nevertheless while the risk from heterosexual encounters is not insignificant, MSM comprise a substantial proportion of the potential risk of spread of a new sexually transmitted infection in Ireland.

Therefore the fear that if a new infection arose that was sexually transmitted it would be more likely to be transmitted among MSM is rational; what remains to be shown is whether the fear that removing the lifelong ban and replacing it with a shorter one (of one year in this instance) is well founded.

That it may not be well founded is based on two observations:

1. The deferral proposed is for MSM who have been abstinent for one year. Assuming that the issue of compliance can be meaningfully addressed (see Section 8), this means that MSM qualifying to donate are not engaging in at risk sex, and are unlikely to be at a similar risk, or to have been at a similar risk as high risk sexually active people in the

recent past [6]. The prior rate of spread of an emerging infection in this group of MSM is unknown, but it is reasonable to suppose that it would not be the same as in some currently non-abstinent men.

2. What happened in Ireland in the 1970s and 1980s was not the same as what happened in the USA; if the fear is that what happened in the USA could happen here, then that is a different thing, and is based on no evidence that it happened in the past. What happened in Ireland is that there was one known HIV transmission by blood transfusion, which occurred before testing was introduced. This may have been prevented by a one year deferral period, though we do not have evidence one way or the other. In the meantime, the disease had already been apparent in the USA for several years, and, given that this was before PCR and NAT, a test would very likely have been developed and deployed here by the time that individual presented if translated to the current time. So that what happened in Ireland in the 1980s does not provide support for maintaining a one year ban.

In conclusion it is reasonable to be concerned that a new infection of the class of HIV could arise and spread silently and preferentially among MSM in the future; however the view that a lifelong donation ban for MSM in Ireland in would be necessary to provide protection in the future from what happened in the past is not supported by the events of the past. A one year deferral would likely have been just as effective on the evidence available.

4. Is there a reason to change in any event?

A State may impose restrictions on its citizens by class of individuals or at an individual level without breaching their rights under certain circumstances. Such circumstances may pertain in the case of the gay blood donation ban. While blood donation is not itself a right, the ban has been judged to infringe the rights of individuals not to be discriminated against on the grounds of sexual orientation, so that there is an onus on the State to demonstrate that the restriction on gay men is proportionate to the benefit sought [7].

The effect that the ban must be proportionate to is threefold – the danger being addressed, its effectiveness in addressing that danger and the discrimination caused.

Given the weight of legal opinion [7,8] behind the view that the ban must be justified by compelling evidence that it provides an increased level of security for patients, then failure to demonstrate that

there is a risk to patients from changing it to something else warrants its removal. In other words the onus is on the Blood Transfusion Service to justify its continuation with sufficient data, or evidence of serious risk from residual uncertainties. Whether that weight of legal judgement empowers the IBTS to act on its own to remove the ban, should it fail to demonstrate to its own satisfaction that there is a risk to patients from changing it, remains to be decided, given that in any event removing the ban could never be shown definitively to improve the care and safety of patients under its burden of care.

For example it is easy to show that the approach used by the Spanish [9] has exposed patients to an increased risk of HIV transmission from blood transfusions, and that such an approach applied in Ireland might have the same effect. Therefore not doing the same in Ireland as is done in Spain, in the absence of large advances in blood safety technologies or changes in epidemiology of infectious diseases, can be justified on available evidence.

In contrast, the changes in practice in several other countries, where a discriminatory policy remains in place although a lifetime ban has been removed, have not been accompanied by manifest changes in HIV risk, so that not following this practice in Ireland would require evidence that blood transfusion practice, societal values and culture, or disease epidemiology is demonstrably different in Ireland from those countries where such changes have been made.

Ireland has a different perception of and tolerance for risk than other countries, and a different scale of redress for transfusion transmitted diseases. This needs to be taken into account in addressing the tolerance for residual risk and uncertainty. On the other hand, the question posed is not whether Ireland should strike out on its own to change to ban, but rather whether it can justify not changing it in the light of the experience of other countries that have already done so. In that regard, if it is concluded that there is not sufficient evidence available now to justify a policy change in regard to MSM donations, then there is surely a requirement to state what level of evidence would be necessary in Ireland before the ban can be removed. (See Section 7, A Question of Science.) If that cannot be stated, then the default position is that the ban will never be removed, and that position cannot be justified.

Any risk involved in changing the current policy is borne by patients actually receiving transfusions. The benefits to patients and others are hypothetical and general and displaced into the future.

These benefits are:

- An improved perception among younger people, the essential blood donors of the future, that the IBTS is not discriminating unduly against MSM, and that it is not being overly conservative and increasingly irrelevant to them, thereby perhaps helping to ensure the blood supply into the future;
- a reduced likelihood of malign intent, where someone takes such offence at the attitude of the IBTS that they give a blood donation as an act of protest, deliberately withholding information around disease risk. This has happened in Ireland and elsewhere in the recent past, but whether changing to a one year ban would be enough to prevent it happening again in the future remains conjectural;
- improved self-image and societal image in young gay men that might reduce the burden of psychological stress. Given recent evidence of higher rates of self-harm among young gay men than their heterosexual peers [10], this may be an important issue, but there are no data available to support the suggestion, and it may be perceived as lying outside the direct mandate of the IBTS.

In that setting it can be argued that since the IBTS has no data to support a case that changing the ban to a one year one is in the interest of the patients it serves, though it **may** clearly be in the public interest, then any decision on removing or altering the ban could only be made in the public interest, and so by the Government, not the transfusion service. So even though

> we cannot show that there is any increased risk of getting HIV from a blood transfusion where the ban is changed to a one year ban,
>
> there is reasonable evidence from similar countries that it is likely to be a safe thing to do,
>
> no one could ever state for definite that it was completely safe to change prior to the change, and all that we will ever be able to say is that it is very unlikely that there would be a worsening of the current extremely low risk of acquiring HIV from a blood transfusion in Ireland,

it may not be compatible with the mandate of the IBTS to impose that change. However, we are able to state that from the point of view of HIV risk from transfusion, the IBTS can safely remove the ban without any increase in HIV transfusion transmitted risk, insofar as any currently accepted reasonable understanding of risk applies. Given Government's approval that we are acting in their name we may reasonably proceed to implement a change.

In addition, since we are able to say that a lifelong ban as opposed to a one year ban was never required in Ireland to prevent transmission of HIV in Ireland in the absence of testing, and that it is difficult to see how it would be now, and that countries closer to the risk of another HIV-like emerging event happening in the future are using a one year ban, it becomes very difficult to justify not moving to a one year ban on the basis of any previously demonstrated benefit of a lifelong ban. In any event we tolerate uncertainty from transmission of an emerging sexually obtained transfusion-transmissible infection with a one year ban on other categories of persons containing individuals with similar risk to at-risk MSM activity, so that leaving a longer ban in place for MSM is at best inconsistent. The net effect is that the IBTS would struggle to counter the weight of legal opinion against the lifelong ban.

5. The Spanish position and the Italian data

Data presented at the Conference described the Spanish experience to date. These data have also been published [9,11]. Since 2005 the Spanish Ministry of Health has enforced removal of any apparent discriminatory policy on deferring gay men, and instead relies on an assessment by a physician at the time of donation to determine whether the individual presenting to donate constitutes a risk for undetected transmission of infection. The physician seeks to exclude those who have occasional sex with a new partner in the past year, among other exclusions. In 2005 there was a window period transmission from a gay man by blood transfusion, casting serious doubt over the robustness of the Spanish policy, or at least over its current implementation.

The Spanish data show that the proportion of donors who are MSM with infection has risen steadily in recent years, suggesting that there has been a cultural change around MSM and blood donation in Spain, manifesting itself several years after the ban was removed. The prevalence of HIV in blood donors in Spain is an order of magnitude higher than in Ireland, and over half of cases are in repeat donors, of which almost 90% are in males. It is not clear how that change has arisen, or why, but it is obvious that the physician interview is completely ineffective at excluding at risk donors who chose not to comply with the rules. Seeking a cheap, discreet and effective test has been implicated in the high rate of attendance and associated dishonesty in at risk and infected donors [12]. In the absence of a definitive and extensive study of donor habits and drivers in Spain and any likely difference in Ireland, a move to an approach anything like the Spanish approach would be impossible to justify on the basis of there being no increase in HIV risk.

A report by the Italian Blood transfusion Services was published in 2013 [12]. The Italian Ministry of Health decreed removal of the permanent deferral of MSM in 2001. The lifelong ban was replaced with an individual assessment of risk on each donor conducted by a trained physician. The published report shows that the incidence of HIV positivity in repeat donors is very high at 5 per 100,000 in males in 2010 (compared to 1 per 100,000 in females). The rate was 3.8 per 100,000 in 1999, shortly before the MSM rules were changed (this is a total rate, not divided by sex for 1999, and is likely not very different from the 2010 rate overall). Data in the report indicate that the donor interview process has a very low sensitivity in detecting at risk activity in donors, and shows that it does not provide an effective barrier to donation from individuals who do not comply with the rules. Donor culture is possibly quite different among Italian donors – donor incentives, discrete access to testing and general societal tolerance for homosexuality may not be comparable to Ireland.

Whether there are other preconditions that if met at some time in the future would allow the Spanish or Italian approach to be revisited is not covered in this paper, but for example advances in pathogen reduction technologies, rapid pre-donation testing, and a major shift in STI epidemiology, and a much better understanding of why infected donors do or do not come to blood donation clinics could combine in the future to have this position reopened. It is unlikely that minor changes in donor screening techniques could be shown to improve the effectiveness of the Spanish and Italian approaches – in strict scientific terms there is no evidence that any system of donor vetting adds any practicable level of safety for sexually transmitted infection risk to blood transfusion, over and above the degree of voluntarism and compliance with the requirements, and the sensitivity of testing. Any effect of minor variations on the methodology of donor vetting and screening cannot be quantified without evidence of effectiveness in the first place.

6. Compliance and the interview process.

As shown above the donor interview process may be ineffective as a barrier to prevent at risk donors from donating. While it may prevent some infected donors getting through to donate, there are no data to give any meaningful estimate of the proportion that is excluded at this point. In the absence of that information it is impossible to test the effect of different interventions on the effectiveness of the donor screening process [13]. The clear implication is that in the absence of compliance with the rules governing donor exclusion, the donor screening process is ineffective (while in the presence of compliance it is likely largely unnecessary). Several delegates at the conference presented data describing compliance – the underlying assumption being that changes in

compliance around changes in the ban would affect safety. This is a reasonable hypothesis that should be rigorously tested – a beneficial change in compliance should result in a measurable reduction in donor incidence or prevalence of disease markers. However there is no validated test of compliance that could be used to test the hypothesis at present. In particular studies to date tend to express compliance as a phenomenon applicable to all donors [14,15,16, 17], whereas it is only meaningful when expressed as non-compliance in donors who should have complied by self-deferral on the basis of an answer to a definite question: i.e. of donors who should have answered yes to question X how many answered no? It might be possible to determine meaningful levels of non-compliance and compare the effects of changes in donor deferrals, or communication strategies on those levels, but that has not been done to date [13].

In the absence of adequate data to give a more precise measure of non-compliance expressed as the proportion of donors who should have been excluded on the basis of sexual risk but were not, we can still assert on the basis of published studies on residual rates of infection in donors and on donor compliance, that non-compliance exists to a substantial degree and poses a considerable risk. Increases in non-compliance to the levels apparent in Spain and Italy could be dangerous in terms of HIV transmission by transfusion, and subsequently emerging infection risk. It is essential that non-compliance is continually monitored; considerable effort needs to be deployed to improve the precision of measurement. However we must work with the level of precision that we have, rather than try to work with something else that might be similar and usefully correlated, but that is not calibrated against the parameter of interest. So that in stating that non-compliance exists among Irish donors at present we can and should take steps intended to measure and address it at the same time. (See Section 8: Measuring voluntariness and non-compliance.)

7. A Question of Science

(1). We are repeatedly asked to base the deferral policy on science. We cannot use science to predict the future other than in a probabilistic fashion that is prone to be of such limited use as to be practically ineffective in dealing with complex situations where seemingly remote events can have major effects [18]. We could, and should, deploy an approach based on falsifiability and propose hypotheses for testing, and then see whether they have been disproved, since they cannot be proved. In that setting the starting hypothesis becomes of key importance: are we trying to show that it is **unsafe** to remove the ban, or **safe** to remove the ban?

Suppose we try to show that it is **unsafe** to replace a lifelong ban with a one year ban. Data from other countries that show no increase in incidence of infection would not disprove that hypothesis, and it will always be arguable that we have not conducted an adequate test to disprove that it is unsafe. If the hypothesis cannot be tested, then any approach based on data analysis alone cannot be considered scientific by current paradigms of science: asking for a scientific basis for removing the ban in answer to the question is it **unsafe**, is invalid in relation to accepted scientific approaches: *no amount of practicable testing could show that it was not unsafe.*

Similarly we could try to show that it was safe – then we could conceivably design tests to disprove that it was safe. Under this approach, it is evident that the Spanish experience has disproved a hypothesis that their approach was safe, and can therefore be rejected. An increase in observed infections that was unlikely to be a chance observation or a random event would be acceptable evidence that the hypothesis was wrong. Looking at the four-country data would be a reasonable place to look, and in doing so we find that the hypothesis **is not disproved** in their case. We now have to examine this evidence severely – was it a reasonable test: would it have detected the effect we were looking for if it was there; does not finding it mean the test was inadequate or that it wasn't there, or was the test a reasonable test of the hypothesis? In any event we do not yet have to change the hypothesis that reducing the ban is safe, and the worst that the questioning of the evidence can do is leave the hypothesis intact while leaving it untested. So what tests would disprove that it was safe, if not the type of epidemiological data from the countries that have changed? A list of possible tests is shown in Table 3.

Table 3. Tests of the hypothesis that replacing the lifelong ban on MSM is safe – (tests that could disprove that it was safe).

1.	Transmission of HIV or other tested-for infection by a donation from an MSM; this would not disprove the hypothesis as a single event – it could be argued that it could have happened anyway, but it would be very suggestive that the change was unsafe. This has not happened in countries that have changed to a one year deferral to date, though it has been seen in the Spanish model .
2.	A change in a marker that is validated to correlate with window period infection risk – a marker of test-seeking behaviour for example, or of protest donations.
3.	A demonstrable increase in non-compliance among high risk individuals, that is individuals with recent at-risk sexual activity.

Once again in the absence of evidence that could disprove the hypothesis we cannot apply a standard scientific approach – we are left with having to say that such evidence that we have is of sufficient strength and quality that we may proceed with caution, or not. That is a value judgement, not a scientifically demonstrated principle, but it may be the best we will ever be able to do. To insist on a science-based demonstration of indemonstrable levels of security is to insist on inertia until there is evidence that the ban is actually harmful (and in that case, to whom?). That too is a value proposition, that may be socially acceptable or not, but it is the logical alternative to the introduction of change. So that if we are not satisfied with current evidence of safety we are obliged to state what would constitute such evidence as would satisfy us, and then seek such evidence. Alternative scientific approaches based on uncertainty and complexity discussed below rather than the fasifiability paradigm above do not alter this conclusion; they simply provide a scientific basis for dealing with the situation we find ourselves in.

> **In conclusion the experience of the countries that have changed their position from a lifelong or very long ban to a one year ban can be interpreted as showing that as far as can be determined, the change was not accompanied by detected increases in surrogate markers for risk of HIV transmission, *albeit using markers that are not validated for measuring real residual risk.* Furthermore on the question of scientific validity, since the available data demonstrate that the hypothesis that changing to a one year ban is safe is not disproved as far as HIV is concerned, we can state that if there is any societal value in modulating the ban – whether moral, legal, ethical or otherwise, which there seems to be from the ECJ position, then on the basis of HIV risk there is not a scientifically valid reason to sustain it based on present knowledge.**

(2). What about a complexity based approach rather than a falsifiability one, which leaves an unsatisfactory degree of uncertainty? An alternative scientific approach to the problem of emerging infections comes from complexity studies and robust design, applied in various disciplines, particularly in engineering. In this approach various strategies are deployed to offset both the likelihood and the effects of possible events. For example to reduce the effects of earthquakes one does not build nuclear reactors near major fault lines, or if one has to for whatever reason extra defences are built in to reduce the impact. The quantum of uncertainty in a system is reduced to the extent possible, accepting that all risk cannot be removed, even after all practicable steps to remove risk have been taken.

Emerging infection risk in blood transfusion has key similarities to earthquake risk – the necessary preconditions exist in nature and cannot be removed (life, spontaneous mutations, massive diversity in the microbiological ecosystem versus tectonic plate movement). Blood transfusion practice is similar to a geological fault line, a place where conditions exist that will result in events that are predictable only with degrees of precision that are impractical for rapid response, so that layers of protection –surveillance, early warning, evacuation drills, building regulations and so on are required if we are to live near the danger area, which we must as long as blood transfusions are required. This is not a simile or metaphor – it is a rational approach to learning how others faced with similar problems and dangers develop systematic approaches to deal with those dangers.

In the setting that no one effective strategy exists that provides an adequate level of safety we deploy many other strategies to try to bolster our defences: have we reason to suppose (given that we can't have prior certainty) that a one year ban will be as effective as a lifelong ban in the setting of other necessary defences? In other words does a lifelong ban add value over and above a one year ban to the layers of defences already in place or otherwise available to us?

This is a key argument – it has been demonstrated above that a one year ban cannot be shown to be more effective than a lifetime one for HIV risk; in addition it cannot be shown that a lifelong ban would have been more effective than a one year ban if deployed in Ireland at the time that HIV transmission took place from transfusion in Ireland prior to testing. (This of course is not true for HIV transmission in Ireland from manufactured blood products transmissions in the 1980s, but the prior conditions from that time no longer exist for such to be a material consideration in Ireland now.) If we cannot reasonably show that a lifelong ban adds to a robust defence against infection then there can be no reason to sustain it. Since we do not have any data that show that a lifelong ban was effective in the past in Ireland, can we show any possible benefit from it as part of a layered defence strategy to counter emerging infections in the future? The elements of a layered defence strategy can be inferred from public health or military approaches to emerging or present threats:

- Surveillance
- Early warning system
- Barriers to entry /travel restrictions for identified hostile agents/infectious agents or vectors
- Rapidly deployable additional effective measures for identified hostile agents/infectious agents or vectors
- Effective engagement measures with present hostile agents/infected individuals
- Personal protection

- Cellularity of defences –when one layer or set of defences is rendered ineffective the whole defence system does not fail
- Containment of hostile agents/infectious agents that have penetrated outer layers of defence
- Damage limitation
- Casualty treatment measures
- Contingency, escape, rescue, fallover
- Exercising & testing all of the above

A ban on certain risk donors fits into the layers at several points:

- Barriers to entry /travel restrictions for identified hostile agents/infectious agents or vectors,
- effective engagement measures with present hostile agents/infected individuals,
- and containment of hostile agents/infectious agents or individuals that have penetrated outer layers of defence.
- In addition the strategy following changing the ban should ensure that we have rapidly deployable additional effective measures for identified hostile agents/infectious agents or vectors – in effect being able to extend the deferral scope or period to other people or for other periods in the light of new relevant information. We should be prepared to reintroduce any measure required, however temporarily.

It is feasible to address the question of additional safety provided by a lifelong versus a one year ban in terms of the question: does a lifelong ban rather than a one year ban add strength to the above defensive measures, in the setting of a comprehensive layered defence approach?

It is always possible to add to defences, but measures become increasingly burdensome in terms of freedoms foregone or return on effort – road traffic accidents can be avoided by staying at home, bicycle accidents by never cycling, food poisoning by never eating anything cooked by others, the San Andreas fault by avoiding California, so that a question of degree will inevitably arise at some point. In addition newly added defensive measures may have the unintended effect of weakening other, perhaps more effective ones, and cannot be assumed to be useful without some supportive evidence of overall improvement in the desired outcome.

Suppose a gay man gets infected with a new, unknown infection? Is it plausible that the risk of that infection reaching a patient requiring blood transfusion is reduced by a lifelong ban compared to a one year ban in Ireland?

In the first instance all other defences stay intact – in other words the lifelong ban does not inadvertently weaken any other, more effective layer that a year-long ban would not: this is the rationale behind wondering if a more acceptable, shorter ban would reduce overall non-compliance. No firm conclusions can be drawn on the compliance question at present, so we can assume all other defences are intact for the time being.

Is this a really plausible threat in itself? Does such an agent exist in our ecosystem? has it ever?– as discussed above it has not existed in the past – that a new agent arises that infects gay men in Ireland who would donate within one year of sex with another man that was not manifest elsewhere in the world that would have given us time to deploy other means to protect ourselves: in other words we would have known for HIV that a new disease was threatening before it reached the donor pool with a one year stand-still period. So that while a lifelong ban would add additional security it would have been redundant up till now, is likely to be more redundant in the future, and may threaten the effectiveness of other, likely more effective layers of defence, though that remains to be shown. Nevertheless, provided the other measures remain intact, then a lifelong ban on MSM is unlikely to contribute a useful measure of defence in a layered defence approach, and an unintended effect on other measures needs to be explored. This position can be bolstered if necessary by re-introduction of a longer deferral period should evidence appear elsewhere that a new relevant infection was emerging, though it would still have to apply equally to at-risk heterosexual behaviour to be effective. In the meantime compliance studies should add to the effectiveness of current barriers to disease entry.

In conclusion a complexity-based approach does not provide evidence to support a lifelong ban over a one year ban; however it does identify certain necessary conditions to ensure that a one year ban remains effective- additional surveillance, sentinel testing, robust communication and ensured buy-in (with measured and monitored effectiveness), testing of barriers, and ensuring that a different strategy can be quickly and effectively deployed if circumstances change. Most importantly, the complexity-based approach clearly points up the effectiveness of voluntariness on blood safety, that the lack of coercion or any other observable incentive other than altruism and avoidance of selfish motivation is the major contributor to blood safety in Ireland from untestable infectious agents. Quantification and validation of this defence requires considerable work in the future, and should be the focus of high grade academic investigation.

8. Measuring voluntariness and non-compliance

Studies to date on compliance in blood transfusion have tended to measure overall compliance rather than focus on non-compliance, and have tended to use population surveys prone to sampling error and low rates of return. The assessment that respondents are proportionate to non-respondents is an untestable proposition for any such study.

Non-compliance is likely to be closely associated with voluntariness, lack of incentivisation, and absence of test seeking behaviour among other factors such as self-assessment of risk exposure [6,19]. This should be testable by developing and validating a value for each of these. There will certainly be a degree of imprecision. Non-compliant donors are unlikely to disclose this directly all or much of the time, but with effort and time it should be possible to achieve a useful degree of quantitation using multiple parallel approaches. The value of this is that it should be possible to validate the statements that voluntariness is proportionate to non-compliance, and that non-compliance is proportionate to risk of both very early infection and emerging infection transmission. In addition degrees of non-compliance may exist – test seeking for example is likely to be a riskier form of non-compliance than protest.

To address this I recommend that the IBTS commission or conduct a detailed study into non-compliance in association with a leading academic unit with expertise in this area. This need not delay implementation of the move to a one year ban, but should be considered a stand-alone parallel addition to transfusion safety – for example covert test seeking behaviour may be currently more likely to occur among heterosexuals who have had risky recent sexual encounters outside an apparently monogamous partnership, or subtle forms of coercion may currently exist among families or partners that compromise the degree of voluntariness.

9. Future directions – what happens after the lifelong ban is changed? Why not move to a shorter deferral period now?

The decision to move from a lifelong ban to a shorter one can be done on its own merits or as part of a larger plan to move to a different place in the future, as advocated for seriously by some [20]. This paper has only addressed a move to a one year ban on its own merits. Nevertheless implementation and communication of this change will require clear statements around future possibilities and plans, and why a shorter deferral has not been proposed at this time. However at this point the Board should not, in my view, make a yes or no decision on a one year ban based on the question of

where it may lead to in the future; other countries have been able to move to a one year ban without any firm commitment to future directions of travel.

It is possible that a ban of less than one year, and a visibly more equable one, could be safely introduced for HIV risk in some future state, provided non-compliance and other vectors of real risk are identified and positively addressed. However it will be difficult to show that a shorter deferral period for at-risk sexual behaviour will give protection against emerging infections, so that a different approach, or at least a reviewed approach to accepting uncertainty, will be essential. Stratifying risk within identifiable categories of MSM, as is done for heterosexuals, may be a useful area to explore. Blood services elsewhere are actively engaged with this question, and a satisfactory course may become apparent in time. For example, studies may show that restricting deferral to one year after penetrative anal sex for either sex may provide a reasonable balance between non-compliance and infection risk, or that a longer deferral period of 3 or 5 years after any sexually transmitted disease in a donor would provide measurable levels of protection against any emerging transfusion-transmissible, sexually-transmitted infection. Indeed introducing such a deferral for all donors around the same time as a move to a one year deferral may be justified, at least as an interim measure.

10. The Mechanism of changing the ban. Timelines and actions.

A detailed plan of communication and a timeline for implementation of the change will be required as a decision to change the policy or not to change it is made. This will be developed by the time of the Board meeting in June, depending on the outcome of the Medical Advisory Committee.

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12. Appendix 1

MSM and Blood donation in Ireland. Options for future policy. Paper presented to the Minister of health, January 2015 (will be provided separately).

13. Appendix 2

The programme for the Conference at the RCPI (will be provided separately).

14. Appendix 3.

Links to policy documents from countries where the MSM deferral policy has been the subject of formal review. (The hyperlinks have been removed in the PDF document.)

http://www.fda.gov/downloads/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Guidance/Blood/UCM446580.pdf

http://www.bloodrulesreview.com.au/files/upload/blood_review_report_may_2012_electronic_version.pdf

http://www.nzblood.co.nz/assets/News/Final-report-to-NZBS-behavioural-donor-deferral-criteria-review.pdf

https://www.blood.ca/sites/default/files/blood/msm/appendix-report-on-donor-selection-criteria-relating-to-men-who-have-sex-with-men_-.pdf

https://www.gov.uk/government/publications/donor-selection-criteria-review