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STIs and HIV in Ireland: towards developing a national second generation surveillance system

Authors
Dr Sarah Tecklenborg & Dr Caroline Kelleher

May 2019

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Acknowledgements

This study was funded by the Health Service Executive (HSE) – Sexual Health and Crisis Pregnancy Programme, through the Irish Research Council Research for Policy and Society Project Awards, 2016 (Grant Number: RfPS/2016/22). We are grateful for the opportunity and support provided by this award.

The research team appreciates and would also like to acknowledge the expert guidance and valuable time of the Steering Committee Members who were an enthusiastic and committed resource throughout the project duration and beyond, namely:

- Professor Ronan Conroy, Royal College of Surgeons in Ireland (RCSI)
- Dr Orla Ennis, Department of Public Health, HSE East
- Ms Caroline Hurley, (Chair) HSE Sexual Health and Crisis Pregnancy Programme
- Dr Derval Igoe, Health Protection Surveillance Centre (HPSC)
- Dr Margaret Morris-Downes, Department of Public Health, HSE Mid-West
- Mr Niall Mulligan, HIV Ireland
- Dr Kate O'Donnell, Health Protection Surveillance Centre
- Ms Maeve O'Brien, HSE Sexual Health and Crisis Pregnancy Programme
- Dr Anastasia Pharris, European Centre for Disease Prevention and Control (ECDC)
- Mr Noel Sutton, Gay Health Network

In particular, we would like to extend our heartfelt thanks to the participants in this project who gave so generously of their time. We hope that they will find these results and recommendations useful and informative as they strive to improve and develop their behavioural surveillance activities for the benefit of their services and service users. It has been a privilege for the research team to have had a role in the development of a second generation surveillance system for STIs and HIV in Ireland.

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Glossary

AGW	Anogenital Warts
CAI	Condomless Anal Intercourse
CBW	Consensus-Building Workshop
CIDR	Computerised Infectious Disease Reporting
DoH	Department of Health
ECDC	European Centre for Disease Prevention and Control
EMIS	European Men who have sex with men Internet Survey
GAM	Global AIDS Monitoring
GARPR	Global AIDS Response Progress Reporting
GBV	Gender-Based Violence
GP	General Population
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
HPSC	Health Protection Surveillance Centre
HSE—SHCPP	Health Service Executive — Sexual Health and Crisis Pregnancy Programme
ICCP	Irish Contraceptive and Crisis Pregnancy Study
IHI	Individual Health Identifier
ISSHR	Irish Study of Sexual Health and Relationships
MedLIS	Medical Laboratory Information System
MISI	Men who have sex with men Internet Survey Ireland
MoH	Medical officer of Health
MSM	Men who have Sex with Men
Natsal	National Survey of Sexual Attitudes and Lifestyles
NGO	Non-Governmental Organisation
NSU	Non-Specific Urethritis
NVRL	National Virus Reference Laboratory
PLHIV	People Living with HIV
PWID	People Who Inject Drugs
SGSS	Second Generation Surveillance System
STI	Sexually Transmitted Infection
SW	Sex Worker
UAI	Unprotected Anal Intercourse
UNAIDS	The Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session
WHO	World Health Organization
WP	Work Package

Executive Summary

Introduction

Sexually transmitted infections (STIs) and HIV are a persistent public health problem and place a considerable burden on the economy and healthcare sector. National second generation surveillance systems (SGSS) combine biological surveillance — the notification of new cases of STIs and HIV — with behavioural surveillance — the monitoring of the population level of risk related to the transmission of STIs and HIV. Ireland currently has a national biological surveillance programme for STIs and HIV under the guidance of the HSE Health Protection Surveillance Centre (HPSC), although biological surveillance alone does not allow us to determine men and women's STI/HIV-related risk and protective behaviours. An analysis of behavioural surveillance programmes in European countries to identify country-level surveillance systems found that the Republic of Ireland does not have a functional behavioural surveillance system.

In late 2015, the Irish government launched Ireland's first national sexual health strategy. One key strategic focus is the gathering of sexual health intelligence: '*robust and high quality sexual health information will be generated to underpin policy practice, service planning and strategic monitoring*'. As well as recommending that stakeholders agree a set of clinical and behavioural sexual health indicators in line with the ECDC framework, the strategy also calls for the establishment of a second generation sexual health surveillance system in line with international requirements. This multi-stage strategically focused research project aimed to identify the gaps in our current STI and HIV surveillance in Ireland and to build consensus with national sexual stakeholders.

Methods

WP1 was a desk-based assessment of biological and behavioural surveillance of STIs and HIV in Ireland since 2000. WP2 was a modified E-Delphi followed by a consensus-building workshop to agree key STI and HIV behavioural indicators with key stakeholders. Key stakeholders providing services or working in the field of STI and HIV surveillance (n=162) were recruited to participate in an E-Delphi (n=44) and consensus-building workshop (CBW) (n=18). National and international indicator datasets were searched to develop an indicator list (N=393) which was categorised by risk area (e.g. condom use) and at-risk groups (e.g. prisoners) for consensus agreement. Using nominal group technique, the CBW further explored the feasibility of these indicators. WP3 was a feasibility study of the agreed behavioural indicators using online quantitative data collection followed by a cognitive

interview. Participants (n=20) completed a sexual health and behaviour online survey followed by a cognitive interview which was audio-recorded and transcribed for analysis.

Results

Key findings

- Ireland has a comprehensive biological surveillance system, which is well managed by HPSC and Departments of Public Health.
- There are standardised case definitions for STIs and HIV and a legal framework with mandatory reporting of notifiable diseases including ten STIs and HIV.
- Data collection and reporting is simplified through CIDR, the national computerised infectious disease reporting system.
- Active biological surveillance in Ireland takes place only in response to unusual trends or increases in STI/HIV infections detected by clinical staff or during routine surveillance by Departments of Public Health or by HPSC.
- Sexual health behavioural surveys of the general population have taken place in 2002, 2003, 2004/5, 2007, 2010, 2015, 2016, 2017; however, the indicator areas for which data was collected have varied throughout.
- More recent studies such as the Healthy Ireland surveys have included small sets of sexual health questions embedded in a general health population survey.
- A total of 188 indicators achieved consensus at the end of the Delphi study, 153 in Round 1 and 35 in Round 2.
- Only three indicators achieved consensus across all population groups: Number of sexual partners in the last 12 months; Use of a condom at last sexual intercourse and use of a condom during most recent intercourse with a casual partner.
- The findings from this cognitive interview study suggest a high level of acceptability of the consensus-agreed STI and HIV behavioural indicators, with some interesting comments and viewpoints around interpretation of several terms, namely partner types (main/casual), the definition of concurrency, and what constituted paid for sex.

Conclusion

Ireland has a well-managed functioning biological surveillance system for STIs and HIV; additional bio-behavioural data would complement and enhance existing biological surveillance datasets. Bio-behavioural data on prevalence and risk could validate infection rates identified by current surveillance methods or highlight areas in need of further insight. The indicator sets identified in this study require further refinement and the defining of

their rationale, time period, definitions, response options, and terminology to be used. The findings from this project provide a valuable insight into the surveillance of STIs and HIV in Ireland as well as gaps in this field. Further work is required to advance the establishment of a national second generation surveillance plan which could be a key part of actionable recommendations in the next National Sexual Health Strategy.

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Chapter 1: Introduction

1.1 Epidemiology of STIs and HIV in Ireland

Sexually transmitted infections (STIs) are an ongoing public health threat and an increasing burden to the global and European economy. In Ireland, there was a 3% increase in reported STIs between 2015 and 2016.[1] Chlamydia is the most commonly notified STI in Ireland with 6,893 diagnoses in 2016, an increase of 1.4% compared to 2015.[1] Broadly speaking, STIs in Ireland have been concentrated in young people and men who have sex with men (MSM).[1] Table 1.1 below illustrates the percentage increases in STIs notified through the national computerised infectious disease reporting (CIDR) system in Ireland between 2015 and 2016.

Table 1.1: Table showing the number of cases of STIs reported in CIDR in 2015 and 2016 and the percentage increase between time periods[1]

Sexually Transmitted Infection (STI)	Notified STIs 2015 N	Notified STIs 2016 N	% Difference between time periods
Chlamydia	6,797	6,893	1.4% ↑
Gonorrhoea	1,302	1,957	33.5% ↑
Herpes simplex (genital)	1,274	1,369	6.9% ↑
Lymphogranuloma Venereum (LGV)	20	48	58.3% ↑
Syphilis	268	305	12.1% ↑
Trichomoniasis	58	79	26.6% ↑

Steady increases in STIs are also occurring within the context of continued transmission of Human Immunodeficiency Virus (HIV). Between 2010 and 2014, HIV diagnoses in Ireland were relatively stable (approximately 7-8 per 100,000 of population) but increased by 30% between 2014 and 2015.[2] In 2015, 485 people were diagnosed with HIV; this was the highest number ever reported in Ireland.[2] This increase was mainly found among migrant MSM with a further 38% increase in the HSE East region attributed to an outbreak of HIV among people who inject drugs (PWID).[2] However, an improvement in the surveillance case definition for HIV in 2015 (HSE East) and 2016 (all other HSE areas) also improved the

sensitivity and timeliness of notifications, thereby accounting in part for this increase.[2] In 2016, there were 508 new HIV diagnoses, an increase of 5% from 2015.[3] Again, the majority of these diagnoses were among MSM (51.4%), 27.6% among heterosexual people and 4.1% among PWID.[3] While, the overall number of HIV diagnoses has increased in recent years, an increasing proportion of people diagnosed with HIV in Ireland have been previously diagnosed positive abroad and have transferred their HIV care to a service in Ireland (34% in 2016 from 12% in 2012).[1-3]

1.2 Behavioural risk factors for STIs and HIV

The spread of any infection is a multifaceted process (requiring a multi-faceted response) driven by the biological attributes of the infectious organism combined with the contact patterns and behaviours within the populations at risk.[4-5] STI control aims to interrupt transmission of the pathogen (e.g. with the use of condoms) and prevent the long-term complications associated with infection.[5] In Ireland in 2010, 80% of sexually active young people had used a condom at last sexual intercourse;[6] although this figure had reduced to 73% in 2014.[7] However, condom use alone may not solve the increasing STI problem.[8-10]

According to Weller and Davis-Beaty(2002), consistent condom use can reduce sexual transmission of infection by approximately 80%.[8] STI and HIV infections have been associated with a number of behavioural risk factors, including but not limited to: condomless intercourse;[11] lack of consistent condom use;[11] the use of online dating sites;[12] level of sexual health knowledge and early sexual initiation;[13] concomitant alcohol and drug use;[14] regular marijuana consumption;[15]and having multiple sexual partners.[16] Condomless anal intercourse (CAI) is a greater risk for HIV than condomless vaginal intercourse, with HIV transmission probability increasing by 18-fold for the former.[17] Therefore, one of the highest risks of HIV transmission is associated with receptive CAI with a HIV positive partner; estimated at 1.4% per act.[17] According to a more recent study,[18] protective sexual behaviours such as serosorting (i.e. using HIV status as a decision-making tool in choosing sexual behaviours/partners) and viral load sorting (i.e. not using barrier protection with a partner as the HIV viral load in their blood is so low it is undetectable) suggest that CAI is not high-risk in all circumstances. Currently, the most high-risk sexual behaviour may now be CAI among those with multiple sexual partners, who engage in CAI with a serodiscordant or unknown serostatus partner whose viral load is unsuppressed.[19] In some situations, highly sexually active people, in particular sub-groups of MSM, are reflective of a sex-positive culturally normative social behavior.[19-20] Some people may also engage in risk-taking behaviours to maximise their sexual pleasures.[21-22] Sexual risk-behaviours do not happen in isolation; there is evidence for the clustering of multiple risk behaviours such as smoking,

illicit drug use and alcohol misuse.[23-24] Socioeconomic status has also been found to be a significant predictor of multiple risk behaviours,[23] and this is reflected in the rates of infectious diseases affecting the most socioeconomically deprived groups and communities in our society. For example, the spread of HIV is disproportionally high among groups that have been marginalised culturally, socially or economically (e.g. PWID, sex workers, migrants);[25-26] which poses a threat not just in these vulnerable groups but also in the general population.[27-28]

The spread of an STI within a population is dependent upon rates of partnership formation and dissolution; evolution of sexual networks; patterns of mixing among subpopulations characterised by age, ethnicity, socioeconomic status and education; and the spatial patterns of sexual networks.[29] Therefore, for effective STI and HIV control and prevention, it is essential to know which exposures are most likely to result in transmission and which interventions are most effective at reducing the risks of exposure and consequences associated with undiagnosed infection.[29] Shifting patterns in risk level have a measurable impact on individuals' decisions around risky and protective sexual behaviours[30] and subsequent rates of HIV, therefore systematic and standardised behavioural surveillance that monitors trends in sexual behaviours over time is a critical public health tool in the control and prevention of STIs and HIV.

1.3 Populations at risk for STIs and HIV

Population-based surveillance of STIs is essential to elucidate the population distribution of behavioural (and other) risk factors.[29] Surveillance should be performed routinely to monitor and track disease trends and allow systems to respond to epidemics.[31]There are several important population characteristics relevant to the epidemiology of STIs and their prevention including: population size; age structure; ethnic makeup; and net migration.[31] In Ireland, for example, the general population increased by 3.7% since 2011, to over 4.7 million in 2016.[32] Ireland's population is also ageing, with an average age of 37.4 years in 2016 compared to 36.1 in 2011.[32] In terms of ethnic diversity, the highest proportion of other nationalities in Ireland are: Polish (n=120,515); UK (n=103,113); Lithuanian (n=36,552); Romanian (n=29,186); Latvian (n=19,933); Brazilian (n=13,640).[32] There are over 1.54 million single people in Ireland over the age of 15; approximately 41.1% of the general population.[32] This rate is even higher in Dublin (53.2%). These demographic changes may contribute to changes in sexual behaviours, as explored later in the chapter.

According to ECDC, effective STI/HIV prevention requires a focus on the sexual health of a number of vulnerable populations in addition to the general population.[33] These populations have been outlined in a sexual health domain framework (see Figure 1.1)

because they are at an increased risk of acquiring an STI/HIV and may require individualised public health communication campaigns.[33] Similarly, the UN has identified six key populations for HIV surveillance, namely: sex workers (SW); MSM; PWID; prisoners; transgender people; and PLHIV.[34]

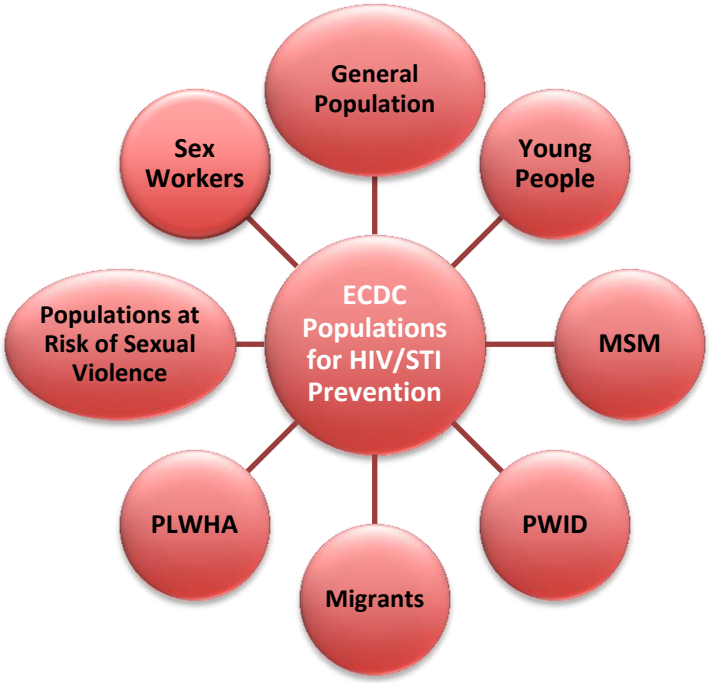

Figure 1.1: The ECDC sexual health domain framework incorporating the eight domains/populations important in effective STI and HIV prevention[33]

Note: ECDC = European Centre for Disease Prevention and Control; HIV = Human immunodeficiency virus; MSM = Men who have sex with men; PLWHA = People living with HIV/AIDs; PWID = People who inject drugs; STI = Sexually transmitted infection

Unfortunately, comprehensive demographic data for more vulnerable populations in Ireland is distinctly lacking. Population estimates come from a range of sources and in some case are quite dated and likely under-reported (e.g. sex workers). However, the estimated population sizes in Ireland for some of these groups are as follows: MSM 106,631; PWID 18,988; migrants 810,406; PLHIV 7,205; sex workers 1,000; prisoners 3,718; and homeless people 5,508.[35] While there are no national population estimates for transgender people in Ireland, the Central Statistics Office (CSO) is currently assessing its options to record statistically citizens who do not identify as either male or female, for the 2021 census.[36]

Sub-groups of these more vulnerable populations may share similar behaviours and risk factors, which put them at a greater risk of acquiring STIs and HIV, such as needle-sharing (PWID) or CAI (MSM).[33] In addition, population groupings by their nature are fluid, with individuals frequently moving in and out of at-risk groups and/or displaying a range of risky behaviours over the course of their lives.[33] Some high-risk behaviours are not easily identifiable as a population grouping per se, e.g. men and women who have multiple heterosexual partners over a short period.[33] However, comprehensive and systematic behavioural surveillance of the general population facilitates the identification of sub-groups who engage in these risk behaviours, e.g. young people or MSM.[33] Therefore, including the general population as a separate grouping in terms of surveillance is essential in order to capture all individuals who may still have a higher risk of acquiring an STI or HIV, but who do not specifically identify as belonging to an at-risk group.[33] Ultimately, it is the behaviours that individuals engage in, rather than the actual population group to which they belong, that are more important in determining their risk of contracting an STI or HIV.

1.4 Surveillance of STIs and HIV

'*Public health surveillance is the continuous and systematic collection, analysis and interpretations of health-related data in order to plan, implement and evaluate public health practice.*'[37] The 2016-2021 World Health Organization (WHO) Global Health Sector Strategy on STIs[38]and UNAIDS 90/90/90[39] calls for a concerted effort to scale up effective interventions and services with the goal of ending STI and HIV epidemics as public health concerns by 2030. The strategy, through a long-term sustainable response, aims to promote health and prolong life using a public health approach to prevent disease.[38] The meaningful engagement and empowerment of those most affected by STIs is an essential principal component.[38] The WHO, through the International Health Regulations, call for a strengthening of existing public health surveillance response capacities of member states and requires countries to report certain disease outbreaks and public health events to the WHO.[38]

1.5 The central role of behavioural surveillance in the prevention and control of STIs and HIV

Most countries in Europe have established national biological surveillance systems for STI/HIV.[48] In spite of this, reporting rates of STIs vary widely across Europe with considerable underreporting.[33] Significantly fewer countries (n=15) have an established behavioural surveillance system[48] with considerable variation between systems. Behavioural surveillance to improve our understanding of HIV, and later STI, transmission has only been ongoing

since the 1980s.[40-42] The start of the HIV epidemic triggered the beginning of data collection on patterns of sexual risk behaviours, mainly through random sampling and household-based surveys[40,41] and more intensified convenience sampling of key populations at higher risk.[43] The use of behavioural indicators (i.e. a question about a specific sexual health-related behaviour) as a data collection tool also started to be collected in these populations, for example: MSM;[38] sex workers;[44] youth;[45] general population[42,46] and PWID.[47]

National second generation surveillance systems (SGSSs) combine biological surveillance — the notification of new cases of STIs and HIV — with behavioural surveillance — the monitoring of the population level of risk related to the transmission of STIs and HIV.[48] SGSSs measure the association between risk and infection, allow the assessment of the requirement for public health action, and facilitate the evaluation of interventions, in terms of reduction in the incidence of STIs and HIV.[47] The UNAIDS/WHO guidelines for implementing an SGSS recommend systematic regular surveillance of behaviours (and infections) among the highest at-risk groups within a country.[29] A later report by ECDC, in 2013, mapped national sexual health data, programmes and policies among 30 EU countries.[33] Specific reference was made to the sexual health of the general population and that of key at-risk populations who were vulnerable to STIs and HIV.[33] Historically Ireland has conducted national and cross-national behavioural surveys on the sexual health of only the general population, young people, MSM and prisoners.[33] Routinely collected case-based surveillance data on STIs and HIV was available for only these populations, with HIV data also available for PWID.[33] In addition, there have been eight national surveys conducted across these groups since 2009 (further details of these studies will be outlined in the Results section).

An integrated and comprehensive approach to STI/HIV prevention, within the broader context of sexual health, has been found to be more effective than prevention and control efforts in isolation.[49,50] This approach is clearly reflected in the publication in late 2015 of Ireland's first National Sexual Health Strategy 2015-2020.[51] Utilising this broader and more comprehensive approach to sexual health, the strategy made a number of recommendations for the future of sexual health services in Ireland and called for the establishment of an evidence-base of '*robust and high quality sexual health information'* to underpin policy and practice, service planning and monitoring.[51] It also highlighted the need for the strengthening of STI/HIV-related surveillance activities in Ireland and the introduction of an SGSS.[51]

1.6 National and international behavioural surveillance studies

Numerous methods have been utilised to capture data on sexual behaviour, including interviews, focus groups, surveys and observational studies.[31,41,51] Surveys are often the tool of choice for population-based behavioural surveillance.[51,52] Sexual behaviour questions can be (and have been) easily included within a general health survey (e.g. Healthy Ireland, 2017[53]) or as part of a standalone sexual health and lifestyle survey (e.g. Ireland: The Irish Study for Sexual Health and Relationships, 2006;[54] UK: The National Survey of Sexual Attitudes and Lifestyles, 2010-2012[55]). Self-completion questionnaires and computer-assisted self-interviewing are becoming increasingly more popular to use as they provide more user-friendly modes of collecting sensitive information.[55-57] General population surveillance surveys are typically ineffective at providing useful information for minority populations such as MSM or migrants.[58] Therefore, separate surveillance is required, and has been carried out in some cases (e.g. MISI: MSM Internet Survey Ireland (2015)[58] and EMIS: European MSM Internet Survey (2017)[59]) to assess behaviours in these populations accurately.

The UK's Natsal behavioural surveillance studies are the largest consecutive national probabilistic surveys ever undertaken on sexual behaviours and attitudes.[55,60-61] The first in 1990/1991 interviewed 18,876 people aged 16-59 years and utilised a paper-and-pencil survey and self-completion approach.[60] The second, a decade later, interviewed 12,110 people aged 16-44 years,[61] and the third, in 2010/11, 15,163 people aged 16-74 years.[55] Both Natsal 2 and Natsal 3 used computer-assisted interviews,[62] with Natsal 3 incorporating urine sampling to assess the prevalence of chlamydia trachomatis, neisseria gonorrhoea, type-specific human papilloma virus, HIV antibodies and mycoplasma genitalium.[55] The resulting data on trends and drivers of the STI/HIV epidemic, identified from each of the three studies, have been instrumental in shaping much of the UK's sexual health services.[63]

1.7 Use of standardised behavioural surveillance indicators

International behavioural surveillance indicators are now monitored as part of a broader set of HIV indicators collected for Global Aids Monitoring (GAM) commitments (formerly GARPR (Global Aids Response Progress Reporting) and UNGASS (United Nations General Assembly Special Session on HIV/AIDS).[64] Co-ordinated by UNAIDS and their partners, GAM now has one of the highest response rates for an international monitoring mechanism.[64] At the European level, ECDC monitors the commitment of 55 countries in Europe to the Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia, which was adopted by European and Central Asian countries in Dublin, Ireland in 2004.[65] As part of this commitment, government and civil society organisations in each country undertake annual

reporting to ECDC, which, since 2018, collects core data on GAM indicators for EU/EEA countries on behalf of UNAIDS and the WHO.[65]

While this is a welcome development, one of the biggest challenges in constructing an SGSS is the great diversity among existing indicator sets for behavioural surveillance, particularly concerning what types of indicators are included, the definitions used, the precise wording, and parameters of age groups and time periods of reference.[48] Developing transverse indicators (i.e. indicators that can be used across all populations) and indicators that are common to many countries would allow for enhanced comparability of data between populations and across borders.[48] ECDC has proposed a set of core indicators and a set of secondary population specific indicators for behavioural surveillance of STIs and HIV.[48,33] The following are six core indicators, which it recommends are routinely collected across all relevant populations:

1. Number of sexual partners (last 12 months)
2. Condom use at last intercourse (last 12 months) (stable, casual and paid partners)
3. Experience of HIV testing
4. Having paid for sex (last 12 months and associated condom use)
5. HIV knowledge (composite indicator)
6. Contextual indicators (level of education; nationality/ethnic origin/sexual orientation)

Additional indicators have been recommended in higher-risk population groups including MSM; PWID; sex workers and PLHIV.[33] The development of a core set of behavioural indicators for Europe created the first framework for the collection of standardised sexual health data that could be compared across time and countries.[33] The efficacy and appropriateness of sexual health policies and programmes are dependent on reliable timely population estimates of sexual behaviours and disease prevalence.[66] However, the main issue with current indicators of sexual behaviour is a lack of specificity and uniformity.[67] Indicators are often asked in different ways between national surveys, with varying timeframes and wording.[33] This makes it increasingly difficult to monitor trends in risk behaviours accurately or to compare data between studies.[33]

It is in the context of this backdrop that the rationale for this project evolved. The following chapter will present a more detailed summary of the factors and resources that informed this project.

Chapter 2: Study Background and Rationale

2.1. Study background

Although accurate estimates of STI prevalence are restricted by inadequate global surveillance, prevalence rates of notified STIs continue to rise in many countries, including in developed countries.[33] In Ireland, figures from the Health Protection Surveillance Centre (HPSC) reported a 62% increase in STIs notified between 2001 and 2011.[68] More recently, the HSPC has reported concerning increases in rates of chlamydia, gonorrhoea, genital herpes and syphilis in 2016 compared to 2015.[1] Several STIs, including HIV, can remain asymptomatic for years; therefore, these undiagnosed infections may result in biological surveillance alone not conveying the true extent of a country's epidemic.[4] In these circumstances, the surveillance of sexual behaviour, both risky and protective, provides a useful additional public health tool.[4] A functional SGSS is crucial for determining the drivers of epidemics, allowing for the accurate and timely development of effective prevention interventions.[29] While Ireland currently has a national biological surveillance programme for STIs and HIV under the guidance of HPSC, as already mentioned, it does not have a functional behavioural surveillance system.[48]

The growing importance of behavioural surveillance of STIs was evident in the launch of Ireland's first National Sexual Health Strategy, 2015-2020.[51] As well as recommending that stakeholders agree a set of clinical and behavioural sexual health indicators[51] in line with the ECDC framework,[48] the strategy also calls for the establishment of a second generation sexual health surveillance system in line with international requirements.[69] WHO/UNAIDS provided the first framework for SGS in 2000,[70] followed in 2002 by practical guidelines for how to initiate an SGSS.[29] More recently, WHO and UNAIDS have published an update for establishing an enhanced SGSS, designed for countries whose baseline surveillance is already of a relatively high standard.[69] Therefore, a key aim of this project was to build the foundations of a national second generation surveillance plan using the established WHO/UNAIDS practical guidelines.[29] This framework, which is outlined in Table 2.1 , outlines the practical steps recommended in this process:

Table 2.1: Framework for implementing HIV second generation surveillance: practical steps (adapted from WHO/UNAIDS 2002)[29]

STEP 1: Assess current surveillance
STEP 2: Hold a national consensus-building workshop with key stakeholders
STEP 3: Develop a national surveillance plan
STEP 4: Develop surveillance protocols
STEP 5: Implement surveillance activities
STEP 6: Monitor the implementation of, and evaluate, surveillance activities

2.2 The current study

Using the WHO/UNAIDS frameworks[29] this study aims to identify the gaps in Ireland's current surveillance system, using a distinctly collaborative approach with key stakeholders, with a view to building consensus on the future design of a national SGSS in Ireland, in line with key recommendations from the National Sexual Health Strategy, 2015-2020.[50] More specifically, it aims to operationalise (and expand) the first two steps in the framework[29] just outlined by:

1. Undertaking a baseline description of STI/HIV behavioural surveillance and research to inform the development of standardised STI and HIV behavioural indicators

2. Engaging key stakeholders in a national consensus-building exercise to agree a set of core STI/HIV behavioural indicators

3. Conducting a feasibility and acceptability study using the agreed STI/HIV behavioural indicators.

2.3 Study Work Packages (WPs)

This study achieved these aims through three discrete but inter-related Work Packages (WPs) which will now be outlined. Table 2.2 shows the strategic alignment of each WP with key recommendations from the National Sexual Health Strategy, 2015-2020.[51]

2.3.1 WP1: Assessing current surveillance systems

WP1 was designed to assess the current level and nature of biological and behavioural surveillance in Ireland related to STIs, HIV and sexual behaviour. Second generation surveillance is built upon a given country's existing surveillance system; therefore, the first step towards establishing a national SGSS is an analysis of the current STI, HIV and behavioural surveillance systems in place.[29] The primary outcome from this stage is an analysis of the strengths, limitations, problems and gaps in the current surveillance systems, in order to identify areas for future improvement.

Table 2.2: Strategic alignment of Project Work Packages with key recommendations from the National Sexual Health Strategy, 2015-2020[51]

Work Package (WP)	National Sexual Health Strategy, 2015-2020[51] Recommendations
WP1: Assessing current surveillance systems	5.6. Undertake a baseline description of surveillance and research activity to inform the development of appropriate, standardised, clinical and behavioural indicators.
WP2: Engage key stakeholders in national consensus-building	5.5 Agree a set of clinical and behavioural sexual health indicators. 5.9 Develop and embed a culture of commitment to surveillance of STIs within sexual health services.
WP3: Acceptability study of agreed STI/HIV behavioural indicators using cognitive interviewing	5.5 Agree a set of clinical and behavioural sexual health indicators.

The WHO/UNAIDS practical guidelines[29] identify the main components that should be reviewed as part of this process, such as: HIV/AIDS/STI surveillance framework; behavioural studies; management of the system including information; resources; and analysis, dissemination and use of information.[29]

2.3.2 WP2: Engage key stakeholders in national consensus-building

WP2 was designed to implement the next practical step in initiating an SGSS. A key focus of an SGSS, and a central aim of this project, is to drive policy and translate information into action. However, to ensure future sustainability this requires a distinctly participatory approach.[29] Therefore, this project was methodologically planned to be inclusive and collaborative in its approach from design to dissemination. WP2 aimed to achieve consolidation and consensus on the key STI/HIV behavioural indicators while also serving to foster a greater sense of engagement and commitment to surveillance of STIs with key stakeholders.

2.3.3 WP3: Acceptability study of agreed STI/HIV behavioural indicators

WP3 assessed the feasibility of the nationally agreed STI/HIV indicators identified in WP2 and aimed to provide valuable information on the appropriate language and terminology for the successful use of these indicators in an SGSS within the target population. One common focus of feasibility studies is the acceptability of the indicators/survey questions to the target population, and the best way to assess this is through qualitative methods.[71,72]

The next chapter will provide the methodological detail for each of the individual WPs.

Chapter 3: Methodology

3.1 Study design

WP1 was a desk-based assessment of biological and behavioural surveillance of STIs and HIV in Ireland since 2000. WP2 was a modified E-Delphi (see Section 3.4.1) followed by a consensus-building workshop to agree key STI and HIV behavioural indicators with key stakeholders. WP3 was a feasibility study of the agreed behavioural indicators using online quantitative data collection followed by a cognitive interview.

3.2 Expert guidance and ethics

One of the initial tasks in this project was the setting up of an external advisory committee consisting of representatives from key stakeholders (i.e. Departments of Public Health; Gay Health Network; HPSC; HIV Ireland; HSE Sexual Health and Crisis Pregnancy Programme (SHCPP)) and researchers in the sector, as well as an international HIV expert from ECDC. The steering committee was strategically consulted for the duration of the project through a number of scheduled face-to-face meetings conducted throughout the project. Ethical approval for WP 2 and WP3 was applied for and obtained from the RCSI Research Ethics Committee in May 2017 and December 2017 respectively.

3.3 Work Package 1: Assessment of current surveillance

Before a country can set up an STI/HIV surveillance system it must first 'know' its epidemic.[69] Critical information derived from this analysis can then be used to direct services to the populations and regions where they are required the most.[69] The WHO/UNAIDS practical guidelines posit that in a country that has not evaluated its surveillance system in 3-4 years, a rapid review assessment is warranted.[29] There are a number of different approaches suggested such as multi-agency surveys, a review of surveillance documents and interviews with key personnel, and/or site visits where surveillance activities are carried out.[29] WHO/UNAIDS[29] advise that this assessment of surveillance should aim to include a review of the following components:

- HIV/AIDS/STIs surveillance framework
- AIDS/HIV infection case reporting
- Sentinel surveillance of HIV
- Surveillance for STIs
- Laboratory practices and quality assessment
- Behavioural studies

- Other relevant AIDS/HIV studies of sources of information in the country
- Management of the system including information
- Resources
- Analysis, dissemination, and use of information.

In this study, a rapid review approach was selected, as this is more time-efficient and more suited to a small research team.[29] Site visits to STI clinics and/or laboratories were not conducted, as a recently completed review on the capacity for STI clinics for electronic surveillance was made available to the research team and access to the surveillance data facilitated by HPSC.[73]

3.3.1 Biological and behavioural surveillance search strategy

Published documents and papers related to STI/HIV surveillance activities, both biological and behavioural, in Ireland since 2000 were reviewed. A Medline search was conducted using combinations of the terms 'surveillance', 'infectious disease', 'Ireland', 'behavioural surveillance', 'risk-behaviours', 'HIV', 'Sexually Transmitted Infection', 'STI', 'Sexually Transmitted Disease' and 'second generation surveillance'. Key websites of national surveillance stakeholders including HPSC, Department of Health (DoH), ECDC and HSE-SHCPP were also searched.

For the behavioural surveillance review specifically, websites of key community and non-governmental organisations (NGOs) were reviewed. Documents appraised included: surveillance protocols, national annual reports, and studies conducted by stakeholders involved in STI or HIV research in Ireland. The review specifically investigated the following areas in relation to STI/HIV surveillance in Ireland: the STI/HIV surveillance framework, case reporting mechanisms, sentinel surveillance, behavioural studies, national population statistics, management of the information and data analysis and dissemination.

3.4 WP2: Achieving consensus on STI and HIV indicators

WP2 was a modified E-Delphi[74] followed by a consensus-building workshop to agree core and secondary STI and HIV behavioural indicators with key stakeholders. Consensus methods in research are often used to problem solve, generate ideas, or determine priorities.[75] The Delphi technique provides an estimate of an overall group opinion by building consensus among participants through a series of rounds of questionnaires.[76] A lead researcher manages this process, provides feedback between rounds and guides the expert group towards consensus.[76] The Delphi method is designed as a way to structure group opinion, ensuring that individual personalities and social relationships do not

influence the decision-making process.[77] Participants remain anonymous throughout and feedback provides the group average results only.[76]

3.4.1 Modified E-Delphi method

Several variations of the Delphi method have been derived including classic Delphi, modified Delphi, E-Delphi and real-time Delphi.[78] In the classic Delphi, participants are experts on a specific topic and provide opinions to arrive at stability in the given responses on the topic.[78] Participants remain anonymous, the first round is an 'ideas' generating round, which is followed by controlled feedback and several subsequent rounds of voting to generate stability in the final responses.[78] An alternative Delphi version, the policy Delphi, aims not to achieve stability in responses but to generate policy alternatives with as many divergent opinions as possible.[79]

In this study, as several international behavioural indicator sets were already available, the Delphi technique was modified, by removing the initial ideas-generating round. This approach was chosen as, in the context of this study, it was necessary not to generate more STI/HIV indicators, but rather to gain consensus on the most important ones across at-risk populations and with key Irish STI and HIV stakeholders. This WP also used a modified E-Delphi[74,78] approach (i.e. where the Delphi study is conducted online). This decision was taken as a pragmatic approach to maximise stakeholder participation and minimise participant burden, as participants could complete the survey at a time that was convenient to them.

3.4.2 Indicator selection

The development of the first iteration of the online survey was informed by a literature search for STI and HIV indicators that have been used nationally and internationally. WP1 assisted in identifying many of the national and international studies that have used STI/HIV indicators, in addition to guidance from the Steering Committee members. This was supplemented by a keyword search, which was used to identify international indicator datasets. Search terms included combinations of 'STIs', 'HIV', 'Behavioural Surveillance', 'Indicators', 'Prevention' and 'Second Generation Surveillance'. Indicators were identified from international databases including: ECDC (2009);[48] NATSAL (2010);[55] WHO Behavioural Indicators (2004);[80] UNAIDS/MEASURE;[81] ISSHR (2006);[54] USAID/DFID;[82] WHO/UNAIDS/UNICEF (2011);[83] GAM (2016; 2017)[84-85] and Dublin Declaration (2017).[86]

Indicators were also searched for by key populations such as: general population; young people; MSM; sex workers; PWID; prisoners; migrants; PLHIV; transgender people and

homeless people. These searches highlighted several gaps in the international knowledge base of the sexual health of certain at-risk groups and the absence of standardised indicators for many groups (e.g. homeless; migrants; prisoners). For these groups additional literature searches were undertaken to identify any additional behaviour surveillance studies, which may have taken place among these groups.

3.4.3 Indicator inclusion and exclusion criteria

Potential indicators were included if:

- They were recommended by international STI and HIV health-monitoring groups e.g. ECDC, WHO.
- They were relevant to one of the at-risk populations of interest
- They described a behavioural/clinical aspect of STIs or HIV
- They were relevant to the Irish STI/HIV context.

This list of indicators was carefully reviewed and duplicates or overly similar indicators were removed. Indicators were also excluded from the final survey draft if they did not appear in more than one study and if they were not relevant to the Irish context, although this was not an overly strict criterion. Some examples of indicators removed at this stage included, for example, antiretroviral medicine stock-outs; number of males voluntarily circumcised (GAM 2017);[85] and multiple versions of knowledge and attitudes indicators. The literature search identified a final list of 393 STI/HIV behavioural indicators.

3.4.4 Development of initial survey draft

For the development of the initial survey draft, for piloting with the Steering Committee, the indicator list (N=393) was categorised by risk area (e.g. condom use) and risk groups (e.g. prisoners). This resulted in the identification of nine broad indicator areas or domains across the at-risk populations, namely:

1. Sexual experiences
2. Partners
3. Condoms and contraceptives
4. STI/HIV testing
5. Paid for sex
6. Knowledge and attitudes
7. Gender-Based violence
8. Drug and alcohol use
9. Safe injecting practices.

All indicators which were necessary to fulfil the national monitoring requirements (e.g. for Dublin Declaration[86] or GAM[85]) were automatically included and the feasibility of data collection for each indicator was not a deciding factor at this stage. Several of the indicators were similar apart from specifying different timeframes. As this would be repetitious, and participants would not have enough information to decide between the merits of asking about one timeframe over another in relation to a single indicator (e.g. is it better to ask if you have had an STI test in the last 3 months or in the last 12 months?); a reference timeframe was selected for indicators with this type of overlap. In most cases, this timeframe was chosen because it is already specified in Ireland's national reporting requirements, and therefore relevant and likely already familiar to some stakeholders. In other cases, the timeframe that appeared the most often nationally and internationally was the one that was selected. The final decision on the most appropriate timeframe for each indicator may differ across populations and behaviours, and exploration of the most appropriate timeframe is not within the scope of this project. This reduced the initial list of behavioural indicators from 393 to 317 (Please see Appendix 1).

3.4.5 Survey pilot with the steering committee

Once the final indicator lists were compiled, a pilot study took place among members of the steering committee. The steering committee members were sent a web link to review the questionnaire in its entirety on SurveyMonkey® and to make comments and suggestions on each item/indicator. Following this review, a number of modifications took place involving the length of the survey, age-range categories, wording of indicators and missing or unnecessary indicators. The invitation email, completion instructions, information leaflet and survey links were included in this pilot as per suggestions from other researchers to reduce misunderstandings and poor responses.[78] Feedback from this stage was used to refine the survey and survey materials before data collection with stakeholders began.

3.4.6 Delphi Rounds

The consensus process involved a one-round pilot (just outlined) and two rounds of a web-based questionnaire with key stakeholders working in STI and HIV services.

3.4.7 Modified E-Delphi: Round 1

3.4.7.1 Participant recruitment

A broad range of experts were invited to participate in this study to ensure inclusion of as many stakeholders as possible. These were identified by consultation with the Steering

Committee members and resources were provided by the HSE-SHCPP and HPSC regarding STI and HIV services in Ireland. Experts represented professional groups that directly work with patients, or groups at risk of STIs/HIV. Participants were invited from diverse geographical locations around Ireland and represented public and private STI clinics, NGOs working in sexual health; NGOs with a primary focus on one of the at-risk populations; laboratories testing for STIs and HIV; the National STI and HIV Public Health Special Interest Group; academic researchers and student health clinics. Participants were contacted by email and invited to take part in the study. The project outline, goals and process were explained and, if the participants agreed, a link to the web-based questionnaire was sent via the online Survey Monkey® platform. Informed consent was sought and obtained on the first page of the survey before any data was collected. SurveyMonkey® includes a function to monitor whether emails have been opened and the link clicked through; in Round 1, 51% of the survey links were unopened. Non-responders were sent a reminder email after one week and again after two weeks.

3.4.7.2 Questionnaire development

After the feedback from the pilot had been incorporated, the first round survey was compiled using a semi-structured event list approach,[87-89] as opposed to an open-ended ideas-generating round, as had been used previously.[90] This method allows for a reduction in consensus-building rounds to as few as two if consensus is reached early.[91] Here, instead of an ideas-generating round, the questionnaire took the form of a list of indicators (i.e. an event list) which respondents had to rank. These lists were semi-structured, that is, in addition to the predefined indicator list compiled from the literature search, each section included open-ended questions where respondents could also provide their opinion. Therefore, the first iteration of the questionnaire included 317 indicators across 11 sections. Additional sections provided information on the study, research team contact details and secured consent (at the beginning) and collected basic background information on the participants themselves, such as: area of work; populations who are the main focus of their work; geographic region of work; and their self-reported expertise with each of the at-risk groups.

In each section that contained indicators (Sections B-L), participants were asked to rank a series of indicators on a scale of 1-10 based on their importance to behavioural surveillance of STIs/HIV in Ireland, from 1 ‘Not important’ to 10 ‘Essential’. The first indicator section (Section B) contained core indicators and demographic questions relevant across all populations. The remaining indicator sections (C-L) were divided by specific population as follows: general population; youth (15-24-year-olds); MSM; sex workers; PWID; prisoners;

migrants; PLHIV; transgender people; and homeless people respectively. At the end of each indicator section, participants were given the opportunity to comment on existing indicators and to recommend the inclusion of alternative indicators for each sub-population.

As the survey was quite lengthy, and following feedback from the Steering Committee, participants were able to opt out of rating indicators for populations if they felt they did not have sufficient expertise. Therefore, in between each section (C-L), participants were asked to indicate if they felt they had enough experience or were qualified to rate the importance of indicators in each specific population. If they responded 'No', they skipped that section and were routed to the next population group.

3.4.7.3 Defining consensus

There are numerous approaches to defining consensus in Delphi Studies, including degree of uncertainty around a point estimate, decreasing variance of group responses, or the proportion of respondents agreeing with a particular viewpoint.[87-89] Many Delphi studies have used specified levels of agreement to define consensus as having been achieved and this can be particularly meaningful in studies utilising Likert or nominal scales to assess the degree of agreement.[90] The percentage cut-off points chosen, however, can significantly affect the study outcome.[91] Lynn (1986) suggests that where there are at least 10 experts participating in a study to develop consensus, at least 80% of them must agree on an individual item in order to have content validity.[92] However, standards for consensus in Delphi studies have not been defined or established.[93] The stricter the criteria, the more difficult it is for consensus to be reached.[94]

3.4.7.4 Achieving consensus

Because of the high numbers of initial indicators (n=317), this study chose a relatively high criterion for consensus. To define an indicator as having achieved consensus agreement, 90% or more of participants must have rated an indicator with a score of seven or more, in terms of importance, on the Likert scale. Similarly, where 90% or more of participants agreed with a score of four or less, an indicator would be classified as unimportant for the behavioural surveillance of STIs and HIV in Ireland.

3.4.7.5 Participant feedback

The feedback between Delphi rounds is meant to be controlled, and statistical group responses usually feature measures of central tendency (mean and median), dispersion (standard deviation or interquartile range) and/or frequency distributions (histograms).[90]

After reviewing the group statistics alongside their own rating, each respondent can decide whether to amend or remain with their initial answer in Round 2. Given the large list of indicators presented in the first round (n=317) and in an attempt to maximise participant response, feedback was kept as simple as possible. Following expert recommendation surrounding what was the most meaningful feedback in this circumstance, participants received a document containing only the group's mean score for each indicator (the average score among those who had responded to a given indicator) and their own score for each indicator.

3.4.8 Modified E-Delphi: Round 2

3.4.8.1 Participant recruitment

A benefit of the E-Delphi is that it facilitates the inclusion of opinions and expertise from a geographically scattered group whilst minimising the disruption and time commitments required to participate.[95] This is essential for staff working in busy clinical services where there are already heavy demands on staff time and resources. Participants can take part when it is convenient for them. Keeney et al. (2011) noted that some organisations' firewalls may block emails containing links to survey providers, preventing experts from participating.[78] The research team sought to overcome this phenomenon in Round 2 by sending a personalised email to each participant from our institute's email account and then sending an email from SurveyMonkey® including the link. Using SurveyMonkey® function to monitor whether emails have been opened and the link clicked through, we were able to reduce the number of unopened survey links in Round 1 from 51% to 11% in Round 2.

Every participant who took part in Round 1 was automatically sent a link to the Round 2 survey. Round 2 non-responders were again sent two reminder emails to complete the survey, one and two weeks after the survey link had been sent. In an attempt to maximise respondent engagement, one final reminder email was sent to participants who had never responded to either Round 1 or the invitation to Round 2. Any stakeholder who then agreed to take part was sent further instructions and a copy of the group average scores from Round 1 to review before they completed the second survey. An analysis of the under-representation of certain at-risk groups was also noted at this stage, and a separate email was drafted to these stakeholders emphasising the importance to their service users of their participation in this research. This increased effort led to an additional 8 responses from stakeholders in Round 2.

3.4.8.2 Questionnaire development

Feedback from respondents of Round 1 indicated that they had found the survey very long. The second survey for Round 2 of the E-Delphi was shorter than Round 1 as any indicators that had reached consensus agreement (90% or more respondents agreeing with a score of seven or more) were removed (n=153).The main benefit of shortening the survey was to encourage more participants to answer in the second round as non-response to subsequent Delphi rounds is a common problem.[76,77] Indicators that achieved consensus in terms of their unimportance (a score of 1-4 on the scale) were also reviewed; however, as there were only two indicators identified in this category, it was decided not to remove them at this stage. New indicators suggested by participants in Round 1 were also included if they were mentioned by three or more participants for any given sub-population. The Round 2 survey had the same format as the Round 1 survey, and participants were once again offered the opportunity to comment on each section.

3.4.8.3 Achieving consensus

In Round 2, participants ranked the remaining indicators on the same scale used in Round 1 but this time with knowledge of the group average scores for each indicator. This provided participants with the opportunity to reflect on their score in light of the group scores and amend them if necessary, whilst still preserving anonymity of their responses. Again, consensus from the group was achieved if 90% or more of the participants rated an indicator with a score of seven or more, in terms of importance, on the Likert scale.

3.4.9 Delphi Analyses

The Likert-like scale upon which the participants expressed their opinions can be assumed to be an interval scale. For the analysis of this research, the mean, a measure of central tendency, was used as the group average opinion, and the standard deviation, a measure of spread, assessed the level of disagreement among panel members. The mean and standard deviation of responses for each indicator was calculated in each round (Appendix 7). Any indicators which achieved consensus agreement in the second round were also included in the final indicator list, along with those achieving consensus in Round 1. The final indicator list could then be stratified in order of importance according to mean responses within each sub-population dataset (Appendix 8).

After the completion of both rounds of the Delphi study, we carried out a separate analysis of whether respondents who took part in both rounds (n=32) changed their opinions from

one round to the next. The group average for indicators ranked by these 32 changed between Rounds 1 and 2 for each of the indicators listed (see Appendix 8).

3.4.10 Consensus-Building Workshop

All participants who took part in the Delphi were informed of the consensus-building workshop prior to participating in the Delphi. All Delphi participants were invited to take part in a national consensus-building workshop. Participants were sent a further information leaflet and consent form for the workshop. The workshop aimed to discuss the feasibility of the agreed indicator lists. Eighteen participants took part in the workshop. Participants were randomly assigned to one of two groups and each group was tasked with two objectives:

- To rank the agreed indicators within each domain in order of importance to that domain
- To rank the top three rated indicators within each domain (as determined from objective 1) in terms of their feasibility.

Discussions were facilitated using the Nominal Group technique.[77] The Nominal Group technique is a structured group session aimed at achieving group consensus.[77] The technique encourages active participation by each group member and aims to reduce power structures or personality effects, giving an equal voice to quieter members.[77] In this technique, a facilitator or member of the research team used a flipchart to record group discussion points and comments. Where different ideas emerged, the group was encouraged to form consensus on each point. A set amount of time was allotted to the discussion of each indicator, and facilitators guided the discussions in a timely manner.

For the first task, participants were provided with the complete list of indicators, which achieved consensus in Rounds 1 and 2 of the Delphi study. They were asked to rank each of the indicator sets individually in order of importance, with number 1 being the most important indicator (Appendix 5). For each group, the top three indicators rated by participants within each indicator domain (Sexual experiences; Partners; Condom and Contraceptive Use; STI/HIV testing; Paid for Sex; Drugs and Alcohol Use; Gender-Based Violence; Homelessness) were calculated. Once calculated, the top three ranked indicators within each domain were discussed by the group in terms of their feasibility.

Following the group discussions on the feasibility of collecting information on each of the top ranked indicators, participants were provided with scoring sheets upon which to rate anonymously the top three ranked indicators within each domain in terms of their feasibility, from definitely not feasible to definitely feasible (Appendix 6). Participant scores

and written comments were collected anonymously. Participants were able to view the full list of all agreed indicators within each domain and provide their comments and feedback on the final list. The comments, feedback and rankings of indicators (data not shown) were taken into account and any suggestions which appeared multiple times or which were mentioned across both workshop groups were added to the final recommended indicator lists (see results chapter).

3.5 WP3: Acceptability study of agreed STI/HIV behavioural indicators

WP3 was an acceptability study of the agreed behavioural indicators, using online quantitative data collection followed by a qualitative cognitive interview. Cognitive interviewing is a technique frequently used to pre-test a data-collection instrument.[96] It enables the researcher to explore the processes that respondents go through to answer survey questions and the factors influencing which answers they provide.[93] Implicit in the construction of survey questions or standardised tool is the assumption that:

1. Respondents will understand the question in a consistent way
2. The questions are worded with sufficient information to enable participants to provide the answers being sought
3. Respondents are capable of retrieving and providing the information required.[93]

Therefore, it is imperative to ensure that a survey reliably and sensitively measures the concepts or behaviours it is designed to measure.[94] In sum, the quality of the final data set, its reliability, validity and sensitivity, is dependent on the quality of the data-collection instrument.[93]

3.5.1 Participant recruitment

Participants were recruited to take part in both an online survey, comprising the agreed indicators emerging from the Delphi study for the general population and young people, and a face-to-face interview. Participants were recruited online through notices on third-level student union sites, emails and snowball sampling. A €50 voucher was offered as an incentive for participation (i.e. coming to RCSI to complete the survey online, followed by a face-to-face cognitive interview). Participants indicated their availability on a Doodle poll especially set up for this purpose and were emailed information on the study and their participation approximately one week before the scheduled cognitive interview. Inclusion criteria were participants who were ordinarily resident in Ireland and aged between 18 and 40 years. Participants were purposively recruited to ensure a gender balance, and written consent was obtained from participants on the day of the interview session.

3.5.2 Safeguarding of participants

While there are no expected risks or potential harm to participants associated with this project, the research topic is a sensitive and often personal area and full consideration was given to the safety and well-being of participants during and after taking part. The research team was mindful of the potential to upset or distress participants who were taking part in the cognitive interview, and ethics approval was obtained prior to any data collection. The research team comprised experienced sexual health researchers and appropriately managed and responded to any issues that arose. None of the participants reported any distress during or upon completion of the interview. All participants were provided with an information sheet to take home with them (see Appendix 11), which included the correct answers to the sexual health knowledge questions, contact details of the research team should they wish to discuss something after participating, and contact details for a number of sexual health-related services including: the Irish Family Planning Association; Dublin Well Woman Centres; HIV Ireland; +Options; and the Dublin Rape Crisis Centre. During the interview, some participants disclosed experiences of sexual violence; these were sensitively responded to and participants were signposted to appropriate services as required.

3.5.3 Survey development

The online survey was developed using results from the Delphi study and included indicators for the general population and young people, along with other questions routinely asked as part of the ISSHR[54] survey (Appendix 10). The survey was designed to replicate a routine sexual health and behaviour questionnaire and was piloted with the research team in advance for coherency and clarity. The survey contained questions on the consensus-agreed indicator domains of: Partners; Sexual Experiences; Condoms and Contraceptive Use; STI and HIV testing; Knowledge and Attitudes, and some demographic questions (Appendix 10). The online survey was hosted on the SurveyMonkey® site.

3.5.4 Data collection

Completion of the online survey and all interviews were conducted on the RCSI campus and took an average of 90 minutes. On arrival, participants were briefed about the research procedure, provided with a hard copy of the information leaflet and, after an opportunity to ask any questions, their consent was obtained. They then completed the online survey, anonymously (identifying details were not recorded) and in isolation, on an iPad. The researcher allowed approximately 30 minutes for this portion of the data collection. Once this was completed and after a brief comfort break, the one-to-one cognitive interview began. Importantly, the researcher was not able to see the participant's responses prior to the cognitive interview.

3.5.5 Cognitive Interview Probes

Central to the method of cognitive interviewing is the Tourangeau model, which describes how respondents answer survey questions.[97] According to Tourangeau, there are four processes involved in answering a question: comprehension, retrieval, judgement and response.[97] Respondents must understand the question, they must be able to retrieve any necessary information from memory, they must choose the correct information to answer the question, and then they must provide their response.[97] Issues with any aspect of this process can affect the reliability of the data and bring the validity of the survey tool into question.

Table 3.1: Showing categories and question probes used in the cognitive interviews adapted from Tourangeau, R. Cognitive science and survey methods: A cognitive perspective. In Jabine, T., Straf, M., Tanur, J., Tourangeau, R. (Eds.) Cognitive aspects of survey methodology: Building a bridge between disciplines (pp 73-100). Washington, DC: National Academy Press, 2013[97]

	Probes
General/ Think aloud	How did you go about answering that question? How easy or difficult did you find this question to answer? Why do you say that?
Comprehension	What does the term X mean to you? What did you understand by X? Could you restate the question in your own words?
Retrieval	How did you remember that? How did you calculate your answer?
Confidence judgement	How well do you remember this? How sure of your answer are you? Were you able to provide the (requested information) or did you have to guess?
Response	How did you feel about answering this question? Were you able to find your first answer to the question from the response options shown?

Using this framework, the main cognitive interview technique utilised in this study was verbal probing.[72] Verbal probes, although subject to researcher bias, are generally the most efficient way of gaining an understanding of the cognitive processes a participants goes through when answering a question, and they are broadly well-accepted by interviewees.[71]

Interviews were conducted with a set list of probes or questions designed to gain an understanding of how the participant thought about, retrieved and developed their responses to survey questions.[72,97] Participants' experiences and understanding of the sexual health and behaviour questions in the survey were explored using combinations of probes.

Interviewers had a set list of probes to ask each respondent about the survey (Appendix 10); however, they were free to probe further if participants' responses indicated. Participants were informed that they did not have to disclose their answers to the survey questions during the interview process, and interviewers did not probe the specific answers directly. Each cognitive interview was audio-recorded and transcribed verbatim by an external third party for analysis. During the course of the interview, the researcher made additional notes as necessary.

3.5.6 Data analysis

Cognitive interview data was analysed using NVivo 11 (QSR International). Transcripts were returned to the researcher and anonymised before being uploaded to the analysis software.The analysis of the cognitive interviews involved a combination of question feature coding and theme coding.[97] The question feature coding focused on the behaviours of the evaluated survey question and analysed respondents' answers based on the Tourangeau formulation of comprehension, retrieval, judgement and response.[97] It is a top-down approach that assigns previously identified codes to the data.[97] The theme coding analysis is a bottom-up analysis method, which builds codes from the data and creates labels to describe phenomena observed in the data.[97] The survey included a range of other relevant sexual health and behaviour questions to provide context for the participant; however, the analysis will only be reported for those indicators that achieved consensus through the E-Delphi[74] process.

The next three chapters (Chapters 4, 5 and 6) present the research findings from the three WPs.

Chapter 4: Results of WP1: Assessment of Current Surveillance in Ireland

4.1 WP1: Assessment of current surveillance in Ireland

An initial step in establishing an SGSS requires an assessment of current STI, HIV and behavioural surveillance. The main objectives of this assessment are to describe current surveillance methods, both biological and behavioural; to identify any gaps in the data, which could be addressed by an SGSS; and to identify any structures and systems already in place that would assist in the development and delivery of an SGSS.[29,69] A table (Table 4.1) presenting a summary of STI and HIV surveillance in Ireland in the context of a SWOT (Strengths, Weaknesses, Opportunities and Threats) framework is presented, and these factors are explored in further detail throughout the chapter.

4.1.1 Context of STI and HIV Surveillance in Ireland

Surveillance of STIs in Ireland is based on a passive surveillance system whereby regular reporting of data is undertaken by all institutions who see patients or test specimens as part of a reporting network.[36] In Ireland, disease data is gathered from all reporting health worker channels, Departments of Public Health, GP clinics, Consultants in Infectious Disease and Genitourinary Medicine, STI clinics and microbiological laboratories coordinated by HPSC (formerly National Disease Surveillance Centre).[98] Neither the incidence nor the prevalence of STIs or HIV is known in Ireland, as the current surveillance system captures new diagnoses of infections only. (Note: In the time since this study was conducted, estimates of HIV in Ireland have been calculated using Spectrum, a UNAIDS-supported modelling tool. Click here for more detail). Active biological surveillance in Ireland takes place only in response to unusual trends or increases in STI/HIV infections, which have been successfully detected by clinical staff, or during routine surveillance by HPSC or Departments of Public Health.[98] Behavioural surveillance of at-risk populations for STIs and HIV-related risk behaviours is specific to the general population, MSM and young people only.

4.1.2 Legal Framework

The Infectious Disease Regulations Act 1981 and its subsequent amendments require medical practitioners, including directors of biological laboratories, to notify the Medical Officer of Health (MOH) in HSE Department of Public Health areas of any diagnoses of certain infectious diseases (called notifiable diseases, see below) that they detect.[98] The MOH is then required to report this data to HPSC, which produces regular reports on the diseases notified.[98]

Table 4.1: Summary of STI and HIV surveillance in Ireland using a SWOT framework

Internal Factors		External Factors	
Strengths	**Weaknesses**	**Opportunities**	**Threats**
Legal Framework	Services stretched	New module being developed in CIDR which will allow electronic reporting from STI clinics to CIDR	Funding
HPSC and HSE	Staff time limited	Available data which could be put to better use (e.g. Prisons)	Stakeholders' lack of resources
National Sexual Health Strategy 2015-2020	Increasing STI notifications	Individual Health Identifier	
Free STI/HIV testing	Limited prevalence data	MedLIS	
Sexual Health IT Systems	No national biological surveillance system		
NGO/Community sector heavily involved	Lack of data for at-risk groups		
Annual international reporting of STI and HIV data to ECDC			
Robust, reliable and valid data (weekly & annual reports)			

Note. CIDR = Computerised Infectious Disease Reporting; ECDC = European Centre for Disease Prevention and Control; HIV = Human Immunodeficieny Virus; IT = Information Technology; MedLIS = Medical Laboratory Information System; NGO = Non-governmental organisation; STI = Sexually transmitted infection.

Infectious disease data collection is standardised nationally, and HPSC provides weekly (for the majority of diseases) and annual statistics for the notification rates of notifiable infectious diseases in Ireland.[98] Currently, the notifiable STIs in Ireland comprise: ano-genital warts (AGW); chancroid; chlamydia; granuloma inguinale; genital herpes simplex; gonorrhoea; lymphogranuloma venereum (LGV); non-specific urethritis (NSU); syphilis; trichomoniasis; and HIV. Data on other diseases that can be sexually transmitted, such as enteric infections (e.g. shigellosis) and hepatitis A, B and C, are also collected.

4.1.3 National Sexual Health Strategy 2015-2020

A national sexual strategy works not only to reduce the transmission and prevalence of STIs/HIV in the population but also to achieve synergy arising from a holistic approach to sexual health.[33] It utilises a multidisciplinary approach to tackle the challenge of infectious disease burden alongside crisis pregnancy, contraceptive use, stigma and discrimination.[33] Ireland's first National Sexual Health Strategy 2015-2020[51] was launched in 2015; it takes a life course approach to sexual health. The vision of the strategy is that everyone in Ireland experiences positive sexual health and wellbeing and has access to high-quality sexual health information, education and services throughout life.[51] The strategy made a number of recommendations for the future of sexual health services in Ireland and called for 'robust and high quality sexual health information' to be generated to underpin policy, practice, service planning and strategic monitoring.[51] The strategy highlights the need for the strengthening of surveillance of STIs and HIV in Ireland and the introduction of an SGSS.[51] The strategy provides the impetus to ensure the ongoing development of the sexual health services in Ireland and helps to focus political will in this endeavour.

4.1.4 Biological surveillance of HIV in Ireland

HIV has been a notifiable disease in Ireland since September 2011.[3] The National Virus Reference Laboratory (NVRL) performs all HIV confirmatory testing.[98] Previously, prior to the notification of a new HIV diagnosis, confirmatory testing on two separate samples was required; however, since January 2015 (HSE East) and January 2016 (all other HSE regions), confirmatory testing on a single sample is sufficient for surveillance purposes.[68] A new HIV diagnosis, which has not been reported previously in Ireland, is then notified. The NVRL enters relevant information into the CIDR system. Notifications are then sent securely within CIDR to the Departments of Public Health.[98] If the original HIV test request came from another laboratory, the resulting notification is first sent back within CIDR to the referring laboratory. Once the laboratory has authorised the test result for sharing with Public Health, the clinical director will have discharged their statutory obligation to notify.[98] An enhanced HIV surveillance form is sent by the NVRL to the requesting clinician. Once the clinician has completed the form and returned it to public health for entry to CIDR, they too will have fulfilled their legal obligation to notify. In Ireland, a stage of infection is reported for all new HIV diagnoses, including AIDS-defining illnesses present at the time of diagnosis.[68] Paediatric infections of HIV are not notified in the above manner; information is collected by the dedicated Rainbow Clinic in Our Lady's Children's Hospital in Crumlin, Dublin and Children's University Hospital, Temple Street, who notify the relevant Department of Public Health

directly of new paediatric diagnoses. The Department then enters these notifications directly into CIDR.[98]

4.1.5 Biological surveillance of STIs in Ireland

Ireland currently does not have a dedicated reference laboratory for bacterial STIs though work is underway to nominate one.[51] In the meantime, there is an interim reference laboratory for gonorrhoea, and testing for bacterial STIs is undertaken in many of the HSE or private voluntary laboratories across the country. The NVRL is the reference laboratory for viral STIs including HIV, as described above. Mandatory information on STI infections in Ireland is notified by laboratories to Public Health via CIDR including: name/Identifier; date of birth; disease; laboratory report date; and sex.[100] These are collected for new diagnoses of chancroid; chlamydia; gonorrhoea; granuloma inguinale; herpes simplex (genital); LGV; syphilis; trichomoniasis. Other information, which is required but often missing from laboratory data, is address/county of residence (postcode in Dublin). There is a national agreement in place for clinicians to provide a core dataset on STIs to the MoH; however, this is not happening in all areas. Syphilis, gonorrhoea, HIV and LGV are all subject to enhanced surveillance and unique additional data is collected for each using enhanced surveillance forms which clinical staff are requested to complete.[98] Case-based data for AGW and NSU are not collected and are not entered into CIDR. Aggregate data on AGW (notifications by age group and sex) and NSU (total notifications) from clinics and GPs are collected by Departments of Public Health and collated nationally by HPSC.[98]

4.1.6 Computerised Infectious Disease Reporting (CIDR) system

Data is collected from medical practitioners and laboratories where possible, through CIDR, Ireland's secure web-based electronic surveillance system for notifiable infectious diseases.[98] CIDR is accredited ISO 27001 with Certification Europe for best practice in information security and system availability.[98]The information provided by laboratories to CIDR is timely and comprehensive; however, it is lacking key behavioural variables such as mode of transmission.[98] This information is generally not held in laboratory information systems (the source of the majority of CIDR notifications) and, as such, in order for STI/HIV clinicians to comply with the legal requirement to notify the MoH, they face the time-consuming process of manual extraction of data.[98] This involves manually collecting data from various sources and transcribing it to enhanced surveillance forms, a process which is open to error. The process puts a considerable workload on clinical and public health staff working in an already resource-constrained environment. For those diseases with enhanced surveillance (LGV, HIV, Syphilis, gonorrhoea), the problem is magnified.[98] A project assessing the feasibility of developing a CIDR STI/HIV module was undertaken in 2016, the aim of

which would ultimately be to allow the electronic upload of core data and to allow clinic staff to enter data directly into CIDR.[99] A core dataset for extraction has been agreed by HPSC and stakeholders and includes the following: clinic ID; county of residence, Health Board area of residence; surname; first name; date of birth; sex; address; suburb; town; postcode; country of birth; ethnic group; disease; and mode of transmission. Ireland's National Sexual Health Strategy, 2015-2020[51] made a recommendation to '*support, sustain and improve surveillance infrastructure and capacity, including the development of capacity to gather behavioural data systematically from sexual health service providers in CIDR*'[51]. The feasibility study confirmed that it was feasible to introduce electronic surveillance, and that there was widespread support for this CIDR module.[99] Work to design and build the module was completed in July 2018. In 2019, funding was secured to test and implement the system on a pilot basis. Further progress is currently awaiting employment of the team to lead this; it is hoped that this will happen in 2019.

4.1.7 Bacterial and viral STI reference laboratories

High-quality infectious disease surveillance is dependent on the availability of detailed and timely information on pathogens.[51] Reference laboratories play a central role in the detection, monitoring, outbreak response, and prevention and control of individual pathogens.[51] They are also uniquely qualified to deliver and provide specific scientific evidence and advice.[51] Viral STI reference facilities are provided by NVRL, Ireland's dedicated viral reference laboratory.[51]

4.1.8 Sexual health IT systems

There are three proprietary and seven in-house IT systems currently in place across Irish STI/HIV clinics.[100] GUMed, an STI clinic management system, was initially trialled in Galway but was not suitable and is no longer in use[100] Work is currently ongoing to identify an alternative clinical management system, which could be compatible with MedLIS (see below). However, many STI clinics are still operating manually using time-consuming paper-based systems.[100]

4.1.9 National Medical Laboratory Information System — MedLIS

In the coming years, the HSE will introduce an integrated nationwide hospital laboratory information system, MedLIS — National Medical Laboratory Information System.[100] The aim is to improve the delivery of diagnostic laboratory medicine, healthcare quality and efficiency of the Irish healthcare system by ensuring 24-hour access to complete and up-to-date laboratory data in a national electronic laboratory record.[100]

4.1.10 Individual health identifier

The DoH is currently developing an Individual Health Identifier (IHI) register for Ireland's five million individuals.[101] The IHI will be a unique 17-digit number. The system has created a single national registry of individual service users of the health and social care services in Ireland. Its aim is to facilitate the governance of matching systems allowing association of health records, and thus improving care.[101] The IHI is being incorporated into all new major IT systems, e.g. national maternity system and MedLIS; however, a decision about retrofitting current systems with IHI has yet to be decided. For this reason, patient identifiers are still required to be submitted to CIDR, where they are protected and stored.[99]

4.1.11 Critical involvement of Non-Governmental Organisation (NGO)/community sector

NGOs working in the area of sexual and reproductive health play a vital role in the control of STIs and HIV in the general population, and even more so among vulnerable at-risk populations. Their work enhances existing government services and they provide additional support in the areas of education and training; community outreach; advocacy; provision of family planning services; and health promotion campaigns.[33] The cooperation provided by all NGOs in developing the national sexual health strategy augurs well for its implementation and delivery.[51] Ireland has over 12 different charities and NGOs dedicated to sexual health among the general population and several at-risk groups. As well as enhancing government services, they provide additional support among vulnerable populations, many of whom may not interact with national service providers.

4.1.12 Robust, reliable and valid data

HPSC provides, on a weekly basis, the available data on new infections of notifiable STIs and HIV at a national level.[100] STI and HIV data in weekly reports is presented as new diagnoses by HSE area, sex and age group, and includes comparative trends for the same time period in the previous year. These weekly reports are provisional and HPSC produces in-depth statistics of final confirmed and validated diagnoses annually.[3] The data provided by HPSC is robust, reliable and valid, and is provided consistently on the HSPC website.[99] Data on HIV and certain STIs is also reported annually to ECDC and to WHO, as required.[33] STI and HIV surveillance reports include all people newly diagnosed in Ireland, even if previously diagnosed abroad.[3] For a system that is dependent on the diagnosis of new infections for its surveillance data, it is imperative that an adequate and representative testing network be put in place.

4.1.13 Free testing and screening

Screening programmes are an example of a secondary prevention measure.[36] Screening involves the systematic application of a test to identify infection in an apparently healthy individual.[36] Screening programmes can involve mass testing of the general population or selective targeting of high-risk populations.[102] Chlamydia, cervical cancer and antenatal screening programmes are considered relevant to the control and prevention of STIs and HIV in Europe.[33] A pilot study investigating the cost-effectiveness of a national chlamydia screening programme found that it would not be economically viable in Ireland.[103] STI testing in Ireland is voluntary. The HSE provides 23 public STI clinics with free STI and HIV testing, including two population-specific clinics for MSM and sex workers in Dublin.[51] In addition, some NGOs, charities, student health clinics and independent family planning centres offer free or discounted STI and HIV testing services. Community-based voluntary testing among MSM and other key populations is also provided to varying degrees across the country. Since 1999, opt-out HIV testing is provided as part of antenatal care to all pregnant women,[104] and a number of hospital emergency departments (EDs) (e.g. St James's Hospital and the Mater Hospital in Dublin) also provide opt-out HIV and Hepatitis testing for people attending ED services.[105]

4.1.14 Resource-constrained environment

Public health resources are constrained and limited. Enhancements in infectious disease surveillance data can allow resources to be targeted more efficiently to those most in need and to assist with improved utilisation of existing services.[33] The threat of further cuts to funding within services, which are already overstretched and understaffed because of recent reductions in health expenditure, will impact significantly on the provision of care to the population. These resource limitations are visible not only within the national HSE but also within smaller stakeholders involved in STI and HIV service provision across the country.

4.1.15 Geographical limitations to services

An effective surveillance system should be able to describe the situation in every geographical region in the country, in order to target intervention programmes to those areas most in need.[33] For countries with a high rural population, this can be a challenge. Ireland's largest STI and HIV services are broadly confined to big cities and towns, potentially leaving some people with barriers to accessing services and testing facilities. In addition, Ireland has one of the highest proportions of rural-dwelling population in Europe. Forty-two per cent of the Irish population lives in rural areas — 35% in cities and 23% in towns/suburbs.[32] While local GPs provide fee-based STI/HIV services in many areas, they

have limited capacity to provide the full range of STI and HIV testing, in addition to other sexual health services. Stigma around STI and HIV testing still exists, which for many will act as an additional barrier to attending their local GP for this type of medical care.[106]

4.1.16 Behavioural surveillance assessment

In 2013, ECDC published a report on a mapping exercise of national sexual health data, programmes and policies among 30 EU countries.[33] Specific reference was made to the sexual health of the general population and key at-risk populations who were vulnerable to STIs and HIV. Those populations deemed by the EU to be at risk of infection include: young people; MSM; sex workers; PLHIV; migrants; populations at risk of sexual violence and PWID. Included in this report, Ireland had conducted national and cross-national behavioural surveys on the sexual health of the following populations: the general population; young people; MSM; and prisoners.[33] Routinely collected case-based surveillance data on STIs and HIV was available only for these populations, with HIV data also available for PWID.[100] There have been eight additional surveys conducted among these groups since 2009, which are summarised in Table 4.3.

4.1.17 Combined biological and behavioural surveillance in Ireland

Ireland has a structured, highly organised approach to data collection for infectious disease surveillance. Data is submitted for analysis in a timely fashion, and weekly and annual reports are published by HPSC. There are, however, a number of gaps in the data available concerning prevalence and specific information for at-risk groups. Here we will discuss some of the strengths of the combined biological and behavioural surveillance methods currently in place in Ireland for our most studied population groups: the general population, young people and MSM.

Table 4.2: National behavioural sexual health studies or studies which contain a sexual health component carried out 2000-2017 among the general population in Ireland

Study Name	Year of publication	Population	Age range (years)	Setting	Administration mode	Number of participants	Comments
GENERAL POPULATION STUDIES							
Healthy Ireland[53]	2016	People aged 15+	15+	Household	Interviewer administered face-to-face	7,498 (subset completed sexual health questions)	17+ and self-completion for sexual health questions
Healthy Ireland[107]	2015	People aged 15+	15+	Household	Interviewer administered face-to-face	7,539 (subset completed sexual health questions)	17+ and self-completion for sexual health questions
ICCP[108]	2012	Adults	18-45	Household	Telephone interview	3,263	
SLAN[109]	2008	Adults — Irish/Non-Irish residents	18+	Household	Face-to-face interviews	10,364	Included a sub-sample of 1,200 adults aged 18-44 years
ISSHR[54]	2006	Adults	18-64	Private residential housing	Computer-assisted telephone interviews	7,688	
ICCP[110]	2004	Adults	18-45	Household	Telephone interview	3,317	
SLAN[111]	2003	Adults — Irish/Non-Irish residents	18+	Household	Self-completion questionnaire (postal)	6,539	

Note: ICCP = The Irish Contraception and Crisis Pregnancy Study; ISSHR = The Irish Study of Sexual Health and Relationships; SLAN = Survey of Lifestyle, Attitudes and Nutrition.

Table 4.3: National behavioural sexual health studies or studies which contain a sexual health component carried out 2000-2017 among MSM in Ireland

Study Name	Year of	Population	Age range	Setting	Administration mode	Number of	Comments

publication		(years)			participants		
MEN WHO HAVE SEX WITH MEN							
EMIS 2017[112]	2019	MSM in Ireland (Irish component of EU study)	17+	Online	Online, self-completion	2,083	Data collected in 2017
MISI[58]	2016	MSM in Ireland	18+	Online	Online, self-completion	3,090	
EMIS[59]	2013	MSM	17+	Online	Online, self-completion	2,303 Ireland; 2,194 ROI	
Real Lives 3[113]	2012	Gay/bisexual/ homosexually active men in Ireland	14+	Online and postal	Online, self-completion	673 (2007 online only) 598 (2008 online only)	Based on All-Ireland Gay Men's Surveys 2007 and 2008
Real Lives 2[114]	2009	Gay/bisexual/ homosexually active men in Ireland	14+	Online	Online, self-completion	1,165 (2005) 856 (2006)	Based on All-Ireland Gay Men's Surveys 2005 and 2006
Real Lives[115]	2006	Gay/bisexual/ homosexually active men in Ireland	14+	Online and postal (2003)	Online, self-completion and postal option	1,030 (2003) 868 (2004)	Based on All-Ireland Gay Men's Surveys 2003 and 2004
Vital statistics[116]	2000	Gay/bisexual/ homosexually active men in Ireland	16+	Bars, clubs, social events	Paper and pen, self-completion	1,290	

Note: EMIS = European MSM Internet Survey; MISI = MSM Internet Survey.

Table 4.4: National behavioural sexual health studies or studies which contain a sexual health component carried out 2000-2017 among young people and prisoners in Ireland

Study Name	Year of publication	Population	Age range (years)	Setting	Administration mode	Number of participants	Comments
YOUNG PEOPLE							

GUI[117]	2016	6,216 young people and their families	17/18	Home	Home-based, face-to-face interviews	6,216	Data collected 2015-2016
HBSC[118]	2015	Schoolgoing children	15-17-18	School	Self-completed questionnaires	13,611 pupils 3,928 aged 15-18 years	Only those aged 15+ asked sexual health questions
HBSC[119]	2012	Schoolgoing children	15-17	School	Self-completed questionnaires	16,040 pupils 4,367 aged 15-17 years	Only those aged 15+ asked sexual health questions
CLAN[120]	2005	Third-level students	less than 21 to over 25	University/Home	Self-completed questionnaire postal or drop off	3,259	
PRISONERS							
Study on the prevalence of drug use, including intravenous drug use, and blood-borne viruses among the Irish prisoner population	2014	Irish prisoners (male and female)	18+	Irish Prisons	Self-completed questionnaire, saliva sample. Assisted questionnaire completion available on site	824	Data collected in 2011.
Hep B, Hep C and HIV prevalence among Irish prison population[121]	1999	Irish prisoners	16+	Irish Prisons	Paper and pen, self-completion	1,205	

Note: CLAN = College Lifestyle and Attitudinal National Survey; GUI = Growing Up in Ireland; HBSC = Health-Behaviour in School-Aged Children.

4.1.18 General population biological surveillance

STI and HIV cases in the general population are reported via HPSC weekly and annual reports and are disaggregated by sex and age group; reports are based on new diagnoses of infection.[100] Antenatal HIV testing, often used as a measure of HIV prevalence in the general population, has been routine in Ireland since 1999. Testing is voluntary and works as an opt-out programme in order to increase uptake.[104] Aggregate data on the levels of screening and numbers of new HIV diagnoses is collected from 19 national maternity units and reported annually by HPSC.[104]

In 2015, the uptake of the programme was 100% although data was not available for one hospital and for private patients in some hospitals.[104] Data was collected from 63,217 women and 84 HIV diagnoses were identified in 2015, nine of which were new diagnoses detected by antenatal screening.[104] Prevalence of HIV detected during antenatal screening has decreased from 0.33% in 2003 to 0.13% in 2015.[104] The high uptake of antenatal screening in Ireland provides a comprehensive overview of HIV prevalence in this sub-group of the general population.

4.1.19 General population behavioural surveillance

Behavioural surveillance surveys of the general population provide an overview of the national risk behaviours relating to STI and HIV infection (Table 4.2) and act as a baseline from which the behaviours of high-risk subpopulations can be measured. Since 2000, Ireland has undertaken six national health surveys involving sexual health in the general population (Table 4.2). Ages of respondents vary among the different surveys but range from 18 to 80 years. ISSHR is Ireland's largest nationally representative study on sexual health ever undertaken.[54] The study surveyed 7,668 adults in Ireland between 18 and 64 years of age.[54] An increase in sexual risk behaviours among younger groups was noted including more casual partners, practising unprotected anal sex, having concurrent sexual relationships, and commercial sex procurement among young men.[54]The use of alcohol and drugs was a significant risk factor for unprotected intercourse.[54]

Table 4.5: Table highlighting the gaps in Irish behavioural surveillance of STIs and HIV, from national surveys 2000-2015 across each of the at-risk populations

Indicator Domain	General Population	Young People (15-24)	MSM	Sex workers	Prisoners	Migrants	PWID	PLHIV	Trans-gender	Homeless
Partners and experiences	●	●	●	●	●	●	●	●	●	●
Condom and contraceptive use	●	●	●	●	●	●	●	●	●	●
STI and HIV testing	●	●	●	●	●	●	●	●	●	●
Sex work	●	●*	●	●	●	●	●	●	●	●
Knowledge and attitudes	●	●	●	●	●	●	●	●	●	●
Sexual violence	●	●	●	●	●	●	●	●	●	●
Alcohol and drug use †	●	●	●	●	●	●	●	●	●	●
Estimated population size (year)	3,751,424 (age 16+) (2016)	576,452 (age 15-24) (2016)	106,631 (2016)	1,000 (2009)	3,718 (2016)	810,406 (2016)	18,988 (2014)	7,205 (2017)	No estimate	5,508 (2017)

Note: ● = Data related to this behavioural indicator domain was collected from this population in the last 15 years; ● = No surveys.
HIV = Human Immunodeficiency virus; MSM = Men who sex with men; PLHIV = People living with HIV; PWID = People who inject drugs; STI = Sexually transmitted infection.
* = Only asked young men's use of sex workers; † = Only included if alcohol and drug use was asked about in the context of sexual activity

These national surveys covered a wide range of indicator areas with the exception of experiences of sexual violence (Table 4.5). There was a national survey of sexual violence in Ireland in 2002;[122] however, the impact of experiencing sexual violence in the context of sexual risk behaviours has not been investigated to date in the general population. Despite a lack of consistency around the phrasing and specifics of individual indicators, these six surveys do allow us to illuminate some patterns in the sexual health risk-taking behaviours among the population of Ireland over time.

4.1.20 HIV testing in the general population

National data on HIV testing rates has improved significantly in the last ten years. Three general population surveys have assessed self-reported HIV testing rates in Ireland. In 2006, ISSHR found that 9% of men and 67% of women had had a HIV test.[54] ICCP-2010 identified an increase to 26% of men and 45% of women reporting having had a HIV test.[108] Most recently in 2017, Healthy Ireland reported that 21% of the population reported having had a HIV test, with 5% reporting having had one in the previuos 12 months;[53] 3% of heterosexual males; 5% of heterosexual females; 12% of MSM; and 4% of women who had sex with women.[53] The higher proportion of MSM reporting HIV tests is encouraging as these are one of the key populations for HIV in Ireland.[2] Using the Healthy Ireland data[53] and CSO population's statistics from 2016,[32] it can be estimated that 181,634 individuals were tested for HIV among the general population. In 2016, HPSC collated the total numbers of HIV tests performed in Ireland and identified 192,956 tests, with a rate of 40.5 per 1,000 population in 2016.[2]

This amounts to a potential discrepancy of over 10,000 tests between HPSC recorded data and self-reported Healthy Ireland data. There could be a number of reasons why this discrepancy might exist:

- Self-reported testing data often over/under-represents the true figures
- The Healthy Ireland survey[53] asks about HIV tests in the previous 12 months and not which country they were conducted in; it is possible that respondents had tests outside of Ireland,
- HPSC HIV testing data accounts for numbers of tests and not numbers of individuals; an individual may have had more than one HIV test in the year
- HPSC figures do not include all of the tests carried out in Ireland as some laboratories did not return data during the reporting period[2]
- And finally, the Healthy Ireland data[53] is based on the self-reported figures for those aged 17 and over in the population; HPSC figures include tests carried out on any member of the general population, regardless of their age

In spite of these caveats, the data shows that self-reported HIV testing rates provided by population surveys correlate quite well with data collected on the number of HIV tests performed in Ireland. Healthy Ireland 2017 also asks about STI tests in the previous 12 months, with 5% of the population reporting having had a test in the previous 12 months.[53] This data cannot be correlated with HPSC STI testing data as, at present, there is no data available on the number of individual tests performed annually in Ireland. Furthermore, the sexual behaviour questions asking about STI and HIV testing have been different in each iteration of the Healthy Ireland survey to date, making comparisons between surveys challenging if not impossible. Standardised behavioural indicators are a way to overcome this challenge.

4.1.21 STI and HIV diagnoses in the general population

Of the estimated 192,956 HIV tests carried out in 2016, there were 1,651 positives, amounting to 508 positive HIV diagnoses.[2] For STI tests, using figures for just chlamydia, gonorrhoea and early infectious syphilis new diagnoses in 2016[2] and the Healthy Ireland self-reported testing data,[53] there were 9,155 STIs diagnosed from 181,634 tests, a positive test rate of 5%.[2] Lloyds Online Doctor, an online provider of STI and HIV home-test kits reported 961 tests utilised by clients in Ireland in 2014, and of these, 6% were positive.[123] The three, Dublin-based, Well Woman clinics performed 5,042 chlamydia tests that same year (2014), of which 5% were positive.[124] While these estimates do not give us a precise idea of prevalence, the question remains as to what level of coverage is required for testing campaigns to give an accurate representation of STI/HIV prevalence using self-reported data.

4.1.22 Biological and behavioural surveillance among young people

Young people have been identified as a significant at-risk group for STIs and HIV in Ireland, both by the HPSC[2] and in several behavioural surveillance studies.[11,44] In 2015, over 38% of new diagnoses of chlamydia, gonorrhoea and herpes simplex were among young people aged 15-24 years. In 2016, this proportion had increased and 15-24-year-olds accounted for almost half of all chlamydia cases, 43% of herpes simplex and 37% of gonorrhoea cases. Seventy per cent of all STIs notified in Ireland in 2016 were among people aged 30 years and under. As ISSHR identified, young people were more likely to participate in risky sexual practices than other age groups even though sexual health knowledge among this group was high.[54] Three national surveys of sexual health among young people have taken place in Ireland since 2000 (Table 4.4). Indicator areas were wide-ranging; however, similar to other populations, experiences of sexual violence were not investigated. Previous experiences of sexual violence have been shown to be a risk factor for future risky sexual behaviours.[2] Inconsistencies also exist between the surveys in terms of age ranges of young people

included, the phrasing of questions relating to indicators, and the timeframes for given indicators. Similar to the challenges with the data from the general population, this makes trend analysis complicated, if not unreliable.

According to the 2016 CSO survey,[32] the population in Ireland aged 15-24 (young people) is 576,452, with slightly more males (292,492) than females (283,960). In ISSHR 2006,[54] 12% of men and 15% of women aged 18-24 had not yet had a sexual partner. According to Hughes and Field (2015), a fall in the age of first sex can lead to increases in reported risky sexual behaviours.[31] They hypothesise that an earlier sexual debut, combined with substantial increases in the time to first live-in relationship and having children, increases the time spent by an individual at risk of STIs.[31] However, without systematic monitoring of these types of behavioural risk factors, it is impossible to prevent and control the transmission of STIs and HIV effectively in this group.

4.1.23 Biological and behavioural surveillance among MSM

MSM are the most represented group in terms of behavioural surveillance in Ireland; however, they are also one of the groups most affected by STIs and HIV.[2] In 2016, 95% of all LGV cases were among MSM, along with 72% of syphilis cases and 42% of gonorrhoea cases.[99] MISI 2015[58] asked MSM (n=3,090) about their sexual health. It identified a HIV-positive rate of 5% among survey respondents and 10% among the 40-49 year age group.[58] Younger men were less knowledgeable about STI prevention and less likely to have been tested for STIs or HIV.[58] The seven national sexual health surveys of MSM in Ireland since 2000 (Table 4.3) have identified a high rate of sexual risk-taking behaviours among a proportion of this population. The in-depth questioning of indicators in many of the surveys has provided an invaluable resource from which to design targeted STI prevention and reduction strategies. The high levels of STIs and HIV diagnoses among this population and the limitations experienced in accessing population-specific services mean that the ongoing surveillance of risk behaviours in this group is essential. The knowledge base created by the seven surveys provides a comprehensive resource from which to analyse future trends in risk behaviours. It is of note that indicators related to gender-based violence have not been typically included in these surveys.

This chapter has highlighted a number of strengths, weaknesses, opportunities and threats within Ireland's past and current surveillance of STIs and HIV. These will be discussed in more detail in Chapter 7.

Chapter 5: Results of WP2: E-Delphi Study for Consensus on STI and HIV Behavioural Indicators

There is great diversity among existing indicator sets for behavioural surveillance, particularly with regard to the indicators included, the definitions used, the precise wording, age groups and periods of reference.[48] This WP was a key component of the project, with the dual aim of agreeing a set of STI and HIV behavioural indicators with stakeholders while also embedding the idea of the value of behavioural surveillance and of their role in the development of a national SGSS.

5.1 E-Delphi response rates

In total, 162 individuals were invited to take part in this study, with 57 respondents between both rounds of the Delphi. Response rates varied between rounds (Table 5.1); out of 162 invitations in Round 1, there were 45 responses (27.8%). In Round 2, there were 44 responses (27.2%) — 32 of the original 45 from Round 1 (71.1%) and 12 new responses. Attrition rates between Delphi rounds have been reported as high as 98%.[78] The E-Delphi technique appears to have more stable rates of between 5 and 28%.[78] In this study, the attrition rate between Rounds 1 and 2 was 28%. This may be attributable to the time of year in which the study took place i (during the summer months) and the busy nature of the work of study participants. Of the 13 participants in Round 1 who did not take part in Round 2, six responded saying that they were abroad on holidays, three had other work commitments and four gave no reason.

5.2 Stakeholder demographics

There was good geographic representation among the stakeholders who participated in both rounds of the E-Delphi, and respondents worked in a variety of settings including: clinical services (n=13); public health (n=10); NGO/community groups (n=8); national policy and service planning (n=3); and academia (n=1).

In terms of the completion of the survey relative to people's self-reported expertise, the general population section of indicators was the most frequently answered by respondents, followed by young people, MSM and PLHIV respectively. Following a researcher-driven initiative in Round 2 to increase responses for some of the least frequently answered sections in Round 1 (sex workers, transgender, and homeless), response rates for these groups were increased.

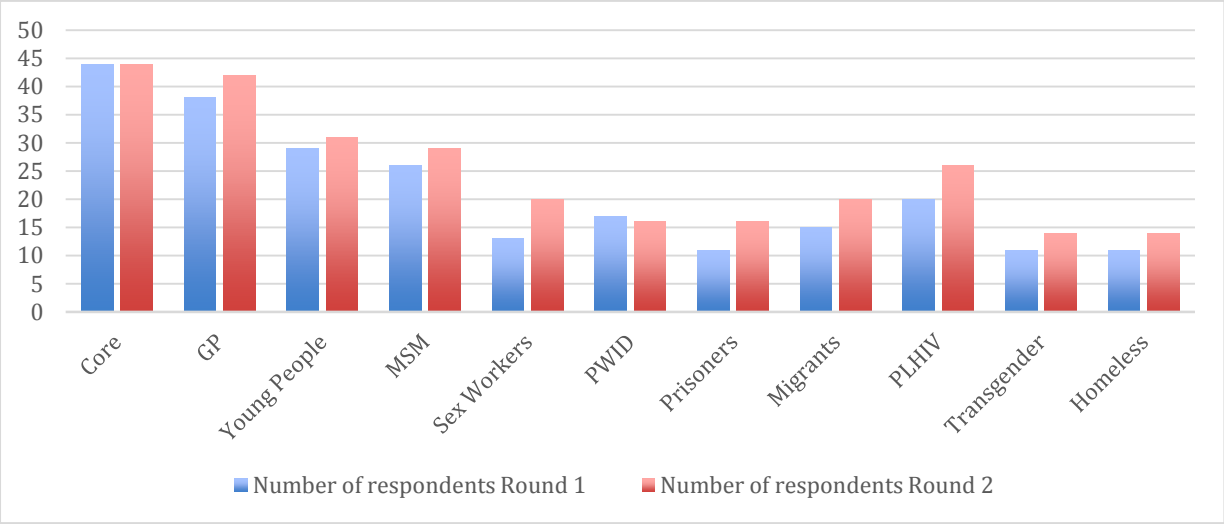

Figure 5.1: Number of participants in each round of the E-Delphi who completed indicators for each at-risk population group

5.3 Consensus-agreed STI and HIV behavioural indicators

A total of 188 indicators achieved consensus at the end of the Delphi study, 153 in Round 1 and 35 in Round 2. Each indicator achieving consensus had an average rating of 8 or more in terms of importance (Appendix 7). Indicators that were included in both rounds (i.e. did not reach consensus agreement in Round 1 and so were included in Round 2) were also rated 8 or more in both rounds (Appendix 7).This shows a consistency among the participants in terms of their consensus on the importance of each indicator. Reviewing scores before re-rating indicators in Round 2 led to an increasing agreement around each indicator, as can be seen from the reducing standard deviations between rounds (Appendix 8). For the group of participants who responded to both Rounds 1 and 2, the standard deviations in their scores for the 28 indicators included in both rounds reduced in 23 out of 28 indicator ratings, demonstrating an increasing move towards consensus between rounds. There was some evidence that receiving the group average scores between the rounds polarised respondents even further from the mean if they felt strongly about an indicator's score. For example, feedback from one participant in Round 2 highlighted this phenomenon when they commented in their survey that: 'I completely disagree with the group's score for this indicator, so I am changing my original number as low as I can.'

Table 5.1: Overview of survey development, E-Delphi rounds and timeline

Sources for Questionnaire Development	Pilot	Round 1	Round 2
EMIS ***GAM 2016/2017*** ***ISSHR*** ***Natsal*** ***UNAIDS*** ***UNICEF*** ***USAID/DFID*** ***WHO***	**Total of 393 Indicators**	**Total of 317 Indicators**	**Total of 188 Indicators**
	Steering Committee Pilot N=10	162 Participants invited 45 Respondents	162 Participants invited 44 Respondents
Total of 393 Indicators →	***Total of 317 Indicators*** →	***153 Indicators reached consensus*** →	***35 Indicators reached consensus***
Data Collection Duration			
4 Weeks	2 Weeks	3 Weeks	3 Weeks

Note: EMIS = European Men who have sex with men Internet Survey; GAM 2016/2017 = Global AIDs Monitoring; ISSHR = Irish Study of Sexual Health and Relationships; Natsal = National Survey of Sexual Attitudes and Lifestyles; UNAIDS = The Joint United Nations Programme on HIV/AIDS; USAID/DFID = US Aid/Department for International Development; UNICEF = United Nations Children's Fund; WHO = World Health Organization.

This study aimed to improve data quality and comparability, both nationally and internationally, from existing indicator resources and in future surveillance studies, by setting out a detailed framework for behavioural surveillance among multiple population groups in Ireland. Only three indicators achieved consensus across all population groups: Number of sexual partners in the last 12 months; Use of a condom at last sexual intercourse; and Use of a condom during most recent intercourse with a casual partner. Respondents felt that certain indicators were more important for surveillance in some populations than others. A total of 7 indicators achieved consensus among the general population group; 21 indicators achieved consensus for young people, and 23 for MSM. Table 5.2 shows the entire list of indicators that achieved consensus across the various populations.

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Table 5.2: Indicators which have reached consensus agreement by the end of the Delphi Study with stakeholders

INDICATOR AREA	INDICATOR	GP	Young People	MSM	Sex Workers	PWID	Prisoners	Migrants	PLHIV	Trans-gender	Homeless
Sexual Experiences											
	Age at first intercourse		X								
Partners											
	Men who have risky (unprotected) sex with both men and women			X							
	Number of sexual partners in the last 12 months	X	X	X	X	X	X	X	X	X	X
	Concurrency (multiple sexual partnerships overlapping in time)		X								
Condoms and Contraceptives											
(At last intercourse)	Use of a condom at last sexual intercourse	X	X	X	X	X	X	X	X	X	X
	Used condom at last anal intercourse	X	X	X	X					X	X
(with different types of partners)	Used condom during most recent intercourse with casual partner	X	X	X	X	X	X	X	X	X	X
	Used condom during last intercourse with partner of unknown or discordant HIV status	X	X	X	X	X				X	X
	Used condom during most recent sexual intercourse with a main partner					X		X		X	
	Used condom during most recent paid intercourse		X		X	X	X	X	X	X	X
	Used condom during the last time they sold sex (for money or benefit in kind)					X					
	Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status						X	X	X		
(in different sexual practices)	Used condom during last oral sex				X					X	
(Frequency)	Consistent condom use with partner of unknown or discordant HIV status	X	X		X					X	X

INDICATOR AREA	INDICATOR	GP	Young People	MSM	Sex Workers	PWID	Prisoners	Migrants	PLHIV	Trans-gender	Homeless
	Consistent condom use with casual partners		X	X	X					X	X
	Consistent condom use with all partners		X		X						X
	Consistent condom use with main partner										X
	Consistent condom use with paid partner				X					X	X
	Consistent condom use with client during intercourse in the last month				X						
	Consistent condom use with client during oral sex in the last month				X						
(Unprotected anal intercourse)	Unprotected anal intercourse (UAI) with any partner in the last 12 months			X						X	
	Unprotected anal intercourse with casual partner in the last 12 months			X						X	
	Unprotected anal intercourse with partner of unknown HIV status in the last 12 months			X						X	
	Unprotected anal intercourse with partner of discordant HIV status in the last 12 months			X						X	
	Unprotected anal intercourse at last sexual encounter			X						X	
	Unprotected anal intercourse with main partner in the last 12 months									X	
	Unprotected anal intercourse at last sexual encounter with a partner of unknown HIV status			X						X	
	Number of unprotected anal intercourse partners			X						X	
	Frequency of unprotected anal intercourse									X	
(External factors)	Availability of condoms in prison						X				
STI/HIV testing											
(STIs)	Recent STI	X	X	X	X		X	X	X	X	X
	Ever diagnosed with an STI		X								

INDICATOR AREA	INDICATOR	GP	Young People	MSM	Sex Workers	PWID	Prisoners	Migrants	PLHIV	Trans-gender	Homeless
	Ever treated for an STI		X								
(HIV)	Currently receiving treatment for HIV			X		X			X		
	Level of HIV viral load			X		X			X		
	CD4 cell count (reported or measured)					X					
	People with advanced HIV receiving antiretroviral therapy								X		
	People receiving pre-exposure prophylaxis (PrEP)			X							
	Seeking voluntary HIV tests				X	X					
	Not attending HIV services because of stigma and discrimination				X			X		X	
	People receiving post-exposure prophylaxis (PEP)			X							
	Having received ART in the last 12 months								X		
(Syphillis)	Current active syphilis infection			X	X						
(Hepatitis)	Hepatitis B status			X	X	X	X	X	X	X	X
	Ever tested for Hep C				X	X	X	X	X		
	Date of last Hep C test				X	X	X		X		X
	Result of the last Hepatitis C test (reported or measured)				X	X	X	X	X	X	X
	Use of targeted service delivery points for sex workers (eg. Women's Health Project Dublin)				X						
	Local availability of opioid substitution therapy					X					
Paid for Sex											
	Having received payment for sex (i.e. financial or in kind) in the last 12 months				X	X		X	X		X
	Having ever received payment or other form of exchange for sex		X								
	Length of time working as a sex worker				X						
	Frequency of sex work				X						

INDICATOR AREA	INDICATOR	GP	Young People	MSM	Sex Workers	PWID	Prisoners	Migrants	PLHIV	Trans-gender	Homeless
Knowledge and Attitudes											
	Young people who are confident that they could refuse sex if they did not want it		X								
	Young people who believe they could seek sexual and reproductive health information and services if they needed them		X								
	Young people who have 'positive' attitudes toward key sexual and reproductive health issues (attitudes to condoms/contraceptives/abstinence/gender role stereotypes/perceived vulnerability)		X								
	Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of STIs and HIV)		X		X	X					
	Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of STIs and HIV and reproductive health issues)		X		X	X					
Gender-Based Violence											
	Coercive or forced sex		X								
	Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner							X		X	
Drug and Alcohol Use											
	Injected drugs in the last 6 months				X						X
	Ever injected while in prison						X				
	Use of Crystal Methamphetamine, GHB/GBL, mephedrone, or ketamine (Chemsex drugs) during a sexual encounter in the last 12 months			X							
	Ever injected drugs			X				X		X	

INDICATOR AREA	INDICATOR	GP	Young People	MSM	Sex Workers	PWID	Prisoners	Migrants	PLHIV	Trans-gender	Homeless
Safe injecting practices											
	*Sharing equipment (needles, syringes, other injecting equipment) (last month)					X	X				
	Equipment sharing at last injection					X	X				
	Number of sharing partners (last month)					X	X				
	*Consistent (100%) use of sterile needles or (Always/Sometimes/Never)					X					
	*Injecting drug users with access to sterile needles					X	X				
	*Use of sterile injecting equipment the last time they injected					X	X				
	Years since first injected					X					
	Number of times injected (last month)					X					
	Ever injected while in prison						X				
	Use of sterile needles (always sometimes never)						X				
	Used substitution therapy (last month)						X				
	Injecting drug users sharing in high equipment sharing situations (last 6 months)					X					
Accommodation Status	Current accommodation status (and type of accommodation)										X

Note: CD4 = type of white blood cell; GBL = gamma-Butyrolactone; GHB = gamma-hydroxybutyric acid; GP = General population; HIV = Human immunodeficiency virus; MSM = Men who have sex with men; PWID = People who inject drugs; STI = Sexually transmitted infections.

5.4 Recommended indicator lists by at-risk population

The importance of standardised indicators for STI/HIV-related risk behaviours cannot be overstated. Standardisation allows comparability over time, nationally and internationally and between population groups. International indicator sets (ECDC, Dublin Declaration, GAM etc.) rely upon data being collected in a standardised manner.

The final indicator lists below incorporate the findings from the Delphi process, the feedback from the Consensus-Building Workshop feedback and indicators required for international reporting. Indicators are presented per population group and subdivided by indicator domain. In these tables, the indicators required for international reporting are highlighted with an asterisk.

5.4.1 Core indicators

Table 5.4.1: Recommended indicators (Core Indicators) for every population or at-risk group

Indicator Domains	Core Indicator
Partners	Identification of the type of partner at last intercourse (casual, stable, main, paid)
	*Number of sexual partners in the last 12 months
Condom and Contraceptive Use	*Use of a condom at last sexual intercourse (in the last 12 months)
STI/HIV Testing	*Date of the last HIV test
	*Having ever been tested for HIV
	*HIV test in the last 12 months
	*Result of the last HIV test (reported or measured)
Paid for Sex	*Having paid for sex in the last 12 months
Contextual/Background	*Age group
	*Country of birth
	*Current relationship status
	Education level (highest level attained)
	Employment status
	*Ethnic origin
	*Gender
	Religious beliefs
	*Sexual orientation
	Social class/Socioeconomic status

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.2 General population

Table 5.4.2: Recommended indicators for the general population

Indicator Domain	Indicator
Sexual Experience	Age at first sexual intercourse/ experience
Partners	*Number of sexual partners in the last 12 months
	Same sex partners (ever)(last year)
	*Number of sexual partners lifetime
	Concurrency (more than one sexual partner overlapping in time)
	Number of casual partners in the last year
Condom and Contraceptive Use	*Used condom during last intercourse
	*Used condom during last anal intercourse
	*Used condom during most recent intercourse with casual partner
	*Used condom during last intercourse with partner of unknown or discordant HIV status
	Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)
	Used condom during last oral sex
	Consistent condom use with casual partners
	Typical contraceptive use
	*Used condom during most recent paid intercourse
STI/HIV Testing	Recent STI (last 12 months)
	Ever diagnosed with an STI
	Voluntarily seeking HIV test
	Male engagement with specified health services (Wellman, Gay Men's Health Service etc.)
Paid for Sex	*Paid for sex in the last 12 months
	Paid for sex ever
	Number of paid-for partners in the last year
Knowledge and Attitudes	*Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of sexually transmitted infections (STIs) and HIV)
	*Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of STIs and HIV and reproductive health issues)
Gender-Based Violence	*Experience of intimate partner violence with current partner

Drug and Alcohol Use	Sexual activity while under the influence of alcohol and/or psychoactive substances

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.3 Young people (15-24 years)

Table 5.4.3: Recommended indicators for young people (15-24 years)

Indicator Domain	Indicator
Sexual Experience	*Age at first intercourse
Partners	Concurrency (multiple sexual partnerships overlapping in time)
	Number of partners lifetime
Paid for Sex	Number of young people who have ever received money or other form of exchange for sex
	*Paid for sex with a commercial sex worker in the last 12 months
Condom and Contraceptive Use	*Used condom during last anal intercourse
	Used condom during most recent paid intercourse
	Consistent (100%) condom use with all partners (or Always/Sometimes/Never)
	*Used condom during most recent intercourse with casual partner
	*Used condom during last intercourse with partner of unknown or discordant HIV status
	Consistent condom use with casual partners (or Always/Sometimes/Never)
	Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)
	Used condom at first intercourse
	Used condom during last oral sex
	Contraceptive use typically
STI/HIV Testing	Young people who were ever diagnosed with an STI
	Recent STI (last 12 months)
	Young people who were ever treated for an STI
	STI/HIV testing behavior
	HPV vaccination rate
	Use of sexual or reproductive health services
Knowledge and Attitudes	*Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of sexually transmitted infections (STIs) and HIV)
	*Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of STIs and HIV and reproductive health issues)
	Young people who have 'positive' attitudes toward key sexual and reproductive health issues (attitudes to condoms/contraceptives/abstinence, gender role stereotypes, perceived vulnerability)
	Young people who are confident that they could refuse sex if they did not want it

	Young people who believe they could seek sexual and reproductive health information and services if they needed them
	Young people who are confident they could get their partner to use contraceptives/condoms if they desired
Gender-Based Violence	Coercive or forced sex among young people
	*Experience of intimate partner violence with current partner

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.4 Men who have Sex with Men (MSM)

Table 5.4.4: Recommended indicators for men who have sex with men

Indicator Domain	Indicator
Sexual Experience	*Age at first sexual intercourse
Partners	Men who have risky sex (unprotected sex) with both men and women
	Number of anal sex partners in the last 6 months
	Concurrency (multiple sexual partnerships overlapping in time)
Condom and Contraceptive Use	*Used condom during last intercourse
	*Used condom during last anal intercourse
	Used condom during most recent intercourse with casual partner
	Used condom during last intercourse with partner of unknown or discordant HIV status
	Consistent condom use with casual partners (or Always/Sometimes/Never)
	Unprotected anal intercourse with any partner in the last 12 months
	Unprotected anal intercourse with casual partner in the last 12 months
	Unprotected anal intercourse with partner of unknown HIV status in the last 12 months
	Unprotected anal intercourse with partner of discordant HIV status in the last 12 months
	Unprotected anal intercourse at last sexual encounter
	Unprotected anal intercourse at last sexual encounter with a person of unknown HIV status
	Number of unprotected anal intercourse partners
	Used condom during last oral sex
	Consistent condom use with partners of unknown or discordant HIV status
	Frequency of unprotected anal intercourse
STI/HIV Testing	Recent STI (last 12 months)
	*Currently receiving treatment for HIV
	Level of HIV viral load
	*Current active syphilis infection
	*People receiving pre-exposure prophylaxis
	*Hepatitis B status
	MSM receiving PEP (post-exposure prophylaxis)
	*Result of last Hepatitis C test (reported or measured)
	*Not attending HIV services because of stigma or discrimination
	HIV testing behavior

	Ever and date of last Hep C test?
Drug and Alcohol Use	Use of crystal methamphetamine, GHB/GBL, mephedrone, or ketamine (Chemsex drugs) during a sexual encounter in the last 12 months
	Having ever injected drugs
Paid for Sex	Have received payment for sex in the last 12 months
	Have paid for sex with a commercial sex worker in the last 12 months
Gender-Based Violence	Experience of intimate partner violence with current partner

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; MSM = Men who have Sex with Men; STI = Sexually Transmitted Infections.

5.4.5 Sex workers

Table 5.4.5: Recommended indicators for sex workers

Indicator Domain	Indicator
Condom and Contraceptive Use	*Used condom during last intercourse
	*Used condom during last anal intercourse
	Used condom during last oral sex
	Used condom during most recent intercourse with casual partner
	*Used condom during most recent paid intercourse
	Used condom during last intercourse with partner of unknown or discordant HIV status
	Consistent (100%) condom use with all partners (or Always/Sometimes/Never)
	Consistent condom use with casual partners (or Always/Sometimes/Never)
	Consistent condom use with paid partner (or Always/Sometimes/Never)
	Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)
	Consistent condom use with a client during intercourse in the last month
	Consistent condom use with a client during oral sex in the last month
	Condom use with main partner
STI/HIV Testing	Recent sexually transmitted infection (last 12 months)
	Ever tested for Hepatitis C
	Date of last Hepatitis C test
	*Result of the last Hepatitis C test (reported or measured)
	Sex workers seeking voluntary HIV tests
	*Active syphilis among sex workers
	*Hepatitis B status
	*Not attending HIV services because of stigma and discrimination
	Use of targeted service delivery points for sex workers (e.g. Women's Health Project, Dublin)
Paid for Sex	*Have received payment (i.e financial or in-kind) for sex in the last 12 months
	Length of time working as a sex worker
	Frequency of sex work
Knowledge and Attitudes	*Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of STIs and HIV)
	*Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of STIs and HIV and reproductive health issues)

Drug and Substance Abuse	Injected drugs in the last six months
Gender-Based Violence	Experience of intimate partner violence with current partner
	Experience of intimate partner violence with paid partner
Accommodation Status	Current accommodation status (and type of accommodation)

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.6 People Who Inject Drugs (PWID)

Table 5.4.6: Recommended indicators for people who inject drugs

Indicator Domain	Indicator
Condom and Contraceptive Use	*Drug injectors using condoms during most recent sexual intercourse with a casual partner
	*Drug injectors using condoms during most recent sexual intercourse with a main partner
	*Drug injectors using condoms during most recent sexual intercourse with a partner of unknown or discordant HIV status
	*Drug injectors using condoms during most recent paid for sexual intercourse
	Drug injectors using condoms the last time they sold sex (for money or benefit-in-kind)
Safe Injecting Practices	*Sharing equipment (needles, syringes, other injecting equipment) (last month)
	Equipment sharing at last injection
	Number of sharing partners (last month)
	*Consistent (100%) use of sterile needles or (Always/Sometimes/Never)
	*Injecting drug users with access to sterile needles
	*Use of sterile injecting equipment the last time they injected
	Years since first injected
	Number of times injected (last month)
	Ever injected while in prison
	Injecting drug users sharing in high equipment-sharing situations (last 6 months)
	Substitution therapy in the last month
STI/HIV Testing	Ever tested for Hepatitis C
	Date of last Hepatitis C test
	*Result of the last Hepatitis C test (reported or measured)
	Intravenous drug users seeking voluntary HIV tests
	Currently receiving treatment for HIV
	CD4 (CD4 positive T-lymphocyte) cell count (reported or measured)
	Level of HIV viral load
	*Hepatitis B status
	Local availability of opioid substitution therapy
	*Avoidance of HIV services because of stigma or discrimination
Paid for Sex	Have received payment (i.e. financial or otherwise) for sex in the last 12 months
Knowledge and	*Sexual and reproductive health knowledge (being able to correctly identify

Attitudes	ways of preventing the sexual transmission of sexually transmitted infections and HIV)
	*Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of sexually transmitted infections and HIV and reproductive health issues)
Gender-Based Violence	Intimate partner violence with current partner
Accommodation Status	Current accommodation statues (and type of accommodation)

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.7 Prisoners

Table 5.4.7: Recommended indicators for prisoners

Indicator Domain	Indicator
Sexual Experience	*Age at first sexual intercourse and/or being sexually active
Partners	Concurrency
Condom and Contraceptive Use	Use of a condom during most recent intercourse with a casual partner
	Use of a condom during most recent paid intercourse
	Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status
	Availability of condoms in prison
STI/HIV Testing	Recent sexually transmitted infection (last 12 months)
	Having ever been tested for Hepatitis C
	Date of last Hepatitis C test
	Result of the last Hepatitis C test (reported or measured)
	Hepatitis B status
	Avoidance of HIV services because of stigma or discrimination
Drug or Substance Abuse	Ever injected while in prison
	Use of sterile needles (Always/Sometimes/Never)
	Used substitution therapy (last month)
	Sharing injecting equipment (needles, syringes, other injecting equipment) (last month)
	Number of equipment-sharing partners
	Injecting equipment sharing at last injection
	Injecting drug users with access to sterile needles
	*Use of sterile injecting equipment at last injection
Paid for Sex	Having received payment for sex in the last 12 months
	Having ever paid for sex

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.8 Migrants

Table 5.4.8: Recommended indicators for migrants

Indicator Domain	Indicator
Sexual Experience	*Age at first sexual intercourse and/or being sexually active
Partners	Concurrency
Condom and Contraceptive Use	Use of a condom during most recent intercourse with a casual partner
	Use of a condom during most recent intercourse with a stable partner
	Use of a condom during most recent paid intercourse
	Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status
Paid for Sex	Having received payment (i.e. financial or in-kind) for sex in the last 12 months
	Having ever paid for sex
STI/HIV Testing	Recent sexually transmitted infection (last 12 months)
	Having ever been tested for Hepatitis C
	Result of the last Hepatitis C test (reported or measured)
	Hepatitis B status
	Avoidance of HIV services because of stigma and discrimination
Drug and Alcohol Use	Having ever injected drugs
	Sexual activity while under the influence of alcohol and or psychoactive substances
Gender-Based Violence	*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner
Accommodation	Current accommodation status (and type of accommodation)

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.9 People Living with HIV (PLHIV)

Table 5.4.9: Recommended indicators for people living with HIV

Indicator Domain	Indicator
Sexual Experience	*Age at first sexual intercourse and or being sexually active
Partners	Concurrency
Condom and Contraceptive Use	Use of a condom during most recent intercourse with a casual partner
	Use of a condom during most recent paid intercourse
	Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status
Paid for sex	Have received payment (i.e. financial or in-kind) for sex in the last 12 months
STI/HIV testing	Recent sexually transmitted infection (last 12 months)
	Having ever been tested for Hepatitis C
	Date of last Hepatitis C test
	Result of the Hepatitis C test (reported or measured)
	Hepatitis B status
	*CD4 cell count
Stigma	Avoidance of HIV services because of stigma and discrimination
Gender-Based Violence	*Experience of intimate partner violence with current partner

Note: * indicates this indicator is needed for international reporting requirements.
CD4 = Type of white blood cell; HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.10 Transgender people

Table 5.4.10: Recommended indicators for transgender people

Indicator Domain	Indicator
Condom and Contraceptive Use	*Used condom during last intercourse
	Used condom during last oral sex
	Used condom during most recent intercourse with casual partner
	Used condom during most recent intercourse with main partner
	Used condom during most recent paid intercourse
	Used condom during last intercourse with partner of unknown or discordant HIV status
	Consistent condom use with casual partners (or Always/Sometimes/Never)
	Consistent condom use with paid partner (or Always/Sometimes/Never)
	Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)
	Unprotected anal intercourse with any partner in the last 12 months
	Unprotected anal intercourse with main partner in the last 12 months
	Unprotected anal intercourse with casual partner in the last 12 months
	Unprotected anal intercourse with partner of unknown HIV status in the last 12 months
	Unprotected anal intercourse with partner of discordant HIV status in the last 12 months
	Number of unprotected anal intercourse partners
	Unprotected anal intercourse at last sexual encounter
	Unprotected anal intercourse at last sexual encounter with a person of unknown HIV status
	Frequency of unprotected anal intercourse
STI/HIV Testing	Recent sexually transmitted infection (last 12 months)
	Result of the last Hepatitis C test (reported or measured)
	Hepatitis B status
	*Avoidance of STI/HIV services because of stigma and discrimination
	Ever and date of last Hepatitis C test
Drug and Alcohol Use	Having ever injected drugs
	Sexual activity while under the influence of alcohol and or psychoactive substances
Gender-Based Violence	*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

5.4.11 Homeless People

Table 5.4.11: Recommended indicators for homeless people

Indicator Domain	Indicator
Sexual Experience	Age at first sexual intercourse and/or being sexually active
Condom and Contraceptive Use	Used condom during last intercourse
	Used condom during last anal intercourse
	Used condom during most recent intercourse with casual partner
	Used condom during most recent paid intercourse
	Used condom during last intercourse with partner of unknown or discordant HIV status
	Consistent (100%) condom use with all partners (or Always/Sometimes/Never)
	Consistent condom use with casual partners (or Always/Sometimes/Never)
	Consistent condom use with main partner (or Always/Sometimes/Never)
	Consistent condom use with paid partner (or Always/Sometimes/Never)
	Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)
	Used condom during last oral sex
Paid for Sex	Have received payment (i.e. financial or in-kind) for sex in the last 12 months
	Having ever paid for sex
STI/HIV Testing	Recent sexually transmitted infection (last 12 months)
	Date of last Hepatitis C test
	Result of last Hepatitis C test (reported or measured)
	Hepatitis B status
	Having ever been tested for Hep C
	Avoidance of STI/HIV services because of stigma or discrimination
Drug and Substance Abuse	Have injected drugs in the last 6 months
Gender-Based Violence	Experience of intimate partner violence with current partner
Accommodation	Current accommodation status (and type of accommodation)

Note: * indicates this indicator is needed for international reporting requirements.
HIV = Human Immunodeficiency Virus; STI = Sexually Transmitted Infections.

Chapter 6: Results of WP3: Acceptability Study of Agreed STI and HIV Behavioural Indicators

Using the indicators that had achieved consensus for the general population and young people population groups, cognitive interviews were conducted with a sample of participants in order to assess their acceptability. Embedded within a wider sexual health questionnaire (see Appendix 10 for a copy of the complete survey), the findings reported here will be restricted to the verbal probing of indicator items that achieved consensus under the following indicator domains, namely: Sexual Experiences; Partners; Condoms and Contraceptive Use; STI and HIV testing; Paid for Sex; Knowledge and Attitudes; Gender-Based Violence; and Drug and Alcohol Use. For clarity, a summary of the acceptability of each indicator is presented alongside the indicator/survey question, response options (where applicable), selection of verbal probes and illustrative quotes.

6.1 Participant demographics

A total of 20 participants took part in the cognitive interviews, comprising nine females and 11 males ranging in age from 19 to 38 years, with 22 years being the average age across the sample. The female participants identified as heterosexual (7/9) and bisexual (2/9), while eight male participants indicated that they were heterosexual and a further three identified as homosexual. At the time of the study, four female participants were single, one was married and four gave their marital status as other (one steady relationship; one exclusive relationship; one dating; one in a relationship). Among the male participants, five were single, two were cohabiting and four gave their marital status as other (one engaged; two in a steady relationship; one in a relationship). The sample included a mixture of university students (15), employed (4) and unemployed individuals (1).

6.2 Sexual and relationship history of participants

Average age at first vaginal intercourse was higher for females (17.4 years) than males (16.8), as was the age at having first given oral sex, at 17.6 years for females and 16.8 years for males. Average age at first anal sex was 20.7 years for women (3/9) and 22.1 years for males (7/11); among homosexual males it was 19 years (3/11). Almost half (4/9) of the female participants and a smaller proportion of the males (4/11) reported previous concurrent sexual partners.

A similar number of females (3/9) and males (3/11) reported condom use on most recent sexual intercourse. The average number of partners in the last year for each group was 2.9 (range 1-7) for females and 1.8 (range 1-5) for males. The number of lifetime partners was also higher for women at 8 (range 1-22) compared to 6.6 (Range 1-25) for males.

6.3 Results for Indicator Domains

6.3.1 Indicator Domain: Sexual Experience

Indicator Domain: Sexual Experience		
Survey Indicator	**Response Options**	**Probes**
Have you had vaginal sexual intercourse?	*Yes* *No* *If yes, what age were you when this first happened?*	Is it difficult to answer this question? Could you restate this question in your own words?
Response to Probes		
Respondents found this very easy to answer and it was well accepted. There were no issues with comprehension or recall.		

Indicator Domain: Sexual Experience		
Survey Indicator		**Response Options**
Have you given someone/received oral sex, that is, put your mouth on your partner's genital area?		*Yes* *No* *If yes, what age were you when this first happened?*
Probes	**Response to Probes**	**Participant Quotes**
We asked you what age you were when this first happened; was it hard to remember this? What do you understand by the term 'partner' here?	Participants found these questions slightly more difficult to answer. Comprehension of the question was good but guessing was involved in the recall for some	'[I] *guessed it was the same as when I started having sex.'* *'educated guess'* *'difficult to remember if it was the same time as I first had sex'*

How easy or difficult did you find this question to answer? Why do you say that? Did you guess?		

Indicator Domain: Sexual Experience		
Survey Indicator	**Response Options**	**Probes**
Have you had anal sex?	*Yes* *No* *If yes, what age were you when this first happened?*	Is it difficult to answer this question? Could you restate this question in your own words?
Response to Probes		
This again was well accepted. Two participants reported that they were less comfortable answering this compared to the other questions; one female felt it was unnecessary. Comprehension and recall were fine.		

6.3.2 Indicator Domain: Partners

Indicator Domain: Partners		
Survey Indicator		**Response Option**
How many sexual partners have you had in the last 12 months?		*Number of sexual partners*
Probes	**Response to Probes**	**Participant Quotes**
How easy or difficult did you find this question to answer? Why do you say that? How did you remember that? Did you guess?	The majority of respondents reported that this was an easy question to answer, with little difficulty in calculating an answer. The definition of sexual partners for these questions differed between respondents (including vaginal intercourse alone or also oral, and some even included partners whom they had kissed as sexual partners). The majority of participants included vaginal, anal and oral sexual partners in their answer to this question.	Two respondents said it '*took some thinking'* to determine their answer *'I found it difficult to distinguish between just oral sex and actual vaginal intercourse.'*

Indicator Domain: Partners		
Survey Indicator		**Response Option**
How many sexual partners have you had in your lifetime?		*Number of sexual partners*
Probes	**Response to Probes**	**Participant Quotes**
How easy or difficult was this question to answer? How well do you remember this? Did you guess? What do you understand by the term 'sexual partners'? Which partners did you include in your answer?	Only half of respondents found this easy to answer. Unlike in the previous question, here participants included only vaginal or anal sexual intercourse partners in their answer, with just one participant reporting including oral sex partners in their calculation.	'[I had to] … *think for a minute*.' '[I] *guessed, don't know how accurate it is*.'

Indicator Domain: Partners		
Survey Indicator		**Response Options**
Did any of these overlap in time (concurrency)?		*Yes* *No*
Probes	**Response to Probes**	**Participant Quotes**
What do you understand by the term concurrency? Could you restate this question in your own words? How well do you remember that?	The question on concurrency was comprehended in a variety of ways by participants. Several respondents understood concurrency as 'cheating'. When probed, one respondent stated that they would not have classed their experience as concurrency if the two partners knew of each other's existence. Some participants understood it as having multiple partners within the same time period, even if each of those partners was a once-off. There were also comprehension discrepancies with regard to the time period which counted as concurrency. Approximately half of respondents would count it as concurrency if there was a one-week gap between two sexual partners, while the other half of respondents would not.	*'Sleeping with two people at the same time — not like a three way.'* *'When you broke up with your boyfriend and then had another sexual partner and then you had sex with your boyfriend again.'* *'Having two people that were friends with benefits, that I had sex with them like without telling the other.'* *'Having sex with different people within the same time period.'* *'If you have one sexual partner and then the next day you had another one.'* *'Sleeping with one person on more than one occasion and at the same time doing that with someone else.'* *'Within a week or* two [of each other].' *'Having two partners in the space of a day.'*

Indicator Domain: Partners		
Survey Indicator		**Response Options**
Which best describes the type of partner you last had sexual intercourse with?		*Main* *Casual* *Stable* *Paid*
Probes	**Response to Probes**	**Participant Quotes**
What is your understanding of each of the answer options? Would you restate them in your own words? What do you understand by 'sexual intercourse' in this question?	Respondents defined casual partners as those which were not in the context of a relationship. Stable partners were most commonly described as those people who were in an exclusive relationship. Some participants were unsure of the difference between the title of stable or main. Although there was confusion for some participants between stable and main partners, others reported that they were glad of the distinction between these. The majority of participants defined a main partner as someone just below the status of a relationship. The majority of respondents categorised partner titles in descending order from most serious monogamous as Stable, Main and then Casual. The inclusion of 'main' partner category was welcomed by participants, particularly males both homosexual and heterosexual, who reported more sexual partners.	***Examples of casual partners:*** *'friends with benefits'/'a fling'/'not exclusive'/'an on/off thing'/'one-night stand'* ***Examples of stable partners**:* *'boyfriend/girlfriend/husband/wife/ something like that'* *'not seeing anyone else'/'steady and ongoing'* *'Stable and main are kind of similar, long-term.'* *'I wasn't certain. Stable I'd describe that as exclusive as opposed to main — I wouldn't describe that as exclusive.'* *'[Stable is] somewhere between casual and main.'* *'…seeing every week but don't have a committed relationship'* ***Examples of main partner:*** *'Not necessarily a relationship'/'Not quite a relationship'/'You may not be in an actual relationship with them but compared to others you are with them more.'/'If you've got a few partners at once … main would be the one you spend the most time with.'/'Boyfriend or husband'/'Current*

		partner'

Note: International behavioural indicators use several categories of sexual partner including Casual, Stable, Main and Paid. As reported later, this inconsistency in the use of response categories for partner types can cause difficulties for participants' interpretation. Respondents had differing views as to what each category of partner represented.

6.3.3 Indicator Domain: Condoms and Contraceptives

Indicator Domain: Condoms and Contraceptives		
Survey Indicator	**Response Options**	**Probes**
Did you use a condom the last time you had sexual/anal intercourse?	*Yes* *No* *Not applicable*	How would you define 'sexual intercourse' for the purpose of this question? How did you feel about answering this question? What do you understand by 'use a condom' in this scenario?
Response to Probes		
These questions were well understood and accepted by respondents. In answering the sexual intercourse question, participants were referring to either vaginal sex or anal sex only. None included oral sex here.		

Indicator Domain: Condoms and Contraceptives		
Survey Indicators	**Response Options**	**Probes**
Did you use a condom: - *in your most recent intercourse with your casual partner?* - *with a partner of unknown or discordant HIV status?* - *in your most recent paid-for sex?*	*Yes* *No* *Not applicable*	How difficult was this question to answer? What do you understand by the term 'unknown or discordant HIV status'? Would other people your age understand what the question was asking?
Response to Probes		
Again questions were found to be acceptable to respondents and well understood, with the exception of discordant HIV status. For definitions of how participants defined casual and main partners, see above.		

Indicator Domain: Condoms and Contraceptives		
Survey Indicator		**Response Options**
Did you use a condom the last time you engaged in oral intercourse?		*Yes* *No* *Not applicable*
Probes	**Response to Probes**	**Participant Quotes**
How easy or difficult was it to answer this question? Why do you say that? What do you understand by 'use a condom' in this scenario?	This question was well understood and acceptable to answer; however, a number of respondents reported being unaware that you should or could use condoms for oral intercourse.	'*That one was easy.'* *'I didn't know you were meant to use condoms for that.'*

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Indicator Domain: Condoms and Contraceptives		
Survey Indicators		**Response Options**
Do you consistently use condoms with your - *casual partners?* - *main partner?*		*Yes* *No* *Not applicable*
Probes	**Response to Probes**	**Participant Quotes**
How would you define casual partner? What would you describe as consistent condom use? (consistent through time or acts) How easy or difficult did you find this question to answer? How did you define consistent condom use for this question? What sexual acts are you including in your answer? How would you state this question in your own words?	These questions posed some difficulties for respondents. Some participants said that their comprehension of the term concurrency (from an earlier indicator) made it difficult to estimate the percentage of time that consistent use entailed and also the sexual acts to be included in the calculation. Approximately half of respondents felt that consistent use meant 100% of the time. However, they had issues when trying to calculate whether their own condom use was consistent or not. Other respondents were unsure as to which sexual activity to include. The majority included only vaginal or anal intercourse in their calculations.	*'There were gaps.'* *'100% of the time, every time from start to finish.'*

Note on Partner Types:
There were only two types of partner specified, 'Casual' or 'Main'. Interpretation of these response options varied slightly from previous interpretation. Interpretations of what constituted a 'main' partner in this question were also more broad than those reported earlier.

Casual partners were defined as:
'a one-night stand'/'every now and again'/'You have sex with but not with the intention of a relationship or anything more serious'/'You don't know, you just hook up with there and then'

Main partners were defined as:
Partners with whom you don't have a relationship but *'sleep with regularly'* up to '*a partner or spouse'.*

Indicator Domain: Condoms and Contraceptives		
Survey Indicators	**Response Options**	**Probes**
On the most recent occasion you had sex with this partner (most recent sexual partner), did you have: vaginal, anal or oral sex? *Did you use a condom the last time you had anal intercourse?*	*Yes* *No* *Not Applicable*	How did you feel about answering this question? What do you understand by 'use a condom' in this scenario?
Response to Probes		
These questions were well understood and acceptable; however, some respondents found them 'irrelevant' or not applicable to them.		

6.3.4 Indicator Domain: STI/HIV Testing

Indicator Domain: STI/HIV Testing		
Survey Indicators		**Response Options**
Have you been diagnosed with an STI in the last 12 months? *Have you ever been diagnosed with an STI?* *Did you receive treatment for it/them?* *Have you ever tested for HIV? If yes, then why?* *Have you been tested for chlamydia in the last 12 months?*		*Yes* *No* *If Yes, which STIs?*
Probes	**Response to Probes**	**Participant Quotes**
How easy or difficult did you find this question to answer? How do you feel about answering this question? How sure of your answer are you? How easy or difficult did you find this question to answer? What do you understand by chlamydia? What is the process of testing for chlamydia?	These questions were again well understood and well accepted. For the HIV question, one respondent subsequently (during probing) realised they had been tested for HIV whilst donating blood but they had answered no in the survey Respondents were also probed on their knowledge of chlamydia and the process of testing for chlamydia. The majority of those asked reported it was a swab and blood test; two said it involved a urine test	*'I think it* [test for chlamydia] *would be a blood test but you'd be definitely going to a clinic; you wouldn't be doing it at home.'*

6.3.5 Indicator Domain: Paid for Sex

Indicator Domain: Paid for Sex		
Survey Indicator		**Response Options**
Have you ever received money, favours or gifts in exchange for sex? (Favours or gifts include: small things such as lifts, food or clothing, to larger gifts such as payment of college fees, housing or money)?		*Yes* *No* *If yes, when was this?*
Probes	**Response to Probes**	**Participant Quotes**
How easy or difficult was it to answer this question? What do you think the term 'sex' means here?	Respondents struggled to answer this question; many of the difficulties came from the examples included in the question wording and their interpretation of what these entailed.	*'I found it difficult because it's not always easy to classify if something is in exchange for sex or not.'* *'If I take someone on the date, and pay for it with the expectation of what might happen later in the night, is that me paying for sex?"* *'I didn't know who it included, like if someone took you on a date, they paid for it and then you didn't really speak to them again.'* *'It was a strange question, so there's large favours … obviously big things like somebody paying for … your house, but then there's small favours like lifts, food, clothes, so could you consider dating as giving somebody a gift?'*

6.3.6 Indicator Domain: Knowledge and Attitudes

Indicator Domain: Knowledge and Attitudes		
Survey Indicators	**Response Options**	**Probes**
Have you ever heard of an STI called chlamydia? *Can you tell me whether you think the following statements about chlamydia are true or false?* *Do you think the following statements about HIV and AIDS are true or false?* *Do you think the following statements about HIV are true or false?*	*Yes* *No* *Chlamydia does not always cause symptoms; Chlamydia is easily treated with antibiotics; Chlamydia has no serious side-effects; Chlamydia can cause infertility if untreated; Chlamydia only affects men* *A person can be infected with HIV for years without getting AIDS; Withdrawing the penis before a man climaxes or ejaculates prevents his partner from getting HIV during sex* *Having sex with one faithful, uninfected partner reduces the risk of HIV transmission; Using a condom reduces the risk of HIV transmission; A healthy-looking person can have HIV; A person can get HIV by sharing a meal, for example lunch or dinner, with someone who is infected*	How easy or difficult did you find this question to answer? Why do you say that?
Response to Probes		
These questions were well answered by the participants, and although many stated that they were unsure of their answers, the lowest score among the male participants was 8/11 correct answers and among the female participants was 8/9 correct answers.		

Indicator Domain: Knowledge and Attitudes		
Survey Indicators		**Response Options**
How long after sexual intercourse do you think the 'morning after pill' or 'emergency contraceptive pill' can be effectively used?		*Up to 12 hours after sexual intercourse; Up to 24 hours; Up to 72 hours; Up to 5 days; Over 5 days; Don't know*
How long is the egg (ovum) viable for fertilisation?		*2-4 hours; 0.5-1 day; 2 days; 3 days; 4 days; 5 days; Don't know*
How long does sperm usually survive in the uterus/fallopian tubes?		*2-4 hours; 0.5-1 day; 1-2 days; 2-3 days; 3-4 days; 4-5 days; Don't know*
At what time of the month do you think a woman is most likely to become pregnant?		*Is it during her period; Just before her period; Just after her period; About half-way between periods; Anytime during the cycle; Don't know*
What is the probability (likelihood) that a 25-year-old woman will become pregnant if she has unprotected sexual intercourse with a young man during ovulation?		*0-10%; 20-30%; 30-40%; 40-50%; 50-60%; 60-80%; 80-100%.*
Probes	**Response to Probes**	**Participant Quotes**
How easy or difficult did you find this question to answer? Why do you say that?	The majority of respondents reported some difficulty with answering the above set of questions with many having to guess the answer. Interestingly, self-reported difficulty was not associated with them getting the question correct. Several respondents reported finding the questions easy and stating they 'definitely knew that answer' yet still answered incorrectly. Several respondents reported having learned the information at some point and yet could not remember correctly now.	*'I had to go back to Leaving Cert Biology; I thought I knew the answer.'* *'I did a* (medical training) *course last week where these were questions in it and I couldn't remember the answer.'*

Indicator Domain: Knowledge and Attitudes		
Survey Indicators	**Response Options**	**Probes**
Can pregnant women be infected with HIV? *Can an infected mother transmit the infection to her child?*	*Yes* *No* *Don't know*	How easy or difficult did you find this question to answer? Why do you say that?
Response to Probes		
Participants struggled with the above two questions, with the majority being answered incorrectly; this may in part be due to the fact that none of the respondents had any children.		

6.3.7 Indicator Domain: Gender-Based Violence

Indicator Domain: Gender-Based Violence		
Survey Indicator		**Response Options**
Since the age of 13 has anyone tried to make you have sex with them against your will?		*Yes* *No* *Don't Know*
Probes	**Response to Probes**	**Participant Quotes**
How did you find answering this question? What did you think 'sex' means in this question?	Two male and one female participant reported having experience of someone trying to make them have sex against their will. One male participant who responded 'Don't know' to this question said in the cognitive interview that this related to an evening where he was given drugs and has no memory of what occurred but felt physically like he had been assaulted. The majority of respondents found this question relatively easy to answer. Two stated that they felt others may find it uncomfortable, particularly if they had an experience of it. One female respondent was unsure what exactly counted as 'tried to make you have sex'. She answered 'No' to the question as she interpreted it as someone physically forcefully trying to make her have sex; however, if it included forceful coercion she would have responded yes, and several times.	*'It was a bit confusing — somebody very forcefully trying to do that or somebody forcefully trying to goad you into having sex with them.'*

Indicator Domain: Gender-Based Violence		
Survey Indicators		**Response Options**
And since the age of 13, has anyone actually made you have sex with them against your will?		*Yes* *No* *Don't know*
Probes	**Response to Probes**	**Participant Quotes**
How do you feel about answering this question?	The one male participant who responded 'Don't know' to the previous question responded similarly to this one. One female participant disclosed that she had experienced rape (from someone she was previously in a relationship with) and that she had never spoken to anyone about it. Three male respondents reported 'Yes' or 'Maybe' to having experienced forced sex; all had spoken to someone about their experience though none had reported it to the Garda Síochána. The majority of respondents found little difficulty in answering this question, and even participants who reported an experience of sexual violence said that they felt fine answering these questions.	Three said they found it very personal and while they '*personally felt fine about it*', they could also imagine '*it wouldn't be appropriate to ask everyone'*. Or '*if it has happened to someone, then they would probably feel very uncomfortable if that was asked*'.

Indicator Domain: Gender-Based Violence		
Survey Indicator		**Response Options**
Have you ever experienced intimate partner violence (physical, sexual, emotional, domestic) with a partner?		*Yes/No* *If yes when was this?*
Probes	**Response to Probes**	**Participant Quotes**
What did you understand by the term 'intimate partner violence'? How would you define a 'partner' in this context?	Two respondents (1 male and 1 female) reported experiences of intimate partner violence in the past, but not with their current partner. Respondents noted two issues with answering this question. The first was, as before, that they were worried that anyone who experiences intimate partner violence might find these questions difficult to answer. The second issue was surrounding their understanding of the definition of intimate partner violence. Male respondents in particular voiced concerns around this.	*'Didn't really understand it very well; I don't know what you mean when you use the words violence ... is it just in a very aggressive damaging way? I don't think violence must mean necessarily in an abusive way.'* *'Hard to know what intimate partner violence is … is annoying someone but not intending on hurting someone intimate partner violence?'* *'Is it just beating someone or something like that?'* *'Making somebody feel bad for going out with their friends or making somebody feel bad for not choosing them over them — that's a type of abuse.'* *'It's quite an open question … so there's physical violence which everybody's kind of aware of, then there's sexual, which again people are aware of, but then there's emotional or domestic which are more the hidden types of violence; there's little things that can be considered emotional abuse or domestic abuse but that's somebody interpreting the question.'*

6.3.8 Indicator Domain: Drug and Alcohol Use

Indicator Domain: Drug and Alcohol Use		
Survey Indicators	**Response Options**	**Probes**
Have you injected (self-injected) drugs (apart from prescribed drugs) in the last year? *When was the first time you injected yourself with non-prescribed drugs or other substances?* *Have you used any of the following during a sexual encounter in the last 12 months?* *Have you engaged in sexual activity in the last 12 months under the influence of psychoactive substances/alcohol and psychoactive substances at the same time?*	*Yes* *No* *In the last 7 days/7 days to 4 weesk/4 weeks to 1 year/ between 1 year and 5 years ago/ longer than 5 years ago* *Crystal methamphetamine/ GHB/GBL/ Mephedrone/ Ketamine* *Yes* *No*	What do you understand by 'sexual encounter'? Did you understand the answer options? How did you feel about answering this question? What do you understand by the term 'psychoactive substances'?
Response to Probes		
These questions were well understood and well accepted by all participants although some felt they were irrelevant to them as they did not use drugs.		

6.4 Conclusion from the cognitive interviews

In conclusion, the findings from this cognitive interview study suggest a high level of acceptability of the consensus-agreed STI and HIV behavioural indicators. Some interesting comments and viewpoints arose around interpretation of several terms, which will be discussed in the context of the wider study in the next chapter.

Chapter 7: Discussion and Conclusion

The main aim of this project was to begin the process of developing Ireland's first SGSS. This was done using practical guidelines from the WHO/UNAIDS who detail specific steps on how to achieve this.[29] Through three distinct but inter-related WPs, the first two steps in this journey have been completed. WP1 delivered an assessment of the current (and historical) biological and behavioural surveillance of STIs and HIV in Ireland while also outlining key strengths and gaps in these activities. WP2 engaged key stakeholders in a consensus-building process of agreeing STI and HIV behavioural indicators across a number of key general and at-risk populations, while simultaneously highlighting the importance, feasibility and value of embedding (or augmenting) behavioural surveillance activities within current services. Finally, WP3 provided vital evidence for the acceptability of using these indicators in a sexual health/behaviour survey with members from the general population, while also furnishing some valuable insight into the varying interpretations people have for a range of commonly used terms. This chapter will now discuss the key findings in more detail.

7.1 Towards developing a national second generation surveillance plan

Second generation surveillance (SGS) allows us to track and describe changes in sexual health behaviours of the population over time.[71] SGS for STIs and HIV gathers data on risk behaviours and correlates these to changes in the levels of the STIs and HIV epidemic over time.[71] SGS systems involve STI and HIV case reporting, STI and HIV surveillance and behavioural surveillance to monitor these trends in risk behaviours.[71] These different components are required to a different degree depending on the level of epidemic a country is facing.[71] For countries with concentrated HIV epidemics, like Ireland, routine behavioural surveillance is recommended for high-risk groups, with particular attention to any behavioural links to the general population.[71] In concentrated epidemics, the presence of sub-populations taking part in high-risk behaviours is an indicator of epidemic potential in a given area, particularly where prevalence data is sparse or unavailable.[71] The WHO recommends that surveillance systems should:

- Capture the minimum dataset required for useful surveillance and an evidence-based approach to public health
- Gather data of a consistently appropriate quality, i.e. using standardised methodologies for data collection; standardised case definitions; appropriate and timely data analysis and feedback
- Provide information for action at the local, intermediate and national levels

- Ensure that participation at the local level is as simple as possible and aligns with routine practice as much as possible, minimising workload.[71]

7.2 Comprehensive biological surveillance of STIs and HIV

The review of surveillance in Ireland identified that Ireland has a comprehensive biological surveillance system, which is well managed by HPSC and Departments of Public Health. There are standardised case definitions for STIs and HIV and a legal framework with mandatory reporting of notifiable diseases, including ten STIs and HIV. Data collection and reporting is simplified through CIDR, the national computerised infectious disease reporting system. There is a core data set collected in CIDR which has been developed in conjunction with stakeholders across the country. Additionally, efforts have been made to ensure that upcoming STI clinic management systems are compatible with CIDR reporting. The methods of reporting are clear and concise. The NVRL confirms all HIV diagnoses and notifies all new HIV diagnoses to CIDR. This is a distinct advantage to the Irish system as in other countries there are multiple laboratories fulfilling this role.[71] HPSC is also responsible for data collections, analysis and dissemination, and national reports are generated biannually and annually (some analysis by HSE region is also produced).

Active biological surveillance in Ireland takes place only in response to unusual trends or increases in STI/HIV infections detected by clinical staff or during routine surveillance by Departments of Public Health or by HPSC. This has been quite successful and, for example, an increase in recently acquired HIV among PWID in 2014 to 2015 sparked an outbreak investigation in Dublin. The outbreak occurred among generally homeless chaotic polydrug users and was associated with the injection of the synthetic cathinone, snow blow. Targeted prevention and control efforts were deployed and the outbreak was declared over in February 2016.[2] The outbreak resulted in increased testing among PWID and improved surveillance in this risk group.

7.3 Gaps in behavioural surveillance of STIs and HIV

Biological surveillance alone does not allow us to determine STI/HIV-related risk and protective behaviours.[48] While several studies of sexual health behaviours have been conducted in Ireland (e.g. ISSHR 2006[12] and MISI 2015[58]), Ireland does not have a functional behavioural surveillance system. Sexual health behavioural surveys of the general population have taken place in 2002, 2003, 2004/5, 2007, 2010, 2015, 2016, 2017; however, the indicator areas for which data was collected have varied throughout. More recent studies such as the Healthy Ireland surveys have

included small sets of sexual health questions embedded within a general health population survey,[54,107] which has provided some much-needed updates to some of the ISSHR data previously reported, albeit not in a standardised way (i.e. different indicators are used in each survey). Nonetheless, it is evident that there are measurable changes in Irish sexual behaviours over time, including STI and HIV testing and condom use, validating the need for a systematic sexual health and sexual behaviour data collection plan that supports and informs the development of a comprehensive surveillance system that can monitor these trends over time.

7.4 Availability of prevalence data for STIs and HIV

Antenatal HIV testing can provide a good overview of prevalence rates in women of childbearing age in Ireland.[104] In 2015, the HIV prevalence was determined to be 0.13% among this group.[2] A pilot study investigating voluntary testing in an emergency department in a Dublin Hospital put HIV, Hep B and Hep C prevalence at 1.09%, 0.49 and 5.05 % respectively.[105] There is a clear geographical variation in HIV prevalence rates in Ireland already identified and it is possible that this variance in prevalence is accounted for by the inner-city location and increasing prevalence of risky behaviours in these areas (e.g. intravenous drug use). However, it is also evident that the HIV prevalence rate is not constant throughout the country and warrants further routine investigations to assess the true levels.

In the UK, guidelines recommend considering the introduction of universal HIV testing where diagnosed prevalence (calculated through all men and women registered in general practice and all general medical admissions) is higher than 2/1000, although this should be thoroughly evaluated for acceptability and feasibility.[125] HIV testing should also be routinely offered and recommended: all patients presenting for healthcare where HIV, including primary HIV infection, enters the differential diagnosis; all patients diagnosed with an STI; all sexual partners of men and women known to be HIV positive; all men who have disclosed sexual contact with other men; all female sexual contacts of men who have sex with men; all patients reporting a history of injecting drug use; all men and women known to be from a country of high HIV prevalence (>1%); and all men and women who report sexual contact abroad or in the UK with individuals from countries of high HIV prevalence.[125] Ireland undertakes testing for HIV, HBV and HCV most commonly on a risk-based testing system. While STI clinics routinely test all attendees for HBV and HIV, this is on an opt-out basis. Blood donations are routinely tested for HIV, HCV, HBV and syphilis, and these clinics also provide prevalence data. HCV testing is routinely conducted only for PWID on each visit, and for

MSM on their first visit and annually thereafter, or more frequently if risk is reported. Universal screening for HIV is performed on an opt-out basis in antenatal care.

7.5 Limitations of testing data for STIs and HIV

A critical component of a national surveillance system is to be representative of the populations it covers. There is no routine data collection on numbers of STI tests performed among any populations in Ireland annually. Ireland asks about STI testing in its national general population surveys[53,107] and among MSM.[58] However, as mentioned, the question is phrased in different ways and does not ask about the country in which the STI tests are carried out. This limits the validity of utilising this data as a proxy for national testing coverage. It is therefore difficult to predict what proportion of the population has been tested in any given year.

Young people carry a significant proportion of the burden of STIs. For example, in the UK in 2010, the Natsal-3 survey identified 54.2% of women aged 16-24 years and 34.6% of men aged 16-24 years had tested for chlamydia in the previous year.[55] This compares to just 13% of 17-24-year-olds having had an STI test in 2016 in Ireland.[53] According to Healthy Ireland, 2016, 71% of those aged 17-24 years are sexually active.[53] As part of the Natsal 3 survey, urine testing for chlamydia was performed on a subgroup of respondents.[126] The positivity rates for chlamydia among 16-24-year-olds were 3.1% in females and 2.3% in males.[126] HPSC reports for 2016[53] identify 3,362 chlamydia infections among 15-24-year-olds (increased to 3,730 in 2017), giving a possible 5,321 missed infections if the chlamydia prevalence here matches that of the UK. In 2010, a pilot cost-effectiveness study for chlamydia screening in Ireland identified a positive rate of 4.8% among 18-29-year-olds.[103]

Out of 30 countries surveyed for the ECDC STI surveillance mapping exercise, Ireland is one of only two who do not routinely collect STI testing data.[48] Relatively high levels of testing among sub-populations are essential given the lack of an integrated screening programme in Ireland. It is important to identify and monitor the patterns, types and locations of testing to understand how representative our biological surveillance data is. For those sub-groups deemed to be most at-risk of STI and HIV infection, it is essential that they have equal access to services and are adequately represented by the current system. At present, it is impossible to determine this. Ireland does collect data from laboratories on HIV tests performed annually. However, laboratories submit results for HIV tests they have undertaken, and so the total is the number of tests and not the

number of individuals;[1] therefore, it may overestimate the numbers of people who have had a HIV test, as some individuals may have had more than one in the reporting period. Barriers to the establishment and maintenance of an SGS system cited by several countries in the ECDC technical report included the lack of resources in terms of money and trained personnel.[48]

7.6 The value of using standardised indicators

The consensus-agreed indicators are a valuable contribution to the generation of a comprehensive surveillance system in Ireland, enhanced by the insightful findings from the cognitive interviews in WP3. There is great diversity among existing indicator sets for behavioural surveillance, particularly with regard to the indicators included, the definitions used, the precise wording, age groups and periods of reference.[48] In Ireland, this could be seen among both the individual indicators asked among population surveys and also in the indicator areas. One indicator domain, 'Gender-Based Violence', which is recommended as an important element of STI/HIV prevention,[48] has not been asked within the context of STI/HIV risk in any behavioural surveillance survey in Ireland to date. Several studies highlight associations between experiencing sexual violence and increased risk factors for STI and HIV acquisition.[127]

Developing transverse indicators (to be used in all populations) and indicators which are common to many countries would allow for enhanced comparability of data between populations and across borders.[48] This research sought to achieve consensus on a set of behavioural indicators relevant to the surveillance of STIs and HIV in Ireland, and to foster a greater sense of engagement and commitment to surveillance of STIs with key stakeholders. The respondents in the Delphi study showed good geographical representation across Ireland. They came from a wide variety of sexual health settings, including clinical services, NGOs, community groups and academia. The E-Delphi was an efficient tool to engage so many stakeholders in achieving consensus on such a large number of initial indicators.

7.7 Recent changes to behavioural indicators

Since the initiation of this project, ECDC has proposed an updated set of core indicators and a set of secondary population-specific indicators for behavioural surveillance of STIs and HIV.[33] The final set of indicators agreed in this work comprises those required for international reporting in addition to indicators which were recommended by stakeholders as relevant to STI/HIV prevention in the Irish

context. With over 269 indicators, the list is quite extensive. The updated ECDC recommendations differ somewhat from the final list identified here.[33] ECDC recommends six core indicators, which are covered within our core list, in addition to one on knowledge and attitudes.[33] Knowledge and Attitude indicators were recommended by this study only for general population, young people, sex workers and PWID. There is no internationally agreed indicator for Knowledge and Attitudes about HIV and STIs.[33] The UNGASS indicator 13, '*percentage of young men and women aged 15-24 who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission*' measures only HIV-related knowledge and not STI-related knowledge.[33] Further work is needed to develop knowledge indicators for the Irish scenario that map to current prevention programme aims and goals.

7.7.1 General population and young people

ECDC recommends contextual indicators comprising Education Level and Ethnic Origin or Nationality.[33] This research identified nine contextual indicators that are relevant to the Irish context. Some are required for constructing later indicators such as 'gender', 'current relationship status' and 'age group'. For the general population group, ECDC now recommends three additional indicators to their core list, including: 'Age at first intercourse', 'Recent STI' and 'Concurrency'.[33] In each case, the recommended timeframe is the last 12 months.[33] All of these indicators were included in the agreed set of 29 indicators for the general population. This research encouraged participants to ignore specific timeframes when deciding which indicators were relevant to the Irish context, with a view to these being defined at a later stage. The indicator 'Concurrency (in the last 12 months)' was included in our lists as it was required for reporting to ECDC;[33] however, it did not achieve consensus during the Delphi study. Many respondents reported that they did not see the relevance of concurrency to STI or HIV surveillance (data not shown). This highlights a gap in the knowledge of sexual health providers to the importance of this indicator and area. An analysis of the comments from both the E-Delphi and the consensus-building workshop identified an interest among the participants in undertaking increased training in the field of STI and HIV behavioural surveillance. This was particularly apparent among providers of young people's STI clinics in university settings, many of whom reported never having received formal training in sexual health.

A fourth indicator, '*Types of drugs consumed in the last 12 months*' is also recommended by ECDC.[33] This is not included in the general population indicator list identified here but is an important additional indicator, which should be considered for this population and for young people, as there

is a gap in the data available for Ireland on drug use among young people.[33] An additional indicator for young people is, '*type of contraception at first intercourse (and last intercourse*)'. Whilst our study included an indicator on type of contraception used typically and condom use at last intercourse, oral sex and first intercourse, it does not specify contraception at first or last intercourse and this needs to be considered in the future.

7.7.2 MSM

ECDC recommended eight indicators for MSM that are more specific than those identified in our study.[33] CAI with a partner of unknown or discordant HIV status carries an increased risk of transmission compared to other partner types and sexual acts.[33] The ECDC indicators tie HIV status and partner types to CAI '*Unprotected anal intercourse (UAI) with partner of unknown or discordant HIV status'* (record separately for casual and main partners)[33]. The ECDC indicators also investigate CAI with casual partners of the same HIV status in the previous 12 months.[33] Our indicator 'number of anal sex partners in the last 6 months' may not be specific enough, as anal sex partners could be male or female. ECDC recommends 'Number of sexual partners in the last 6 or 12 months (male and female)' to be recorded separately.[33] This indicator gives a clearer overview on the size of the potential bridging population between the higher-risk MSM community and the lower-risk general population. The 6- and 12-month timeframes are a welcome addition as 12 months can be a more difficult timeframe to recall accurately, particularly for those with higher numbers of sexual partners. In addition to our indicator on 'used condom during most recent intercourse with a casual partner', ECDC recommends condom use during most recent paid intercourse and intercourse with a main partner.[33] The final ECDC-recommended indicator, which is not included anywhere in our indicator sets, is 'where men met their sexual partners in the last 12 months'.[33]This indicator is useful for health promotion campaigns to know which types of venues to target — saunas, bars, clubs, online, etc.

7.7.3 Sex workers

Several of the ECDC-recommended indicators for sex workers[33] are also required to be asked in the general population, for example, 'the proportion of men who have paid for sex in the past 12 months', 'the proportion of men who paid for sex in the past 12 months who report using a condom the last time they paid for sex' and 'the proportion of men who have paid for sex in the past 12 months who have had a HIV test in the last 12 months'; each of these indicators can be constructed

from indicators which are included within our general population indicator set. One additional indicator, 'access to preventative services', needs to be considered here; our indicators ask 'use of targeted service delivery points' but not specifically access to services. This indicator is useful in assessing the ability of current providers to deliver these services and to identify any barriers to accessing services, geographic or otherwise.

7.7.4 PWID

Our indicator set for PWID aligns closely to the ECDC-recommended indicators.[33] One difference is that timeframes are now specified by ECDC as 4 weeks instead of the 'last month' included within our study's indicator sets.[33] Also, in addition to the indicator 'ever injected while in prison', ECDC recommends 'and syringe sharing in prison'. One additional indicator which cannot be constructed from those asked in our study is 'the number of new needles and syringes obtained for personal use from all sources in the last four weeks among current IDU'; this indicator can be compared to the injecting frequency indicator to assess if needle supply is meeting demand for individual users and to assess access to services.[33]

7.7.5 PLHIV

The ECDC indicators for PLHIV include an indicator on medical treatment,[33] comprising two parts — 'being on antiretroviral therapy (ART)', which is also included in our dataset, and having an 'undetectable viral load'. While we do include CD4 cell count, as was previously recommended,[48] in light of current national guidance as well as a change in the treatment context (i.e. CD4 count is no longer necessary/relevant to begin ART, but viral load must be measured before treatment commencement), it is now more appropriate, and recommended to measure viral load before initiating treatment.

7.7.6 Transgender, Migrants, Prisoners and Homeless

The new ECDC indicator sets do not include any specific additional indicators for transgender people, migrants, prisoners (although some indicators relating to prisons are included in the PWID category) or homeless people.[33] Indicators for homeless populations were included as per suggestions from respondents to the Delphi and CBW as part of this research. In addition, the indicator domain 'accommodation status' was included as recommended by respondents.

7.8 Informing future surveillance activities for STIs and HIV

Further work is required to identify a final core list of indicators and the finalised minimum data sets required for each of the key populations. Although this research has developed a comprehensive list of behavioural surveillance indicators, what is unknown is which of these indicators actually correlate with increased STI risk in the Irish context. Future behavioural surveillance, which relates risky behaviour to STI rates, either through self-reported prevalence or testing within the capacity of the survey, would allow us to assess which indicators are indicative of STI or HIV risk within the individual populations. Risky sexual behaviours are ever changing, as identified in the Natsal studies,[60,61] and new drivers of the epidemic can be identified through repeated behavioural surveillance. SGSs must be flexible enough to be able to identify and monitor any emerging trends. This flexibility and rapid identification of emerging threats allows public health initiatives to react to issues with a targeted and swift response.[33]

7.9 Second generation surveillance informing policy and services

Repeated behavioural surveys allow us to track trends in sexual behaviour and to identify newly emerging drivers in a country's STI and HIV epidemic.[69] Sampling strategies, standardised indicators and questionnaire wording, and computer-assisted data collection have improved quality and validity of data.[69] More recently, biological measures have been added to behavioural questionnaires, allowing for the determination of prevalence of STIs and hormonal status of respondents.[60,61] These combined bio-behavioural national population-based STI and HIV surveys identify the geographical distribution of risk and prevalence among different population groups.[69] Such surveys, although costly and complex, are recommended in generalised HIV epidemics (prevalence above 2%) to be implemented every three to five years.[85] There are no such guidelines defining which levels of STI prevalence warrant bio-behavioural general population surveys.[85]

Ireland has a concentrated HIV epidemic with low-level areas also.[85] The WHO/UNAIDS recommend bio-behavioural surveys of key populations at higher risk every two to three years; facility or community-based STI and HIV sentinel surveillance for key populations at higher risk annually; and size estimations of key populations at higher risk every two to three years.[85] For concentrated epidemic areas, the recommendations are bio-behavioural surveys of key populations every two years for high-priority sites, in addition to standard STI and HIV case reporting.[85] Ireland meets the

guidelines of STI and HIV case reporting and antenatal clinic sentinel surveillance for HIV for concentrated epidemic areas.

Comparing survey results from national probabilistic and convenience sampling methods highlights that probability surveys better reflect the overall population, including minority groups, e.g. MSM, but are limited in smaller sample sizes of these groups. Convenience sampling is often utilised to access minority population groups, and time-space sampling and respondent-driven sampling can yield more representative samples; however, they are more complicated resource-intensive activities.[70] Convenience surveys of minority groups recruit larger sample sizes; however, they tend to over-represent those reporting sexual risk behaviours.[62] The challenges associated with acquiring more representative data from minority populations is often worth the cost in situations where these groups are at higher risk of STIs and HIV.[114]

The UK leads the field globally on large-scale population-based sexual behaviour surveys. The three Natsal studies have provided data that has been instrumental in shaping much of the UK's sexual health services.[60,61] The national Chlamydia Screening Programme and England's Teenage Pregnancy Strategy have been developed in direct response to Natsal findings.[60] Findings from the Natsal studies have allowed Public Health England to bring together information on both clinic attendees, for whom they have the numbers of diagnosed infections, and also non-clinic attendees, providing a fuller picture of the incidence of STIs and the extent of those at risk of STIs.[60] Natsal data has also identified trends in sexual behaviour and emerging risk factors for STI acquisition, such as a fall in the age at first sexual intercourse and increases in the number of lifetime sexual partners.[49] Natsal 2 (2000) identified a rise in the number of men paying for sex and the increasing risk-taking of MSM.[60]

7.10 Conclusion

Additional bio-behavioural data would complement and enhance existing biological surveillance datasets in Ireland. Bio-behavioural data on prevalence and risk could validate infection rates identified by current surveillance methods or highlight areas in need of further insight. Steady increases in STI rates identified in Ireland could be the result of increasing rates of testing,[54,108] as opposed to an increased spread of infection. Likewise, increasing testing rates could be shedding light on a greater burden of STIs in some population groups.

An effective national second-generation surveillance system for Ireland would be one with more frequent national bio-behavioural surveillance, using the core indicator set in addition to more detailed descriptive questions. Furthermore, the core indicator sets could be used by any stakeholder or community organisation carrying out research on its own population of interest, in addition to the population-specific indicators identified. This would allow for comprehensive reporting of STI and HIV risk behaviours for specific populations, which are not as easily targeted by general population surveillance or for whom the data from general population samples is not statistically powered enough to deduce any specific trends for these populations. Whilst MSM are the most frequently studied population in terms of behavioural surveillance in Ireland, ongoing surveillance within this population is essential given the high burden of STIs and HIV experienced by this group. The future of national prevention efforts and policy development is reliant on the collection of better data and the strengthening of national surveillance.

Chapter 8: Recommendations

This research was conducted between 2017 and 2018 and the report was finalised in late 2019. During this interim period, as was the case throughout the project, the authors worked closely with HSE-SHCPP and the Steering Committee. On consideration of the scope of the research findings, an additional process was begun by HSE-SHCPP, in consultation with the authors, to ensure that the findings would directly inform and develop future surveillance activities. This report will now conclude with some key recommendations, based on the findings, followed by a brief update on progress since the project was completed in mid-2018.

8.1 Study recommendations

8.1.1 Finalise behavioural indicators

- Additional work (which HSE-SHCPP has already begun) should aim to refine and expand the indicators agreed in this report in terms of complying with international reporting requirements, while also appropriately addressing national significance and local relevance, which may change over time.
- Before use in any research project or routine data collection, the current list of proposed indicators will need to be aligned with the most up-to-date national and international reporting requirements for Global AIDS Monitoring (GAM) and others.
- They will also need to be agreed and signed off on for each at-risk population, preferably in close collaboration with key national stakeholders.
- Resources such as this report, the ECDC behavioural surveillance toolkit and the GAM Indicator Registry are useful templates to help advance this work in completing the third practical step from the WHO practical guidelines in establishing an SGSS for Ireland, i.e. developing a national surveillance plan.
- Detail needed for each indicator includes: what it measures, rationale for its use, numerator, denominator, calculation, method of measurement, measurement frequency, disaggregation, explanation of the numerator, explanation of the denominator and strengths and weaknesses.

8.1.2 Governance and quality assurance

- Once this work is complete, the HSE-SHCPP and the HPSC should consider the development of an Irish-specific indicator registry (e.g. http://www.indicatorregistry.org/), which can act as an easily accessible resource for stakeholders to begin or augment current surveillance activities within their services. This step will ensure the embedding of aspects of STI and HIV surveillance in current services, which is critical for the future sustainability of any national SGSS.
- A consideration of who would be responsible for updating and maintaining this registry needs to be determined, as well as the funding stream that can support this into the future.

8.1.3 Future-proofing behavioural surveillance activities

- The establishment of an SGSS will need to be supplemented and supported by ongoing training and support around the value, importance and implementation of surveillance.
- Further exploration of whether core indicators can be embedded within current clinical and electronic services (i.e. CIDR) would also be an important step.
- Building on this work, key recommendations in the next sexual health strategy should include a practical and actionable plan on developing and resourcing surveillance activities and an SGS system for the years ahead.
- This should include further engagement with key stakeholders who are central to the ultimate success and long-term sustainability of such a system

8.1.4 Further priority areas for research

- Priority should be given to research into key under-represented populations, such as sex workers, migrants, transgender people etc., in terms of standardising behavioural indicators for surveillance purposes. Already disadvantaged because of a range of factors, the STI and HIV requirements of these sub-groups of the population need to be urgently addressed.

Finally, mirroring research methods used here (e.g. cognitive interviewing techniques), further work is required on a population-by-population basis, to test the understanding of the indicators to ensure that participants are answering the question we think we are asking. This work would greatly inform the international understanding of STI and HIV behavioural indicators also.

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Appendix 1 : Pilot Survey of STI and HIV Indicators with Steering Committee

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Introduction

You have been invited to take part in a research study being carried out by researchers from the Department of Psychology, Division of Population Health Sciences, Royal College of Surgeons in Ireland (RCSI), Dublin aimed at achieving consensus on STI and HIV behavioural surveillance indicators.

Before you decide whether or not you wish to take part, you should read the information provided on the next few pages carefully and, if you wish, discuss it with your colleagues or family or friends. Take time to ask questions – do not feel rushed or under pressure to make a quick decision.

You should clearly understand the risks and benefits of taking part in this study so that you can make a decision that is right for you. This process is known as 'Informed Consent'.

You do not have to take part in this study and you can change your mind about taking part in the study any time you like. Even if the study has started, you can still opt out and you do not have to give us a reason.

The following page will give you detailed information on the study and your participation.

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Information on the Study

Why is this study being done?

Sexually transmitted infections and HIV are still a very real threat to public health and a significant burden on the healthcare system. Without an adequate understanding of: what types of infections are being spread; who gets these infections; and the kinds of sexual behaviour people engage in; we cannot adequately or successfully address this public health risk. This study is being done to assess biological and behavioural surveillance activities that are currently in place to monitor and prevent the spread of STIs and HIV and what we can do to inform and develop a better system. One part of this system, and the focus of this survey, is achieving agreement among all of the relevant and interested stakeholders, as to what kinds of sexual behaviour questions (or behavioural surveillance indicators) we should ask people from different population groups about.

Who is organising and funding this study?

This study is being conducted by researchers from the Department of Psychology, Division of Population Health Sciences, Royal College of Surgeons in Ireland (RCSI). Dr. Caroline Kelleher (Principal Investigator) was awarded a research grant from the Irish Research Council and the HSE-Sexual Health and Crisis Pregnancy Programme (HSE-SHCPP) to conduct this research. Dr. Sarah Tecklenborg is employed as a researcher on the project.

Why am I being asked to take part?

You are being asked to take part as you are employed in an organisation/facility that is involved in the collection of STI/HIV biological and/or behavioural surveillance data in Ireland. You may also have been asked to take part as you are involved in providing services or supports to people who are vulnerable to STIs or HIV. By completing this survey, you will ensure that the needs of your service users are represented in the final behavioural surveillance system.

How will the study be carried out?

Over the summer months of 2017 we will contact interested participants and relevant organisations and services and invite them to complete 2 online questionnaires. After the completion of the first questionnaire we will analyse the findings and use them to inform the second draft of the questionnaire. You will then be asked to complete a second questionnaire online. In early to late Autumn 2017 we plan to invite participants to participate in a consensus-building workshop here in RCSI. This workshop will produce a national consensus on STI and HIV behavioural surveillance indicators.

What will happen to me if I agree to take part?

If you are reading this then you have been sent a link to this survey on Survey Monkey. This survey will ask you to rate a series of statements related to sexual behaviour and should take approximately 30-35 minutes to complete. After we have analysed everybody's responses you will be sent another link to a revised version of the survey a couple of weeks later. The results from this round will also be analysed by the project team and the findings will be presented at a consensus-building workshop for wider discussion and agreement. If you agree, you will also be invited to take part in this 1-day workshop. Completing this survey does not mean you have to attend the workshop.

What are the benefits?

There are no personal benefits to you by taking part. However, as a key stakeholder involved in STI/HIV surveillance activities and services your voice and that of your organisation are critical in the development of a fit-for-purpose behavioural surveillance plan for Ireland.

What are the risks?

There are no foreseeable risks to taking part in this study apart from the demands on your time completing the surveys and attending the workshop.

Will it cost me anything to take part?

It will not cost you anything to take part. Local and national travel expenses for your attendance at the consensus-building workshop will be reimbursed upon presentation of receipts, and refreshments will be provided on the day.

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Confidentiality and Further Information

Is the study voluntary and confidential?

Your participation in this study is entirely voluntary and you are free to withdraw and withdraw your data at any stage without giving a reason. In terms of confidentiality, only the project researchers will have access to your responses/the Survey Monkey account. Any identifying information from these responses will be removed by the project team before analysis. It will not be possible to identify you or your organisation from your responses or from any results emerging from the analyses of these responses. Survey data will be retained securely on an encrypted computer in RCSI at all times for 5 years, in line with best research practice.

You should be aware that as Survey Monkey is a US-based company, technically your data will be stored there. As Survey Monkey is a third-party application, we cannot guarantee 100% security of your responses. With this in mind, please feel free to review the following Survey Monkey Privacy Policy https://www.surveymonkey.com/mp/policy/privacy-policy/ and Security Statement https://www.surveymonkey.com/mp/policy/security/ which should address any potential concerns you may have.

The findings from this research will be used to inform the drafting of a national second generation (combining biological and behavioural) surveillance plan for Ireland — a key recommendation of the National Sexual Health Strategy — and will also be published in scientific journals and presented at national and international conferences.

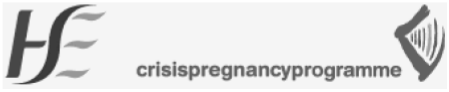
Where can I get further information?
If you have any further questions about the study or if you want to opt out of the study or if you need any further information now or at any time in the future, please contact:

Researcher's Names and Contact Details:
Dr Caroline Kelleher and Dr Sarah Tecklenborg

Address: Department of Psychology, Division of Population Health Sciences,
Royal College of Surgeons in Ireland, Beaux Lane House,
Lower Mercer Street, Dublin 2.

Caroline's Phone: (01) 402 2725 (during office hours); Email: carolinekelleher@rcsi.ie

Sarah's Phone:(01) 402 2350 (during office hours); Email: sarahtecklenborg@rcsi.ie



Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Informed Consent

Please answer the following questions before beginning the survey.

* I have read and understood the Information Leaflet about this research project. The information has been fully explained to me and I have been able to ask questions, all of which have been answered to my satisfaction.

☐ Yes

☐ No

* I understand that I don't have to take part in this study and that I can opt out at any time. I understand that I don't have to give a reason for opting out.

☐ Yes

☐ No

* I am aware of the potential risks of this research study.

☐ Yes

☐ No

* I give permission for material/data to be stored for possible future research related to the current study without further consent being required, subject to research ethics committee approval.

☐ Yes

☐ No

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

IMPORTANT: Delphi Survey Instructions

We want to identify a list of behavioural indicators essential to the systematic behavioural surveillance of STIs and HIV among core at-risk populations.

This questionnaire consists of several different sections containing lists of STI and HIV behavioural indicators relevant to different population groups.

The indicators presented here are by no means comprehensive and we welcome any suggestions of additional indicators which you feel are relevant in the Irish context, or in the context of the population group you are most familiar with.

Importantly, while we have grouped the indicators by population group, *we would appreciate it if you would respond to every indicator in the survey,* not just those in the population group you are most familiar with. This will ensure a final list of indicators that is inclusive and comprehensive.

Indicators which are required for national reporting to the Dublin Declaration and Global Aids Monitoring programmes are identified by the following symbol — * — at the beginning of the question.

Instructions

Please indicate the importance of each of the behavioural surveillance indicators in the context of the at-risk population group on a scale of 1 to 10, where 1 is '*Not important'* and 10 is *'Essential'.*

Please complete your questionnaire by 23/06/2017.

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section A: Core Indicators (i.e. data to be collected across all at-risk populations)

Please indicate the importance of each of these indicators to STI and HIV behavioural surveillance in ALL at-risk populations in Ireland.

The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'.
Please provide a response for each item.

	1	2	3	4	5	6	7	8	9	10
*Number of sexual partners in the last 12 months	○	○	○	○	○	○	○	○	○	○
*Use of a condom at last intercourse (in the last 12 months)	○	○	○	○	○	○	○	○	○	○
Identification of the type of partner at last intercourse (casual, stable, main, paid)	○	○	○	○	○	○	○	○	○	○
*Ever and date of the last HIV test or whether tested in the last 12 months	○	○	○	○	○	○	○	○	○	○
*Result of the test (reported or measured)	○	○	○	○	○	○	○	○	○	○
*Having paid for sex in the last 12 months	○	○	○	○	○	○	○	○	○	○
*Use of a condom at last paid intercourse (in the last 12 months)	○	○	○	○	○	○	○	○	○	○
*Sexual orientation	○	○	○	○	○	○	○	○	○	○

*Being able to both correctly identify ways of preventing the sexual transmission of HIV and to reject major misconceptions about HIV transmission	○	○	○	○	○	○	○	○	○	○
*Types of drugs consumed in the last 12 months	○	○	○	○	○	○	○	○	○	○
Social class/Socio- economic status	○	○	○	○	○	○	○	○	○	○
*Current relationship status	○	○	○	○	○	○	○	○	○	○
Education level (highest level attained)	○	○	○	○	○	○	○	○	○	○
Country of Birth/ Ethnic origin	○	○	○	○	○	○	○	○	○	○
Religious beliefs	○	○	○	○	○	○	○	○	○	○
Employment status	○	○	○	○	○	○	○	○	○	○
*Age group	○	○	○	○	○	○	○	○	○	○
*Gender	○	○	○	○	○	○	○	○	○	○

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section A: Core Indicators (i.e. data to be collected across all at-risk populations)

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section you have just completed.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No
- ○ If Yes, please list them here:

Have you any further comments on any of the indicators for all at-risk population groups?

IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

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Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section B: General Population Indicators

Please indicate the importance of each of the following indicators to STI and HIV behavioural surveillance among the General Population in Ireland.
The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'.
Please provide a response for each item.

Sexual Experiences

	1	2	3	4	5	6	7	8	9	10
Heterosexual intercourse (vaginal or anal) before 16	○	○	○	○	○	○	○	○	○	○
*Sexual intercourse (vaginal or anal) before age 15	○	○	○	○	○	○	○	○	○	○
Same-sex experience with genital contact ever	○	○	○	○	○	○	○	○	○	○
Same-sex partners past 5 years	○	○	○	○	○	○	○	○	○	○

Partners

	1	2	3	4	5	6	7	8	9	10
*Number of sexual partners lifetime	○	○	○	○	○	○	○	○	○	○
*Number of sexual partners in the last 12 months	○	○	○	○	○	○	○	○	○	○
Concurrency (more than one sexual partner overlapping in time)	○	○	○	○	○	○	○	○	○	○
Number of heterosexual partners over the last five years	○	○	○	○	○	○	○	○	○	○
Number of casual partners in the last year	○	○	○	○	○	○	○	○	○	○

Condom and contraceptive use

	1	2	3	4	5	6	7	8	9	10
*Used condom during last intercourse	○	○	○	○	○	○	○	○	○	○
*Used condom during last anal intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during last oral sex	○	○	○	○	○	○	○	○	○	○
*Used condom during most recent intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during most recent intercourse with main partner	○	○	○	○	○	○	○	○	○	○
with casual partner *Used condom during most recent paid intercourse	○	○	○	○	○	○	○	○	○	○
*Used condom during last intercourse with partner of unknown or discordant HIV status	○	○	○	○	○	○	○	○	○	○
Consistent (100%) condom use with all partners (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with casual partners (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with main partner (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with paid partner (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Contraceptive use typically (condom, pill, injection, implant, coil, IUD, sterilisation)	○	○	○	○	○	○	○	○	○	○
Knowledge of emergency contraceptive pill	○	○	○	○	○	○	○	○	○	○

STI/HIV Testing

	1	2	3	4	5	6	7	8	9	10
Ever diagnosed with an STI	○	○	○	○	○	○	○	○	○	○
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
Tested for chlamydia in the last 12 months	○	○	○	○	○	○	○	○	○	○
Person seeks voluntary HIV tests	○	○	○	○	○	○	○	○	○	○
*Pregnant women who were counselled and tested for HIV and know their results	○	○	○	○	○	○	○	○	○	○
*HIV positive pregnant women who received appropriate treatment in labour according to Prevention of Mother to Child Transmission of HIV Strategy recommendations	○	○	○	○	○	○	○	○	○	○
*HIV positive pregnant women who received a complete course of Antiretroviral therapy (ART) prophylaxis	○	○	○	○	○	○	○	○	○	○
Male engagement with specified health services (e.g. WellMan Clinics; Gay Men's Health Service)	○	○	○	○	○	○	○	○	○	○

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
Paid for heterosexual sex ever	○	○	○	○	○	○	○	○	○	○
Paid for heterosexual sex in the last 5 years	○	○	○	○	○	○	○	○	○	○
Number of paid-for partners in the last year										
*Paid for sex in the last 12 months	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○

Knowledge and Attitudes

	1	2	3	4	5	6	7	8	9	10
*Have accepting attitudes towards those living with HIV	○	○	○	○	○	○	○	○	○	○
*Knowledge of methods of preventing mother-to-child transmission of HIV	○	○	○	○	○	○	○	○	○	○
Knowledge of chlamydia	○	○	○	○	○	○	○	○	○	○
Knowledge of fertility	○	○	○	○	○	○	○	○	○	○

Gender-Based Violence

	1	2	3	4	5	6	7	8	9	10
*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	○	○	○	○	○	○	○	○	○	○

Drug and alcohol use

	1	2	3	4	5	6	7	8	9	10
Sexual activity while under the influence of alcohol	○	○	○	○	○	○	○	○	○	○
Sexual activity while under the influence of psychoactive substances	○	○	○	○	○	○	○	○	○	○
Sexual activity while under the influence of both alcohol and psychoactive substances	○	○	○	○	○	○	○	○	○	○

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section B: General Population Indicators

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for the General Population.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No

○ If Yes, please list them here:

Have you any further comments on any of the listed indicators for the General Population at-risk group?

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section C: Young People (16-29 years)

Please indicate the importance of each of these indicators to STI and HIV behavioural surveillance among Young People (16-29 years) in Ireland. The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'. Please provide a response for each item.

Sexual experiences

	1	2	3	4	5	6	7	8	9	10
*Age at first intercourse	○	○	○	○	○	○	○	○	○	○

Partners

	1	2	3	4	5	6	7	8	9	10
Concurrency (multiple sexual partnerships overlapping in time)	○	○	○	○	○	○	○	○	○	○
Number of partners lifetime	○	○	○	○	○	○	○	○	○	○
Age-mixing (one partner significantly older than another) in sexual partnerships among young women	○	○	○	○	○	○	○	○	○	○

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
Number of young people who have ever received money or other form of exchange for sex	○	○	○	○	○	○	○	○	○	○
*Sexual intercourse with a commercial sex worker among young people (*last 12 months) (ever)	○	○	○	○	○	○	○	○	○	○
Sexual intercourse with a commercial sex worker among young men (ever)	○	○	○	○	○	○	○	○	○	○

Condom and contraceptive use

*Used condom during last intercourse

Used condom at first intercourse

*Used condom during last anal intercourse

Used condom during last oral sex

*Used condom during most recent intercourse with casual partner

Used condom during most recent intercourse with main partner

Used condom during most recent paid intercourse

*Used condom during last intercourse with partner of unknown or discordant

Consistent (100%) condom use with all partners (or Always/Sometimes/Never)

HIV status

Consistent condom use with casual partners (or Always/ Sometimes/ Never)

Consistent condom use with paid partner (of Always/ Sometimes/ Never)

Consistent condom use with main partner (or Always/Sometimes/Never)

Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)

Contraceptive use typically (condom, pill, injection, implant, coil, IUD, sterilisation)	○	○	○	○	○	○	○	○	○	○
Contraceptive use at first intercourse	○	○	○	○	○	○	○	○	○	○
Contraceptive use at last intercourse	○	○	○	○	○	○	○	○	○	○
Young people abstaining from sexual intercourse	○	○	○	○	○	○	○	○	○	○
Young people being faithful to one partner	○	○	○	○	○	○	○	○	○	○

STI/HIV testing

	1	2	3	4	5	6	7	8	9	10
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
HIV testing behaviour (regular testing, service seeking behaviours) among young people	○	○	○	○	○	○	○	○	○	○
Young people who were ever diagnosed with an STI	○	○	○	○	○	○	○	○	○	○
Young people who were ever treated for an STI were ever treated	○	○	○	○	○	○	○	○	○	○
Number of young people seeking voluntary HIV tests	○	○	○	○	○	○	○	○	○	○
Use of sexual and reproductive health services (e.g. B4UDecide; STI clinics) by young people	○	○	○	○	○	○	○	○	○	○
Percent of girls vaccinated with the Human Papilloma virus (HPV) vaccine	○	○	○	○	○	○	○	○	○	○
Number of young people not attending HIV services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○

Knowledge and Attitudes

*Sexual and reproductive health knowledge (being able to both correctly identify ways of preventing the sexual transmission of STIs and HIV and rejecting major misconceptions about transmission and reproductive health issues)

1 2 3 4 5 6 7 8 9 10

Percentage of young people who have 'positive' attitudes toward key sexual and reproductive health issues (attitudes to condoms/contraceptives/abstinence, gender role stereotypes, perceived vulnerability)

Percentage of young people who are confident that they could refuse sex if they did not want it

Percentage of young people who are confident that they could get their partner to use contraceptives/condoms if they desired

Percentage of young people who believe they could seek sexual and reproductive health information and services if they needed them

Young people who feel 'connected' with their parents

Young people who feel 'connected' with their family

Gender-based Violence

1 2 3 4 5 6 7 8 9 10

*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner

Coercive or forced sex among young people

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section C: Young People (16-29 years)

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for Young People (16-29 years).

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No
- ○ If Yes, please list them here:

Have you any further comments on any of the listed indicators for the Young People (16-29 years) at-risk group?

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section D: Men who have sex with men (MSM)

Please indicate the importance of each of these indicators to STI and HIV behavioural surveillance among Men who have sex with men (MSM) in Ireland. The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'. Please provide a response for each item.

Sexual Experiences

	1	2	3	4	5	6	7	8	9	10
*Age at first intercourse	○	○	○	○	○	○	○	○	○	○

Partners

	1	2	3	4	5	6	7	8	9	10
Number of anal sex partners in the last six months	○	○	○	○	○	○	○	○	○	○
Concurrency (multiple sexual partnerships overlapping in time)	○	○	○	○	○	○	○	○	○	○
Men who have risky sex (unprotected sex) with men and women	○	○	○	○	○	○	○	○	○	○

Condom and contraceptive use

	1	2	3	4	5	6	7	8	9	10
*Used condom during last intercourse	○	○	○	○	○	○	○	○	○	○
*Used condom during last anal intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during last oral sex	○	○	○	○	○	○	○	○	○	○
Used condom during most recent intercourse with casual partner most recent intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during most recent intercourse with main partner	○	○	○	○	○	○	○	○	○	○
Used condom during most recent paid intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during last intercourse with partner of unknown or discordant HIV status	○	○	○	○	○	○	○	○	○	○
Consistent (100%) condom use with all partners (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with casual partners (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with main partner (or Always/ Sometimes/ Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with paid partner (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Unprotected anal intercourse with any partner in the last 12 months	○	○	○	○	○	○	○	○	○	○

Unprotected anal intercourse with main partner in the last 12 months	○	○	○	○	○	○	○	○	○	○
Unprotected anal intercourse with casual partner in the last 12 months	○	○	○	○	○	○	○	○	○	○
Unprotected anal intercourse with partner of unknown HIV status in the last 12 months	○	○	○	○	○	○	○	○	○	○
Unprotected anal intercourse with partner of discordant HIV status in the last 12 months	○	○	○	○	○	○	○	○	○	○
Number of unprotected anal intercourse partners	○	○	○	○	○	○	○	○	○	○
Frequency of unprotected anal intercourse	○	○	○	○	○	○	○	○	○	○
Unprotected anal intercourse at last sexual encounter	○	○	○	○	○	○	○	○	○	○
Unprotected anal intercourse at last sexual encounter with a person of unknown HIV status	○	○	○	○	○	○	○	○	○	○

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
Have received payment (i.e. financial or in-kind) for sex in the last 12 months	○	○	○	○	○	○	○	○	○	○

STI/HIV testing

	1	2	3	4	5	6	7	8	9	10
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
Was ever tested for Hepatitis C	○	○	○	○	○	○	○	○	○	○
Date of last Hepatitis C test	○	○	○	○	○	○	○	○	○	○
*Result of the Hepatitis C test (reported or measured)	○	○	○	○	○	○	○	○	○	○
*Currently receiving treatment for HIV	○	○	○	○	○	○	○	○	○	○
CD4 (CD4 positive T-lymphocytes) cell count (reported or measured)	○	○	○	○	○	○	○	○	○	○
Level of HIV viral load	○	○	○	○	○	○	○	○	○	○
*Current active syphilis infection	○	○	○	○	○	○	○	○	○	○
*People receiving pre-exposure prophylaxis	○	○	○	○	○	○	○	○	○	○
*Hepatitis B status	○	○	○	○	○	○	○	○	○	○
MSM seeking HIV tests voluntarily	○	○	○	○	○	○	○	○	○	○
*Not attending HIV services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○

Knowledge and Attitudes

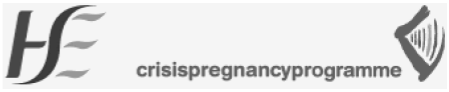
	1	2	3	4	5	6	7	8	9	10
*Sexual and reproductive health knowledge (both being able to correctly identify ways of preventing the sexual transmission of STIs and HIV and rejecting major misconceptions about transmission and reproductive health issues)	○	○	○	○	○	○	○	○	○	○

Gender-Based Violence

	1	2	3	4	5	6	7	8	9	10
*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	○	○	○	○	○	○	○	○	○	○

Drug and alcohol use

	1	2	3	4	5	6	7	8	9	10
Use of poppers in the last 12 months	○	○	○	○	○	○	○	○	○	○
Use of crystal methamphetamin, GHB/GBL, mephedrone, or ketamine (Chemsex drugs) during a sexual encounter in the last 12 months	○	○	○	○	○	○	○	○	○	○
Having ever injected drugs	○	○	○	○	○	○	○	○	○	○



Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section D: Men who have sex with men (MSM)

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for Men who have sex with men (MSM) in Ireland.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No

○ If Yes, please list them here:

Have you any further comments on any of the listed indicators for the Men who have sex with men (MSM) at risk group?

Behavioural Surveillance of STIs and HIV in Irelan (Pilot)

Section E: Sex Workers

Please indicate the importance of each of these indicators to STI and HIV behavioural surveillance among Sex Workers in Ireland.
The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'.
Please provide a response for each item.

Sexual Experiences

	1	2	3	4	5	6	7	8	9	10
Age at first intercourse and/or being sexually active	○	○	○	○	○	○	○	○	○	○

Condom and contraceptive use

	1	2	3	4	5	6	7	8	9	10
*Used condom during last intercourse										
*Used condom during last anal intercourse										
Used condom during last oral sex										
Used condom during most recent intercourse with casual partner										
*Used condom during most recent intercourse with main partner										
Used condom during last intercourse with partner of unknown or discordant HIV status										
recent paid intercourse										
Consistent (100%) condom use with all partners (or Always/Sometimes/Never)										
Consistent condom use with casual partners (or Always/Sometimes/Never)										
Consistent condom use with main partner (or Always/ Sometimes/ Never)										
Consistent condom use with paid partner (or Always/Sometimes/Never)										
Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)										
Consistent condom use with a client during intercourse in the last month										
Consistent condom use with a client during oral sex in the last month										

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
*Have received payment (i.e. financial or in-kind) for sex in the last 12 months										

STI/HIV testing

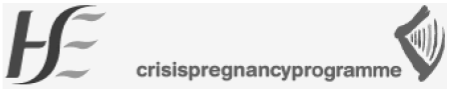
	1	2	3	4	5	6	7	8	9	10
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
Ever tested for Hepatitis C	○	○	○	○	○	○	○	○	○	○
Date of last Hepatitis C test	○	○	○	○	○	○	○	○	○	○
*Result of the Hep C test (reported or measured)	○	○	○	○	○	○	○	○	○	○
Sex workers seeking voluntary HIV tests	○	○	○	○	○	○	○	○	○	○
*Active syphilis among sex workers	○	○	○	○	○	○	○	○	○	○
*Hepatitis B status	○	○	○	○	○	○	○	○	○	○
*Not attending HIV services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○
Use of targeted service delivery points for sex workers (e.g. Women's Health Project, Dublin)	○	○	○	○	○	○	○	○	○	○

Knowledge and Attitudes

	1	2	3	4	5	6	7	8	9	10
*Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of STIs and HIV and rejecting major misconceptions about transmission and reproductive health issues)	○	○	○	○	○	○	○	○	○	○

Drug and substance abuse

	1	2	3	4	5	6	7	8	9	10
Injected drugs in the last six months	○	○	○	○	○	○	○	○	○	○



Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section E: Sex Workers

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for Sex Workers.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No

If Yes, please list them here:

Have you any further comments on any of the listed indicators for the Sex Workers at-risk group?

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section F: Intravenous Drug Users (IDU)

Please indicate the importance of each of these indicators to STI and HIV behavioural surveillance among Intravenous Drug Users (IDU) in Ireland. The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'. Please provide a response for each item.

Condom and contraceptive use

	1	2	3	4	5	6	7	8	9	10
*Drug injectors using condoms during most recent sexual intercourse with a casual partner	○	○	○	○	○	○	○	○	○	○
*Drug injectors using condoms during most recent sexual intercourse with a main partner	○	○	○	○	○	○	○	○	○	○
*Drug injectors using condoms during most recent sexual intercourse with a partner of unknown or discordant HIV status	○	○	○	○	○	○	○	○	○	○
*Drug injectors using condoms during most recent paid-for sexual intercourse	○	○	○	○	○	○	○	○	○	○
Drug injectors using condoms the last time they sold sex (for money or benefit-in-kind)	○	○	○	○	○	○	○	○	○	○

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
Have received payment (i.e. financial or otherwise) for sex in the last 12 months	○	○	○	○	○	○	○	○	○	○

Safe Injecting Practices

	1	2	3	4	5	6	7	8	9	10
Number of times injected (last month)	○	○	○	○	○	○	○	○	○	○
*Sharing equipment (needles, syringes, other injecting equipment) (last month)	○	○	○	○	○	○	○	○	○	○
Equipment sharing at last injection	○	○	○	○	○	○	○	○	○	○
Injecting drug users sharing in high equipment-sharing situations (last 6 months)	○	○	○	○	○	○	○	○	○	○
Number of sharing partners (last month)	○	○	○	○	○	○	○	○	○	○
Years since first injected	○	○	○	○	○	○	○	○	○	○
Ever injected while in prison	○	○	○	○	○	○	○	○	○	○
*Consistent (100%) use of sterile needles (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
*Injecting drug users with access to sterile needles	○	○	○	○	○	○	○	○	○	○
Substitution therapy (last month)	○	○	○	○	○	○	○	○	○	○
*Use of sterile injecting equipment the last time they injected	○	○	○	○	○	○	○	○	○	○

STI/HIV testing

	1	2	3	4	5	6	7	8	9	10
Ever tested for Hepatitis C	○	○	○	○	○	○	○	○	○	○
Date of last Hepatitis C test	○	○	○	○	○	○	○	○	○	○
*Result of the Hep C test (reported or measured)	○	○	○	○	○	○	○	○	○	○
Intravenous drug users seeking voluntary HIV tests	○	○	○	○	○	○	○	○	○	○
Currently receiving treatment for HIV	○	○	○	○	○	○	○	○	○	○
CD4 (CD4 positive T-lymphocyte) cell count (reported or measured)	○	○	○	○	○	○	○	○	○	○
Level of HIV viral load	○	○	○	○	○	○	○	○	○	○
*Avoidance of HIV services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○
*Hepatitis B status	○	○	○	○	○	○	○	○	○	○
Local availability of opioid substitution therapy	○	○	○	○	○	○	○	○	○	○

Knowledge and Attitudes

	1	2	3	4	5	6	7	8	9	10
*Sexual and reproductive health knowledge (both being able to correctly identify ways of preventing the sexual transmission of STIs and HIV and rejecting major misconceptions about transmission and reproductive health issues)	○	○	○	○	○	○	○	○	○	○

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section F: Intravenous Drug Users (IDU)

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for Intravenous Drug Users in Ireland.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No

○ If Yes, please list them here:

Have you any further comments on any of the listed indicators for the Intravenous Drug Users (IDU) at-risk population group?

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section G: Prisoners

Please indicate the importance of each of these indicators to STI and HIV behavioural surveillance among Prisoners in Ireland.
The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'.
Please provide a response for each item.

Sexual Experiences

	1	2	3	4	5	6	7	8	9	10
*Age at first intercourse and/or being sexually active	○	○	○	○	○	○	○	○	○	○

Partners

	1	2	3	4	5	6	7	8	9	10
Concurrency (multiple sexual partnerships overlapping in time)	○	○	○	○	○	○	○	○	○	○

Condom Use

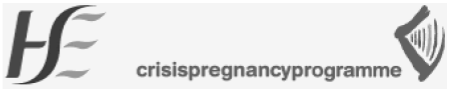
	1	2	3	4	5	6	7	8	9	10
Use of a condom during most recent intercourse with a casual partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent intercourse with a stable partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent intercourse with a main partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent paid intercourse	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status	○	○	○	○	○	○	○	○	○	○

STI/HIV testing

	1	2	3	4	5	6	7	8	9	10
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
Having ever been tested for Hepatitis C	○	○	○	○	○	○	○	○	○	○
Date of last Hepatitis C test	○	○	○	○	○	○	○	○	○	○
Result of the Hepatitis C test (reported or measured)	○	○	○	○	○	○	○	○	○	○
Hepatitis B status	○	○	○	○	○	○	○	○	○	○
Avoidance of HIV services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
Having received payment (i.e. financial or in-kind) for sex in the last 12 months	○	○	○	○	○	○	○	○	○	○



Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section G: Prisoners

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for Prisoners.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No
- ○ If Yes, please list them here:

Have you any further comments on any of the listed indicators for the Prisoner at-risk population group?

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section H: Migrants

Please indicate the importance of each of these indicators to STI and HIV behavioural surveillance among migrants in Ireland.
The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'.
Please provide a response for each item.

Sexual experiences

	1	2	3	4	5	6	7	8	9	10
*Age at first intercourse and/or being sexually active	○	○	○	○	○	○	○	○	○	○

Partners

	1	2	3	4	5	6	7	8	9	10
Concurrency (multiple sexual partnerships overlapping in time)	○	○	○	○	○	○	○	○	○	○

Condom Use

	1	2	3	4	5	6	7	8	9	10
Use of a condom during most recent intercourse with a casual partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent intercourse with a stable partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent intercourse with a main partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status	○	○	○	○	○	○	○	○	○	○
paid intercourse	○	○	○	○	○	○	○	○	○	○

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
Having received payment (i.e. financial or in-kind) for sex in the last 12 months	○	○	○	○	○	○	○	○	○	○

STI/HIV testing

	1	2	3	4	5	6	7	8	9	10
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
Having ever been tested for Hepatitis C	○	○	○	○	○	○	○	○	○	○
Date of last Hepatitis C test	○	○	○	○	○	○	○	○	○	○
Result of the last Hepatitis C test (reported or measured)	○	○	○	○	○	○	○	○	○	○
Hepatitis B status	○	○	○	○	○	○	○	○	○	○
Avoidance of HIV services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○

Gender-Based Violence

	1	2	3	4	5	6	7	8	9	10
*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	○	○	○	○	○	○	○	○	○	○

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section H: Migrants

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for Migrants.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No

- ○ If Yes, please list them here:

Have you any further comments on any of the listed indicators for the Migrant at-risk population group?

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section I: People Living with HIV/AIDS (PLWHA)

Please indicate the importance of each of these indicators to STI and HIV behavioural surveillance among People Living with HIV/AIDS (PLWHA) in Ireland. The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'. Please provide a response for each item.

Sexual Experiences

	1	2	3	4	5	6	7	8	9	10
*Age at first intercourse and/or being sexually active	○	○	○	○	○	○	○	○	○	○

Partners

	1	2	3	4	5	6	7	8	9	10
Concurrency (multiple sexual partnerships overlapping in time)	○	○	○	○	○	○	○	○	○	○

Condom Use

	1	2	3	4	5	6	7	8	9	10
Use of a condom during most recent intercourse with a casual partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent intercourse with a stable partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent intercourse with a main partner	○	○	○	○	○	○	○	○	○	○
Use of a condom during most paid intercourse	○	○	○	○	○	○	○	○	○	○
Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status	○	○	○	○	○	○	○	○	○	○

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
Have received payment (i.e. financial or in-kind) for sex in the last 12 months	○	○	○	○	○	○	○	○	○	○

STI/HIV testing

	1	2	3	4	5	6	7	8	9	10
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
Having ever been tested for Hepatitis C	○	○	○	○	○	○	○	○	○	○
Date of last Hepatitis C test	○	○	○	○	○	○	○	○	○	○
Result of the Hepatitis C test (reported or measured)	○	○	○	○	○	○	○	○	○	○
*Currently receiving treatment for HIV	○	○	○	○	○	○	○	○	○	○
*CD4 (CD4 positive T-lymphocyte) cell count (reported or measured)	○	○	○	○	○	○	○	○	○	○
* People with advanced HIV infection receiving antiretroviral therapy	○	○	○	○	○	○	○	○	○	○
Level of HIV viral load	○	○	○	○	○	○	○	○	○	○
Hepatitis B status	○	○	○	○	○	○	○	○	○	○
Avoidance of HIV services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○

Gender-Based Violence

	1	2	3	4	5	6	7	8	9	10
*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	○	○	○	○	○	○	○	○	○	○

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section I: People living with HIV/AIDS (PLWHA)

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for People living with HIV/AIDS (PLWHA).

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No

If Yes, please list them here:

Have you any further comments on any of the listed indicators for the People living with HIV/AIDS (PLWHA) at-risk population group?

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section J: Transgender

Please indicate the importance of each of these background indicators to STI and HIV behavioural surveillance among Transgender people in Ireland. The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'. Please provide a response for each item.

Condom and contraceptive use

	1	2	3	4	5	6	7	8	9	10
*Used condom during last intercourse	○	○	○	○	○	○	○	○	○	○
*Used condom during last anal intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during last oral sex	○	○	○	○	○	○	○	○	○	○
Used condom during most recent intercourse with casual partner	○	○	○	○	○	○	○	○	○	○
Used condom during most recent intercourse with main partner	○	○	○	○	○	○	○	○	○	○
Used condom during most recent paid intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during last intercourse with partner of unknown or discordant HIV status	○	○	○	○	○	○	○	○	○	○
Consistent (100%) condom use with all partners (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with casual partners (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with main partner (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with paid partner (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○

Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)

Unprotected anal intercourse with any partner in the last 12 months

Unprotected anal intercourse with main partner in the last 12 months

Unprotected anal intercourse with casual partner in the last 12 months

Unprotected anal intercourse with partner of unknown HIV status in the last 12 months

Unprotected anal intercourse with partner of discordant HIV status in the last 12 months

Number of unprotected anal intercourse partners

Frequency of unprotected anal intercourse

Unprotected anal intercourse at last sexual encounter

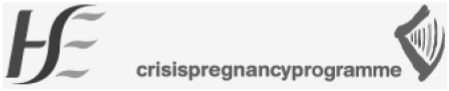
Unprotected anal intercourse at last sexual encounter with a person of unknown HIV status

STI/HIV testing

	1	2	3	4	5	6	7	8	9	10
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
Having ever been tested for Hepatitis C	○	○	○	○	○	○	○	○	○	○
Date of the last Hepatitis C test	○	○	○	○	○	○	○	○	○	○
Result of the last Hepatitis C test (reported or measured)	○	○	○	○	○	○	○	○	○	○
Hepatitis B status	○	○	○	○	○	○	○	○	○	○
*Avoidance of HIV/STI services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○

Gender-Based Violence

	1	2	3	4	5	6	7	8	9	10
*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	○	○	○	○	○	○	○	○	○	○



Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section J: Transgender

Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for Transgender people.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No

If Yes, please list them here:

Have you any further comments on any of the listed indicators for the Transgender at-risk population group?

IRISH RESEARCH COUNCIL
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Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section K: Homeless

Please indicate the importance of each of these background indicators to STI and HIV behavioural surveillance among Homeless people in Ireland. The scale goes from 1 to 10, where 1 is 'Not important' and 10 is 'Essential'. Please provide a response for each item.

Sexual Experiences

	1	2	3	4	5	6	7	8	9	10
Age at first intercourse and/or being sexually active	○	○	○	○	○	○	○	○	○	○

Condom and contraceptive use

	1	2	3	4	5	6	7	8	9	10
Used condom during last intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during last anal intercourse	○	○	○	○	○	○	○	○	○	○
Used condom during last oral sex	○	○	○	○	○	○	○	○	○	○
Used condom during most recent intercourse with casual partner	○	○	○	○	○	○	○	○	○	○
Used condom during most recent intercourse with main partner	○	○	○	○	○	○	○	○	○	○
Used condom during last intercourse with partner of unknown or discordant HIV status	○	○	○	○	○	○	○	○	○	○
Used condom during most recent paid intercourse	○	○	○	○	○	○	○	○	○	○
Consistent (100%) condom use with all partners (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with casual partners (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with main partner (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○
Consistent condom use with paid partner (or Always/Sometimes/Never)	○	○	○	○	○	○	○	○	○	○

Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)	◯	◯	◯	◯	◯	◯	◯	◯	◯	◯

Paid for Sex

	1	2	3	4	5	6	7	8	9	10
Have received payment (i.e. financial or in-kind) for sex in the last 12 months	○	○	○	○	○	○	○	○	○	○

STI/HIV testing

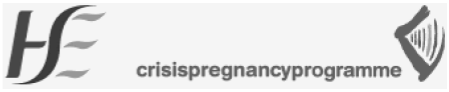
	1	2	3	4	5	6	7	8	9	10
Recent STI (last 12 months)	○	○	○	○	○	○	○	○	○	○
Having ever been tested for Hepatitis C	○	○	○	○	○	○	○	○	○	○
Date of last Hepatitis C test	○	○	○	○	○	○	○	○	○	○
Result of last Hepatitis C test (reported or measured)	○	○	○	○	○	○	○	○	○	○
Hepatitis B status	○	○	○	○	○	○	○	○	○	○
Avoidance of HIV/STI services because of stigma and discrimination	○	○	○	○	○	○	○	○	○	○

Drugs and Substance Abuse

	1	2	3	4	5	6	7	8	9	10
Have injected drugs in the last 6 months	○	○	○	○	○	○	○	○	○	○

Gender-Based Violence

	1	2	3	4	5	6	7	8	9	10
Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	○	○	○	○	○	○	○	○	○	○



Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section K: Homeless

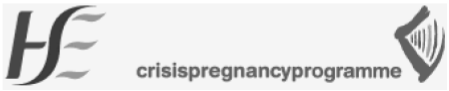
Please provide any additional comments detailing anything you feel is missing from the STI/HIV behavioural surveillance indicator section for Homeless people.

Are there any indicators you feel are missing from the above list?

- ○ Yes
- ○ No

If Yes, please list them here:

Have you any further comments on any of the listed indicators for the Homeless people at-risk population group?



Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Section L: Background

Congratulations, you have reached the last section of the survey. Before you go, we would really appreciate it if you could provide us with some brief detail on your experience in this field. This will provide us with important context for analysing survey responses, and your anonymity is guaranteed.

In which capacity are you responding to this questionnaire?

- ○ Policy Maker
- ○ Researcher/Academic
- ○ Public Health Service Provider
- ○ Voluntary/Non-Governmental Organisation Service Provider
- ○ Clinical Practitioner — Public Health
- ○ Clinical Practitioner — STI/HIV Specialist
- ○ Other (please specify)

Which of the following groups describes the main focus of your work?

- ○ General Population
- ○ Young People
- ○ Men who Have Sex with Men
- ○ Sex Workers
- ○ Intravenous Drug Users
- ○ Prisoners
- ○ Migrants
- ○ People Living With HIV/AIDS
- ○ Transgender
- ○ Homeless
- ○ Other (please specify)

Which HSE region(s) do you work in or does your service operate in?

- ☐ Dublin Mid-Leinster
- ☐ Dublin North East
- ☐ South
- ☐ West

How would you rate your expertise in relation to HIV and STI risk behaviours for each of the following populations?

	No experience	Some experience	Experienced	Expert
General Population	○	○	○	○
Youth	○	○	○	○
Men who Have Sex with Men	○	○	○	○
Intravenous Drug users	○	○	○	○
Sex Workers	○	○	○	○
Prisoners	○	○	○	○
Migrants	○	○	○	○
People Living With HIV	○	○	○	○
Transgender	○	○	○	○

Homeless

Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

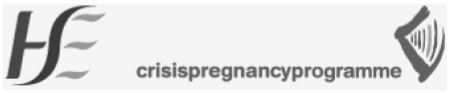
Query re Informed Consent

You have been brought to this page as you endorsed 'No' to one or more of the questions on our Informed Consent form page.

If this was done in error, please go back and begin the survey again.

If you have any questions or require further clarification before proceeding, please contact a member of the research team: Caroline Kelleher on 01 402 2725 carolinekelleher@rcsi.ie or Sarah Tecklenborg on 01 402 2350 sarahtecklenborg@rcsi.ie.

Thank you for your time thus far; we really appreciate it.



Behavioural Surveillance of STIs and HIV in Ireland (Pilot)

Finished

Thank you for completing the survey and taking the time to provide us with your important feedback and comments.

We really appreciate the time you have taken to assist us with our research and we will be in touch again in the future with some feedback and the second version of this survey.

Caroline and Sarah

https://www.surveymonkey.com/r/NJM2KT7

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Appendix 2: E-Delphi Results

Table of STI and HIV Behavioural Indicators that had reached consensus agreement with stakeholders by the end of the E-Delphi Study

			Round 1		Round 2	
Population	**Indicator Area**	**Indicator**	**Mean**	**ST. Dev**	**Mean**	**ST. Dev**
Core	Core	*Use of a condom at last sexual intercourse (in the last 12 months)	8.98	1.99		
		*Number of sexual partners in the last 12 months	8.75	2.04	8.89	1.3
General Population	Partners	*Number of sexual partners in the last 12 months	8.53	2.16	8.5	1.74
	Condom and Contraceptive Use	*Used condom during last intercourse	8.39	2.18	8.48	2.06
		*Used condom during last anal intercourse	8.63	2.08	8.79	2
		*Used condom during most recent intercourse with casual partner	8.74	2.08	8.62	2.2
		*Used condom during last intercourse with partner of unknown or discordant HIV status	8.82	2.07	8.9	1.64
		Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/Never)	8.95	1.87		
	STI/HIV Testing	Recent STI (last 12 months)	9.03	1.95	8.48	2.12
Young People	Sexual Experiences	*Age at first intercourse	8	2.59	8.35	1.98
	Partners	Concurrency (multiple sexual partnerships overlapping in time)	8.31	2.24	8.42	1.59
	Paid for Sex	Number of young people who have ever received money or other form of exchange for sex	8.34	2.42	8.68	1.33
	Condom and Contraceptive Use	*Used condom during last anal intercourse	8.93	2.16	8.61	1.91
		Used condom during most recent paid intercourse	8.65	2.35	8.71	1.99
		Consistent (100%) condom use with all partners (or Always/Sometimes/Never)	8.66	2.39	8.39	2.03
		*Used condom during most recent intercourse with casual partner	9.04	1.97		

		*Used condom during last intercourse with partner of unknown or discordant HIV status	9.25	1.84		
		Consistent condom use with casual partners (or Always/Sometimes/Never)	9.14	1.96		
		Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/ Never)	9.28	1.91		
	STI/HIV Testing	Young people who were ever diagnosed with an STI	8.9	1.8	8.77	1.18
		Recent STI (last 12 months)	9.21	1.47		
		Young people who were ever treated for an STI	8.79	1.81	8.32	1.94
	Knowledge and Attitudes	*Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of sexually transmitted infections (STIs) and HIV)	8.97	2.1	8.65	2.14
		*Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of STIs and HIV and reproductive health issues)	8.93	2.07	8.68	1.7
		Young people who have 'positive' attitudes toward key sexual and reproductive health issues (attitudes to condoms/ contraceptives/abstinence, gender role stereotypes, perceived vulnerability)	8.59	2.21	8.52	1.75
		Young people who are confident that they could refuse sex if they did not want it	8.86	1.68		
		Young people who believe they could seek sexual and reproductive health information and services if they needed them	9.07	1.53		
	Gender-Based Violence	Coercive or forced sex among young people	9.21	1.32		
MSM	Partners	Men who have risky sex (unprotected sex) with both men and women	9.32	1.35		
	Condom and Contraceptive Use	*Used condom during last intercourse	9	1.58		
		*Used condom during last anal intercourse	9.36	1.35		
		Used condom during most recent intercourse with casual partner	9.2	1.44		
		Used condom during last intercourse with partner of unknown or discordant HIV status	9.16	1.52		

		Consistent condom use with casual partners (or Always/Sometimes/ Never)	9.16	1.52		
		Unprotected anal intercourse with any partner in the last 12 months	9.24	1.48		
		Unprotected anal intercourse with casual partner in the last 12 months	9.6	0.65		
		Unprotected anal intercourse with partner of unknown HIV status in the last 12 months	9.48	0.77		
		Unprotected anal intercourse with partner of discordant HIV status in the last 12 months	9.56	0.65		
		Unprotected anal intercourse at last sexual encounter	9.08	1.47		
		Unprotected anal intercourse at last sexual encounter with a person of unknown HIV status	9.28	1.31		
MSM	Condom and Contraceptive Use	Number of unprotected anal intercourse partners	8.88	1.67	8.66	1.88
	STI/HIV Testing	Recent STI (last 12 months)	9.48	1.08		
		*Currently receiving treatment for HIV	9.44	0.96		
		Level of HIV viral load	9.04	1.43		
		*Current active syphilis infection	9.4	1.08		
		*People receiving pre-exposure prophylaxis	9.44	0.96		
		*Hepatitis B status	9.24	1.2		
		MSM receiving PEP (post-exposure prophylaxis)	—		9	1.52
	Drug and Alcohol Use	Use of crystal methamphetamine, GHB/GBL, mephedrone, or ketamine (Chemsex drugs) during a sexual encounter in the last 12 months	9.13	1.48	9.31	1
		Having ever injected drugs	9.04	1.51	9.21	1.03
Sex Workers	Condom and Contraceptive Use	*Used condom during last intercourse	9.92	0.29		
		*Used condom during last anal intercourse	9.92	0.29		
		Used condom during last oral sex	9.58	1.16		
		Used condom during most recent intercourse with casual partner	9.92	0.29		
		*Used condom during most recent paid intercourse	9.92	0.28		
		Used condom during last intercourse with partner of unknown or discordant HIV status	9.92	0.29		
		Consistent (100%) condom use with all partners (or Always/ Sometimes/Never)	9.08	2.27		

		Consistent condom use with casual partners (or Always/Sometimes/ Never)	9.83	0.39		
		Consistent condom use with paid partner (or Always/Sometimes/ Never)	9.83	0.39		
		Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/ Never)	9.83	0.39		
		Consistent condom use with a client during intercourse in the last month	9.83	0.39		
		Consistent condom use with a client during oral sex in the last month	9.73	0.65		
	STI/HIV Testing	Recent sexually transmitted infection (last 12 months)	9.85	0.38		
		Ever tested for Hepatitis C	9.42	1.24		
		Date of last Hepatitis C test	9.58	0.67		
		*Result of the Hepatitis C test (reported or measured)	9.77	0.6		
		Sex workers seeking voluntary HIV tests	9.33	1.37		
		*Active syphilis among sex workers	9.77	0.44		
		*Hepatitis B status	9.77	0.6		
		*Not attending HIV services because of stigma and discrimination	9.38	1.33		
		Use of targeted service delivery points for sex workers (e.g. Women's Health Project, Dublin)	8.92	1.83		
	Paid for Sex	*Have received payment (i.e. financial or in-kind) for sex in the last 12 months	9.15	2.15	9.15	1.5
		Length of time working as a sex worker	—		8.95	0.89
		Frequency of sex work	—		8.45	2.24
	Knowledge and Attitudes	*Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of STIs and HIV)	9.08	2.27		
		*Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of STIs and HIV and reproductive health issues)	9.08	2.27		
	Drug and Substance Abuse	Injected drugs in the last six months	9.69	0.63		
PWID	Condom and Contraceptive Use	*Drug injectors using condoms during most recent sexual intercourse with a casual partner	9.44	1.04		

		*Drug injectors using condoms during most recent sexual intercourse with a main partner	9	1.41		
		*Drug injectors using condoms during most recent sexual intercourse with a partner of unknown or discordant HIV status	9.59	0.87		
		*Drug injectors using condoms during most recent paid-for sexual intercourse	9.65	0.86		
		Drug injectors using condoms the last time they sold sex (for money or benefit-in-kind)	9.81	0.54		
	Safe Injecting Practices	*Sharing equipment (needles, syringes, other injecting equipment) (last month)	9.81	0.54		
		Equipment sharing at last injection	9.69	0.6		
		Number of sharing partners (last month)	9.13	1.78		
		*Consistent (100%) use of sterile needles or (Always/Sometimes/ Never)	9.75	0.58		
		*Injecting drug users with access to sterile needles	9.75	0.58		
		*Use of sterile injecting equipment the last time they injected	9.76	0.56		
		Years since first injected	8.06	1.57		
		Number of times injected (last month)	8.44	1.55		
		Ever injected while in prison	8.88	1.63		
		Injecting drug users sharing in high equipment-sharing situations (last 6 months)	8.75	2.08	9.25	1.24
	STI/HIV Testing	Ever tested for Hepatitis C	9.35	1.17		
		Date of last Hepatitis C test	9.41	0.87		
		*Result of the Hep C test (reported or measured)	9.71	0.77		
		Intravenous drug users seeking voluntary HIV tests	9	1.21		
		Currently receiving treatment for HIV	9.63	0.62		
		CD4 (CD4 positive T-lymphocyte) cell count (reported or measured)	8.94	1.24		
		Level of HIV viral load	9.25	0.93		
		*Hepatitis B status	9.65	0.70		
		Local availability of opioid substitution therapy	9.06	1.34		
	Paid for Sex	Have received payment (i.e. financial or otherwise) for sex in the last 12 months	9.12	1.54	8.88	1.5
	Knowledge and Attitudes	*Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of sexually transmitted infections and HIV)	8.88	1.96		

		*Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of sexually transmitted infections and HIV and reproductive health issues)	8.88	1.96		
Prisoners	Condom and Contraceptive Use	Use of a condom during most recent intercourse with a casual partner	9.1	1.6		
		Use of a condom during most recent paid intercourse	8.7	1.7		
		Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status	8.9	1.66		
		Availability of condoms in prison	9.55	1.51		
	STI/HIV Testing	Recent sexually transmitted infection (last 12 months)	9.45	1.04		
		Having ever been tested for Hepatitis C	9.18	1.54		
		Date of last Hepatitis C test	9.55	0.69		
		Result of the Hepatitis C test (reported or measured)	9.73	0.65		
		Hepatitis B status	9.82	0.6		
	Drug or Substance Abuse	Ever injected while in prison	9.3	1.57		
		Use of sterile needles (Always/ Sometimes/Never)	9.5	0.71		
		Used substitution therapy (last month)	8.8	1.55		
		Sharing injecting equipment (needles, syringes, other injecting equipment) (last month)	9.7	0.48		
		Number of equipment-sharing partners	9.2	1.55		
		Injecting equipment sharing at last injection	9.2	1.55		
		Injecting drug users with access to sterile needles	9.3	1.57		
		*Use of sterile injecting equipment at last injection	9.3	1.57		
Migrants	Condom and Contraceptive Use	Use of a condom during most recent intercourse with a casual partner	9.73	0.59		
		Use of a condom during most recent intercourse with a stable partner	8.93	1.71		
		Use of a condom during most recent paid intercourse	9.93	0.26		
		Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status	9.93	0.26		

	Paid for Sex	Having received payment (i.e. financial or in-kind) for sex in the last 12 months	9.6	1.3		
	STI/HIV Testing	Recent sexually transmitted infection (last 12 months)	9.6	1.12		
		Having ever been tested for Hepatitis C	9.07	1.49		
		Result of the last Hepatitis C test (reported or measured)	9.47	1		
		Hepatitis B status	9.53	0.92		
		Avoidance of HIV services because of stigma and discrimination	9	1.81	8.85	1.81
	Drug and Alcohol Use	Having ever injected drugs	—		8.7	1.66
	Gender-Based Violence	*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	8.8	2.04	8.85	1.57
PLWHA	Condom and Contraceptive Use	Use of a condom during most recent intercourse with a casual partner	9.4	1.09		
		Use of a condom during most recent paid intercourse	9.42	1.07		
		Use of a condom during most recent paid intercourse with a partner of unknown or discordant HIV status	9.42	1.07		
	Paid for Sex	Have received payment (i.e. financial or in-kind) for sex in the last 12 months	9.05	1.22		
	STI/HIV Testing	Recent sexually transmitted infection (last 12 months)	9.45	1		
		Having ever been tested for Hepatitis C	8.75	1.94		
		Date of last Hepatitis C test	8.5	2.21		
		Result of the Hepatitis C test (reported or measured)	9.11	1.63		
	Treatment	*Currently receiving treatment for HIV	9.75	0.72		
		*People with advanced HIV infection receiving anti-retroviral therapy	9.4	1.31		
		Level of HIV viral load	9.8	0.41		
		Hepatitis B status	9.45	0.89		
		Having received anti-retroviral therapy (ART) in the last 12 months	—		9.62	0.64

Transgender People	Condom and Contraceptive Use	*Used condom during last intercourse	9.91	0.3		
		*Used condom during last anal intercourse	9.91	0.3		
		Used condom during last oral sex	8.9	2.5		
		Used condom during most recent intercourse with casual partner	9.9	0.32		
		Used condom during most recent intercourse with main partner	8.8	2.53		
		Used condom during most recent paid intercourse	10	0		
		Used condom during last intercourse with partner of unknown or discordant HIV status	10	0		
		Consistent condom use with casual partners (or Always/Sometimes/ Never)	9.3	1.57		
		Consistent condom use with paid partner (or Always/Sometimes/ Never)	9.4	1.58		
		Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/ Never)	9.4	1.58		
		Unprotected anal intercourse with any partner in the last 12 months	9.7	0.67		
		Unprotected anal intercourse with main partner in the last 12 months	9	2.54		
		Unprotected anal intercourse with casual partner in the last 12 months	10	0		
		Unprotected anal intercourse with partner of unknown HIV status in the last 12 months	9.9	0.32		
		Unprotected anal intercourse with partner of discordant HIV status in the last 12 months	10	0		
		Number of unprotected anal intercourse partners	9.7	0.95		
		Unprotected anal intercourse at last sexual encounter	9.9	0.32		
		Unprotected anal intercourse at last sexual encounter with a person of unknown HIV status	9.9	0.32		
		Frequency of unprotected anal intercourse	8.7	2.5	8.86	1.96
	STI/HIV Testing	Recent sexually transmitted infection (last 12 months)	9.64	1.21		
		Result of the last Hepatitis C test (reported or measured)	9.91	0.3		
		Hepatitis B status	9.8	0.42		
		*Avoidance of STI/HIV services because of stigma and discrimination	9.36	1.5		

	Drug and Alcohol Use	Having ever injected drugs	—		9	0.96
	Gender-Based Violence	*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	8.55	2.25	8.86	1.41
Homeless People	Condom and Contraceptive Use	Used condom during last intercourse	9	1.48		
		Used condom during last anal intercourse	8.91	1.51		
		Used condom during most recent intercourse with casual partner	9.18	1.54		
		Used condom during most recent paid intercourse	9.45	1.51		
		Used condom during last intercourse with partner of unknown or discordant HIV status	9.45	1.51		
		Consistent (100%) condom use with all partners (or Always/ Sometimes/Never)	9	2.05		
		Consistent condom use with casual partners (or Always/Sometimes/ Never)	9.64	0.5		
		Consistent condom use with main partner (or Always/Sometimes/ Never)	8.91	2.07		
		Consistent condom use with paid partner (or Always/Sometimes/ Never)	9.82	0.4		
		Consistent condom use with partners of unknown or discordant HIV status (or Always/Sometimes/ Never)	9.82	0.4		
	Paid for Sex	Have received payment (i.e. financial or in-kind) for sex in the last 12 months	9.18	1.66		
	STI/HIV Testing	Recent sexually transmitted infection (last 12 months)	9.55	1.04		
		Date of last Hepatitis C test	9.18	1.25		
		Result of last Hepatitis C test (reported or measured)	9.36	1.29		
		Hepatitis B status	9.27	1.42		
	Drug and Substance Abuse	Have injected drugs in the last 6 months	9.45	1.04		
	Accommodation	Current accommodation status (and type of accommodation)	—		8.93	1.14

Note: * indicates this indicator is needed for international reporting requirements.
CD4 = type of white blood cell; GBL = gamma-Butyrolactone; GHB = gamma-hydroxybutyric acid; HIV = Human Immunodeficiency Virus; MSM = Men who have sex with men; PLWHA = People living with HIV/AIDS; PWID = People who inject drugs; ST. Dev = Standard Deviation; STI = Sexually transmitted infections.

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Appendix 3: E-Delphi Results between Rounds of E-Delphi study

Table showing means and standard deviations for indicators achieving consensus in each Round for participants who completed Rounds 1 and 2. (N=32)

Population	Indicator Area	Indicator	Round 1		Round 2	
			Mean	**ST. Dev**	**Mean**	**ST. Dev.**
Core	Core	*Number of sexual partners in the last 12 months	8.8	1.95	8.97	1.24
General Population	Partners	*Number of sexual partners in the last 12 months	8.38	2.25	8.61	1.82
	Condom and Contraceptive Use	*Used condom during last intercourse	8.25	2.26	8.23	2.29
		*Used condom during last anal intercourse	8.5	2.16	8.84	1.77
		*Used condom during most recent intercourse with casual partner	8.69	2.16	8.68	2.07
		*Used condom during last intercourse with partner of unknown or discordant HIV status	8.75	2.14	8.87	1.78
	STI/HIV Testing	Recent STI (last 12 months)	9.03	1.93	8.81	1.83
Young People	Sexual Experiences	*Age at first intercourse	7.96	2.63	8.1	2.21
	Partners	Concurrency (multiple sexual partnerships overlapping in time)	8.38	2.32	8.48	1.75
	Paid for Sex	Number of young people who have ever received money or other form of exchange for sex	8.38	2.55	8.62	1.43
	Condom and Contraceptive Use	*Used condom during last anal intercourse	8.86	2.34	8.33	2.18
		Used condom during most recent paid intercourse	8.68	2.55	8.48	2.29
		Consistent (100%) condom use with all partners (or Always/Sometimes/ Never)	8.67	2.62	8.29	2.19
	STI/HIV Testing	Young people who were ever diagnosed with an STI	9.08	1.67	8.86	1.15
		Young people who were ever treated for an STI	8.96	1.69	8.29	2.22
	Knowledge and Attitudes	*Sexual and reproductive health knowledge (being able to correctly identify ways of preventing the sexual transmission of sexually	8.96	2.27	8.38	2.48

		transmitted infections (STIs) and HIV)				
		*Sexual and reproductive health knowledge (being able to reject major misconceptions about transmission of STIs and HIV and reproductive health issues)	8.88	2.25	8.52	1.97
		Young people who have 'positive' attitudes toward key sexual and reproductive health issues (attitudes to condoms/contraceptives/ abstinence, gender role stereotypes, perceived vulnerability)	8.42	2.38	8.48	1.86
MSM	Condom and Contraceptive Use	Number of unprotected anal intercourse partners	8.85	1.81	8.37	2.22
	Drug and Alcohol Use	Use of crystal methamphetamine, GHB/GBL, mephedrone, or ketamine (Chemsex drugs) during a sexual encounter in the last 12 months	9.16	1.46	9.37	0.9
		Having ever injected drugs	9.2	1.36	9.33	0.91
Sex Workers	Paid for Sex	*Have received payment (i.e. financial or in-kind) for sex in the last 12 months	9	2.32	9.33	1.72
PWID	Safe Injecting Practices	Injecting drug users sharing in high equipment-sharing situations (last 6 months)	8.27	2.37	9.18	1.47
	Paid for Sex	Have received payment (i.e. financial or otherwise) for sex in the last 12 months	9.25	1.29	8.64	1.75
Migrants	STI/HIV Testing	Avoidance of HIV services because of stigma and discrimination	8.75	1.96	9.45	1.21
	Gender-Based Violence	*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	8.5	2.2	8.45	1.81
Transgender People	Condom and Contraceptive Use	Frequency of unprotected anal intercourse	8.67	2.65	8.75	2.43
	Gender-Based Violence	*Experience of intimate partner violence (physical, sexual, emotional, domestic) with current partner	8.4	2.32	8.75	1.58

Note: * indicates this indicator is needed for international reporting requirements.
GBL = gamma-Butyrolactone; GHB = gamma-hydroxybutyric acid; HIV = Human Immunodeficiency Virus; MSM = Men who have sex with men; PWID = People who inject drugs; ST. Dev = Standard Deviation; STI = Sexually transmitted infections.

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Appendix 4: Feasibility Cognitive Interview Probes and Survey Questions

Survey Question/ Behavioural Indicator	Survey Response Options	Probes
All		Did you answer this question? If no, do you mind me asking why not?
1. Consent Questions **2. Anonymous ID Participant number**		
Section 1: Sexual Experiences		
3. Have you had vaginal sexual intercourse?	*Yes* *No* *If yes, what age were you when this first happened?*	Is it difficult to answer this question? Could you restate this question in your own words?
4. Have you given someone oral sex, that is, put your mouth on your partner's genital area?	*Yes* *No* *If yes, what age were you when this first happened?*	We asked you what age you were when this first happened; was it hard to remember this? How easy or difficult did you find this question to answer? Why do you say that?
5. Have you received oral sex, that is, your partner put their mouth on your genital area?	*Yes* *No* *If yes, what age were you when this first happened?*	What do you understand by the term 'partner' here? We asked you what age you were when this first happened; was it hard to remember this? Why do you say that? Did you guess?
6. Have you had anal sex?	*Yes* *No*	How did you feel about being asked this question?

	If yes, what age were you when this first happened?	We asked you what age you were when this first happened; if you answered this, was it hard to remember this? Did you guess?
Section 2: Most Recent Sexual Experiences		
7. When was the last occasion you had vaginal sexual intercourse with a (woman/man)?	*In the last 7 days* *Not in the last 7 days but within the last 4 weeks.* *Not in the last 4 weeks but within the last 3 months.* *Not in the last 3 months but within the last 6 months.* *Not in the last 6 months but within the last 5 years* *More than 5 years ago* *I have never had vaginal sexual intercourse*	How easy or difficult did you find this question to answer? Could you see your answer in the answer choices? Did you have to guess the date?
8. When was the last occasion you gave ORAL SEX to a (woman/man) — by you to a partner, that is your mouth on a partner's genital area?	*In the last 7 days* *Not in the last 7 days but within the last 4 weeks* *Not in the last 4 weeks but within the last 3 months* *Not in the last 3 months but within the last 6 months* *Not in the last 6 months but within the last 5 years* *More than 5 years ago* *I have never given oral sex*	How easy or difficult did you find this question to answer? How well do you remember this?
9. When was the last occasion you received ORAL SEX from a (woman/man) — by a partner to you, that is a partner's mouth on your genital area?	*In the last 7 days* *Not in the last 7 days but within the last 4 weeks* *Not in the last 4 weeks but within the last 3 months* *Not in the last 3 months but within the last 6 months*	How easy or difficult did you find this question to answer? How well do you remember this?

	Not in the last 6 months but within the last 5 years *More than 5 years ago* *I have never received oral sex*	
10. When was the last occasion you had ANAL SEX with a (woman/man)?	*In the last 7 days* *Not in the last 7 days but within the last 4 weeks* *Not in the last 4 weeks but within the last 3 months* *Not in the last 3 months but within the last 6 months* *Not in the last 6 months but within the last 5 years* *More than 5 years ago* *I have never had anal sex*	How easy or difficult did you find this question to answer? How well do you remember this?
Section 3: Most Recent Sexual Partner		
11. Was your most recent partner:	*Male* *Female* *Trans Male* *Trans Female*	Were you able to find your first answer from the answer options shown?
12. Which best describes your relationship to the other person at the time you had sex on that most recent occasion:	*You had just met for the first time/didn't know each other* *You knew each other, but didn't have a steady relationship at the time* *You had a steady relationship at the time* *You were living together (but not married or engaged)* *You were engaged to be married.* *You were married* *You paid for sex* *Other (please specify)*	Were you able to find your first answer from the answer options shown?
13. Where did you first meet this partner?	*At school; At university or college; At work (or through work); In a pub, bar, night club, dance, or disco;*	How did you feel about being asked this question? Were you able to find your

	Introduced by friends or family; Through a sports club, faith group, or other organisation or society; On holiday or while travelling; Internet dating website; Other dating agency / personal ads; Online, but not through a dating website; Had always known each other (for example as family friends or neighbours); Neighbour/lived locally/house or flatshare; Through an arranged marriage; In a public place (e.g. park, museum, shop, public transport); (He/she) was a sex worker / prostitute; Other (please specify)	first answer from the answer options shown?
14. How long was it between when you first met this person and when you first had sex with him or her? (Note we are looking for the length of time from when you first met this person, could be face to face, over the phone or online, to when you first had sex with him/her)	*24 hours or less* *Between 1 day and 1 week* *Between 1 week and 4 weeks* *Between 4 weeks and 6 months* *Between 6 months and 1 year* *Between 1 year and 5 years* *Between 5 years and 10 years* *10 years or more*	How did you feel about answering this question? How well did you remember your answer? How did you go about calculating this?
15. On the most recent occasion you had sex with this partner, how old were they?		Was it difficult to answer this question? Why do you say that?
16. Was your most recent partner:	*White – Irish/White – Irish Traveller/ Any other White Background (please specify)/ Black or Black Irish – African/ Black or Black irish – Any other black background(please specify)/ Asian – Asian Irish – Chinese/ Asian or Asian Irish – Any other Asian background*	

	(please specify)/ Other, including mixed background (please specify)	
17. On the most recent occasion you had sex with this partner did you have:	*Vaginal sex* *Anal sex* *Oral sex*	
18. Was any method of contraception or any protection against sexually transmitted infection used on the most recent occasion by you or your partner?	*Contraception used – Yes/No* *Sexually transmitted infection protection used – Yes/No*	
19 If Yes, what method was used:	*Condom/male sheath/Durex* *Contraceptive pill* *Coil/IUD/Mirena* *Cap/ diaphragm Spermicides (Gels/sprays/pessaries)* *Safe period/rhythm method/ Billings method (excluding Persona) Persona* *Withdrawal* *Injections/implanted capsules/patches/vaginal ring* *Sterilisation(Vasectomy/ tubal ligation)* *Emergency contraception (morning-after pill)* *Other (please specify)*	Were you able to find your answer from the answer options shown?
Section 4: Sexual Activity and Alcohol/Drug Use		
20. Have you engaged in sexual activity in the last 12 months under the influence of alcohol?	*Yes* *No*	What do you understand by 'under the influence of alcohol'? How did you remember this? Did you guess? What do you think 'sexual activity' means here?

21. Have you engaged in sexual activity in the last 12 months under the influence of psychoactive substances?	*Yes* *No*	How did you feel about answering this question? What do you understand by the term 'psychoactive substances'?
22. Have you used any of the following during a sexual encounter in the last 12 months?	*Crystal methamphetamine* *GHB/GBL* *Mep* *Ketamin hedronee*	What do you understand by 'sexual encounter'? Did you understand the answer options? How did you feel about answering this question?
23. Have you engaged in sexual activity in the last 12 months under the influence of alcohol and psychoactive substances at the same time?	*Yes* *No*	
Section 5: Partners and Sexual Experiences		
24. Which best describes your current relationship status?	*Single* *Married* *Widowed Separated/Divorced* *Cohabiting* *Other (please specify)*	Were you able to find your first answer to this question from the response options shown?
25. Which best describes the type of partner you last had sexual intercourse with:	*Main* *Casual* *Stable* *Paid*	What is your understanding of each of the answer options? Would you restate them in your own words? What do you understand by 'sexual intercourse' in this question?

26. How many sexual partners have you had in the last 12 months?		How easy or difficult did you find this question to answer? Why do you say that? How did you remember that? Did you guess?
27. How many sexual partners have you had in your lifetime?		How easy or difficult was this question to answer? How well do you remember this? Did you guess? What do you understand by the term 'sexual partners'? Which partners did you include in your answer?
28. Did any of these overlap in time (concurrency)?	*Yes* *No*	What do you understand by the term 'concurrency'? Could you restate this question in your own words? How well do you remember that?
29. Have you ever paid for sex?	*Yes* *No*	How did you feel about answering this question? What do you understand by the term 'paid for sex'?
30. Have you paid for sex in the last 12 months?	*Yes* *No*	
31. How many paid-for partners have you had in the last 12		How well did you remember this?

months?		
32. How many paid-for partners have you had in the last 5 years?		How well did you remember this? How did you feel about answering this question?
33. Have you ever received money, favours or gifts in exchange for sex? (favours or gifts include: small things such as lifts, food or clothing, to larger gifts such as payment of college fees, housing or money)	*Yes/No* *If yes, when was this?*	How easy or difficult was it to answer this question? What do you think the term 'sex' means here?
34. Have you ever experienced intimate partner violence (physical, sexual, emotional, domestic) with a partner?	*Yes/No* *If yes, when was this?*	What did you understand by the term 'intimate partner violence'? How would you define a 'partner' in this context?
35. Have you ever experienced intimate partner violence with your current partner?	*Yes* *No* *If yes, how old were you when this last happened?*	How did you feel about answering this question?
36. Since the age of 13, has anyone tried to make you have sex with them against your will?	*Yes* *No* *Don't Know*	How did you find answering this question? What did you think 'sex' means in this question?
37. And since the age of 13, has anyone actually made you have sex with them, against your will?	*Yes* *No* *Don't Know*	How do you feel about answering this question?
38. Was this person:	*Someone you were, or had been in a relationship with/*	

	Someone known to you as a family member or friend/ Someone known to you but not as a family member or friend/ Someone you didn't know/ Other/Not applicable	
39. Did you talk to anyone about this?	*Yes* *No* *Not applicable*	
40. Did you speak to the police about this?	*Yes* *No* *Not applicable*	
Thank you for answering those questions. If you wish to talk to someone about anything in these last few questions, there are a range or organisations that can provide expert advice and support. At the end of the interview, we will provide you with a leaflet with these contact details.		
Section 6: Condom and Contraceptive Use and Fertility		
41. Did you use a condom the last time you had sexual intercourse?	*Yes* *No*	How would you define 'sexual intercourse' for the purpose of this question? How did you feel about answering this question? What do you understand by 'use a condom'?
42. Did you use a condom the last time you had anal intercourse?	*Yes* *No* *Not Applicable*	How did you feel about answering this question? What do you understand by 'use a condom' in this scenario?
43. Did you use a condom the last time you engaged in oral intercourse?	*Yes* *No* *Not Applicable*	How easy or difficult was it to answer this question? Why do you say that? What do you understand by

		'use a condom' in this scenario?
44. Did you use a condom in your most recent intercourse with your main partner?	*Yes* *No*	What do you understand by the term 'partner'? How difficult was this question to answer?
45. Did you use a condom in your most recent intercourse with your casual partner?	*Yes* *No* *Not Applicable*	How difficult was this question to answer?
46. Did you use a condom in your most recent paid-for sex?	*Yes* *No* *Not Applicable*	How difficult was this question to answer?
47. Do you know the HIV status of the last person you had intercourse with?	*Yes* *No*	What do you think this question was asking? How difficult was this question to answer?
48. Did you use a condom in your most recent intercourse with a partner of unknown or discordant HIV status?	*Yes* *No* *Not Applicable*	What do you understand by the term 'unknown or discordant HIV status'? Would other people your age understand what the question was asking?
49. Do you consistently use condoms with your casual partners?	*Yes* *No* *Not Applicable*	How would you define 'casual partner'? What would you describe as consistent condom use? (consistent through time or acts) How did you feel about

		answering this question?
50. Do you consistently use condoms with your main partner?	*Yes* *No* *Not applicable*	How easy or difficult did you find this question to answer? How did you define consistent condom use for this question? What sexual acts are you including in your answer? How would you state this question in your own words?
51. Do you consistently use condoms with paid partners?	*Yes* *No* *Not applicable*	
52. What contraception do you typically use? Please tick all that apply. (if you are unsure about any of these terms, then please ask the researcher)	*Condom* *Pill* *Injection* *Implant* *Coil* *IUD (Intra Uterine Device)* *Sterilisation* *Other (please specify)*	How did you feel about answering this question? What do you understand by the term 'contraception'? Were you able to find your first answer to the question from the response options shown?
53. How long after sexual intercourse do you think the 'morning-after pill' or 'emergency contraceptive pill' can be effectively used?	*Up to 12 hours after sexual intercourse* *Up to 24 hours* *Up to 72 hours* *Up to 5 days* *Over 5 days* *Don't know*	How easy or difficult did you find this question to answer? Why do you say that? How did you calculate your answer?
54. How long is the egg (ovum)	*2-4 hours*	How easy or difficult did you

viable for fertilisation?	*0.5-1 day* *2 days* *3 days* *4 days* *5 days* *Don't know*	find this question to answer? Why do you say that? How did you calculate your answer?
55. How long does sperm usually survive in the uterus/fallopian tubes?	*2-4 hours* *0.5-1 day* *1-2 days* *2-3 days* *3-4 days* *4-5 days* *Don't know*	How easy or difficult did you find this question to answer? Why do you say that? How did you calculate your answer?
56. At what time of the month do you think a woman is most likely to become pregnant? Is it:	*During her period* *Just before her period* *Just after her period* *About halfway between periods* *Anytime during the cycle* *Don't know*	How easy or difficult did you find this question to answer? Why do you say that? How did you calculate your answer?
57. What is the probability (likelihood) that a 25-year-old woman will become pregnant if she has unprotected sexual intercourse with a young man during ovulation?	*0-10%* *10-20%* *20-30%* *30-40%* *40-50%* *50-60%* *60-80%* *80-100%*	How easy or difficult did you find this question to answer? Why do you say that? How did you calculate your answer?
58. Have you visited a WellMan or WellWoman or other sexual health clinic in the last 12 months?	*Yes* *No*	How did you feel about answering this question? How would you define a 'sexual health clinic'? Can you give me examples? How easy was it to remember?

59. If yes, how many visits? **60. If no, why not?**		
Section 7: STI and HIV Testing		
61. Have you ever tested for HIV?	*Yes* *No* *If Yes, then why?*	How easy or difficult did you find this question to answer? How sure of your answer are you?
62. What was the date of your last HIV test?		How easy was this question to answer? How did you come up with your answer?
63. What was the result of your last HIV test?	*Positive* *Negative* *Don't know* *Do not wish to answer* *Not Applicable*	How do you feel about answering this question?
64. Have you ever been diagnosed with a sexually transmitted infection (STI)?	*Yes* *No* *If yes, which STIs?*	
65. Did you receive treatment for it/them?	*Yes* *No* *Not applicable*	
66. Have you been tested for STIs in the last 12 months?	*Yes* *No*	How do you feel about answering this question?
67. Did you have this test in Ireland or abroad?	*Ireland* *Abroad*	

	Not applicable *If abroad, please specify the country:*	
68. What was the date of your last STI test?		
69. Have you been diagnosed with an STI in the last 12 months?	*Yes* *No* *If yes, which STIs?*	
70. Have you ever heard of sexually transmitted infection called Chlamydia?	*Yes* *No*	
71. Have you been tested for chlamydia in the last 12 months?	*Yes* *No*	How easy or difficult did you find this question to answer? What do you understand by chlamydia? What is the process of testing for chlamydia?
72. Can you tell me whether you think the following statements about chlamydia are true or false?	*Chlamydia does not always cause symptoms/* *Chlamydia is easily treated with antibiotics/* *Chlamydia has no serious side effects /* *Chlamydia can cause infertility if untreated/* *Chlamydia only affects men.*	How easy or difficult did you find this question to answer? Why do you say that?
73. Do you think the following statements about HIV and AIDS are true or false?	*There is a cure for AIDS/* *A person can be infected with HIV for years without getting AIDS/* *Withdrawing the penis before a man climaxes or ejaculates prevents his partner from getting HIV during sex.*	
74. Do you think the following statements about HIV are true or	*Having sex with one faithful, uninfected partner reduces the risk of HIV transmission/*	How easy or difficult did you find this question to answer?

false?	*Using a condom reduces the risk of HIV transmission/* *A healthy-looking person can have HIV/* *A person can get HIV by sharing a meal, for example lunch or dinner, with someone who is infected.*	Why do you say that?
Questions 75 to 78 were later found to be obsolete questions about AIDS and stigma and were therefore removed.		
79. Can pregnant women be infected with HIV?	*Yes* *No* *Don't Know*	How easy or difficult did you find this question to answer? Why do you say that?
80. Can an infected mother transmit the infection to her child?	*Yes* *No* *Don't know*	
81. How can an infected mother transmit the infection to her child?	*During pregnancy* *Through vaginal delivery* *Through caesarean section* *Through breastfeeding* *Don't know* *Other (please specify)*	How easy or difficult was it to answer this question? Why? How sure are you of your answer?
82. How can mother-to-child transmission of infection be prevented?	*Anti-retroviral therapy during pregnancy* *Delivery by caesarean section* *Giving anti-retroviral drugs to the newborn* *Avoiding breastfeeding* *Don't Know* *Other (please specify)*	Please restate the question in your own words? Did you understand the answer options in the question? How sure are you of your answer?
Section 9: Pregnancy		
83. Have you ever been pregnant?	*Yes* *No*	

Section 10: HIV and Pregnancy		
84. Did you receive a HIV test and test result as part of your antenatal care?	*Yes* *No* *Not Applicable*	How easy or difficult did you find this question to answer?
85. Were you taking antiretroviral therapy before/during/and after your labour?	*Yes* *No* *Not Applicable*	
86. Did you receive anti-retroviral therapy during your pregnancy?	*Yes* *No* *Not Applicable*	Can you restate this question in your own words? Understanding of anti-retroviral therapy?
Section 11: Drug and Alcohol Use		
87. How often have you had an alcoholic drink of any kind in the last 12 months?	*Daily* *5-6 times a week* *4 times a week* *3 times a week* *Twice a week* *Once a week* *2-3 times a month* *Once a month* *6-11 times a year* *2-5 times a year* *Once a year* *I did not drink in the last year but I drank longer ago* *I do not drink alcohol* *Don't know*	How did you calculate your answer? How sure of your answer are you? Did you guess?
88. About how many drinks do you usually have on the days when you have any, apart from parties or special occasions? One drink would be equal to a glass of wine, a measure of spirits or a half-pint of beer.	*One or two* *Three or four* *Five or six* *Seven or eight* *More than eight* *Varies too much to say*	How easy or difficult did you find this question to answer? Why do you say that?

89. During the last 12 months, how often have you consumed (drunk) the equivalent of 6 standard drinks on one drinking occasion?	*Daily* *5-6 times a week* *4 times a week* *3 times a week* *2 times a week* *Once a week* *2-3 times a month* *Once a month* *6-11 times a year* *2-5 times a year* *Once a year* *Never* *Don't know*	How well do you remember this? How did you calculate your answer? What do you understand by the term 'standard drink'?
90. Have you consumed any of the following in the last year?	*Cannabis (hash, dope, grass, weed)* *Amphetamines (Speed, uppers)* *Ecstasy (E, yokes, pills) Heroin (gear, smack) Cocaine (coke, snow)* *LSD (acid)*	How did you feel about answering this question?
91. Have you injected (self injected) drugs (apart from prescribed drugs) in the last year?	*Yes* *No*	
92. When was the first time you injected yourself with non-prescribed drugs or other substances?	*In the last 7 days/* *Between 7 days and 4 weeks ago/* *Between 4 weeks and 1 year ago/* *Between 1 year and 5 years ago/* *Longer than 5 years ago*	
93. Have you ever shared a needle used for injecting with someone else?	*Yes* *No*	

Section 12: Demographic Data		
94. What age are you?		
95. What sex were you assigned at birth?	*Male* *Female* *Other (please specify)*	What did you understand by this question? Should the question be asked using different wording?
96. How would you describe yourself?	*Male* *Female* *Trans Male/ Trans Man Trans Female / Trans Woman* *Gender Queer* *Gender non-conforming*	What does the term Trans Male or Trans Female mean to you? What does the term Gender Queer mean to you?
97. Do you consider yourself to be:	*Heterosexual / straight* *Gay* *Lesbian* *Bisexual* *Other (please specify)*	How easy or difficult did you find this question to answer? Why do you say that?
98. What is your current marital status?	*Single, never married and never in a civil partnership* *Married or in a civil partnership* *Widowed or with civil partnership that ended with the death of partner (not remarried or in civil partnership)* *Divorced or with civil partnership that was legally dissolved (not remarried or in new civil partnership)* *Separated (including deserted)*	Were you able to find your first answer to the question among the response options shown?
99. Do you have a full medical card?	*Yes* *No*	

100. Do you have a GP only medical card?	*Yes* *No*
101. Do you have private health insurance?	*Yes* *No*
102. What is the highest level of education/training (full-time or part-time) which you have completed to date?	*No formal education or training/* *Primary education (FETAC Level 1 or 2 Cert. or equivalent). NFQ levels 1 or 2/* *Lower secondary education (Junior/Inter/Group Cert, FETAC Level 3 Cert, FAS Introductory Skills, NCVA Foundation Cert. or equivalent). NFQ Level 3/* *Upper secondary educations (Leaving Cert. (including Applied and Vocational programmes) or equivalent. NFQ Levels 4 or 5/ Technical or Vocational, FETAC Level 4/5 Cert., NCVA Level 1/2, FAS National Craft Cert., Teagasc Farming Cert., CERT Professional Cookery Cert. or equivalent. NFQ Levels 4 or 5/ Advanced Certificate / Completed Apprenticeship, FETAC Advance Cert., NCVA Level 3, FAS National Craft CERT., Teagasc Farming CERT., CERT Professional Cookery CERT. or equivalent. NFQ level 5/* *Higher Certificate, NCEA/HETAC National Cert. or equivalent. NFQ Level 6/* *Ordinary Bachelor Degree or National Diploma. NFQ Level 7/* *Honours Bachelor Degree / Professional Qualification or both. NFQ Level 8/* *Postgraduate diploma, Masters Degree or equivalent. NFQ Level 9/* *Doctorate (Ph.D) or higher. NFQ Level 10.*
103. How would you define your current situation with regard to work?	*Working for payment or profit/* *Looking for first regular job/* *Unemployed, having lost or given up previous job/* *Actively looking for work after voluntary interruption of working life (for 12 months or more) for personal or domestic reasons/* *Student or pupil/* *Engaged in home duties/* *Retired from employment/* *Unable to work due to permanent sickness or disability/* *Other (please specify)*

104. If you are currently unemployed, how long is it since you had a job (in months)?		
105. If you have never had a job, how long have you been looking for your first regular job (in months)?		
106. Do you work as an employee or are/were you self-employed in your main job?	*Employee/* *Self-employed, with paid employees/* *Self-employed without paid employees/* *Assisting relative (not receiving a fixed wage or salary)*	
107. In your job, do you or did you have any formal responsibility for supervising the work of other employees?	*Yes* *No*	
108. Are you the Chief Income Earner in your household?	*Yes* *No*	
109. To which of the following groups do you consider you belong?	*White - Irish/* *White - Irish Traveller/* *Any other White background (please specify)/* *Black or Black Irish – African/* *Black or Black Irish - Any other Black background (please specify)/* *Asian or Asian Irish – Chinese/* *Asian or Asian Irish - Any other Asian background (please specify)/* *Other including mixed background (please specify)*	Were you able to find your first answer to the question among the response options shown?
110. Were you born in the Republic of Ireland?	*Yes* *No*	

111. If not in Ireland, then in what country were you born in?	*Poland/ UK/ Lithuania/ Latvia/ Nigeria/ Romania/ India/ Philippines/ Germany/ USA/ China/ Slovakia/ France/ Brazil/ Hungary/ Italy/ Pakistan/ Spain/ Czech Republic/South Africa/ Other (please specify)*

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Appendix 5: Participant Information on Correct Answers to Sexual Health Questions and Contact Information for Sexual Health and Support Services

Correct Answers to Knowledge Questions

Q. How long after sexual intercourse do you think the 'morning-after pill' or 'emergency contraceptive pill' can be effectively used.?
Up to 72 hours

Q. How long is the egg (ovum) viable for fertilisation?
0.5-1 day

Q. How long does sperm usually survive in the uterus/fallopian tubes?
2-3 days

Q. At what time of the month do you think a woman is most likely to become pregnant?
About halfway between periods

Q. What is the probability (likelihood) that a 25-year-old woman will become pregnant if she has unprotected sexual intercourse with a young man during ovulation?
20-30%

Q. Do you think the following statements about Chlamydia are true or false?

Chlamydia does not always cause symptoms	TRUE
Chlamydia is easily treated with antibiotics	TRUE
Chlamydia has no serious side-effects	FALSE
Chlamydia can cause infertility if untreated	TRUE
Chlamydia only affects men	FALSE

Q. Do you think the following statements about HIV and AIDS are true or false?

There is a cure for AIDS	FALSE
A person can be infected with HIV for years without getting AIDS	TRUE
Withdrawing the penis before a man climaxes or ejaculates prevents his partner from getting HIV during sex	FALSE

Q. Do you think the following statements about HIV are true or false

Having sex with one faithful uninfected partner reduces the risk of HIV transmission?	TRUE
Using a condom reduces the risk of HIV transmission	TRUE
A healthy-looking person can have HIV	TRUE
A person can get HIV by sharing a meal, for example lunch or dinner, with someone who is infected	FALSE

Q. Can pregnant women be infected with HIV? YES

Q. Can an infected mother transmit the infection to her child?	YES
Q. How can an infected mother transmit the infection to her child?	
During pregnancy	TRUE
Through vaginal delivery	TRUE
Through caesarean section	FALSE
Through breastfeeding	TRUE
Q. How can mother-to-child transmission of infection be prevented?	
Anti-retroviral therapy during pregnancy	TRUE
Delivery by caesarean section	TRUE
(Caesarean section reduces risk of transmission compared to vaginal birth)	
Giving anti-retroviral drugs to the newborn	TRUE
Avoiding breastfeeding	TRUE

If you have any further questions about the study, or if you want to opt out of the study, or if you need any further information now or at any time in the future, please contact:

Researcher's Names and Contact Details:
Dr Caroline Kelleher and Dr Sarah Tecklenborg

Address: Department of Psychology
Division of Population Health Sciences
Royal College of Surgeons in Ireland
Beaux Lane House
Lower Mercer Street
Dublin 2

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Sexual Health Information and Contact Details

Further information is available from the services below:

Irish Family Planning Association is a charitable organisation which provides sexual and reproductive health information, clinical services, counselling service education, training and awareness raising: www.ifpa.ie
Solomon's House, 42A Pearse Street, Dublin 2
Telephone: (01) 607 4456
National Pregnancy Helpline: 1850 49 50 51
Email: info@ifpa.ie

The **Dublin Well Woman Centres** were founded to provide access to family planning advice and services.
There are three medical centres in Dublin: www.wellwomancentre.ie
Head Office, 25 Capel Street, Dublin 1
Telephone: (01) 874 9243
Email: info@wellwomancentre.ie

HIV Ireland is a voluntary organisation working to improve conditions for people living with or affected by HIV and AIDS: www.hivireland.ie. HIV Ireland's *Don't Panic Guides* give an overview of sexual health and sexual health services in Dublin in a variety of languages.
70 Eccles Street, Dublin 7
Telephone: (01) 873 3799
Email: info@hivireland.ie

+OPTIONS Crisis Pregnancy Programme website. Details of organisations that offer pregnancy counselling services in Ireland. These services are free of charge.
Freetext LIST to 50444 to get a list of these services.
www.positiveoptions.ie.

Dublin Rape Crisis Centre. Provides support to victims of sexual violence through a national 24-hour helpline, face-to-face counselling, accompaniment and referral services.
McGonnell House, 70 Lower Leeson Street, Dublin 2
Freephone: 1800 77 8888.
www.drcc.ie