

Surveillance activities during the outbreak of COVID-19

This document outlines the following:

1. Stages of the outbreak
2. Surveillance objectives during these stages
3. Surveillance activities during these stages and status in Ireland

Two stages of the COVID-19 outbreak

1. Containment or interim phase: Prior to widespread community transmission
2. Mitigation or epidemic phase: Widespread sustained community transmission

Surveillance objectives

Containment phase

1. To ensure rapid detection of cases via active case finding.
2. To undertake rapid assessment of epidemiological, clinical and virological features of earliest cases in Europe
3. To detect community transmission To estimate infection-severity and transmissibility
4. To provide data to inform real-time modelling
5. To predict future population impact and inform optimal interventions

Mitigation phase

1. To monitor the intensity and spread in the population
2. To measure the impact on population and the health care system
3. To measure the impact of any mitigation measures

Phase	Surveillance activity	Status-Ireland
	Active case finding	<p>Consider testing of asymptomatic contacts – However there are logistical issues re where and who will test. In light of the Italian experience, and evidence of asymptomatic spread in China, this option requires consideration. To consider at EAG on 26/02/2020.</p> <p>Testing of severe unexplained pneumonia in those without relevant travel history- there are practical IPC implications in hospitals, but this was the trigger in Italy that identified significant undetected local transmission. To consider at EAG on 26/02/2020.</p>
Containment	Surveillance of first 100 cases, hospitalisations and deaths	<p>Enhanced surveillance system for COVID-19 established for use on CIDR and system in place to report to ECDC and WHO Euro</p> <p>Provide daily and/or weekly reports on probable and confirmed cases of COVID-19</p>
	Virological surveillance –sentinel and non-sentinel NVRL	<p>NVRL /HPSC to establish a system for undertaking testing for SARS-CoV-2 on sentinel GP ILI specimens and non-sentinel specimens from other sources (year round surveillance). Currently sentinel GP ILI specimens are tested for influenza A(H3), A (H1) and influenza B as well as RSV A and B. Non-sentinel specimens are tested for influenza A, B, RSV, adenovirus, PIV 1-4 and human metapneumovirus. Detection of SARS-CoV-2 in human specimens both of these systems would indicate transmission of SARS-CoV-2 in the community and would be a trigger to move to mitigation.</p> <p>The non-sentinel system would be more likely to detect such cases, as the sentinel system covers a small percentage of the population and is designed to pick up cases of common illnesses. There is currently no commercial multiplex test or luminex panel available for testing SARS-CoV-2 with other pathogens. This will become available in the near future (2-3 months) and testing will be much easier to carry out at that point. In the interim, additional resources would be required at NVRL to initiate testing of SARS-CoV-2 on non-sentinel and sentinel specimens.</p>

		<p>An additional laboratory technical officer or attendant will be required to process samples in order to test for SARS-CoV-2 (i.e. when no multiplex available). Once it is established that the laboratory has the facility to test sentinel specimens for SARS-CoV-2 , the GP sentinel network would need to be informed and agree with proceeding. The timeline for establishing such surveillance would be 4 to 6 weeks.</p> <p>In addition, we need to know what the maximum capacity currently in NVRL with regard to SARS-CoV-2 testing and assess how this can be augmented in advance of the commercial test becoming available. Options for adding additional testing sites (three sites were mentioned at EAG) should be considered also. Once this testing is established, it will facilitate ILI clinical and virological surveillance for SARS-CoV2 year round . HPSC will also need to review additional resources required from the surveillance and reporting side.</p>
	Follow-up of contacts of cases	<p>Contact tracing forms and database developed by HPSC.</p> <p>Provide weekly reports on contacts or daily if required. This will be very resource intensive. UK figures on numbers of contacts per case vary from a few to several hundreds.</p>
	Special studies	
	Household transmission studies	<p>WHO protocol available for use. Very resource intensive. UK described this on a WHO-Euro teleconference and intensive follow-up is required. Ethical approval also required. May be best undertaken by larger countries e.g. Germany, France. Capacity issues to undertake this in Ireland.</p>
	Outbreak cohort studies including returning traveller cohorts –WHO led study	<p>Protocol from WHO to assess transmission among evacuees from China -We don't have persons in Ireland who fit the study population. Our repatriated persons have been held in quarantine in other jurisdictions</p>
	Cohort study on repatriated EU/EEA citizens – ECDC led study	<p>We don't have persons in Ireland who fit the study population. Our repatriated</p>

		persons have been held in quarantine in other jurisdictions. This study and the previous study are to some extent similar investigations. WHO Euro and ECDC are meeting to discuss.
	Population serological studies being undertaken by UK and Norway as they have established biobanks and serosurveys in place.	Ireland does not currently have a biobank and doesn't routinely undertake serosurveys resulting in a deficit in the national surveillance of SARS-CoV2 and influenza. Undertaking serosurveys would be very important if a COVID-19 vaccine came to market as they would assess immunity in the population and guide prioritisation of vaccination if vaccine is scarce. It is notable that there is currently no serology assay available globally. Establishment of a biobank and a structure for undertaking serosurveys would require additional resourcing and also a policy directive from DoH in order to legally enable the establishment of a biobank and ensuing serosurveys.
Mitigation	Weekly aggregated reporting of epidemiological and virological data	Will undertake using CIDR and the influenza surveillance framework. Weekly reports on COVID-19 activity will be provided. Data on COVID-19 will also be uploaded to the ECDC TESSy system on a weekly basis as per influenza surveillance. NVRL laboratory sequencing data will also need to be uploaded onto TESSy as per influenza sequencing data (Inflantavir). This is a year round activity. May need extra resource at HPSC to facilitate additional surveillance work.
	Continue integration and analysis of COVID-19 surveillance data as per influenza framework with additional testing for SARS-CoV-2.	NVRL in conjunction with HPSC.
	Use GP ILI sentinel surveillance system to test patients with ILI for SARS-CoV2 (COVID-19). GP clinical ILI surveillance occurs all year round since 2003.	Ongoing weekly surveillance of GP ILI (clinical and virological) with virology testing for SARS-CoV-2 undertaken by NVRL (Year-round).
	GP out of hours surveillance system run by HSE NE will continue into the summer of 2020.	The system currently operates as follows; Records in GP OOH services with clinical symptoms reported as flu or influenza are extracted for analysis. This information may act as an early indicator of increased ILI activity. However, data are self-reported by callers and are not based on coded influenza diagnoses. Extractions for

		COVID-19 will be included also. Discussed with Elaine Brabazon, surveillance scientist, HSE NE who agreed to maintain this system year round.
	Sentinel Hospital surveillance will continue through the summer of 2020.	The Departments of Public Health have established at least one sentinel hospital in each HSE-Area, to report data on total, emergency and respiratory admissions on a weekly basis. This will continue year-round.
	Surveillance of confirmed hospitalised and ICU COVID-19 cases	Use CIDR (hospitalisation status, clinical complications and interventions are included in enhanced COVID-19 surveillance dataset) and adapt established influenza ICU surveillance system to undertake surveillance of confirmed cases of COVID-19 in ICU. Will discuss with Dr Michael Power (HSE clinical lead for critical care) and Dr. Brian Marsh this week. If the numbers of COVID-19 increase substantially we will need to focus on surveillance of ICU cases only and not all hospitalised cases. In the context of ICU cases, we will need to focus on burden on ICUS i.e. current numbers in ICU on a given day as well a new cases coming into ICU, and length of stay in ICU and this may be required daily
	Excess mortality monitoring	Use established EuroMoMo system to monitor excess all-cause mortality and excess deaths from influenza and pneumonia.
	Pandemic Influenza Severity Indicators (PISA) These indicators have been developed by WHO to assess the severity of a pandemic. These indicators look at transmissibility (positive virology multiplied by ILI rate), severity (rate of cases hospitalised and in ICU) and impact (excess mortality).	HPSC to work on this. This will be a very useful standardised tool developed by WHO which assess transmissibility, severity and impact in a pandemic.