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# Covid-19: The Irish Public Health Experience

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The Covid-19 global pandemic, caused by highly transmissible novel human pathogen SARS-CoV-2, is unprecedented. At time of writing (29/07/2020), almost 17 million cases have been confirmed worldwide[1]. In the absence of a vaccine or curative treatment, response has largely depended on non-pharmaceutical interventions (NPIs)[2]. Nationally, exhaustive efforts of Public Health departments and widespread societal engagement with NPIs, helped to mitigate risk during containment and delay phases. On June 30th 2020, Ireland reported the lowest 14-day incidence of Covid-19 cases in Western Europe [3]. However, as national NPIs are relaxed, resurgence risk arises[3].

There are 8 regional Departments of Public Health in Ireland and the Health Protection Surveillance Centre (HPSC) provides national oversight for health protection activities. In Ireland, Covid-19 cases are notified to Public Health under Infectious Diseases Regulations 1981; confirmed cases (defined as 'Detection of SARS-CoV-2 nucleic acid in a clinical specimen') are notified electronically from laboratory to the Computerised Infectious Disease Reporting System (CIDR) [4,5]. Transmission classification is defined by the World Health Organisation (WHO) as 'community, local or imported' [6] and the need for 'low levels of community transmission' has been cited recently as a pre-requisite to reopening schools and wider healthcare nationally[7].

Given current knowledge of SARS-CoV-2 transmission dynamics[8], timely testing pathways are critical to enable immediate specialised Public Health control activities. These activities rapidly break chains of transmission and prevent generation of secondary and tertiary cases from an index case of Covid-19. Such activities include; control in complex settings, outbreak investigation, identification of transmission source, risk assessment, contact tracing, case finding, isolation of cases, quarantine/'restricted movements' of specific cohorts and enhanced surveillance, amongst others[2,3]. The European Centre for Disease Prevention and Control (ECDC) advises that these Public Health activities should be adequately resourced, multifaceted, robust, timely, sustained, readily adaptable and supported by extended testing[3].

The SARS-CoV-2 testing pathway is complex and comprises multiple steps including patient referral, sample procurement, transport of sample to laboratory, testing of sample, reporting of results/notification and appropriate management of those results. Initial national surge capacity issues, affecting various points of the testing pathway, are well documented and posed a significant challenge to all those involved in control activities in various settings[9,10]. However, the considerable cross specialty and cross sectoral efforts invested in developing and implementing the current 'end to end' national testing process are to be commended. It is vital, at a national (and global) population health level, that timely 'test and trace' processes continue to be prioritised. Innovation such as the introduction of an adjunctive national contact tracing app[9,10] is welcome but does not replace the core Public Health activities outlined above.

At time of writing, the current 'Epidemiology of Covid-19 in Ireland' report[6], prepared by HPSC for the National Public Health Emergency Team (NPHET) describes; 25,890 confirmed cases, with 12.94% (3,349) of cases hospitalised, 1.69% (437) of cases admitted to ICU and a case fatality ratio of 5.82%. A total of 2,282 outbreaks are reported, imported cases account for 1.71% (442) of cases, healthcare workers (HCW) account for 32.43% (8,395) of cases and median age of cases is 48 years.

Transmission classification is reported as 65.87% (17,054) due to local transmission (where the source of infection is within the reporting location), 31.6% (8,180) due to community transmission and 2.44% (633) as related to travel abroad. Community transmission is defined as 'inability to relate confirmed cases through chains of transmission for a large number of cases, or by increasing positive tests through routine screening of sentinel samples' [6].

As Ireland 're-opens' the risk of introduction of new chains of transmission increases. Thus, it is critical that selected NPIs are continued[2,3], while living alongside SARS-CoV-2 in a 'new norm'. This is especially important to protect vulnerable cohorts as we remain a susceptible population currently, as demonstrated by recent seroprevalence studies[2]. Mandatory quarantine after travel abroad also plays a vital role[9,10]. Nationally 269 outbreaks in nursing homes have been reported [6]. In our regional experience in HSE-South (Cork and Kerry, population approximately 690,000[11]), and as reported internationally [3,12], Covid-19 has a devastating and disproportionate impact on older age groups. Those with underlying medical condition(s) are also at increased risk of severe illness[6], this highlights the need for targeted services and preventative measures in vulnerable cohort settings.

In our regional experience the Covid-19 epidemic evolved with discrete surges in specific settings. From early March 2020 a spike in travel-related cases was observed. Notifications from hospital and nursing home settings increased rapidly, likely reflecting increased community transmission. On 12/03/2020 Ireland moved into delay phase and schools closed, on 16/03/2020 overseas travel was restricted and on 27/03/2020 a national 'stay-at home' order was implemented[9]. We observed that healthcare and community setting notifications featured prominently in our region up to end of April 2020, with nursing home and residential institution settings of particular concern. Cases in private houses featured throughout. In our region cases declined from mid-March but from May resource-intensive local clusters predominated (e.g., in specific workplace settings). This is consistent with ECDC reports[3].

While occupational exposure risk must be considered, in our experience local transmission within shared accommodation/social settings was also implicated in some outbreak settings (such as workplace and residential institution settings). This is in alignment with international observations[13]. The unique challenges posed by meat factory Covid-19 outbreaks have been described recently[14]. In our experience, migrant workers, particularly those from non-English speaking communities, are especially vulnerable to household spread and development of familial clusters - due to crowded living conditions, and language and cultural barriers. National meat factory outbreak guidance has incorporated multilingual initiatives[15]. This facilitates health protection of wider communities also.

In Ireland, phased relaxation of national NPIs, with increased individual responsibility, commenced on the 18th May[9,10]. The ECDC has outlined a clear framework for avoiding resurgence[3], including a key recommendation that countries are 'prepared to amend strategies rapidly in response to indications of increased transmission'. At time of writing, in response to recent increased Covid-19 activity in Ireland, progression from Phase 3 to Phase 4 has been delayed [7]. Such measures must be underpinned by robustly resourced Public Health services which are fundamental to any effective Covid-19 control strategy [7]. For now, we must optimise our preparedness for the months ahead. As Dr Tedros, Director General WHO tells us 'The second wave is in our hands'.

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