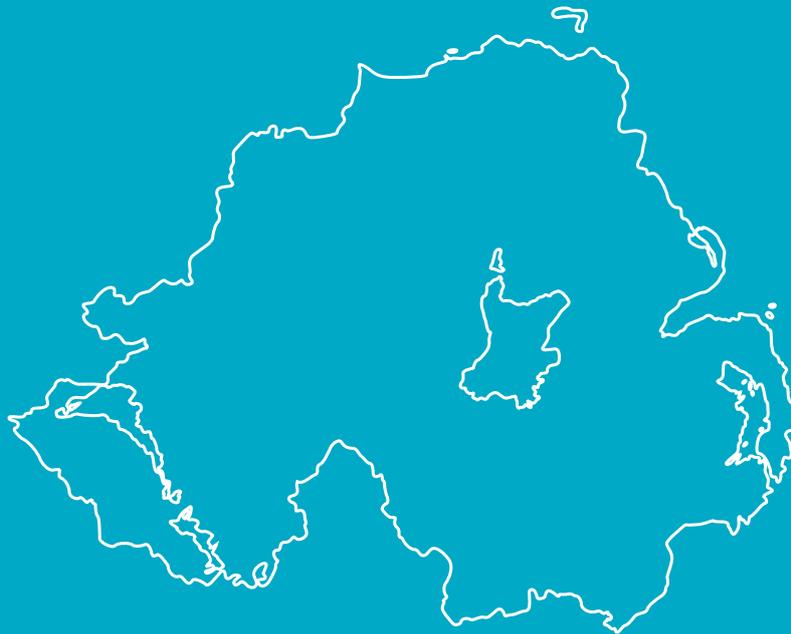


Coronavirus (COVID-19)

Monthly Epidemiological Bulletin



Northern Ireland

Summary - Up to week 20 (17 May 2020)

To week 20, there have been a total of 4,469 laboratory confirmed cases¹ of COVID-19, including 578 registered COVID-19 deaths² in Northern Ireland

COVID-19 case epidemiology



- 4,469 laboratory confirmed cases
- 61% of total cases are female
- 28% of total cases reside in Belfast (Local Government District)
- Highest proportion of confirmed cases (23%) was accounted for by the least deprived 20% of the population

Care home outbreaks (suspected and confirmed)



- 137 suspected/confirmed COVID-19 outbreaks reported
- 28.4% of all Northern Ireland care homes have reported an outbreak
- Belfast has the highest proportion of outbreaks reported (35.2%)

Primary care syndromic surveillance



- In week 20:
- In-hours Acute Respiratory Infections (ARI) and COVID-19 consultation rate: 19.5 per 100,000 population
 - Out-of-hours (OOH) ARI consultation rate: 25.7 per 100,000

¹ Virological reports; 2020

² NISRA; 2020 - up to 8 May 2020

	<p>population</p> <ul style="list-style-type: none"> OOH COVID-19 consultation rate: 9.0 per 100,000 population When samples from the flu spotter programme were tested retrospectively, none were positive for COVID-19: 96% were negative and the other 4% did not have sufficient sample remaining to be tested
<p>Critical care surveillance</p>	
	<ul style="list-style-type: none"> 90 confirmed COVID-19 individuals reported to the PHA through the COVID-19 critical care online reporting system The majority of reported critical care cases were male (77%) The median age of cases was 58 years (range 28 – 81 years)
<p>Mortality surveillance</p>	
	<ul style="list-style-type: none"> In week ending 8 May 2020, the proportion of COVID-19 deaths registered was 25%. From the beginning of 2020 to week ending 8 May 2020 the proportion was 9% Excess deaths were reported in weeks 13-19; mainly in those over 65 years
<p>Testing surveillance virology</p>	
	<ul style="list-style-type: none"> Total number of individuals tested: 41,851 (10.7% positivity)

Introduction

COVID-19 is a new illness that can affect your lungs and airways. It's caused by a type of virus called SARS-CoV2 (coronavirus).

The Public Health Agency (PHA) Health Protection team has developed this report with the primary focus of looking at the demographic characteristics (age, sex, geographical location, deprivation) of people affected by the virus. It also looks at some of the wider impact of the virus on the healthcare system, comparing recent trends in activity with historic norms.

There is a large amount of data being regularly published regarding COVID-19 (for example, the Department of Health Dashboard and *Deaths involving coronavirus in Northern Ireland* by the Northern Ireland Statistics and Research Agency). This report presents data from existing and newly developed PHA Health Protection surveillance systems that monitor COVID-19 activity in Northern Ireland and complements the range of existing data currently available.

As this is an emerging pandemic the systems used will constantly evolve and the complexity of the analysis will increase. All updates will be documented here.

Unless otherwise stated, data is presented using epidemiological weeks (a standardised method of counting weeks [Monday-Sunday] to allow for the comparison of data year after year). This is dependent on the data available and comparisons are not yet possible due to the recent emergence of this novel virus.

Routine laboratory surveillance

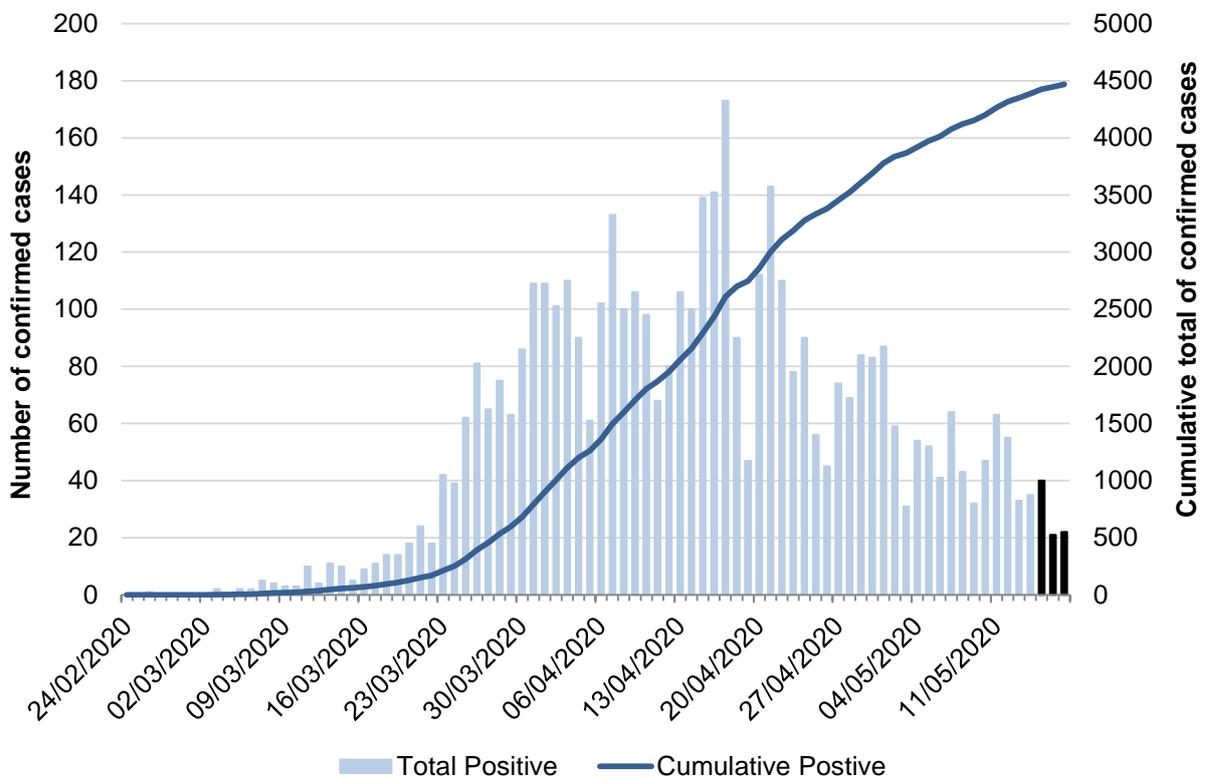


Figure 1. Laboratory confirmed COVID-19 cases by sample date

Figure 1 represents the number of new daily cases reported to the PHA (bars) and the cumulative number of cases (solid line). The bars in the most recent days of the latest reporting week have been highlighted because reporting is likely to be incomplete.

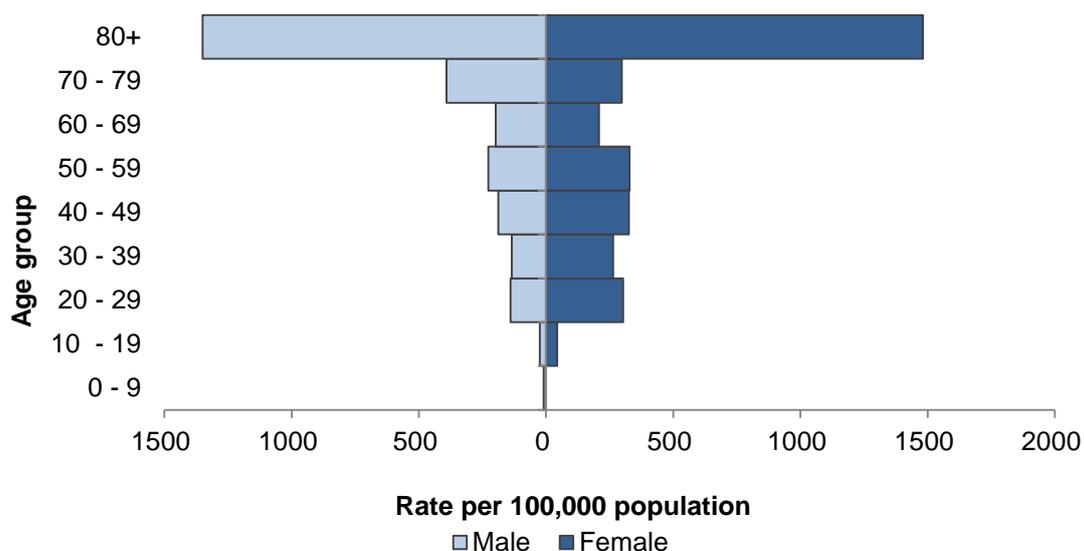


Figure 2. Laboratory confirmed cases per 100,000 population, by age and sex, 2020

Presentation of rates per 100,000 enables monitoring of cases taking into account different population sizes

Age Group	Sex		
	Male	Female	Total*
0 - 9	9	11	20
10 - 19	29	50	79
20 - 29	170	355	525
30 - 39	164	336	500
40 - 49	223	408	631
50 - 59	283	425	708
60 - 69	187	203	390
70 - 79	255	222	477
80+	412	720	1,132
Unknown	3	3	6
Total	1,735	2,733	4,468

*Unknown sex for one case

Table 2. Laboratory confirmed COVID-19 cases, by Trust				
Trust Area	Epidemiological week			
	18	19	20	Total
Belfast	117	63	33	1,246
Northern	73	64	47	633
South Eastern	98	58	80	668
Southern	45	60	72	673
Western	19	7	6	286
Other*	121	73	16	907
Unknown	14	8	15	56
Northern Ireland	487	333	269	4,469

**Other includes tests conducted by Public Health England (prior to introduction of local testing), and also includes testing from pathology services, GPs and hospices*

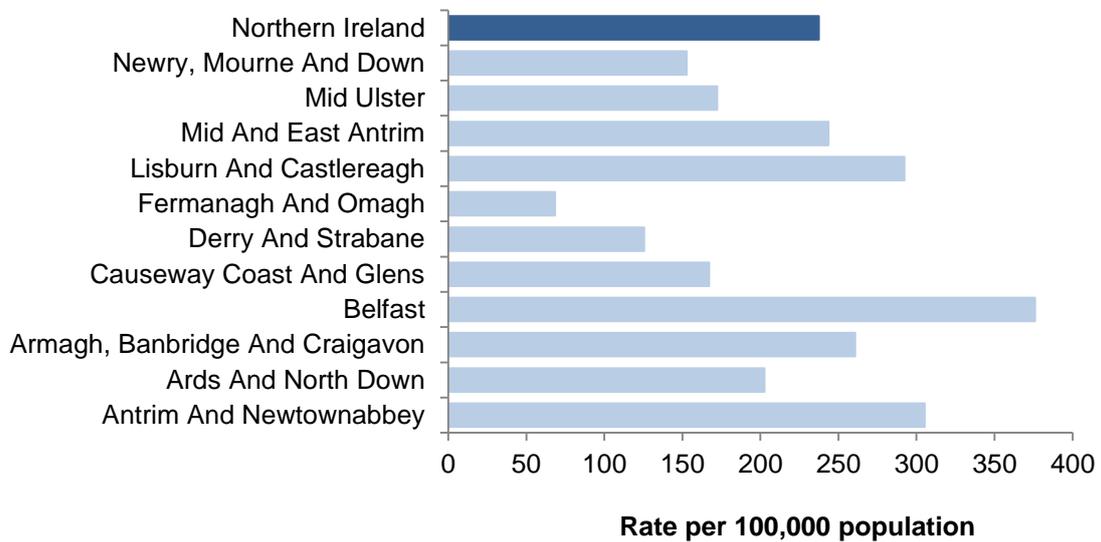
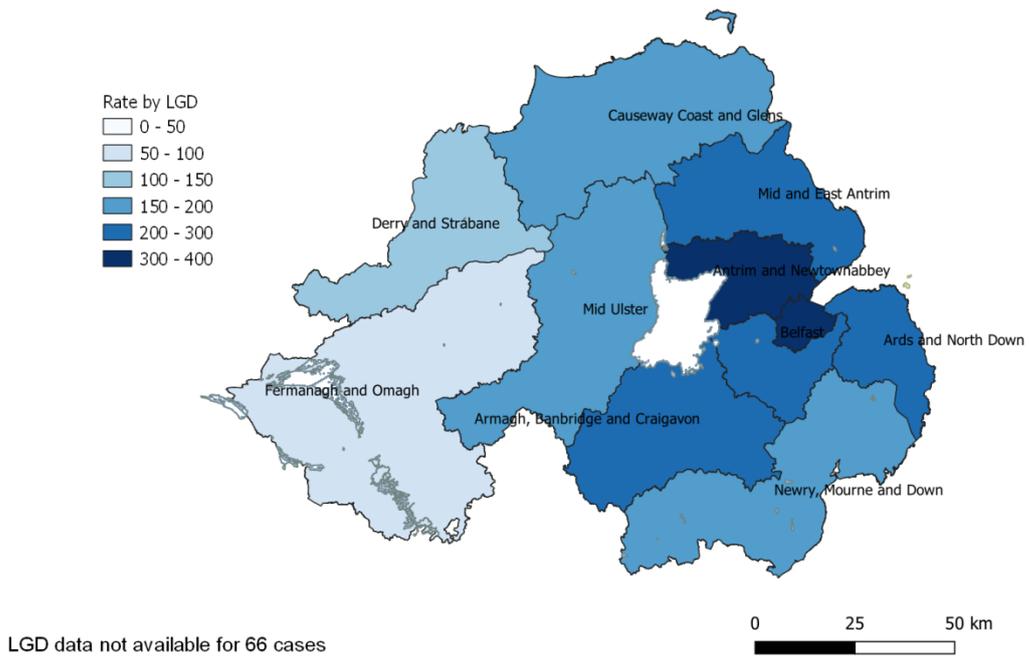


Figure 3. Laboratory confirmed cases per 100,000 population, by Local Government District (LGD), 2020

Presentation of rates per 100,000 enables monitoring of cases taking into account different population sizes.

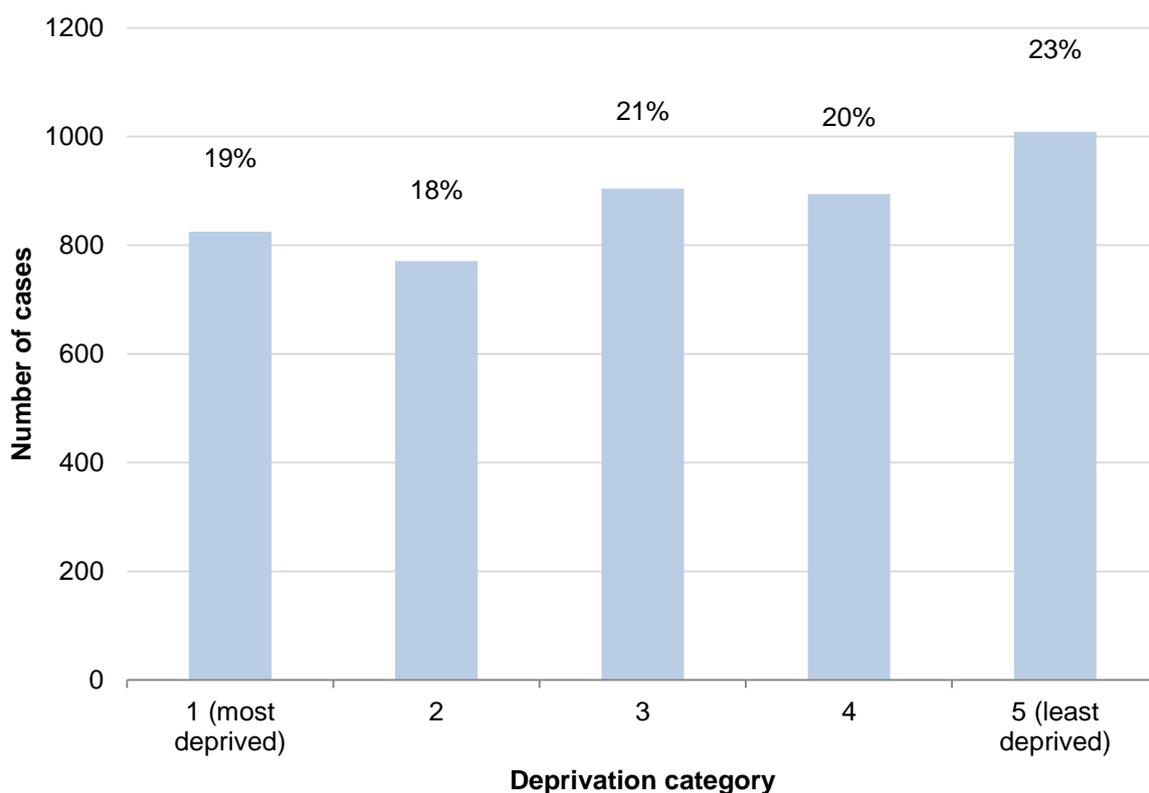


Figure 4. Laboratory confirmed cases by deprivation category, 2020

Figure 4 shows the number of confirmed COVID-19 cases by deprivation category from the most deprived 20% of the population to the least deprived 20% of the population.

While there is no evidence of an overall trend by deprivation groups, the highest proportion of confirmed cases to week 20 (23%) was accounted for by the least deprived 20% of the population.

Source: HSC Trust laboratory reports

Care home outbreaks

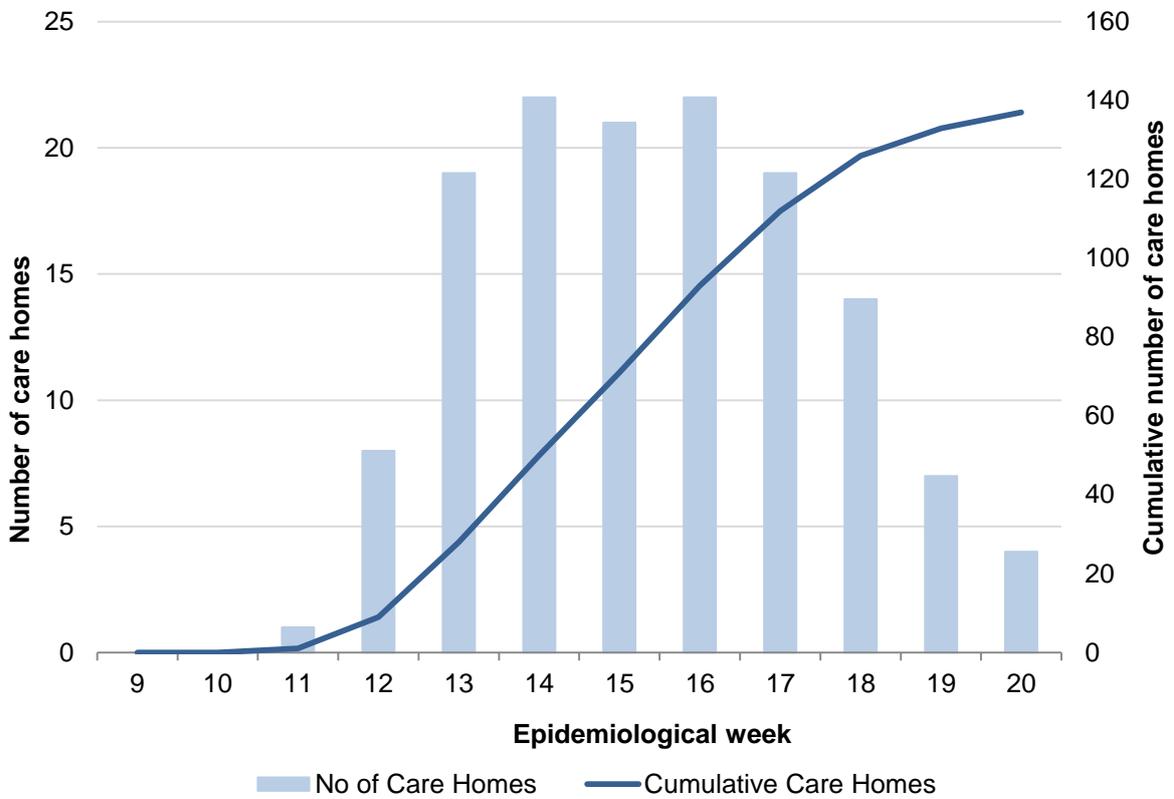


Figure 5. Confirmed and suspected COVID-19 care home outbreaks in Northern Ireland, 2020

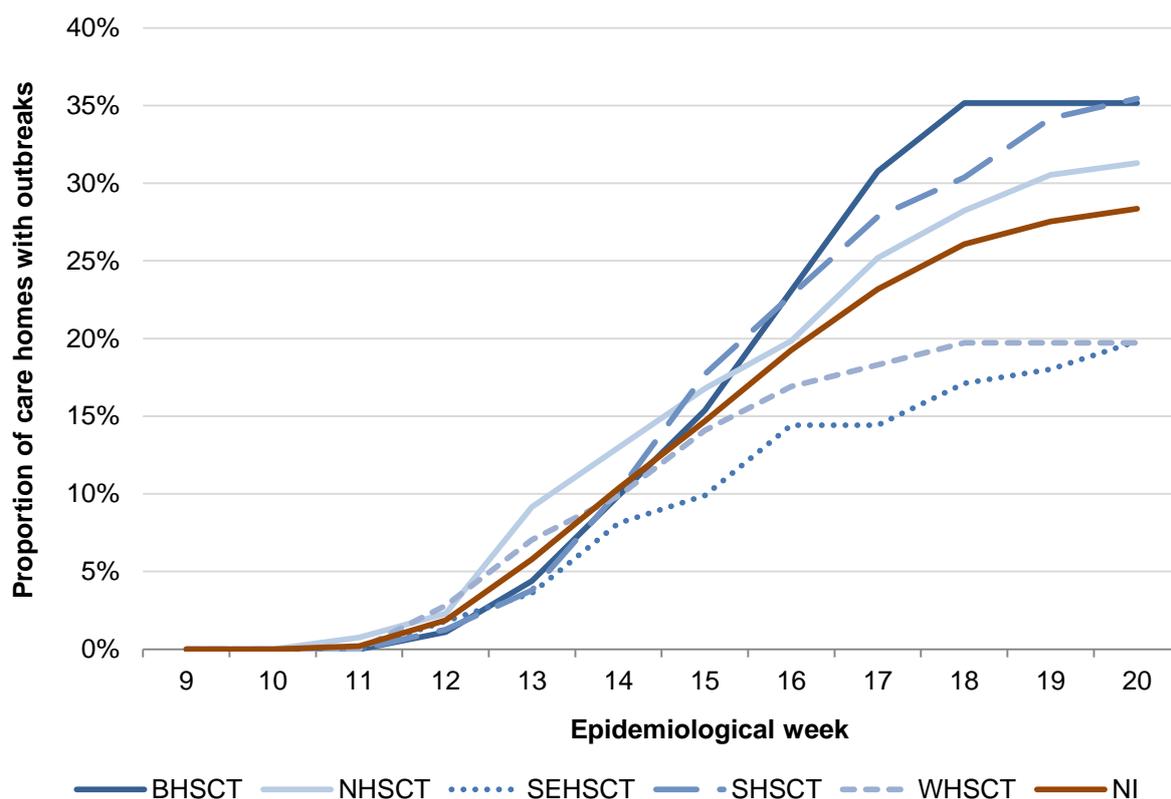


Figure 6. Proportion of care homes with confirmed/suspected COVID-19 in Northern Ireland by Trust, 2020

Table 3. Confirmed/suspected COVID-19 care home outbreaks in Northern Ireland, by Trust			
Trust Area	Cumulative total of outbreaks in 2020	Total number of care homes	% of care homes with outbreaks
Belfast	32	91	35.2%
Northern	41	131	31.3%
South Eastern	22	111	19.8%
Southern	28	79	35.4%
Western	14	71	19.7%
Northern Ireland	137	483	28.4%

To week 20, 28.4% of all Northern Ireland care homes reported a suspected/confirmed COVID-19 outbreak. Belfast (HSCT) has reported the highest proportion of care homes with suspected/confirmed COVID-19 outbreaks (35.2%).

Source: PHA Health Protection duty room reports from care homes

Primary care syndromic surveillance

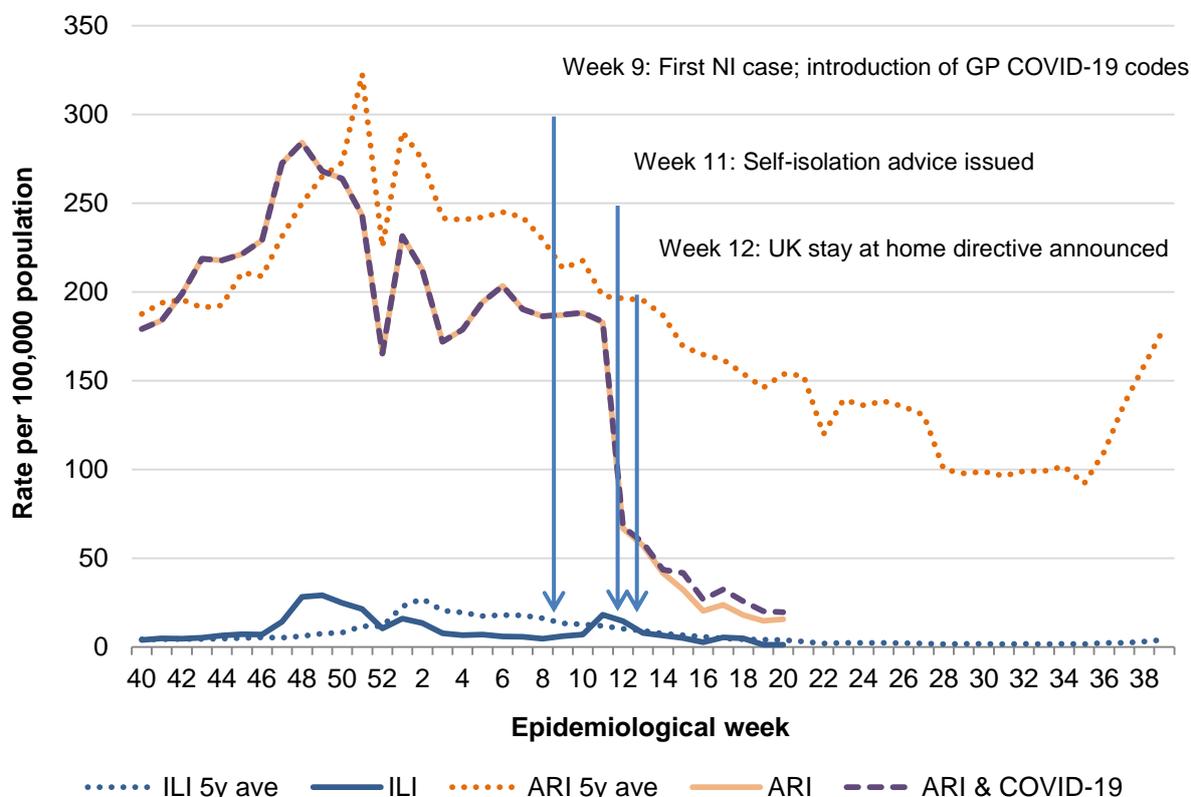


Figure 7. In-hours consultation rates for influenza- like illness (ILI), acute respiratory infections (ARI) and COVID-19

The ARI consultation rate trend during 2019/20 increased from week 40 to a peak in week 48 (284.1 per 100,000 population), before declining. The trend pattern for ILI is similar although rates are much smaller. The peak occurred earlier than the previous five year average reflecting the earlier 2019/20 influenza season.

In week 11 ARI consultation rates dramatically fell from 182.8 per 100,000 to 66.6 per 100,000 in week 12, which coincides with the introduction of self-isolation advice, the stay at home directive (“lockdown”) and a change to primary care delivery in managing COVID-19 cases.

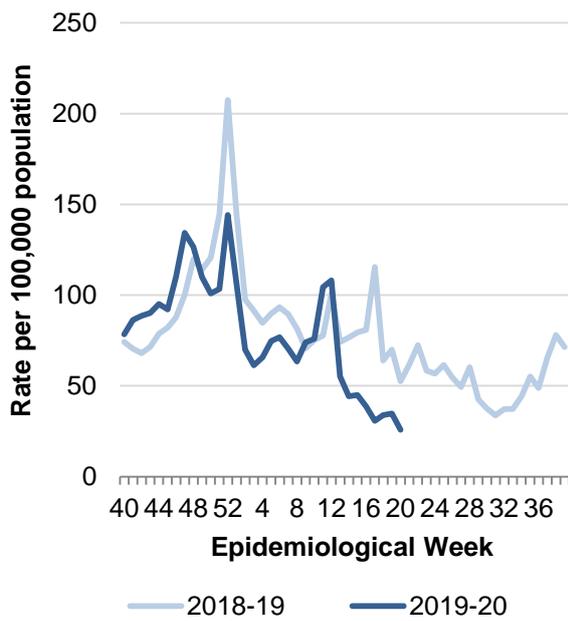


Figure 8. Out-of-hours (OOH) consultation rates for ARI, 2018/19 – 2019/20

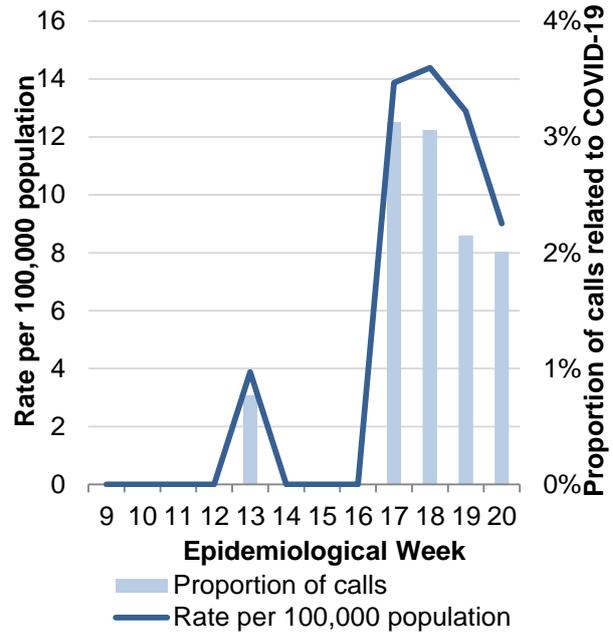


Figure 9. Out-of-hours (OOH) consultation rates for COVID-19, 2020

The ARI consultation rate in primary care out-of-hours (OOH) trend during 2019/20 increased from week 40 to a peak in week 52 (144.2 per 100,000 population), before declining. In week 10 ARI consultation rates in OOH increased from 76.0 to 108.1 per 100,000 by week 12, before dramatically falling again to 55.2 per 100,000 in week 13. This follows a similar trend to in-hours consultations.

The COVID-19 consultation rate in OOH centres during 2020 started increasing from week 17. It peaked in week 18 at 14.4 per 100,000 before declining. A similar trend was seen in terms of proportion of calls related to COVID-19, though this proportion has so far remained small. This trend coincides with the introduction of GP COVID-19 codes and the change from using established respiratory codes, such as ARI, to COVID-19.

Sentinel Testing

As part of pilot work for the COVID-19 sentinel testing programme, 71 samples from the flu spotter programme were tested retrospectively (swabbed 27 December 2019 - 12 March 2020). None were positive for SARS-CoV2: 96% were negative and the other 4% did not have

sufficient sample remaining to be tested. This would suggest that SARS-CoV2 was not circulating undetected in Northern Ireland before the first case was confirmed.

Source: Apollo; Wellbeing Software & flu spotter programme

Critical care surveillance

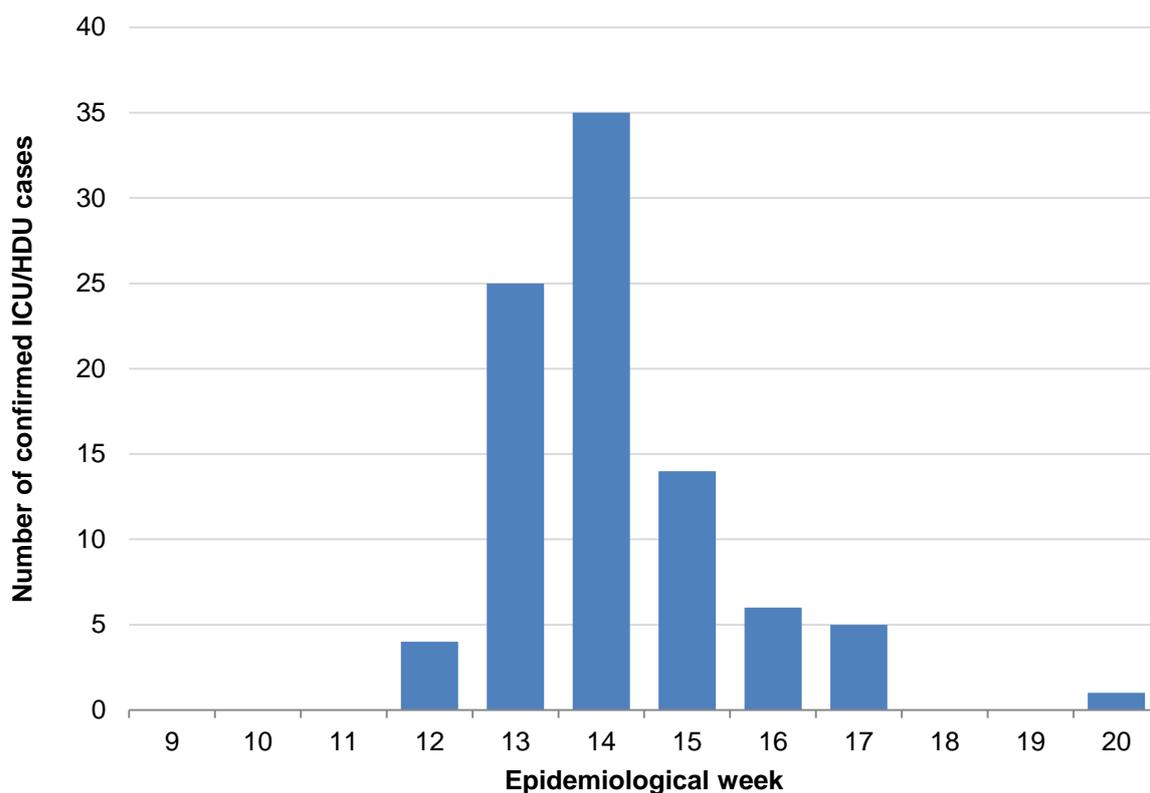


Figure 10. ICU/HDU COVID-19 cases by sample result week, 2020

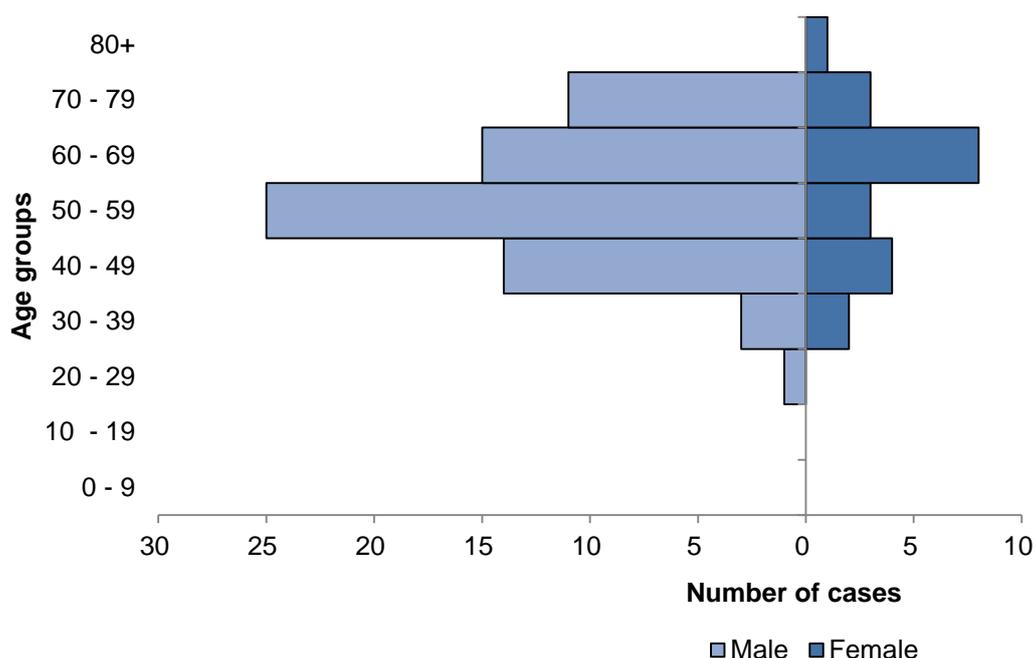


Figure 11. ICU/HDU COVID-19 cases, by age and sex, 2020

To week 20, there have been 90 admissions to critical care with confirmed SARS-CoV2 reported to the PHA. Week 14 saw the highest number of ICU admissions with a positive result.

Of the 90 admissions, 77% (n=69) were male. The ages ranged from 28 years to 81 years, with a median age of 58 years and a mean age of 57 years old.

Source: PHA COVID-19 critical care surveillance online reporting system

Mortality surveillance

Medical Certificate of Cause of Death for confirmed / suspected COVID-19

The Northern Ireland Statistics and Research Agency (NISRA) provide the weekly number of **registered respiratory and COVID-19 deaths each Friday** ([here](#)). In week ending 8 May 2020, the proportion of COVID-19 deaths registered was 25%, and from the beginning of 2020 to week ending 8 May 2020 the proportion of COVID-19 deaths registered was 9%.

All-cause excess deaths

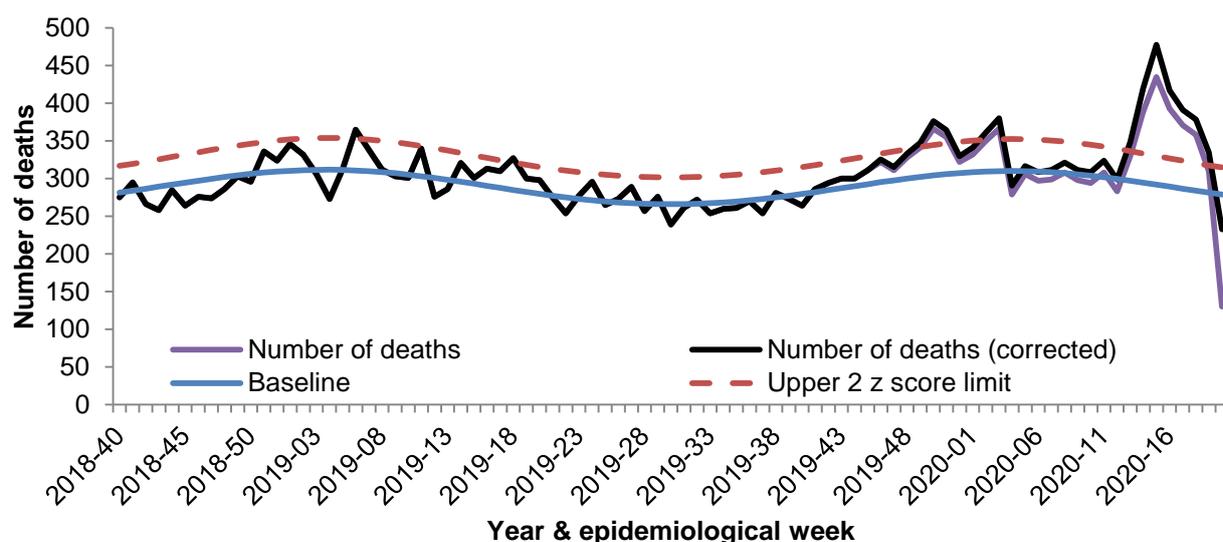


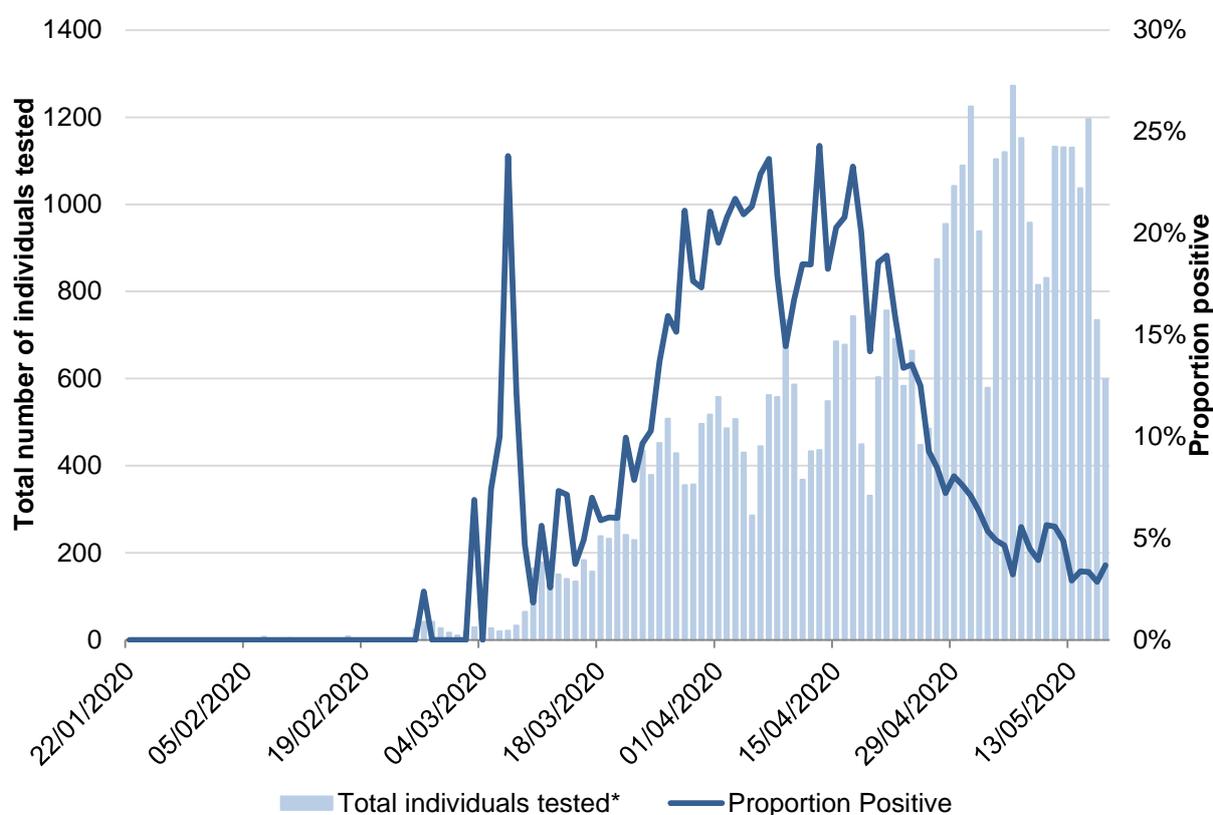
Figure 12. Weekly observed and expected number of all-cause deaths in all ages, week 40 2018 - week 20 2020

In 2020, excess all-cause deaths were reported in epidemiological weeks 13-19. This increase in deaths happened outside the influenza season and at a time when we know flu was not circulating. This suggests the excess mortality of this was driven mainly by COVID-19 deaths. Excess deaths were mainly in those over 65 years, which is in line with the age profile of COVID-19 deaths.

Despite delay correction, reported mortality data is still provisional due to the time delay in registration and observations which can vary from week to week; not all registrations for the current week will have been included in this bulletin.

Source: Northern Ireland Statistical Research Agency (NISRA)

Testing surveillance virology



* Total individuals tested include those that were reported as indeterminate

Figure 13. Daily number of individuals tested for SARS-CoV2 and proportion positive, 2020

To week 20, the total number of individuals tested was 41,851; positivity 10.7%. Overall, the proportion testing positive continues to decline from a high of 24.3% in week 16 (on 13 April 2020).

Table 4. COVID-19 activity in Northern Ireland, Week 20, 2020			
Period	Individuals tested	Number positive	Proportion positive
Current week	6,959	269	3.9%
Total	41,851	4,469	10.7%

Global situation

Globally, up to 17 May 2020, [WHO](#) has been notified of 4,525,497 confirmed cases of COVID-19, including 307,395 related deaths.

Appendix

PHA Health Protection COVID-19 surveillance systems

The PHA Health Protection Directorate has established the following surveillance systems to monitor COVID-19 activity across the spectrum of community and health care settings. As new systems are developed they will be added to this report.

Routine laboratory surveillance

SARS-CoV2 testing was first developed by the National Reference Laboratory (Public Health England) for all of the United Kingdom on 24 January 2020. On 7 February 2020, SARS-CoV2 testing was developed locally by the Regional Virus Laboratory, Belfast Health and Social Care (HSC) Trust and performed testing across Northern Ireland. Since 23 March, 28 March and 3 April respectively, Northern HSC Trust, Southern HSC Trust and Western HSC Trust laboratories, have been performing SARS-CoV2 testing.

The PHA Health Protection Directorate laboratory surveillance system collates SARS-CoV2 laboratory data on all tests from HSC Trust laboratories.

As an individual may have more than one test for clinical purposes, the laboratory data is then collated to enable monitoring of individuals rather than tests performed by laboratories. This is done using the Organism-Patient-Illness-Episode (OPIE) principle, a standard approach used across the UK.³ The episode length used nationally is 6 weeks (42 days), and is being reviewed as more data becomes available.

If an individual is infected on two separate occasions by the same organism (within the episode of infection) they will be represented by one distinct record. The exception to this is if the first result is negative which is followed by a positive result on a second occasion, the positive

³ Public Health England. 2016. Laboratory reporting to Public Health England: A guide for diagnostic laboratories. [ONLINE] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739854/PHE_Laboratory_Reporting_Guidelines.pdf. [Accessed 21 April 2020]

result will be recorded rather than the negative. If an individual is infected on two separate occasions by the same organism (outside the episode of infection with recovery implied) they will be represented by two distinct records, regardless of the test result.

All laboratories report a standardised data set which includes individual demographics, test result and source (location) at the time the specimen was taken. Data is collated to produce information on the number and trend of individuals tested at HSC Trust laboratories and the number and trend of confirmed cases in Northern Ireland and at HSC Trust or Local Government District level, by age and sex.

Care home outbreak surveillance

A care home is a term that includes all nursing homes and residential homes in Northern Ireland that are registered with the Regulation and Quality Improvement Agency (RQIA) and can either be HSC Trust or independent sector owned.

All care homes have a requirement to notify the PHA Health Protection duty room of suspected outbreaks of any infectious disease. A suspected outbreak of COVID-19 occurs when two or more residents and/or staff meet the case definitions for suspected COVID-19, confirmed COVID-19, influenza-like illness or worsening shortness of breath.

The PHA Health Protection Directorate care home outbreak surveillance system collects and collates data on all initial notifications of suspected COVID-19 outbreaks from the duty room clinical records.

The care home COVID-19 outbreak surveillance system is updated every day to reflect public health management. If the risk assessment subsequently excludes an outbreak from the initial notification then the surveillance data will be updated.

Currently, care homes with multiple facilities, nursing and residential, but the same name may be reported as one outbreak, rather than two (if both units are affected) which may underestimate the number of care homes affected.

Primary care surveillance

a. GP in-hours respiratory syndromic surveillance

The GP in-hours respiratory-related syndromic surveillance system collects and analyses anonymised respiratory-related data from over 320 GP practices via the Apollo GP Flu Surveillance System (Wellbeing Software), hereafter referred to as Apollo. This covers approximately 98% of the population.

Based on standardised definitions and extracted using READ codes in the GP Clinical Systems, respiratory-related data is collected on:

- Influenza Like Illness (ILI)
- Acute Respiratory Infections (ARI)
- Suspected COVID-19 (introduced late March 2020).

Data is analysed on a weekly basis to produce trends of ARI, ILI and COVID-19 consultation rates for Northern Ireland and at HSC Trust level.

GP out-of-hours syndromic surveillance

The GP respiratory-related syndromic surveillance system collects and analyses anonymised ARI, ILI and COVID-19 data from five OOH practices via Apollo. This system covers 100% of the population and complements the existing GP surveillance systems that cover in-hours consultations.

Data is analysed on a weekly basis to produce trends of ARI, ILI and COVID-19 consultation rates for Northern Ireland and at HSC Trust level. The system also monitors the number of unscheduled visits and calls to GPs every day during evenings, overnight, on weekends and on public holidays.

b. Sentinel testing

The GP sentinel testing surveillance system builds on the existing flu sentinel testing system where 36 general practices ('spotter' practices), representing approximately 11% of practices across Northern Ireland,

are commissioned to carry out flu testing in suspected influenza-like illness.

Individuals registered at a spotter practice with symptoms of suspected COVID-19 and who are well enough to self-care in their own home are referred to a Trust testing facility for testing. The service commenced in 13 spotter practices in Belfast and South Eastern HSC Trust locality at the end of April and is currently being rolled out to the other 23 practices in Northern, Southern and Western HSC Trust localities.

Laboratories reports from spotter practices are identified from the laboratory (virology) surveillance and are collated to produce information on the number of individuals tested and the number of confirmed cases.

Critical care surveillance

The PHA Health Protection COVID-19 critical care online reporting system captures the incidence of COVID-19 infections in critical care and aims to improve the understanding of severe disease.

This system should complement critical care data collected by the Health and Social Care Board for service planning purposes and the publicly available reports on COVID-19 in critical care in Northern Ireland by the Intensive Care National Audit and Research Centre (iCNARC) ([here](#)).

Data is collected on all individuals admitted to an Intensive Care Unit (ICU) or High Dependency Unit (HDU) with a positive SARS-CoV2 result, from either before or during the ICU/HDU admission.

As the online reporting system is newly developed, the quality of the data will continue to improve as it is validated against other information sources.

Mortality surveillance

Medical Certificate of Cause of Death for confirmed/suspected COVID-19

The traditional method for examining the number of deaths, and the range of causes of death, takes information from death certificates that are reported to the General Registrar's Office (GRO). The death certificate contains two parts. Part 1 describes the immediate causes of death and Part 2 provides information on related conditions that may also have contributed to death. The numbers of deaths from COVID-19 are based on COVID-19 being recorded on any part of the death certificate (i.e. Part 1 or Part 2).

These include all deaths in which a doctor feels that COVID was either a direct or indirect cause of death. It includes confirmed cases (deaths with a positive laboratory result) and probable or suspected cases, where a doctor assesses that COVID was a cause of death but there is either no lab test or the test was negative. It captures deaths in all settings, such as hospitals, care homes, hospices and the community. It takes up to five days for most deaths to be certified by a doctor, registered and the data processed, meaning these deaths will be reported on about a week after they occurred.

All-cause excess deaths

The PHA Health Protection Directorate reports the weekly number of excess deaths from any cause for Northern Ireland using the Mortality Monitoring in Europe (EuroMOMO) model. EuroMOMO provides a coordinated, timely and standardised approach to monitoring and analysing mortality data across the UK and Europe, to ensure that signals are comparable between countries. Further information is available at: <https://www.euromomo.eu/>

Based on mortality data supplied by NISRA, EuroMOMO produces the number of expected and observed deaths every week, corrected for reporting delay and standardised for the population by age group and region. Excess mortality is reported if the number of observed deaths exceeds the number of expected deaths, and is defined as a statistically significant increase in the number of deaths reported over the expected number for a given point in time.

Case definitions

Case definitions are determined by Public Health England, on the advice of NERVTAG. As the pandemic evolves and more evidence emerges the definitions will change to ensure individuals are appropriately identified.

Suspected case of COVID-19 (as of 18 May 2020)

In the community, an individual with:

- new continuous cough and/or
- high temperature
- a loss of, or change in, your normal sense of taste or smell (anosmia)

Requiring admission to hospital, an individual with:

- clinical or radiological evidence of pneumonia **or**
- acute respiratory distress syndrome **or**
- influenza like illness

Confirmed case of COVID-19

An individual with clinical symptoms and a positive SARS-CoV2 specimen result.

Critical care COVID-19 case

A case that has either been admitted to an ICU/HDU in Northern Ireland with a pre-existing positive result for SARS-CoV2, or received a positive result for SARS-CoV2 post-admission to ICU/HDU.

Medical Certificate of Cause of Death for confirmed/suspected COVID-19

NISRA define a death associated with COVID-19 as one where COVID-19 or suspected COVID-19 was mentioned anywhere on the death certificate, including in combination with other health conditions.

Influenza-like illness (ILI)

Acute respiratory disease with sudden onset of symptoms and:

- at least one systemic symptom (fever $\geq 37.8^{\circ}\text{C}$, myalgia, malaise, headache) AND
- at least one respiratory symptom: cough (with or without sputum), shortness of breath (and/or wheezing), sore throat, nasal discharge, sneezing or congestion