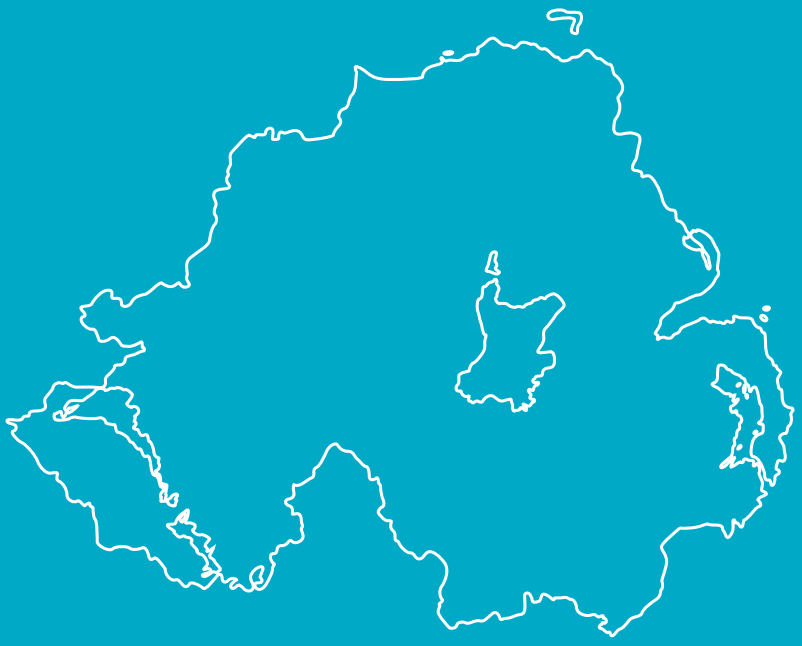
HSC Public Health Agency

Coronavirus (COVID-19)

Monthly Epidemiological Bulletin



Northern Ireland

Up to week 42 (18 October 2020)

Summary - Up to week 42 (18 October 2020)

To week 42, there have been a total of 28,197 laboratory confirmed cases[1] of COVID-19, including 913 registered COVID-19 deaths[2] in Northern Ireland.

COVID-19 case epidemiology

- 28,197 laboratory confirmed cases (25% from HSC laboratories)
- 53% of total cases are female
- In week 42, those aged 15-44 had the highest case rate (537.2 per 100,000 population; 16.7% positivity)
- In week 42, Derry and Strabane had the highest case rate (776.0 per 100,000 population; 21.1% positivity)

Care home outbreaks (suspected and confirmed)

- 308 suspected/confirmed COVID-19 outbreaks reported in total; includes 17 reported in week 42
- Involving 218 care homes (46.7% of all Northern Ireland care homes)
- The highest proportion of outbreaks (58.1%) were reported from the Southern Trust area

Primary care syndromic surveillance

In week 42:

- In-hours Acute Respiratory Infections (ARI) and COVID-19 consultation rate: 49.3 per 100,000 population

[1] Virological reports and the National Testing Programme

[2] NISRA; 2020 - up to 9 October 2020

- Out-of-hours (OOH) ARI consultation rate: 40.6 per 100,000 population
- OOH COVID-19 consultation rate: 10.5 per 100,000 population

Sentinel testing

- Testing started 27 April 2020
- Number of individuals tested in total: 545 (1.7% positivity)

COVID centres

- Testing started 15 June 2020 (one COVID centre: BHSCT)
- Virology data from the COVID centre became available from 1 July 2020
- Number of individuals tested 15 - 30 June 2020: 182 (all negative)
- Number of individuals tested 1 July - 18 October 2020: 864 (1.6% positivity)

Critical care surveillance

- 185 confirmed COVID-19 individuals
- The majority of reported critical care cases were male (69%)
- Median age of cases was 59 years (range 26 – 85 years)

Schools Surveillance

- 608 COVID-19 incidents reported in all schools
- Involving 519 schools (50% of all Northern Ireland schools)
- 39% of incidents were clusters of 2-5 cases; 11% were clusters of 5 or more cases

- The highest proportion of incidents (76%) were reported from Belfast Local Government District

Mortality surveillance

- In week ending 9 October 2020, the proportion of COVID-19 deaths registered was 3.2%. From the beginning of 2020 to week ending 9 October 2020 the proportion was 7.0%
- Excess deaths were reported in weeks 13-20, and week 22; mainly in those over 65 years old

Testing surveillance virology

- Number of individuals tested in total: 511.247 (5.5% positivity)
- Number of individuals tested in;
    - HSC laboratories:181,212 (35% of total tests)
    - National Testing Programme: 330,035 (65% of total tests)

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 and geographical location) 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 in “what’s new” section below.

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 not yet possible due to the recent emergence of this novel virus.

There is a large amount of data being regularly published regarding COVID-19 (for example, Department of Health COVID-19 Daily Dashboard Updates and NISRA Deaths Registered Dashboard). This bulletin complements the range of existing data currently available.

What's new

In this edition we have added information about:

- The number of daily active COVID-19 care home outbreaks (symptomatic and asymptomatic)
- The number of COVID-19 incidents in schools and the number of schools affected by COVID-19 incidents
- Due to the overlap in content and audience for the PHA weekly and monthly COVID-19 bulletins, every fourth week only the monthly bulletins will be published.
- Figure 10 now shows data for the current reporting week e.g. week 42 (12 - 18 October 2020)

Contact tracing

Contact tracing is the process of identifying, assessing, and managing people who have been exposed to a disease to prevent onward transmission (WHO). Contact tracing can help break the chains of transmission of COVID-19 and is an essential public health tool for controlling the virus.

Contact tracing seeks to limit and prevent the spread of infections such as COVID-19. It works by identifying a confirmed case and asking them who they have been in contact with. Individual contacts are considered high risk if they have spent more than 15 minutes in close contact with a confirmed case without personal protection. This means that those who have casually passed by someone on the street will not be considered high risk. The person with a confirmed infection and their close contacts will be given advice regarding symptom management and the need to self-isolate to prevent wider spread of the virus. This advice is based on information available on the PHA website and includes social distancing, handwashing and cleaning in the home to help protect people who are at risk. We can also advise people on how to best look after those in their care.

The most up-to-date contact tracing management service update (issued 15 October 2020) can be found here*.

The StopCOVID NI contact tracing app is now available from the Google or Apple App store.

*These are experimental performance and activity data and provide a snapshot of contact tracer activity. Data reported relates to a live operational system which includes case and contact activity in progress or in a queue. It is based on manually recorded information and data extracted from current contact tracing systems and reporting methods and parameters may change over time.

Automatic reporting in future may create a discontinuity in figures. New IT systems and data outputs often take some time to bed in. Data should therefore be treated with caution while the system and understanding of the data develops. At this stage, there is a risk of data entry errors or delay, which may require that data are revised and updated in future. The process of finding and removing duplicate records may also need refining, which could result in revisions to the data.

Clusters

Definition: A cluster is currently defined as two or more laboratory confirmed cases of COVID-19 among individuals associated with a key setting, who have illness onset dates within a 14 day period. Key settings in which clusters have occurred include: workplaces, retail, hospitality and leisure premises as well as educational settings[3].

Comment:

Number of all clusters (open and closed) that have been recorded by the contact tracing service up to 12pm Tuesday 20 October 2020. Note: the reporting period for cluster data is slightly different to the remainder of the report in order to provide the most up to date cluster information at the time of the bulletin.

There have been 62 new clusters in the seven days up to 20 October 2020[4,5]. From week to week the number of clusters may change due to ongoing updates to the source information following detailed risk assessments. For this reason, we would discourage making direct comparisons between the cumulative number of clusters reported each week, with the number reported in the current week the most accurate at the time of the report.

In total, up to 20 October 2020, a total of 52 clusters with greater than five people have been identified in the following council areas; Antrim and Newtownabbey (n=4), Ards and North Down (n=1), Armagh City, Banbridge and Craigavon (n=3), Belfast City (n=17), Causeway Coast and Glens (n=1), Derry City and Strabane (n=4), Fermanagh and Omagh (n=2), Lisburn and Castlereagh City (n=2), Mid and East Antrim

[3] COVID-19 transmission is most common in household settings. The number of affected households is not reported.

[4] Note: the reporting period for cluster data is slightly different to the remainder of the report in order to provide the most up to date cluster information at the time of the bulletin. Some clusters may overlap (larger clusters may contain or overlap with several smaller clusters).

[5] From week to week the number of clusters may change due to ongoing updates to the source information following detailed risk assessments. For this reason, we would discourage making direct comparisons between the cumulative number of clusters reported each week, with the number reported in the current week the most accurate at the time of the report.

(n=4), Mid Ulster (n=4) and Newry, Mourne and Down (n=10). In addition, there have been 115 clusters across Northern Ireland with fewer than five people.

Source: Contact Tracing Service / PHA Health Protection Service

Case epidemiology

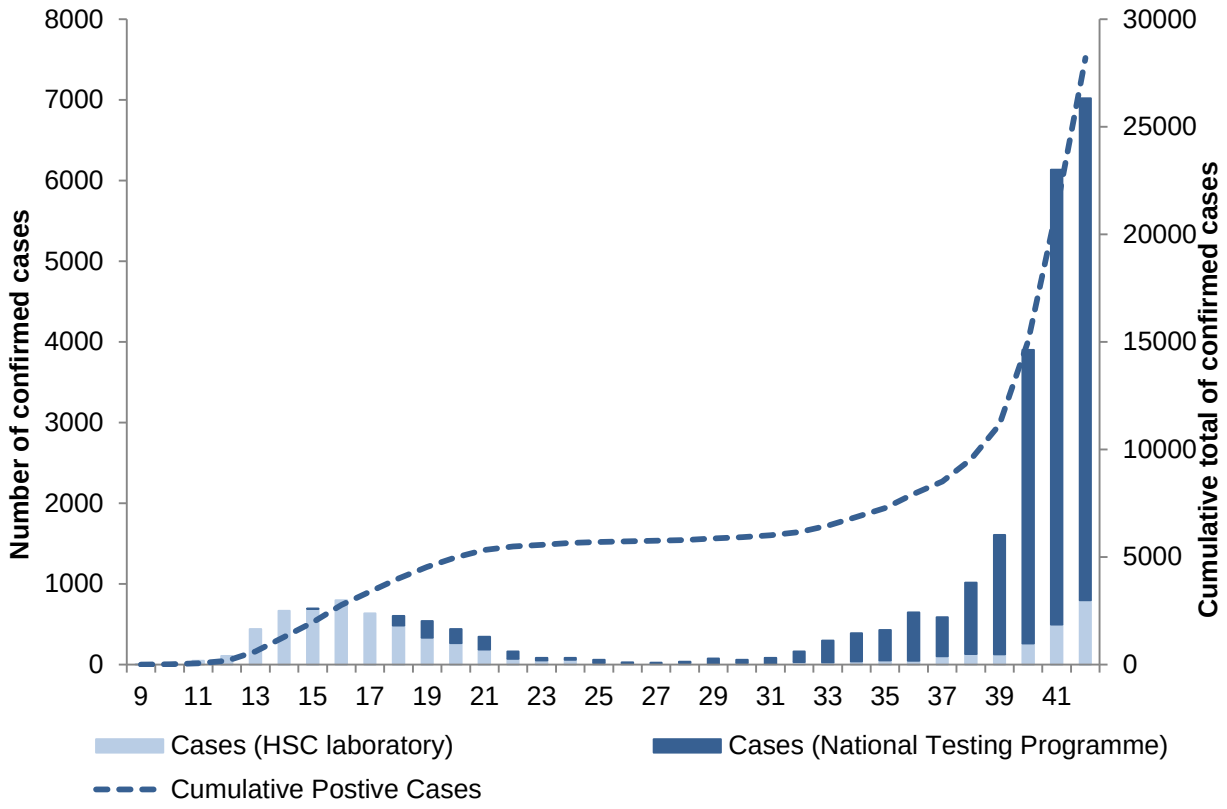


Figure 1. Laboratory confirmed COVID-19 cases by epidemiological week and source (HSC Laboratory testing and the National Testing Programme), 2020

Figure 1 represents the number of new weekly cases reported to the PHA (bars) and the cumulative number of cases (dashed line). Reporting is likely to be incomplete for the most recent week due to natural delays in samples reaching the labs, being tested and the information being reported.

From the end of September (week 40 onwards) we have seen a large increase in weekly peaks and increasing cumulative confirmed cases. This is mainly due to increasing clusters, increasing community transmission and contact tracing within a variety of settings. HSC laboratories are also beginning to report an increased number of cases.

Cases in week 42 were the highest reported since the initial peak in week 16 (13 - 19 April 2020).

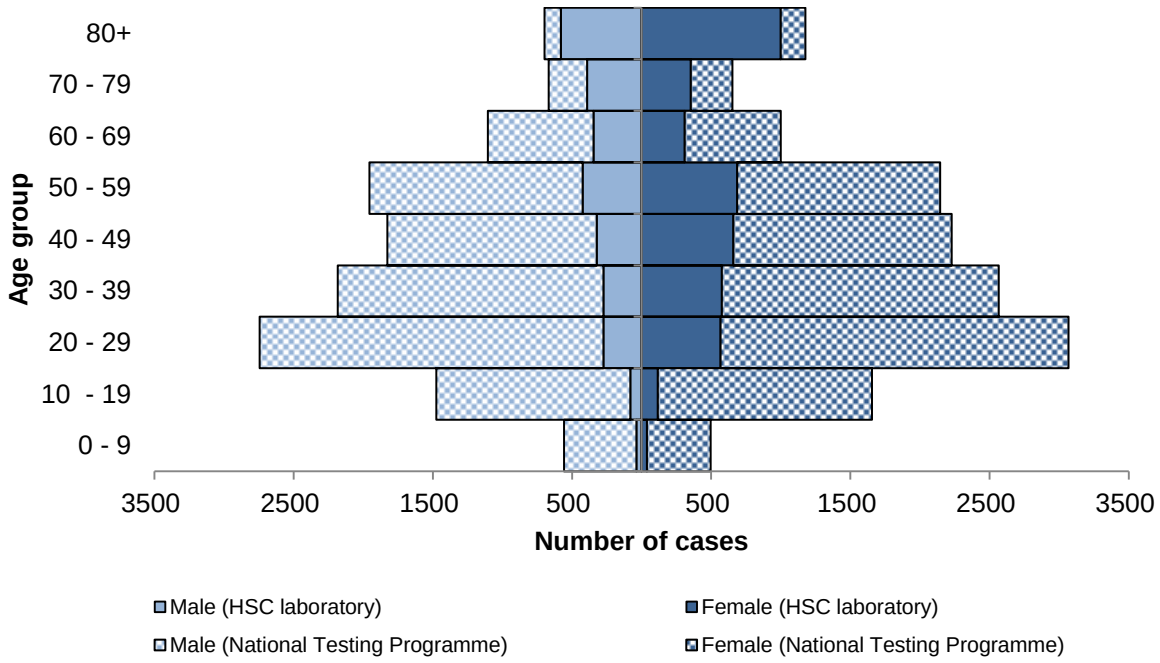


Figure 2. Laboratory confirmed cases, by age, sex and source (HSC Laboratory testing and the National Testing Programme), 2020

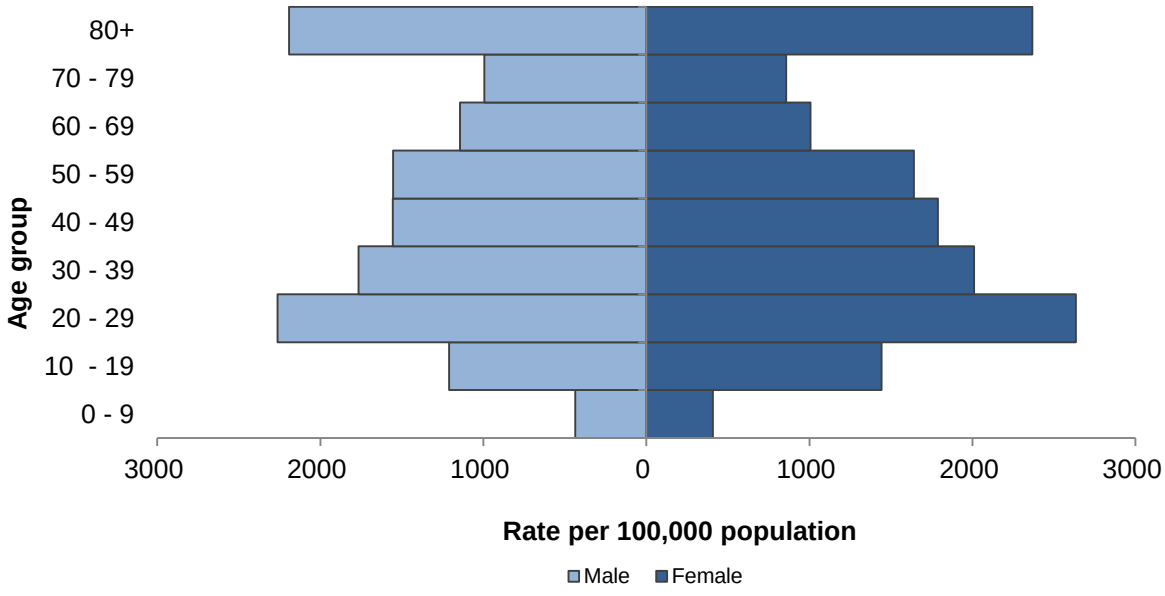


Figure 3. Laboratory confirmed cases per 100,000 population, by age and sex, for all testing data combined, 2020

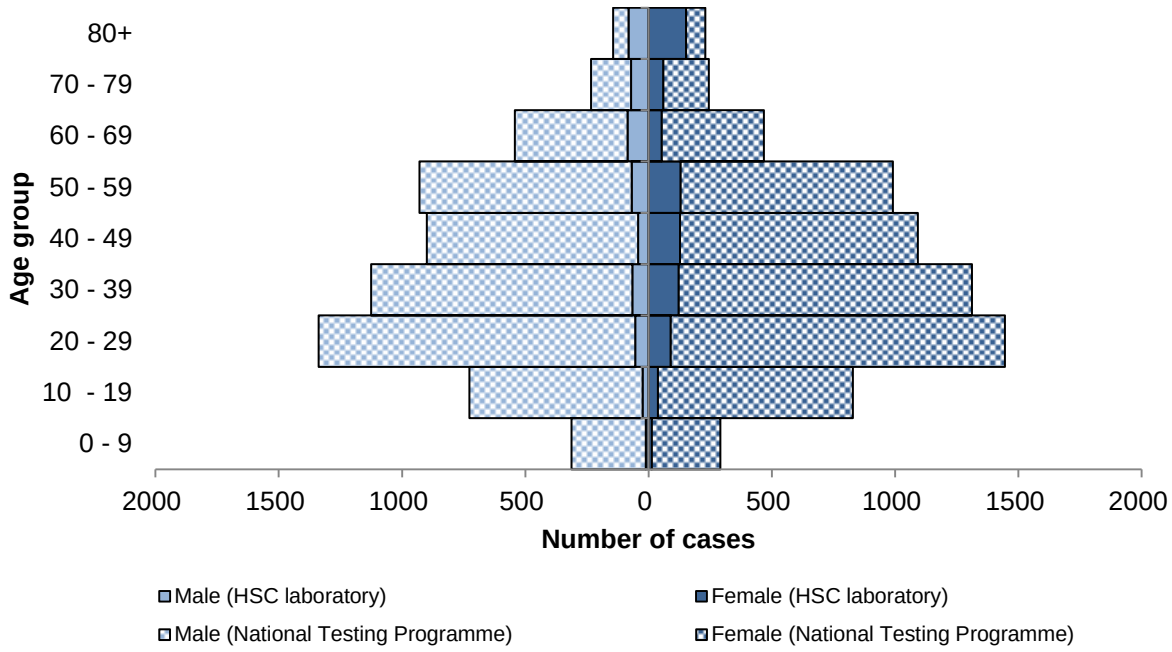


Figure 4. Laboratory confirmed cases, by age, sex and source (HSC Laboratory testing and the National Testing Programme), for weeks 41 and 42

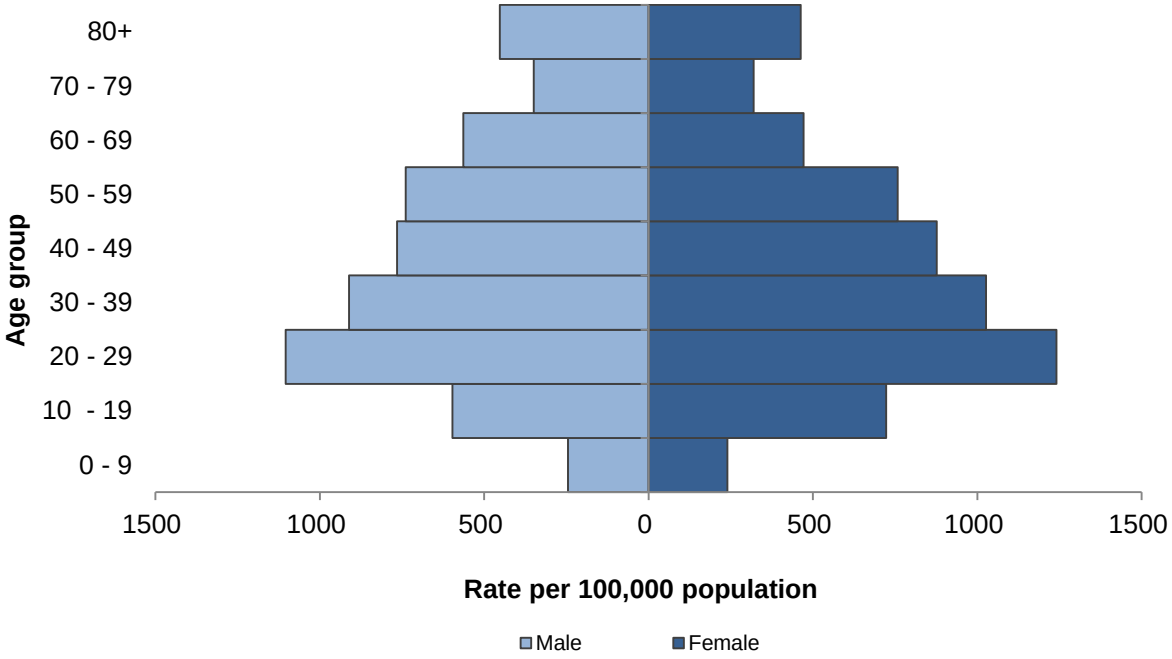


Figure 5. Laboratory confirmed cases per 100,000 population, by age and sex, for all testing data combined, for weeks 41 and 42

Figures 2 and 3 represents the cumulative number of cases reported by HSC laboratories and the National Testing Programme, and overall case rates per 100,000 population, respectively. HSC laboratory cases were mainly detected at the beginning of the pandemic in hospital settings, resulting in higher cases and rates among the older age groups. With the introduction of the National Testing Programme cases it has become the main source of case data as a result of enhanced community testing enabling us to detect a greater spectrum of disease. From this data we have seen higher cases among the younger age groups (most commonly in the 20-29 age group).

Figures 4 and 5 show similar to the cumulative numbers but restricted to the previous two epidemiological weeks. These show how the age groups of cases in the most recent weeks differ from the overall cumulative cases presented in figures 2 and 3. Also, more cases are being detected outside of hospital settings as part of the National Testing Programme.

Table 1. Total laboratory confirmed COVID-19 cases, by sex, for all testing data combined

Age Group	Sex		
	Male	Female	Total*
0 - 9	557	496	1,053
10 - 19	1,474	1,655	3,129
20 - 29	2,743	3,067	5,810
30 - 39	2,183	2,567	4,750
40 - 49	1,827	2,228	4,055
50 - 59	1,954	2,146	4,100
60 - 69	1,103	1,000	2,103
70 - 79	666	654	1,320
80+	698	1,177	1,875
Unknown	-	-	-
Total	**13,205**	**14,990**	**28,195**

**Unknown sex for one case*

Table 2. Laboratory confirmed COVID-19 cases, by Trust				
Trust Area	Epidemiological week			
	40	41	42	Total
Belfast	95	202	299	2,150
Northern	20	60	98	1,042
South Eastern	14	51	115	1,046
Southern	63	67	117	1,124
Western	46	80	102	565
Other*	3,663	5,676	6,288	22,269
Unknown	-	-	-	1
Northern Ireland	**3,901**	**6,136**	**7,019**	**28,197**

**Other cases includes those from the National Testing Programme, NIAS, private nursing home residents, pathology services, GPs and hospices*

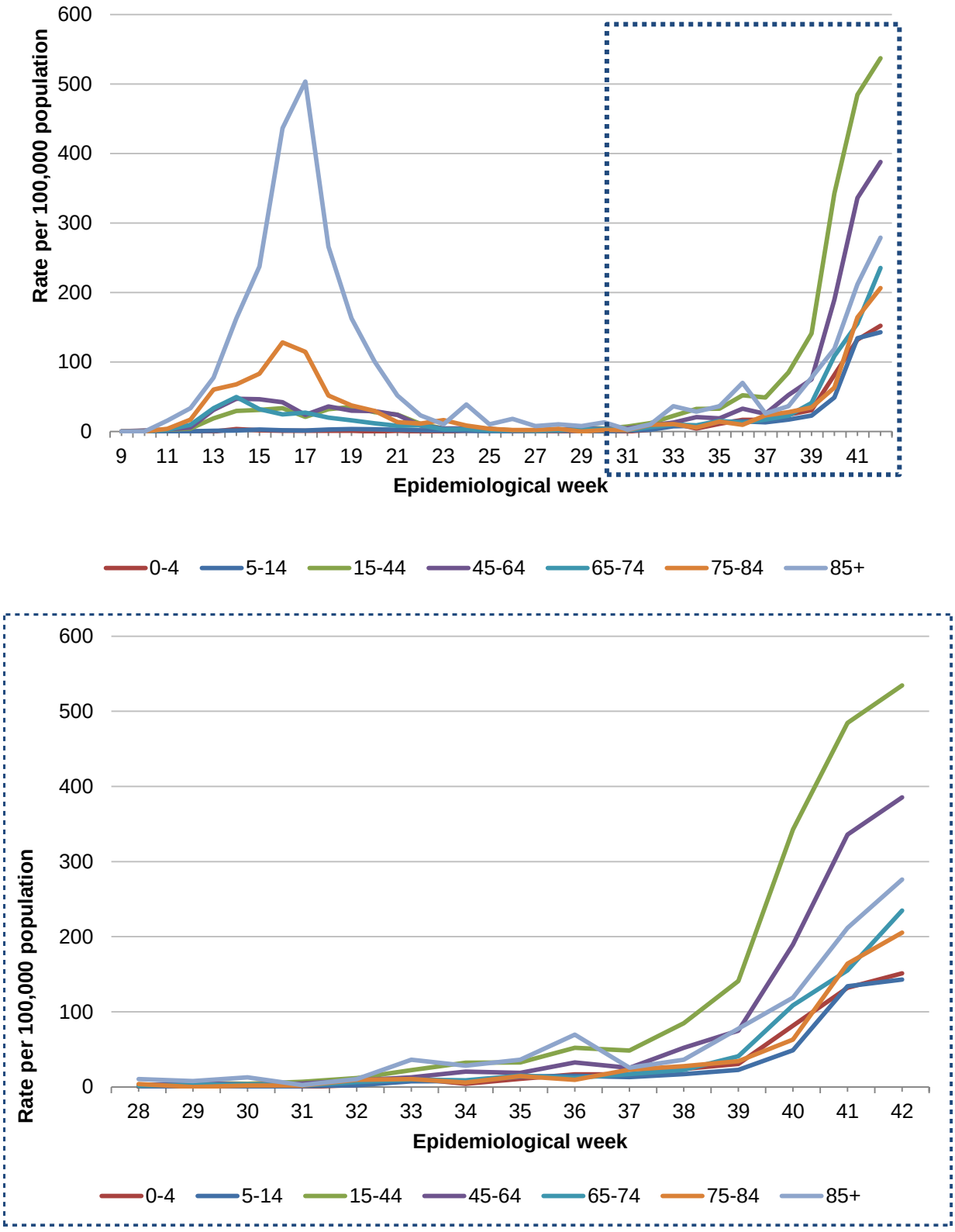


Figure 6. Weekly laboratory confirmed case rates per 100,000 population, by age group, for all testing data combined, 2020

The case rates increased in week 42 compared to previous weeks in all age groups. The highest case rate in week 42 was seen in the 15-44 year age group (537.2 per 100,000 population).This is a change from what was seen during the peak when the highest rates were reported among the older age groups, peaking at 503.4 per 100,000 in the 85+ age group in week 17 (20 - 26 April 2020).

In week 42, the proportion positive has increased in all age groups, with positivity being highest in the 15-44 and 45-64 ages groups (16.7% and 17.0% respectively). Lower positivity was observed in the 85+ age group (5.7%). This a change from a peak positivity of 38% in the 85+ age group in week 16 (13 - 19 April 2020).

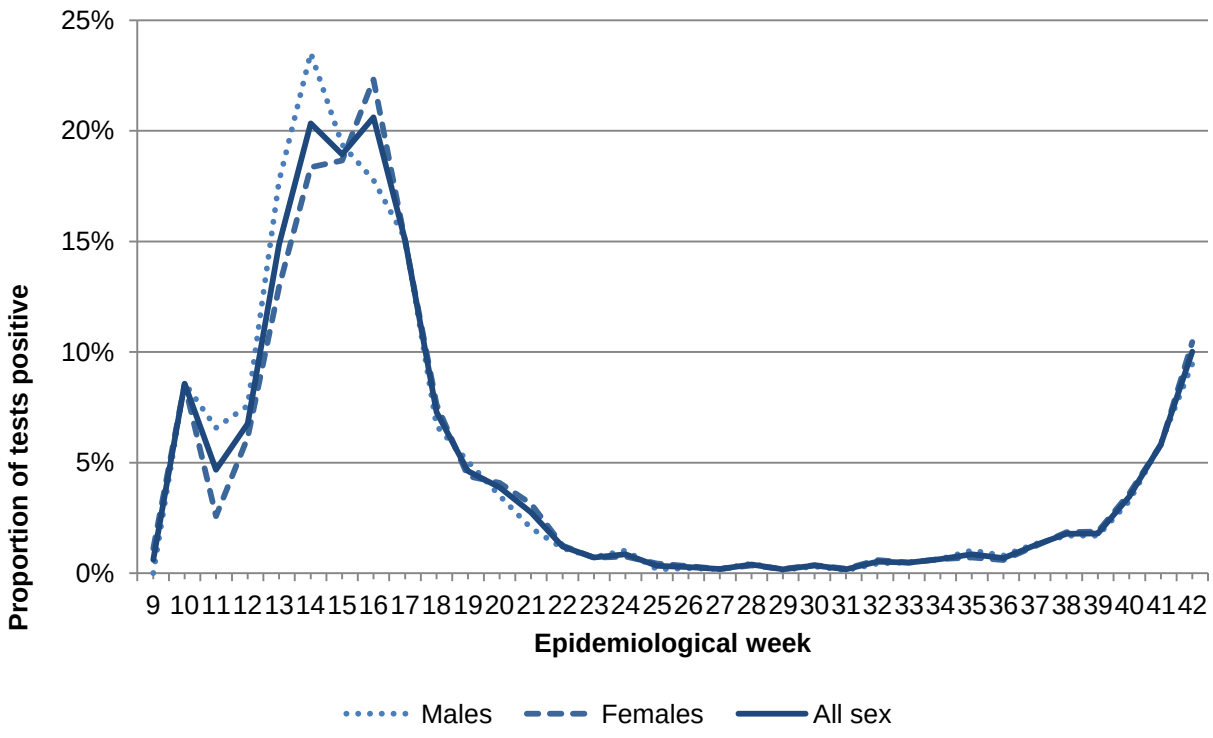


Figure 7. Positivity (%) of laboratory confirmed COVID-19 cases by epidemiological week, overall and by sex (HSC Laboratory testing), 2020

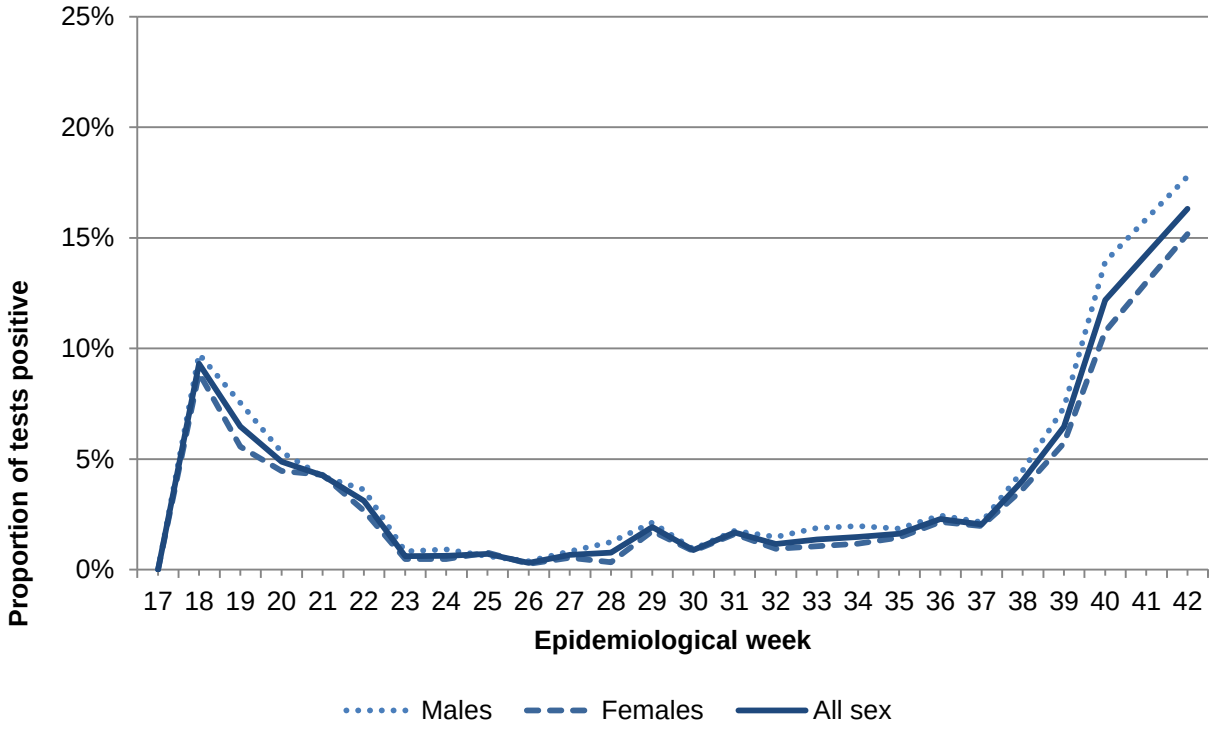


Figure 8. Positivity (%) of laboratory confirmed COVID-19 cases by epidemiological week, overall and by sex (National Testing programme), 2020

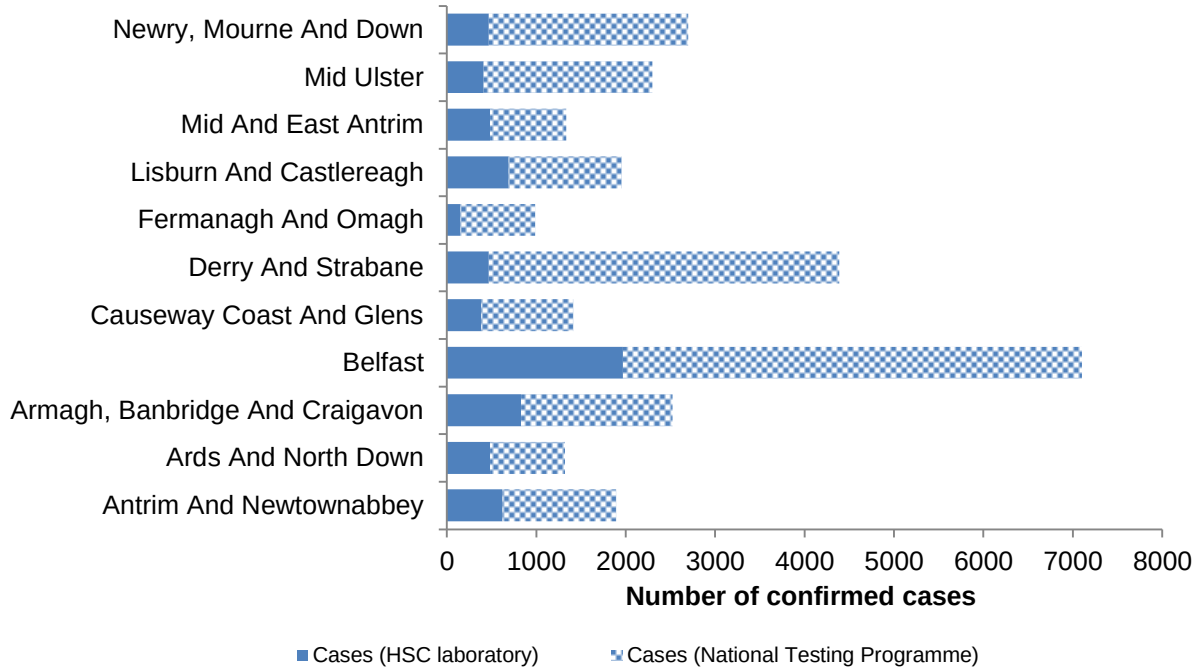


Figure 9. Total laboratory confirmed cases, by Local Government District (LGD) and source (HSC Laboratory testing and the National Testing Programme), 2020

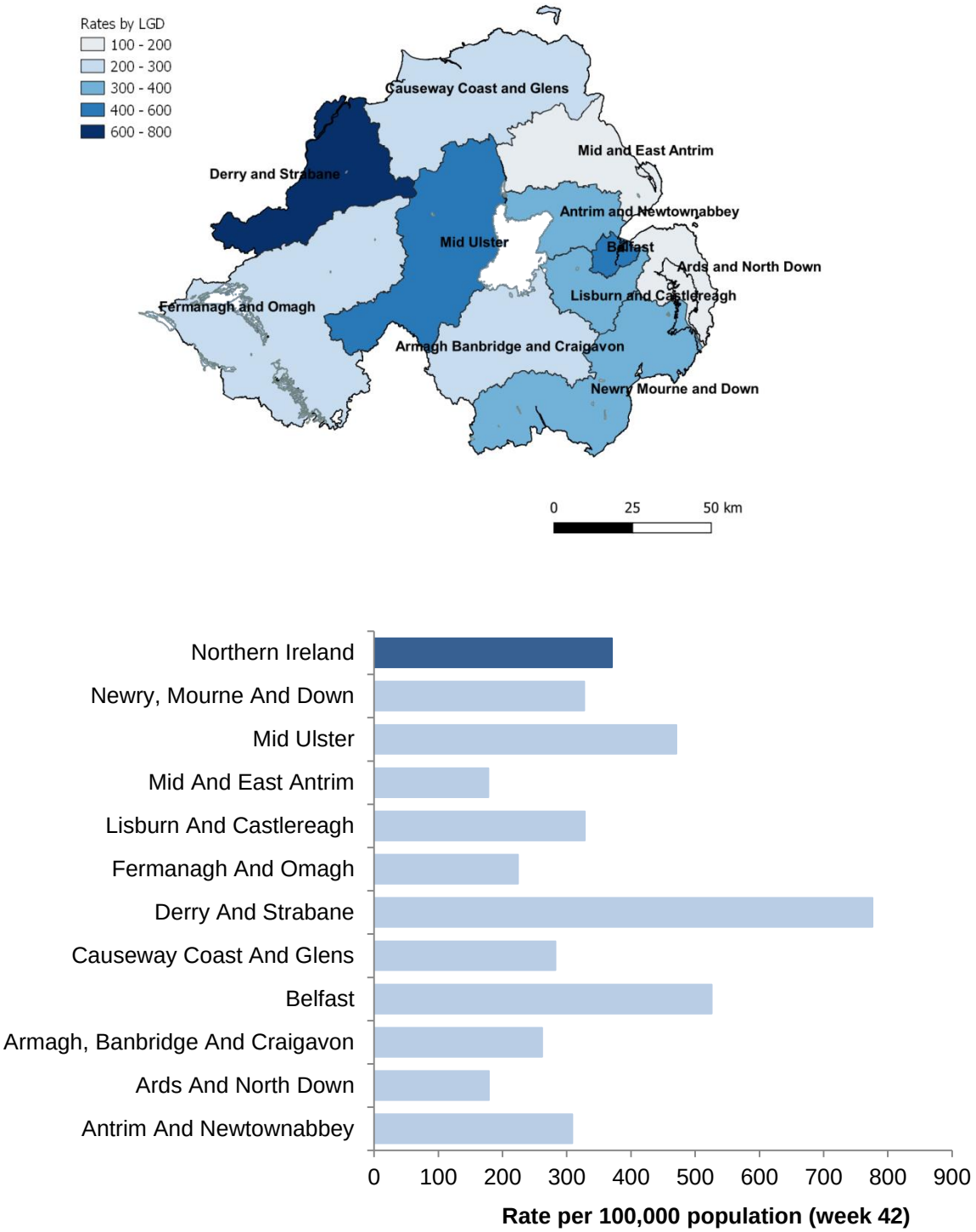
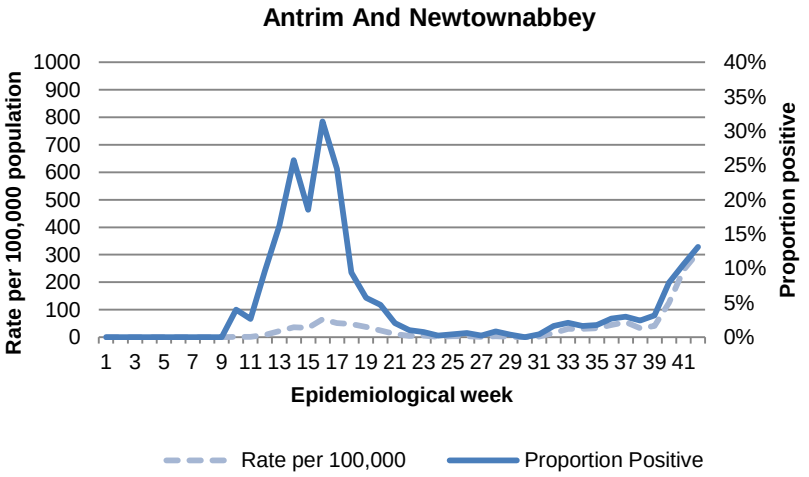
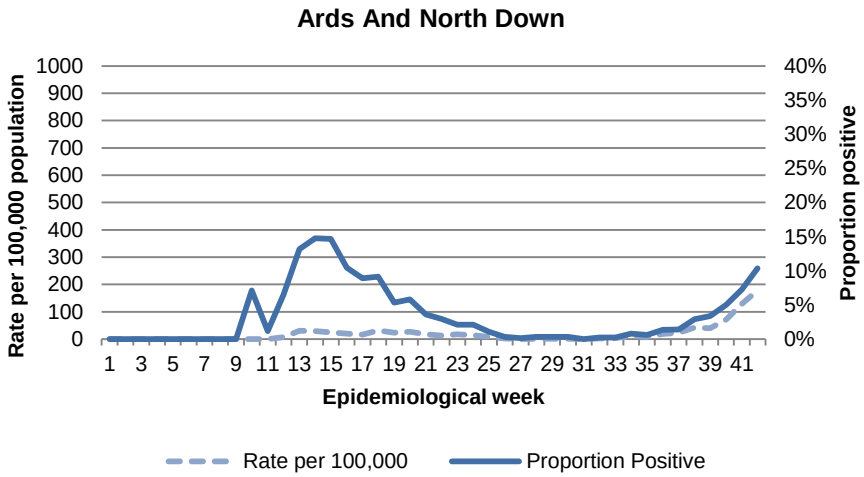
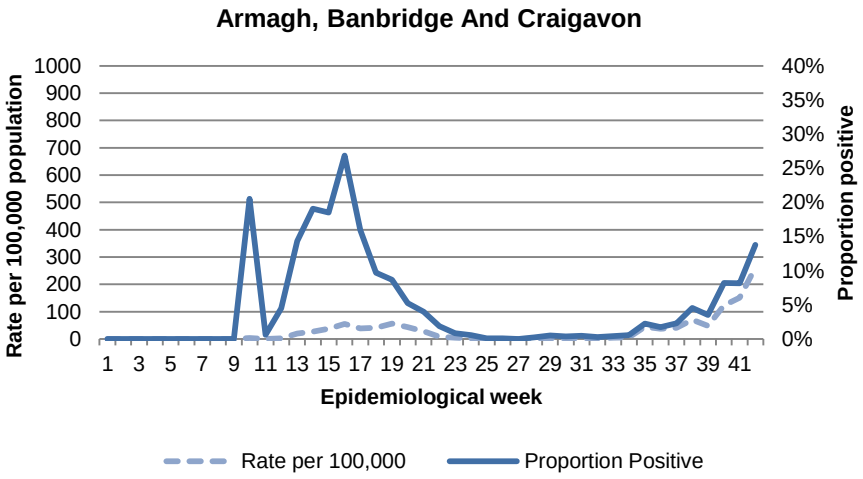
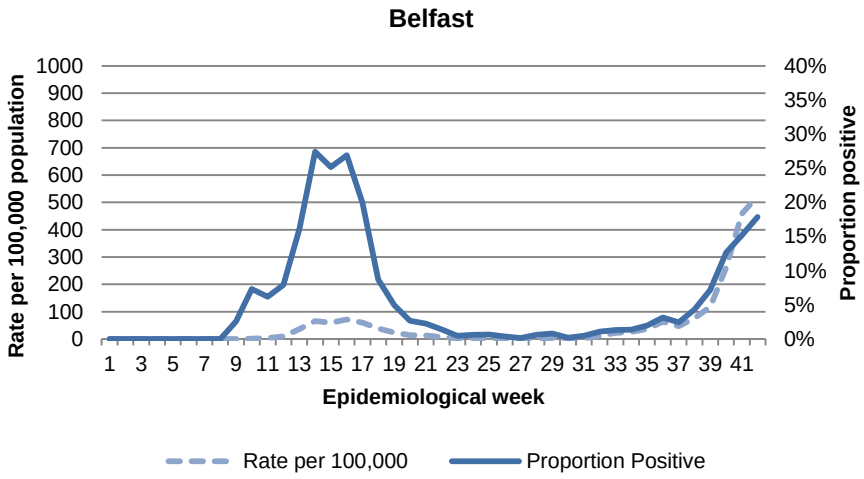


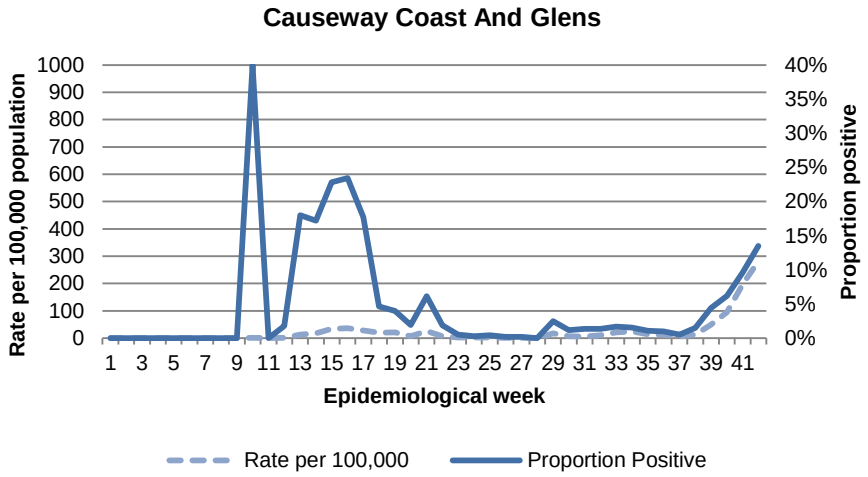
Figure 10. Total laboratory confirmed cases per 100,000 population, by Local Government District (LGD), for all testing data combined, week 42 (12 - 18 October 2020)

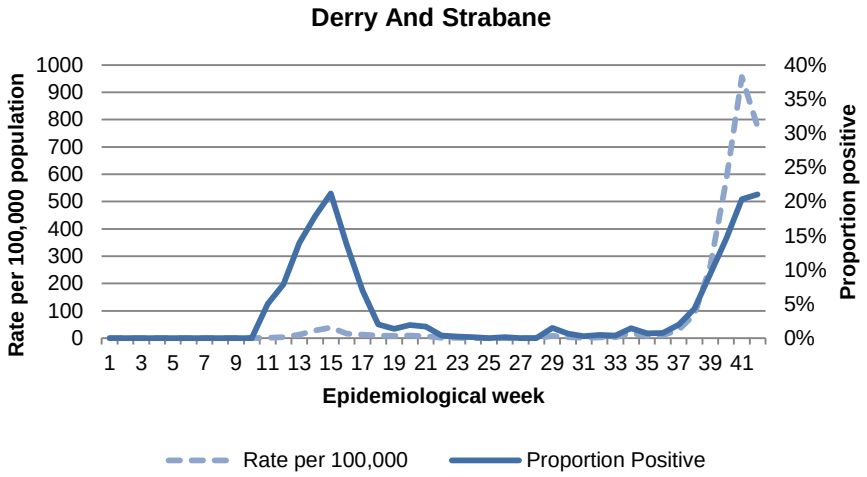

Antrim And Newtownabbey
Rate per 100,000 population
Proportion positive
Epidemiological week
Rate per 100,000
Proportion Positive

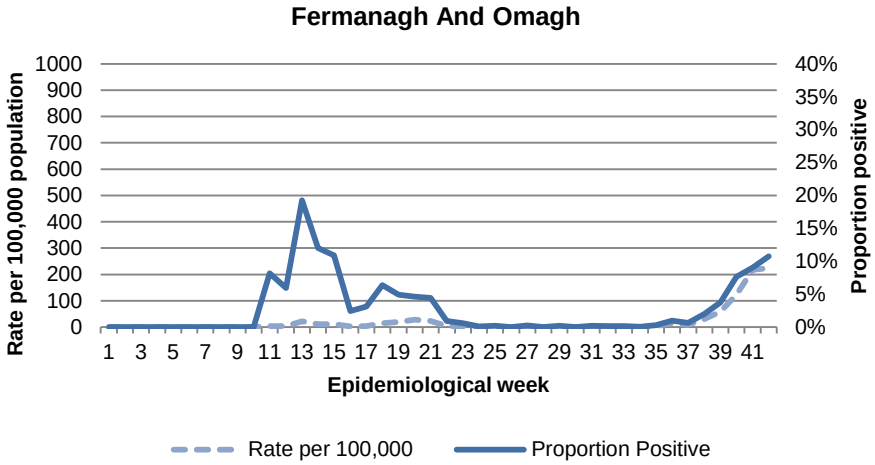

Ards And North Down
Rate per 100,000 population
Proportion positive
Epidemiological week
Rate per 100,000
Proportion Positive

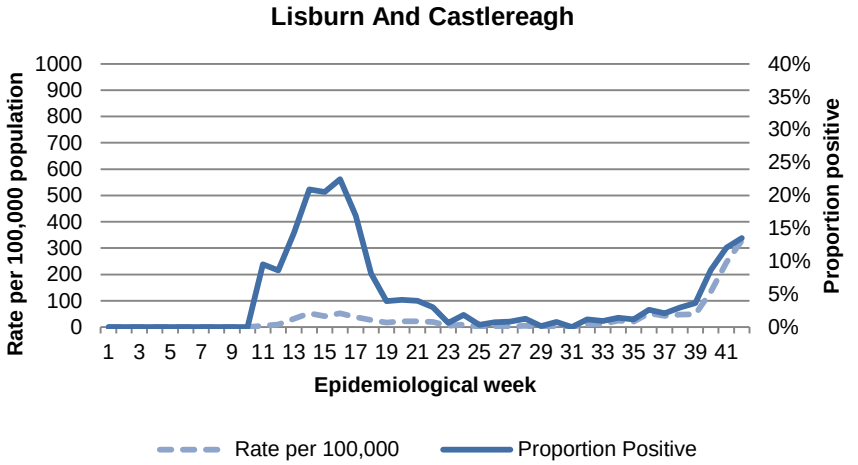

Armagh, Banbridge And Craigavon
Rate per 100,000 population
Proportion positive
Epidemiological week
Rate per 100,000
Proportion Positive


Belfast
Rate per 100,000 population
Proportion positive
Epidemiological week
Rate per 100,000
Proportion Positive


Causeway Coast And Glens
Rate per 100,000 population
Proportion positive
Epidemiological week
Rate per 100,000
Proportion Positive


Derry And Strabane
Rate per 100,000 population
Proportion positive
Epidemiological week
Rate per 100,000
Proportion Positive


Fermanagh And Omagh
Rate per 100,000 population
Proportion positive
Epidemiological week
Rate per 100,000
Proportion Positive


Lisburn And Castlereagh
Rate per 100,000 population
Proportion positive
Epidemiological week
Rate per 100,000
Proportion Positive

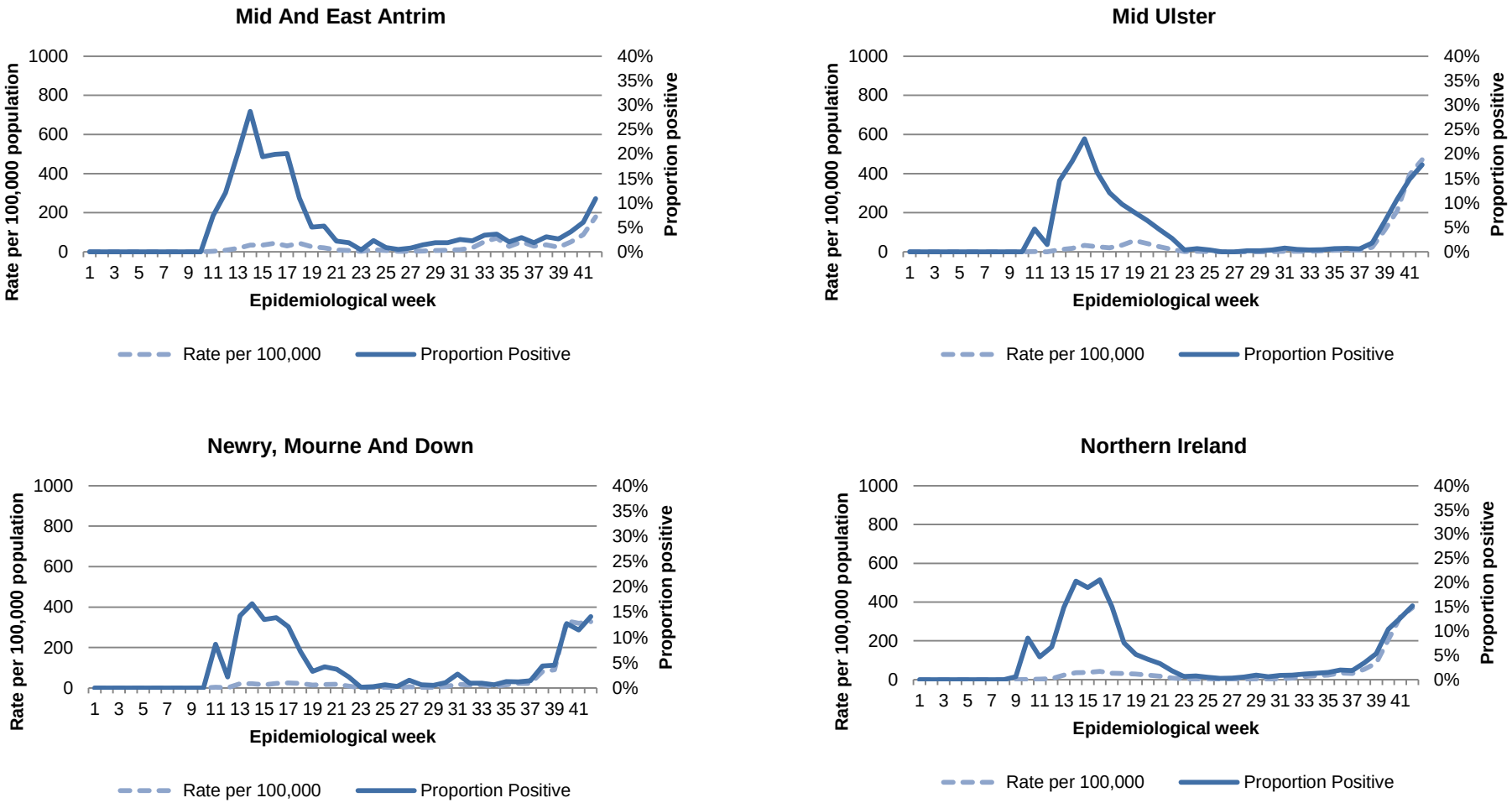


Figure 11. Weekly laboratory confirmed cases per 100,000 population and proportion positive, by Local Government District (LGD) and Northern Ireland, for all testing data combined, 2020.

The case rates decreased in week 42 compared to week 41 in Derry and Strabane. While the rate is decreasing, Derry and Strabane had the highest rate in week 42 compared to other Local Government Districts (776.0 per 100,000 population). The rates increased in all other Local Government Districts (LGD), mainly driven by localised clusters and increasing community transmission. The overall Northern Ireland rate increased from 324.0 to 370.7 per 100,000 population between week 41 and 42.

The proportion positive has increased across all LGDs, with the highest positivity occurring in Derry and Strabane (21.1%). Northern Ireland's proportion positive in week 42 was 15.2%, an increase from 12.8% in week 41. However, this is lower than the peak positivity of 20.6% reported across Northern Ireland in week 16 (13 - 19 April 2020).

Source: HSC Trust laboratory reports and the National Testing Programme

Deprivation

An analysis of COVID-19 related health inequalities relating positive test cases and COVID-19 related admissions between the most and least deprived areas of Northern Ireland, including variations across age, sex and urban and rural areas was published by Department of Health on 17 June 2020.

Care home outbreaks

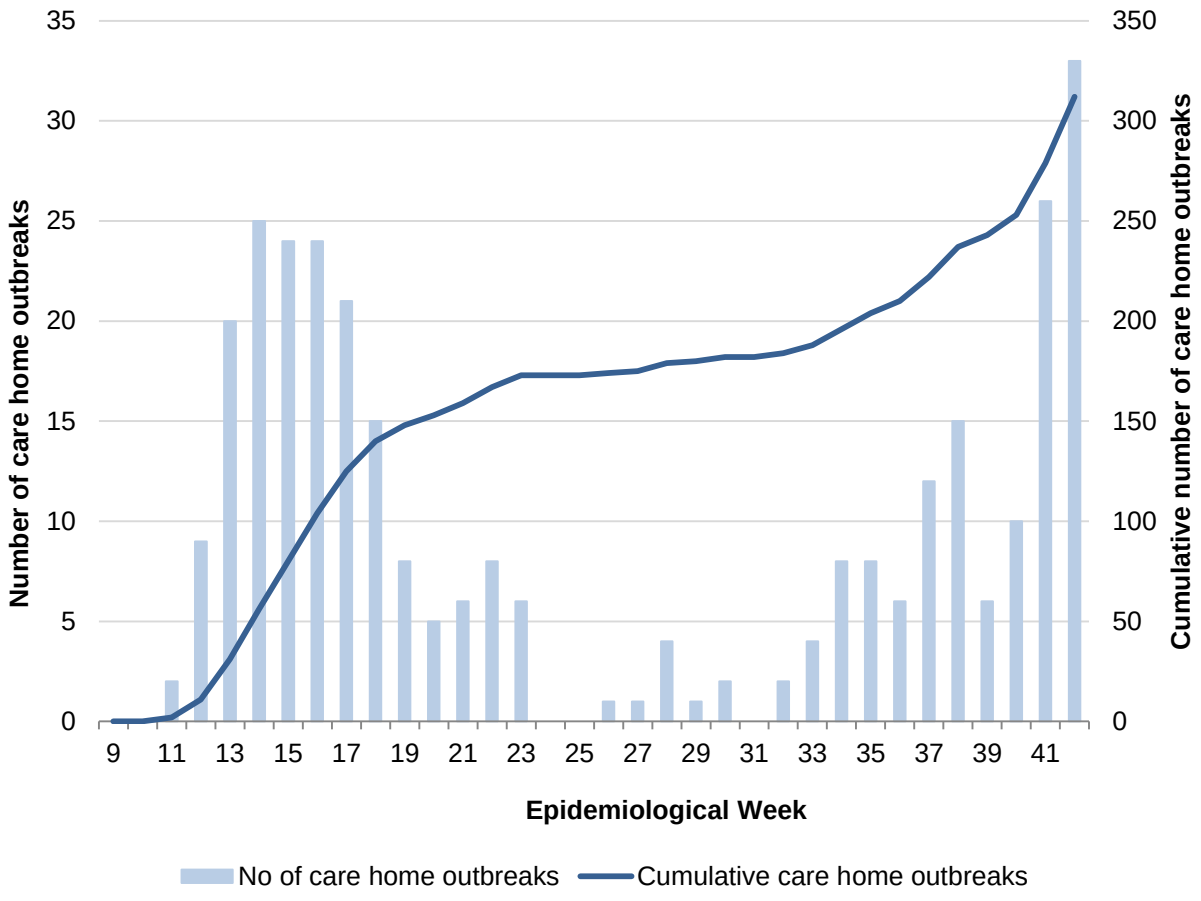


Figure 12. Confirmed and suspected COVID-19 care home outbreaks in Northern Ireland, 2020

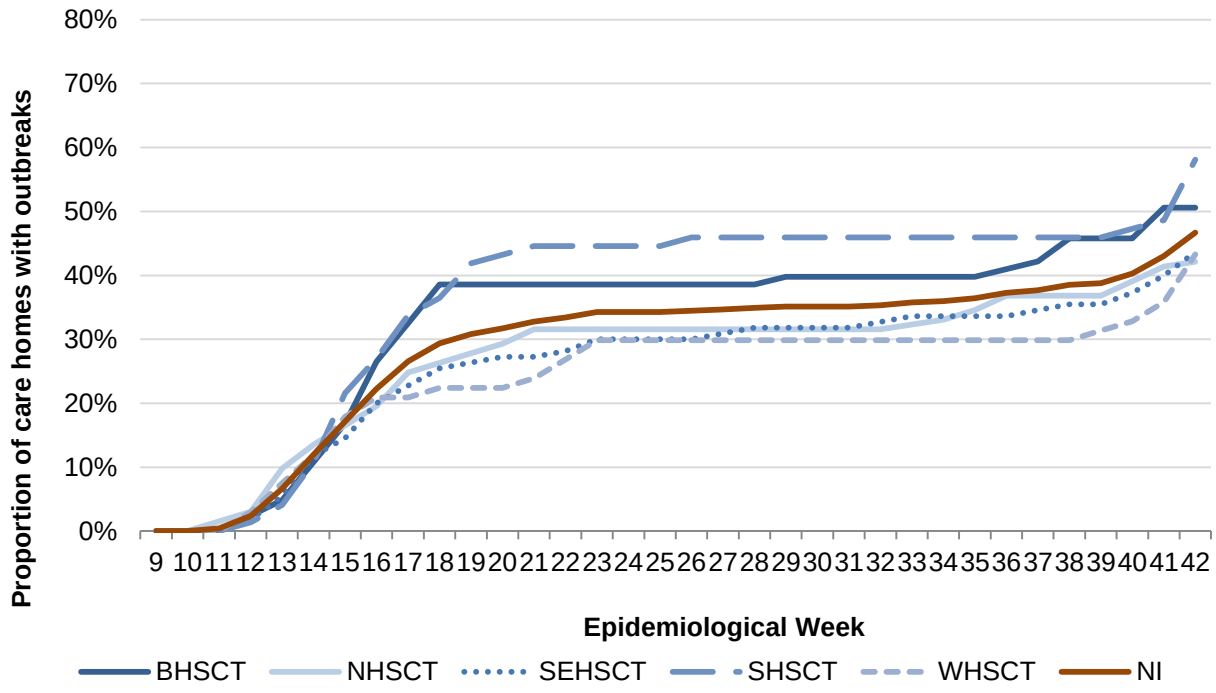


Figure 13. Proportion of care homes with confirmed or suspected COVID-19 in Northern Ireland by Trust, 2020

Table 3. Proportion of care homes with confirmed or suspected COVID-19 outbreaks in Northern Ireland, by Trust

Trust Area	Cumulative total of care homes with outbreaks in 2020	% of care homes with outbreaks	Total number of care homes
Belfast	42	50.6%	83
Northern	56	42.1%	133
South Eastern	48	43.6%	110
Southern	43	58.1%	74
Western	29	43.3%	67
Northern Ireland	218	46.7%	467

To week 42, a total of 308 suspected/confirmed COVID-19 care home outbreaks were reported, involving 218 care homes (46.7% of all Northern Ireland care homes). The highest proportion of care homes with suspected/confirmed COVID-19 outbreaks (58.1%) were reported from the Southern Trust area.

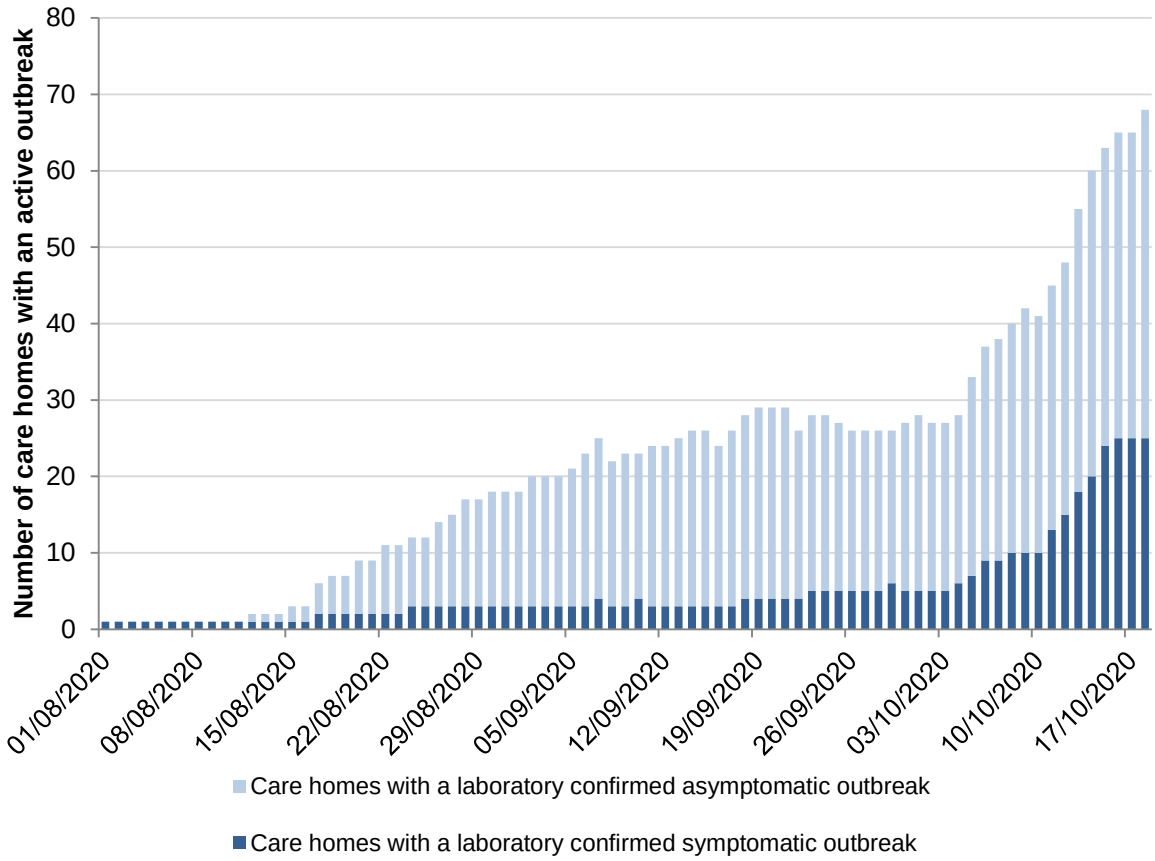


Figure 14. Number of care homes with a confirmed active symptomatic or asymptomatic COVID-19 outbreak[6] in Northern Ireland, 2020

Source: PHA Health Protection duty room reports from care homes

[6] PHA began recording confirmed Covid-19 outbreaks as either symptomatic or asymptomatic on 1 August 2020. This means the numbers represented on the graph may not equal the total active confirmed COVID-19 outbreaks. Confirmed COVID-19 outbreaks reported prior to 1 August 2020 and are still ongoing are not included in this graph. Additionally, other respiratory outbreaks are not included.

Primary care syndromic surveillance

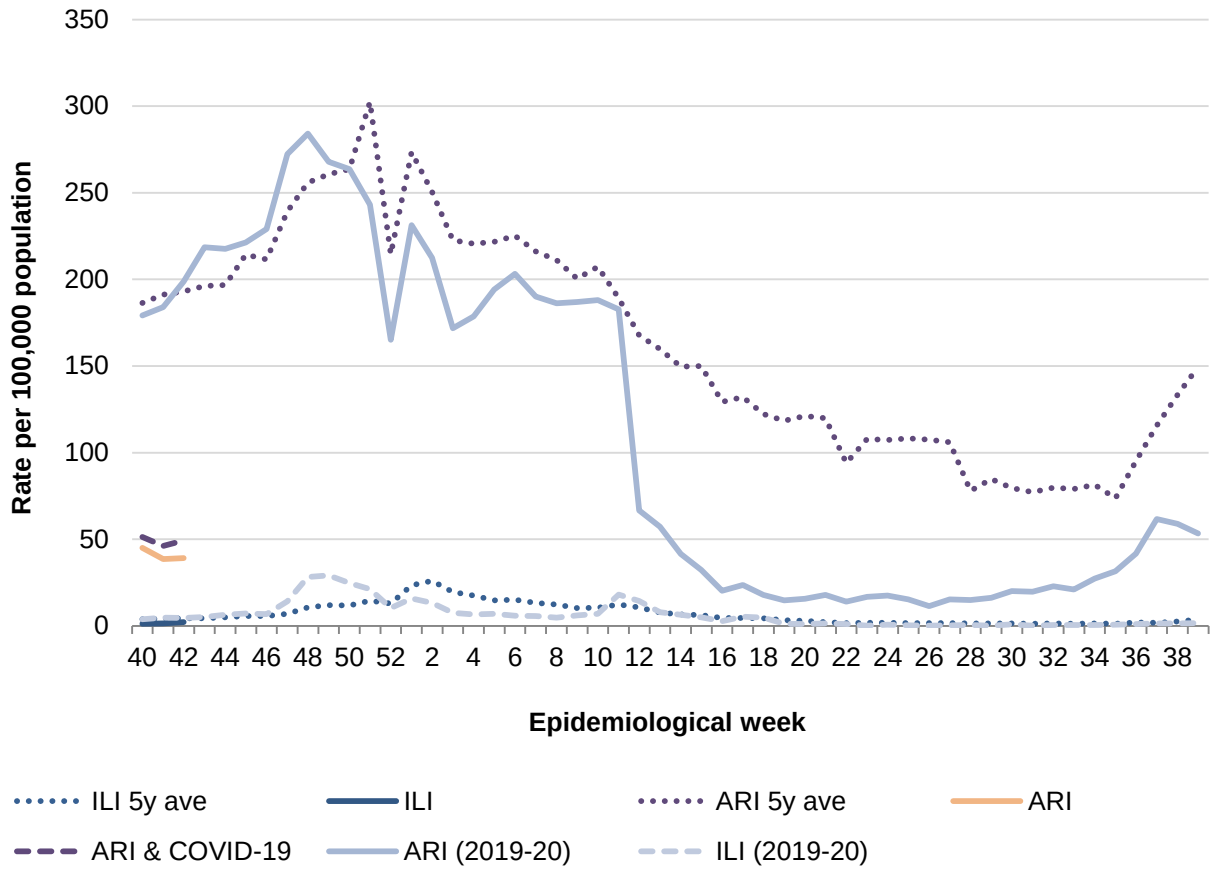


Figure 15. In-hours consultation rates for influenza- like illness (ILI), acute respiratory infections (ARI) and COVID-19, 2019/20 - 2020/21

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. In recent weeks ARI consultation rates have been decreasing, but when combined with COVID-19 consultations, there has been an increase since week 35.

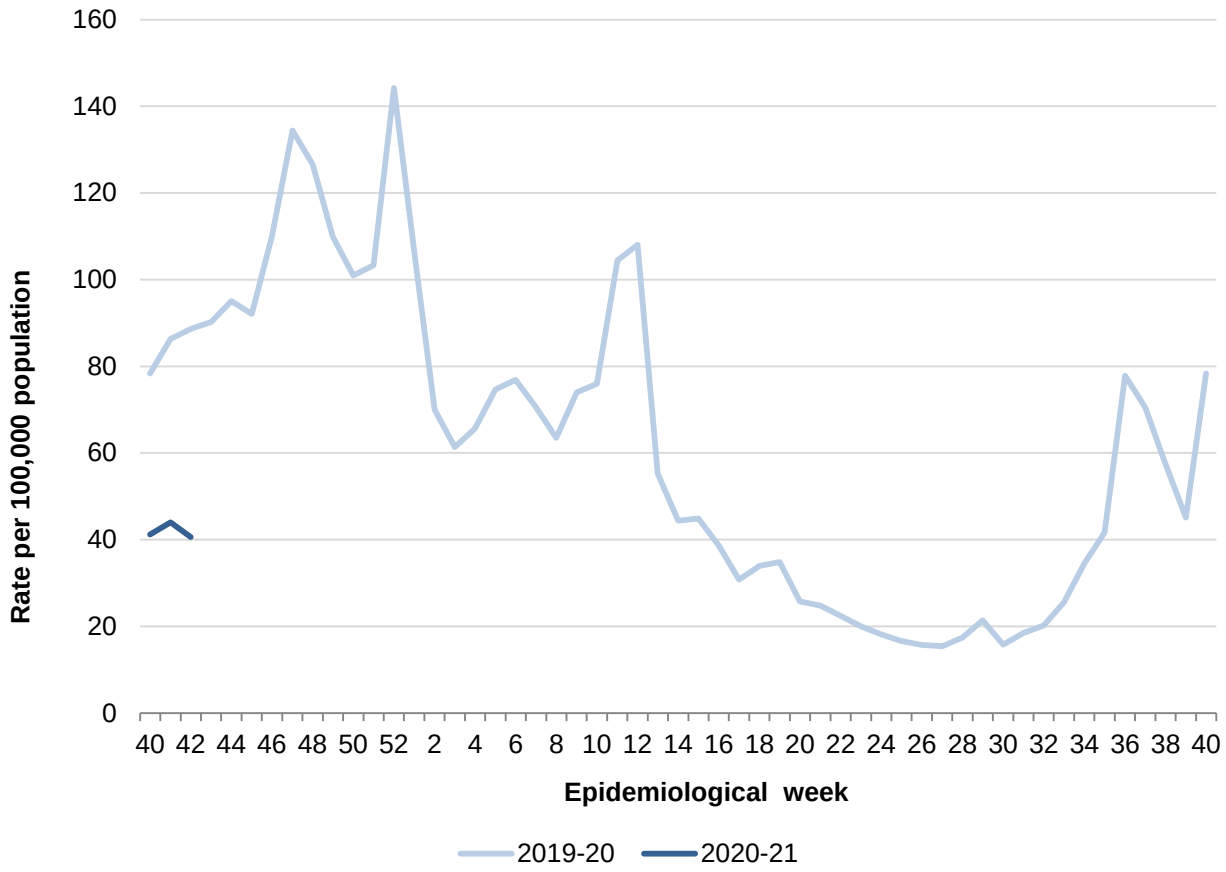


Figure 16. Out-of-hours (OOH) consultation rates for ARI, 2019/20 – 2020-21

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 new respiratory 2020-21 year commenced in week 40.Consultations during week 42 are lower compared to this time last year.

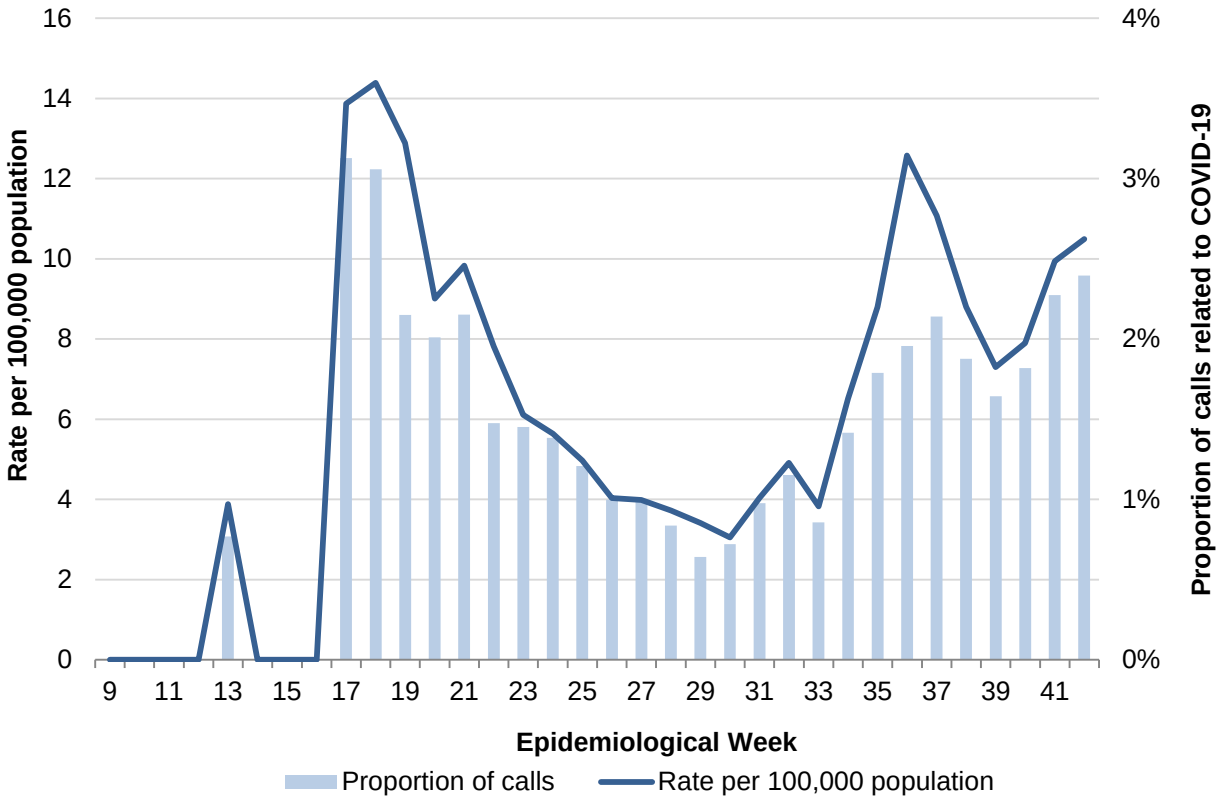


Figure 17. Out-of-hours (OOH) consultation rates for COVID-19, 2020

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.

In recent weeks COVID-19 consultation rates have increased. Proportion of calls related to COVID-19 also increased and has remained above 2% since week 41.

Source: Apollo, Wellbeing Software

Sentinel testing

Table 4. COVID-19 activity in Northern Ireland Sentinel GP Practices*, week 42, 2020			
Period	**Individuals tested**	**Number positive**	**Proportion positive**
Current week	8	1	12.5%
Total	**545**	**9**	**1.7%**

**Sentinel testing programme started 27 April 2020; members of the public so excludes individuals tested in a care home setting and healthcare workers. Work is ongoing to improve the quality of data to identify sentinel samples so it is subject to change.*

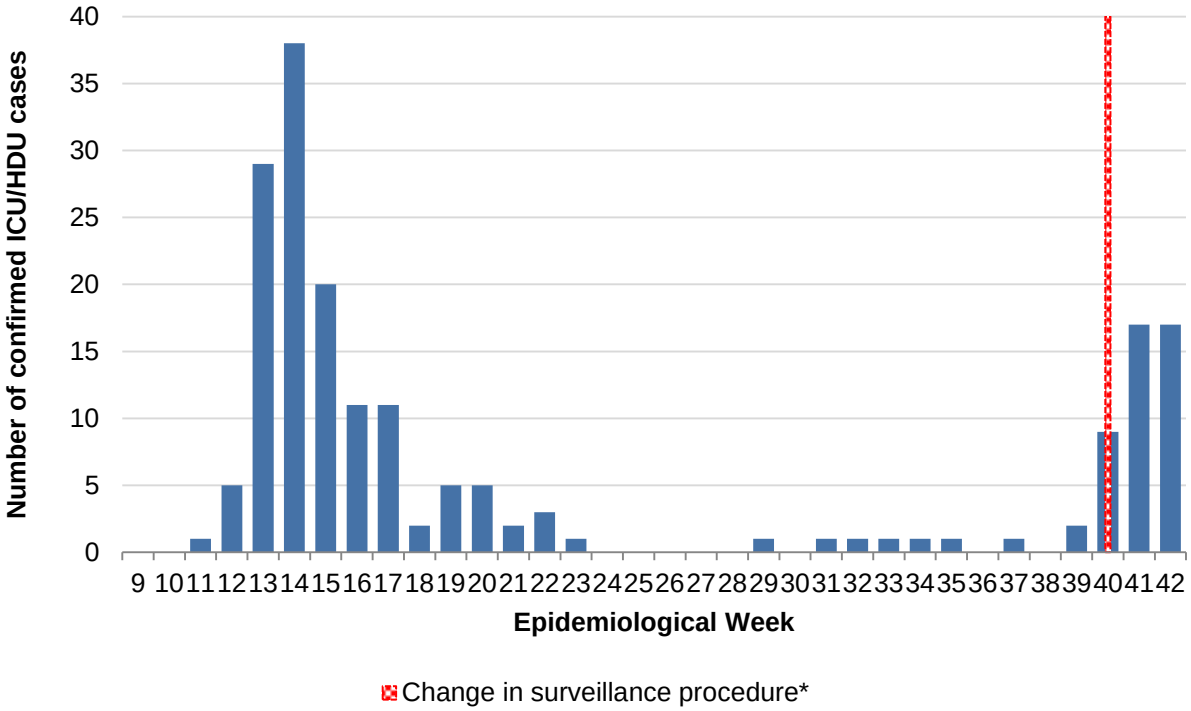
COVID centre testing

Table 5. COVID-19 activity in Northern Ireland COVID Centres*, week 42, 2020			
Period	**Individuals tested**	**Number positive**	**Proportion positive**
Current week	-	-	N/A
Total	**864**	**14**	**1.6%**

** One COVID centre operational from 15 June 2020 (BHSCT); virology data in table above from 01 July 2020. Data provided from the COVID centre directly reported 182 individuals tested between 15 June and 30 June 2020 inclusive. All results were negative. This data is subject to change as we continue to quality assure the COVID centre information against virology.*

Source: HSC Trust laboratory reports and the National Testing Programme

Critical care surveillance



*Since start of week 40 (28 September 2020), data collection for critical care surveillance has been streamlined to coincide with the well-established surveillance of influenza patients in critical care in conjunction with the Critical Care Network Northern Ireland (CaNNI)

Figure 18. ICU/HDU COVID-19 cases by sample result week, 2020

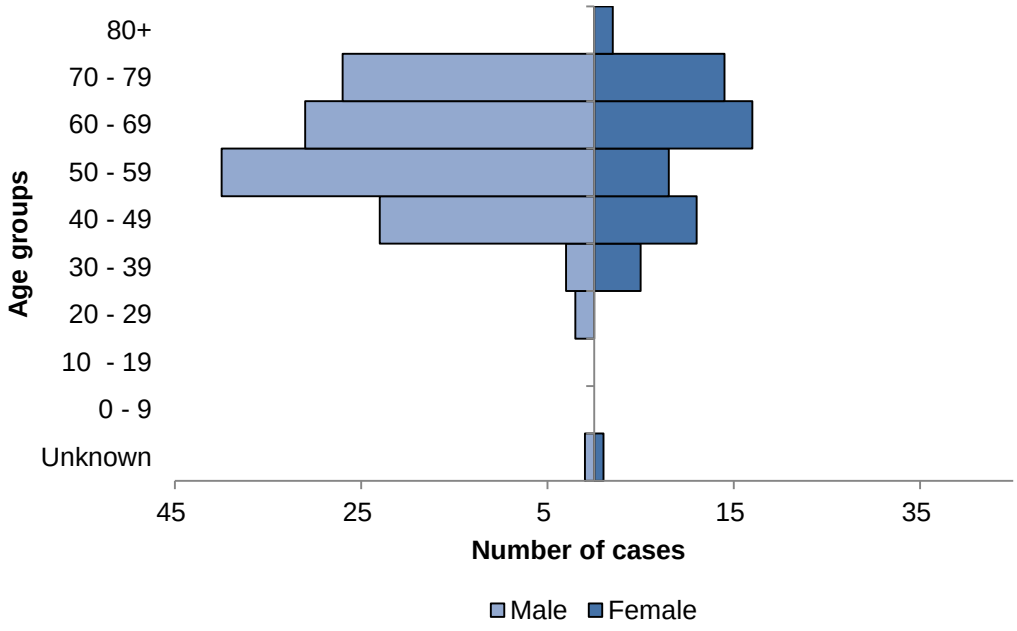


Figure 19. ICU/HDU COVID-19 cases, by age and sex, 2020

To week 42, there have been 185 individuals admitted to critical care with confirmed SARS-CoV2 reported to the PHA. Week 14 saw the highest number of ICU reports with a positive result (n=38).

Of the 185 individuals, 69% (n=127) were male. The ages ranged from 26 years to 85 years, with a median age of 59 years.

Source: PHA COVID-19 critical care surveillance online reporting system and the Critical Care Network Northern Ireland (CaNNI)

Schools Surveillance

This is the first week of reporting school surveillance.

Information on school COVID incidents is based on situations reported to PHA COVID School Team.

These include:

- **Single confirmed case** of COVID-19 (SARS-CoV-2) in a student or member of staff in the school setting.

  The incident is closed after 14 days if there have been no further cases.

- **Cluster of two or more confirmed cases of COVID** (SARS-CoV-2) in a student or member of staff in the school setting within a 14 day period.

  The incident is closed after 14 days if there have been no further cases from the last case

The PHA COVID School Team carries out contact tracing of cases that attend a school in collaboration with PHA Test and Trace Programme. Clusters are also further investigated by the School Team in liaison with local partners.

Data is collected on the number of COVID school incidents reported to the PHA COVID School Team since schools reopened.

The number of cases that have been reported by schools to the PHA school team is also included in this section to provide high level information on cases broken down by pupil and staff status. It is important to note that the definitive source for the number of COVID-19 confirmed cases in school aged children is from the HSC Laboratory testing and the National Testing Programme. Direct comparisons should not be made with laboratory data as the school teams figures may an underestimate of laboratory data.

Table 6 shows the number of school incidents by type of school that have been reported to the PHA School team up to Tuesday 20/10/20.

The figures are a snapshot of incidents recorded at the time of data extraction. A school may have had more than one incident since opening. Figures should not be compared from week to week as the number will include new reports and further cases of existing incidents.

Table 6. Number of COVID-19 Incidents in Schools	
School Type	**Total to date**
Primary	373
Post Primary	202
Special	33
Total	608

Note: This information is shared with Department of Education prior to publication.

Table 7 shows the number of school incidents by type of school and also type of incident i.e. single case in a 14 day period or cluster of cases within a 14 day period.

Clusters have been further broken down into those with 2 to 5 cases and more than 5 cases.

Table 7. Number of Incidents by School and Incident Type			
Incident Type	**School Type**	**Total to date**	**Proportion**
Single Case	Primary	228	75%
	Post Primary	59	20%
	Special	15	5%
	All	302	
Cluster (2-5 cases)	Primary	136	57%
	Post Primary	88	37%
	Special	13	5%
	All	237	
Cluster (>5 cases)	Primary	9	13%
	Post Primary	55	80%
	Special	5	7%
	All	69	

[7] A COVID-19 incident relates to the occurrence of at least one case (pupil or staff member) of COVID-19 in a school setting.

Cumulative number of schools affected by at least one case of COVID-19

A school may have had more than one incident since opening on 24th August. Table 8 shows the cumulative number of schools that have had at least one school incident as of close of play Tuesday 20/10/20.

The 608 school incidents have occurred in 519 schools in Northern Ireland. Overall 50% of schools have had at least one COVID-19 case in a pupil or member of staff.

Table 8. Number of Schools with a COVID-19 Incident

School type	No. schools that have had at least one case	Total number of schools in Northern Ireland	Proportion of school in Northern Ireland that have had at least one case
Primary	326	803	40.6%
Post Primary	167	193	86.5%
Special	26	39	66.7%
Total	519	1035	50.1%

Trend of school incidents

The following information includes the number of incidents in schools since they first reopened until the end of week 42 (18th October 2020).

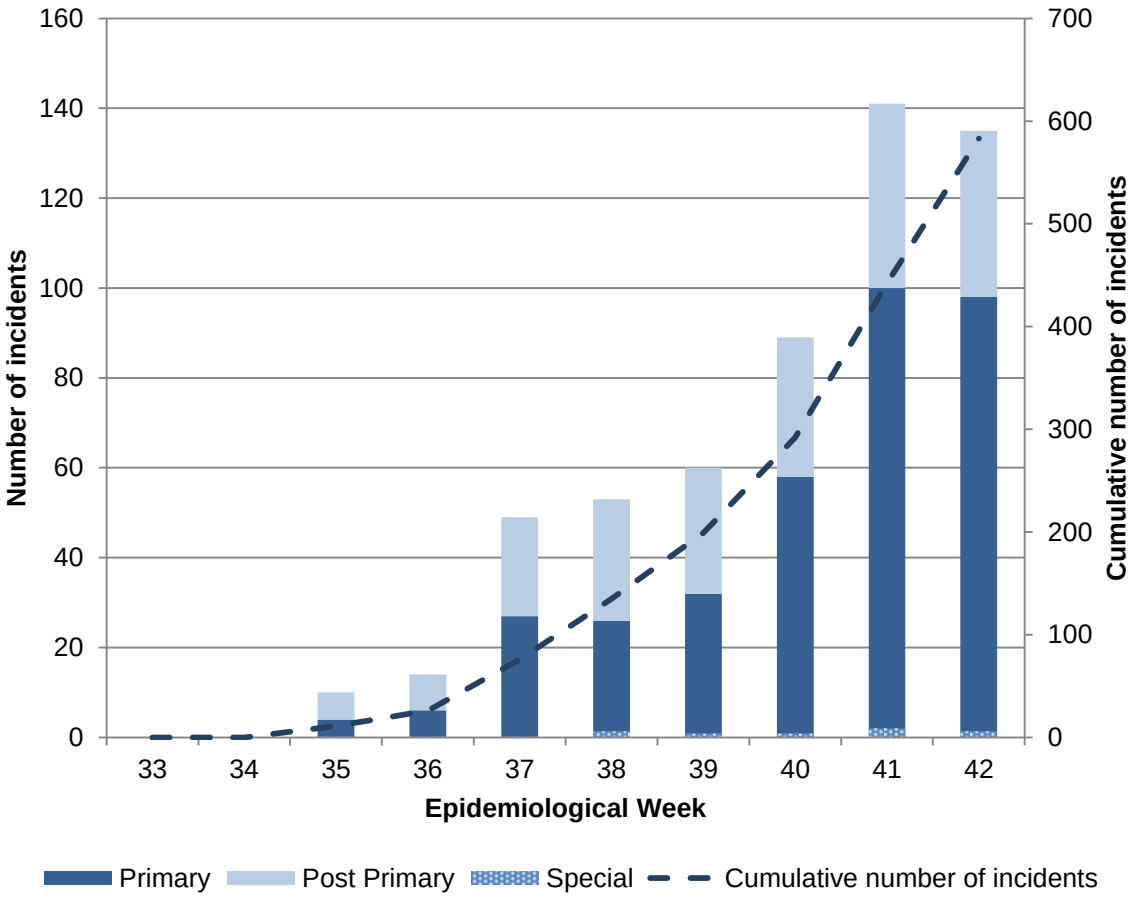


Figure 20. Number of COVID-19 incidents in schools, by school type, week 33 - 42

Cumulative School Incidents by Local Government District

The following information includes the cumulative number of incidents in schools by LGD since they first reopened until the end of week 42 (18th October 2020).

The cumulative community rate per 100,000 population is also shown in the figure.

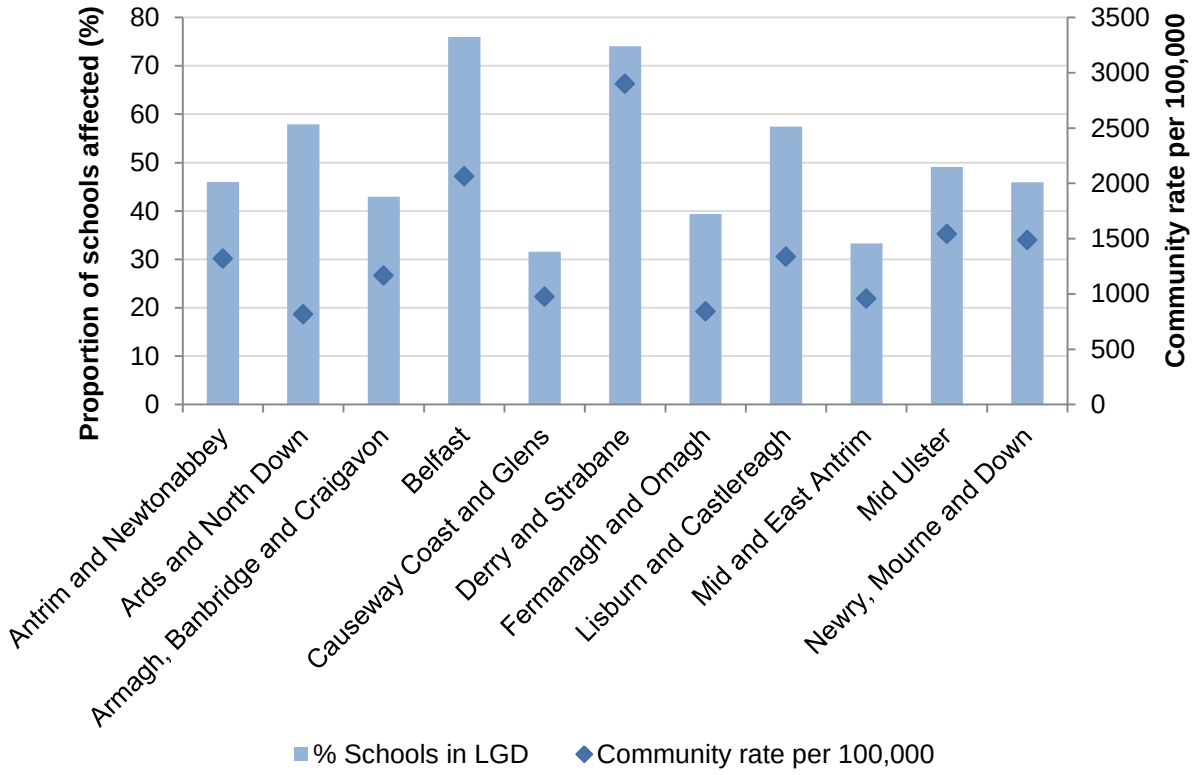


Figure 21. Proportion of schools with a COVID-19 incident by Local Government District (LGD)

Cumulative number of COVID-19 cases reported by schools to PHA School Team

Since schools opening on 24th August until end of week 42, there have been 2,030 confirmed COVID-19 cases that occurred at any point during this time reported by schools to the PHA School Team.

The definitive source for the number of COVID-19 confirmed cases in school aged children is from the HSC Laboratory testing and the National Testing Programme. Direct comparisons should not be made with laboratory data.

Information on pupil / staff breakdown is available for 88% of all cases. Staff member includes teaching and non-teaching staff.

Table 9. Number of COVID-19 cases reported by schools where information is available on pupil / status, up to week 42

School	Pupil Case	Staff Case	Total	Proportion of all cases that are pupils
Primary	390	278	668	58%
Post Primary	803	210	1,013	79%
Special	25	83	108	23%
All	1,218	571	1,789	68%

Table 10. Number of COVID-19 cases in school aged children reported by schools where information is available as a proportion of all school age children and registered staff, up to week 42		
School Type	**Pupil cases**	**Proportion of all school aged pupils in Northern Ireland**
Primary	390	0.21%
Post Primary	803	0.52%
Special	25	0.43%
All	1,218	0.37%

Source: PHA COVID-19 Schools Team, Department of Education school statistics

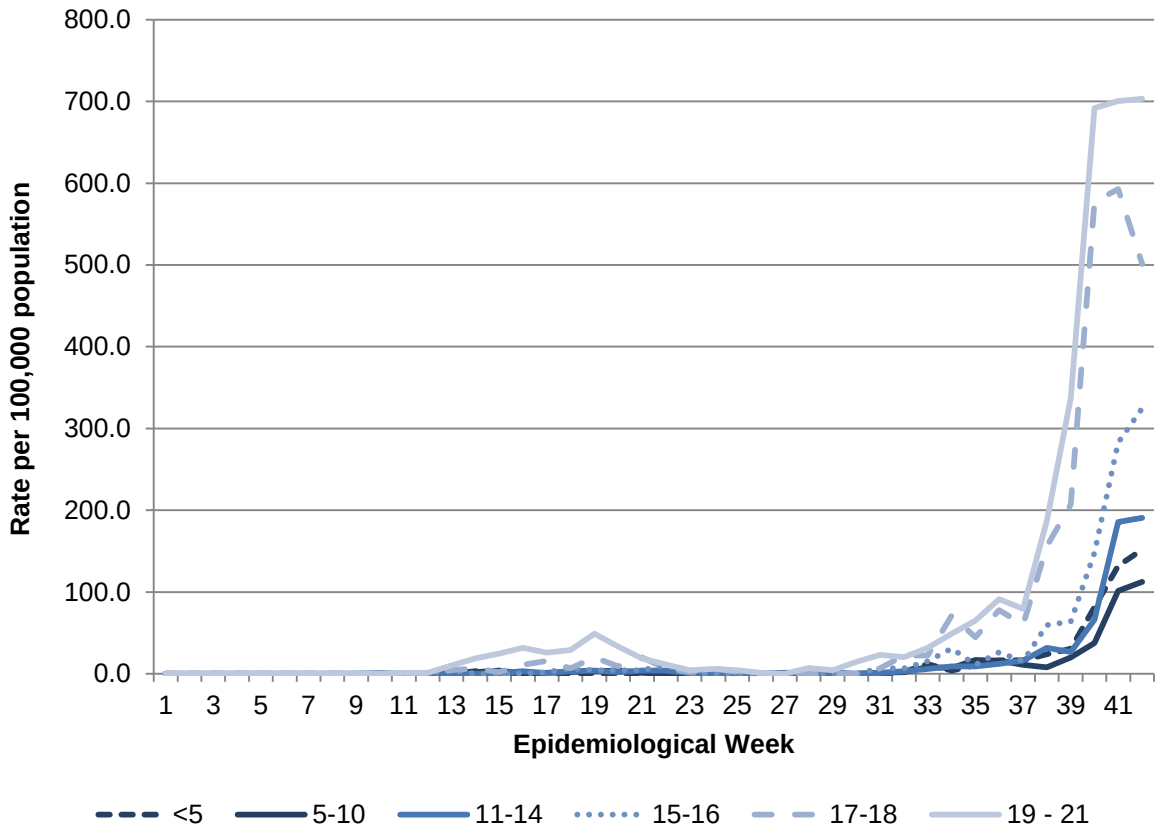


Figure 22. Weekly laboratory confirmed case rates per 100,000 population, by age group, for all testing data combined, in those aged 21 and under, 2020

In week 42, the highest rates were observed in the 19-21 age group (703.4 per 100,000), followed by the 17-18 age group (501.3 per 100,000).

Source: HSC Trust laboratory reports and the National Testing Programme

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 9 October 2020, the proportion of COVID-19 deaths registered was 3.2%, and from the beginning of 2020 to week ending 9 October 2020 the proportion of COVID-19 deaths registered was 7.0%.

All-cause excess deaths

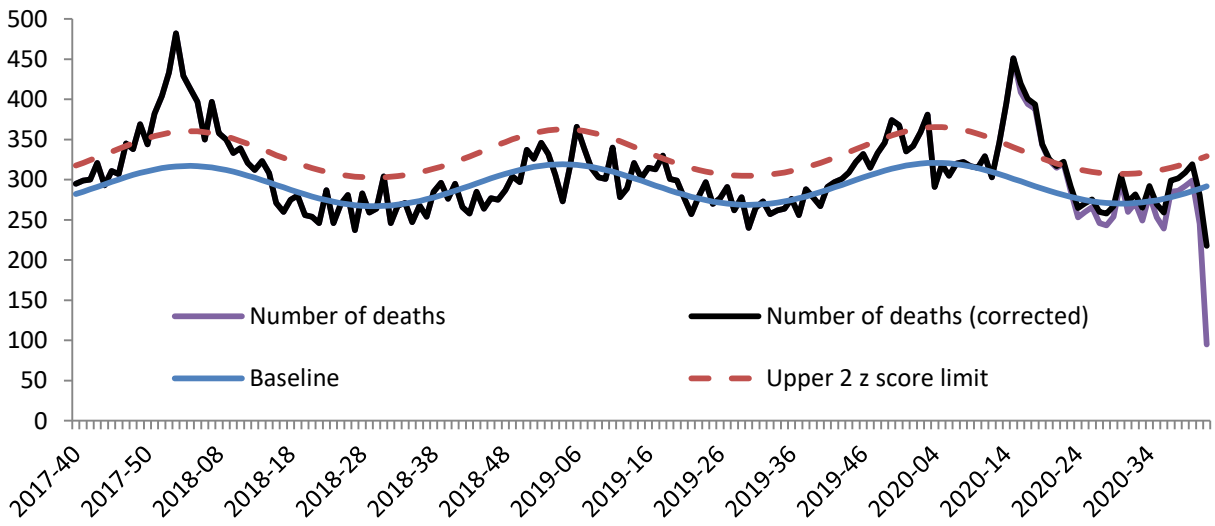


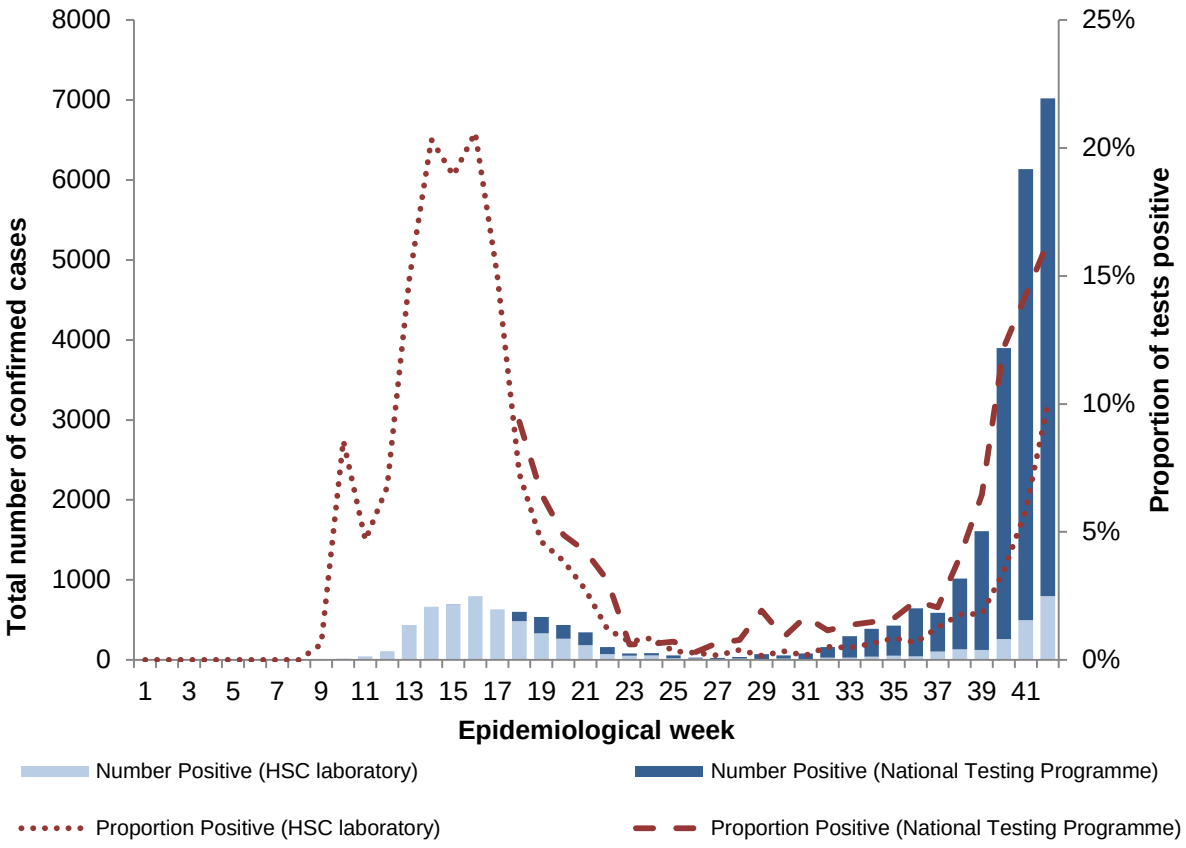
Figure 23. Weekly observed and expected number of all-cause deaths in all ages, week 40 2017 - week 42 2020

In 2020, excess all-cause deaths were reported in epidemiological weeks 13 to 20, and week 22. This increase in deaths happened outside the influenza season and at a time when we know flu was not circulating (here). This suggests the excess mortality may in part be related to COVID-19 deaths and to a fall in presentation to hospital with other conditions (data not shown). 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 this bulletin.

Source: Northern Ireland Statistical Research Agency (NISRA)

Virology testing surveillance



** Total individuals tested include those that were reported as indeterminate*

Figure 24. Weekly number of individuals tested for SARS-CoV2 and proportion positive, by source (HSC Laboratory testing and the National Testing Programme), 2020

Table 11. COVID-19 activity in Northern Ireland, for all testing data combined, week 42, 2020			
Period	**Individuals tested**	**Number positive**	**Proportion positive**
Current week	46,084	7,019	15.2%
Total	**511,247**	**28,197**	**5.5%**

Table 12. COVID-19 activity in Northern Ireland (HSC laboratory), week 42, 2020			
Period	**Individuals tested**	**Number positive**	**Proportion positive**
Current week	7,951	796	10.0%
Total	**181,212**	**7,042**	**3.9%**

Table 13. COVID-19 activity in Northern Ireland (National Testing Programme), week 42, 2020			
Period	**Individuals tested**	**Number positive**	**Proportion positive**
Current week	38,133	6,223	16.3%
Total	**330,035**	**21,155**	**6.4%**

Source: HSC Trust laboratory reports and the National Testing Programme

To week 42, the total number of individuals tested was 511,247; positivity 5.5%. Overall, more individuals have now been tested as part of the National Testing Programme, and positivity is now higher (6.4%) compared to HSC laboratories (3.9%).

Global situation

As of 21 October 2020, WHO has been notified of 40,455,651 confirmed cases of COVID-19, including 1,119,431 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 heath care settings. As new systems are developed they will be added to this report.

Case epidemiology

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, 3 April and 13 May respectively, Northern HSC Trust, Southern HSC Trust, Western HSC and South Eastern 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.[8] 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. It is still unclear to what extent second infections occur in COVID-19. The exception to this is where the first result is negative and is then followed by a positive result on a second occasion. In such circumstances, the later positive result will be recorded rather

[8] 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]

than the earlier negative one. 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. This is a standard approach which is taken across a range of infectious diseases.

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.

National Testing Programme

The National Testing Programme in Northern Ireland consists of drive through (regional test sites), mobile test unit sites, home testing and satellite testing of nursing homes.

Everyone in Northern Ireland with symptoms of coronavirus is now eligible for testing.

Testing is prioritised through the website gov.uk for essential workers who are self-isolating because they are symptomatic, or have household members who are symptomatic, to help enable essential workers to return to work as soon as safe.

Testing is available for the general public through the website nhs.uk.

The StopCOVID NI contact tracing app is now available from the Google or Apple App store.

Testing for non-HSC essential workers and the general public is currently conducted in drive-through sites operating in Belfast, Enniskillen, Derry/Londonderry and Portadown. In addition there is a mobile testing unit currently operating within Northern Ireland.

Home testing can be requested by any individual meeting the criteria with a test kit(s) being mailed to the individual and household contacts.

Tests are processed in laboratories outside the normal health and social care network and data fed back to the Public Health Agency via the Business Services Organisation.

The data has been included in the case epidemiology and virology testing surveillance sections. This data should be interpreted with caution, when interpreted alongside the HSC laboratory data, because it includes testing undertaken as part of the outbreak response i.e. possibly asymptomatic people with a certain age, gender or area profile. Testing numbers may be skewed to different local government districts depending on whether an outbreak was detected and managed.

For more information see here.

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. There are 472 active care homes in Northern Ireland.

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 of the initial notification then the surveillance data will be updated.

Currently, care homes with multiple facilities, i.e. 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 rated 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.

c. COVID centre testing

A COVID centre is a separate facility created as an extension of primary care to help direct suspected COVID positive patients for assessment.

This keeps practices free to deal with any other medical problems. Triage will still occur at the practice, most likely via phone followed by referral to the centre if required.

There are three categories of patient that might be assessed at a COVID centre:

1. patients symptomatic for COVID, or already test positive who are clinically worsening: there will also be direct pathways for investigation and/or admission from the centre
2. patients where there is diagnostic uncertainty: symptoms similar to COVID but could be another clinical problem ranging from tonsillitis to meningitis requiring an assessment to exclude or confirm
3. patients being discharged from hospital: this group will grow with time but on many occasions will still have a need for clinical assessment and follow up.

Centres are staffed by GPs, helped by other members of staff, including nurses, health care workers etc.

Centres run from 8am to 10pm and see patients after triage and referral (by CCG) from the practice.

Patients can either be seen in their car outside the centre if a straightforward examination is needed, or brought into the centre for assessment. Patients are told to wait in their car until phoned to come in to prevent any crowding or grouping of patients.

Centres are hosted by the trusts and operate in each trust area.

Critical care surveillance

Until 28th September 2020, the PHA Health Protection COVID-19 critical care online reporting system captured 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 Northern Ireland by the Intensive Care National Audit and Research Centre (iCNARC) (here).

Since 28th September 2020, data collection for critical care surveillance has been streamlined to coincide with the well-established surveillance of influenza patients in critical care in conjunction with the Critical Care Network Northern Ireland (CaNNI).

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.

Schools Surveillance

Information on school COVID incidents is based on situations reported to PHA COVID School Team. These include:

- **Single confirmed case** of COVID (SARS-CoV-2) in a student or member of staff in the school setting. The incident is closed after 14 days if there have been no further cases.

- **Cluster of two or more confirmed cases of COVID** in a student or member of staff in the school setting within a 14 day period. The incident is closed after 14 days if there have been no further cases from the last case

PHA COVID School Team carries out contact tracing of cases that attend a school in collaboration with PHA Test and Trace Programme. All clusters are also investigated by the School Team in liaison with local partners.

Data is collected on the number of COVID school incidents reported to the PHA COVID School Team since schools reopened. This is the first week of reporting school surveillance.

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.

Inclusion of references to COVID-19 in Part 2 of the death certificate may slightly over estimate the number of individuals where COVID-19 is a significant contributor to death.

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 here.

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 the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG). As the pandemic evolves and more evidence emerges the definitions will change to ensure individuals are appropriately identified.

Possible case of COVID-19 (as of 28 September 2020)

As of 2nd October, case definitions for inpatient and community settings were consolidated into one list. Unusual presentations are also highlighted.

Individuals with

- new continuous cough **OR**
- high temperature **OR**
- a loss of, or change in, normal sense of smell (anosmia) or taste (ageusia)

Individuals with any of the above symptoms but who are well enough to remain in the community should follow the stay at home guidance and get tested.

Clinicians should be alert to the possibility of atypical presentations in patients who are immunocompromised.

Alternative clinical diagnoses and epidemiological risk factors should be considered.

A wide variety of clinical symptoms have been associated with COVID-19.

Patients with acute respiratory infection, influenza-like illness, clinical or radiological evidence of pneumonia, or acute worsening of underlying respiratory illness, or fever without another cause should have a SARS-CoV-2 test, whether presenting in primary or secondary care.

In addition, the following situation should prompt clinicians to consider SARS-CoV2 testing:

- Onset of delirium (acute confusion) in older people, or in those with dementia or cognitive impairment. New infections in people with dementia may be manifest as delirium.

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.

Influenza-like Illness (ILI)

Acute respiratory disease with sudden onset of symptoms and:

- at least one systemic symptom (fever ≥37.8°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

Further Information

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