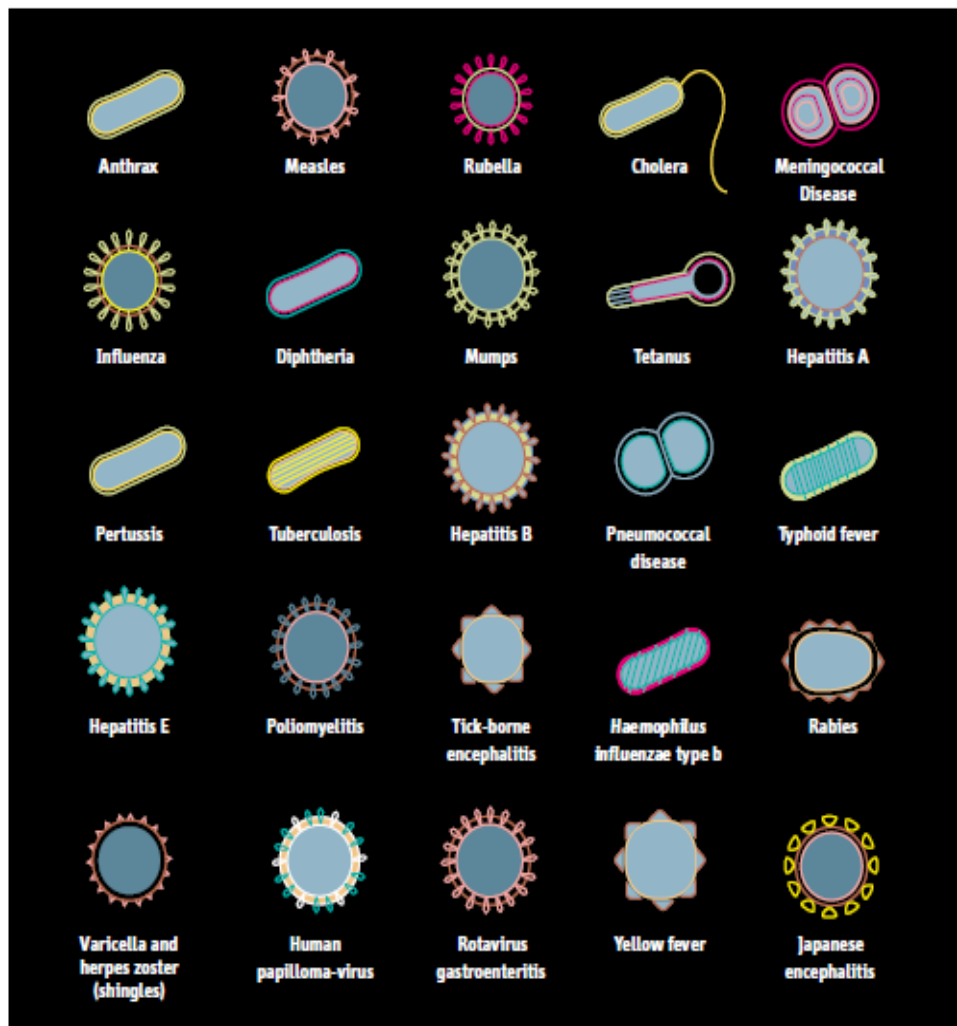


# Annual Vaccine Preventable Diseases Report for Northern Ireland 2019

An analysis of data for the calendar year 2018



# Acknowledgements

The Public Health Agency Health Protection Directorate Vaccine Preventable Disease Surveillance Team would like to thank everyone across Northern Ireland who reports cases of vaccine-preventable diseases. This information enables us to assess the burden of disease across the region and evaluate the impact of our national vaccination programmes. This includes GPs, hospital clinicians, paediatricians, staff in Health and Social Care Trust laboratories, the Regional Virology Laboratory and the Public Health England National Reference Centres and PHA communications team.

The front cover image, taken from the WHO *Global Vaccine Action Plan 2011-2020*, represents all bacteria and viruses for which a vaccine is available, highlighting what a valuable and growing resource vaccines are across the world to protect against infectious diseases<sup>1</sup>. Not all of these vaccines are routinely used in Northern Ireland as vaccine recommendations are based on the local epidemiology of vaccine preventable diseases.

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April 2019

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Cover image used with permission from WHO *Global Vaccine Action Plan 2011-2020*<sup>1</sup> - <http://apps.who.int/iris/handle/10665/78141>  
[http://www.who.int/immunization/global\\_vaccine\\_action\\_plan/GVAP\\_doc\\_2011\\_2020/en/](http://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/)  
ISBN 9789241504980 – Page 17, table 1: vaccine-preventable infectious agents or diseases

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# Summary

## **Invasive Meningococcal Disease**

- 26 clinically suspected notifications, with 17 (65%) laboratory confirmed cases; a decrease of 28% and 19% respectively since 2017 (36 notifications; 21 confirmed cases)
- Median age of cases 16 years (1 month to 84 years), with age-specific incidence highest in children 4 years of age and under (7.3 per 100,000 population)
- Of the 17 laboratory confirmed cases, 71% (12) serotype B, with the remainder <5 in serotype C, W135 and Y

## **Invasive Pneumococcal Disease**

- 171 laboratory confirmed cases; largely unchanged since 2017 (173)
- Cases over 45 years of age accounted for 77% of cases, with the majority of these over 65 years
- Of the 88 laboratory confirmed cases with typing, 80% of cases due to strains not included in the pneumococcal conjugate vaccine (PCV13)

## **Invasive Haemophilus Influenzae Disease**

- 49 laboratory confirmed cases; an increase of 58% when compared to 2017 (31)
- Cases over 15 years of age accounted for 59% of cases
- Of the 17 cases with typing 82% were non capsulated strains with the remaining capsulated non-B strains

## **Pertussis**

- 37 laboratory confirmed cases; a decrease of 49% since 2017 (72)
- The majority (51%) were in those over 25 years of age

## **Measles, Mumps, Rubella**

- 29 notifications of clinically suspected measles, all of which were discarded on measles testing
- Less than five notifications of clinically suspected rubella, all of which were discarded on rubella testing
- 66 laboratory confirmed cases of mumps, a 65% decrease from 2017 (191), with the majority of cases in 15-24 years (53%;) and fully vaccinated with MMR vaccine

# Introduction

Vaccine programmes have been a huge success in reducing the burden of Vaccine-Preventable Diseases (VPDs) globally. According to the *WHO Global Vaccine Action Plan 2011-2020*, “Overwhelming evidence demonstrates the benefits of immunisation as one of the most successful and cost-effective health interventions known”. Their vision for the Decade of Vaccines (2011–2020) is of a world in which all individuals and communities enjoy lives free from vaccine-preventable diseases.

This Annual Surveillance report 2019 provides an overview of the epidemiology of VPDs in Northern Ireland for the calendar year 2018. This information is used to inform public health actions for individual cases, identify outbreaks, assess the burden of disease in Northern Ireland and contribute to national and European monitoring of disease burden and vaccine effectiveness.

Epidemiological information is presented for

- Invasive Meningococcus Disease
- Invasive Pneumococcus Disease
- Invasive Haemophilus Influenzae Disease
- Pertussis (whooping cough)
- Measles
- Mumps
- Rubella
- Diphtheria, Tetanus and Poliomyelitis

Epidemiological information on other infections preventable by vaccination can be found in PHA disease specific surveillance reports, including: influenza virus, rotavirus, hepatitis B, genital warts secondary to human papilloma virus (HPV) and tuberculosis secondary to mycoplasma bacterium <sup>2,3,4,5</sup>.

# Data Sources

The VPD Surveillance Team collects and collates epidemiological data on VPDs throughout the year to analyse local trends of frequency, incidence rates, age distribution and serotype characterisation. Data is collected from the following sources:

## **Notification of Infectious Diseases (NOIDs):**

Registered medical practitioners have a statutory duty to notify the PHA Health Protection Duty Room of clinically suspected cases of certain infectious diseases<sup>6</sup>. Notifications are collated on the Health Protection electronic software system, HP Zone® by PHA Duty Officers. The surveillance team extracts required information from HP Zone® on VPD NOIDs.

## **Laboratory reports from Health and Social Care Trusts (HSCT):**

HSCT Laboratories performing a primary diagnostic role voluntarily report confirmed cases of infectious disease to the surveillance team through electronic software (CoSurv®). HSCT Laboratories report microbiological culture results for meningococcal, pneumococcal and haemophilus influenza infections and, if performed, serological results for pertussis infection. Urgent reports are sent by telephone or email to the duty room. Those that are notifiable infections are collated on HP Zone® by PHA Duty Officers and required information extracted for surveillance.

## **Laboratory reports from Regional Virology Laboratory (RVL):**

HSCT laboratories transfer all specimens for clinically suspected cases of measles, rubella, mumps or enterovirus for Polymerase Chain Reaction (PCR) testing to the Regional Virology Laboratory. They also may voluntarily submit specimens for PCR testing of bacterial VPDs. RVL voluntarily reports confirmed PCR cases through CoSurv®. Urgent reports are sent by telephone or email to the PHA Duty Room.

Those that are notifiable infections are collated on HP Zone<sup>®</sup> by PHA Duty Officers with required information extracted for surveillance purposes.

### **Laboratory reports from National Reference Laboratories:**

HSCT Laboratories and RVL voluntarily submit positive isolates to Public Health England (PHE) National Reference Laboratories. HSCT Laboratories may also voluntarily submit specimens for PCR testing of bacterial VPDs. The surveillance team collates PHE laboratory reports on serotype characterisation and other specialist testing.

The Meningococcal Reference Unit in Manchester is the national reference laboratory for meningococcal disease. The Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU) provides respiratory, systemic and vaccine-preventable bacteria and serodiagnostic testing for diphtheria, tetanus and bordetella pertussis immunity. The Immunisation and Diagnostic Unit (IDU) provides testing for rash associated viral and neurological infections, including measles, mumps and rubella.

### **Enhanced surveillance systems:**

Following introduction of the meningococcal C conjugate vaccine and pneumococcal conjugate vaccine programmes, since 1999 and 2006 respectively, enhanced epidemiological information has been collected across the United Kingdom to monitor vaccine programme effectiveness. Information collected includes clinical status, vaccination status and severity indicators.

### **Denominator Data:**

Incidence rates were calculated with 2017 mid-population estimates obtained from Northern Ireland Statistics and Research Agency (NISRA). [www.nisra.gov.uk/publications/2017-mid-year-population-estimates-northern-ireland](http://www.nisra.gov.uk/publications/2017-mid-year-population-estimates-northern-ireland)



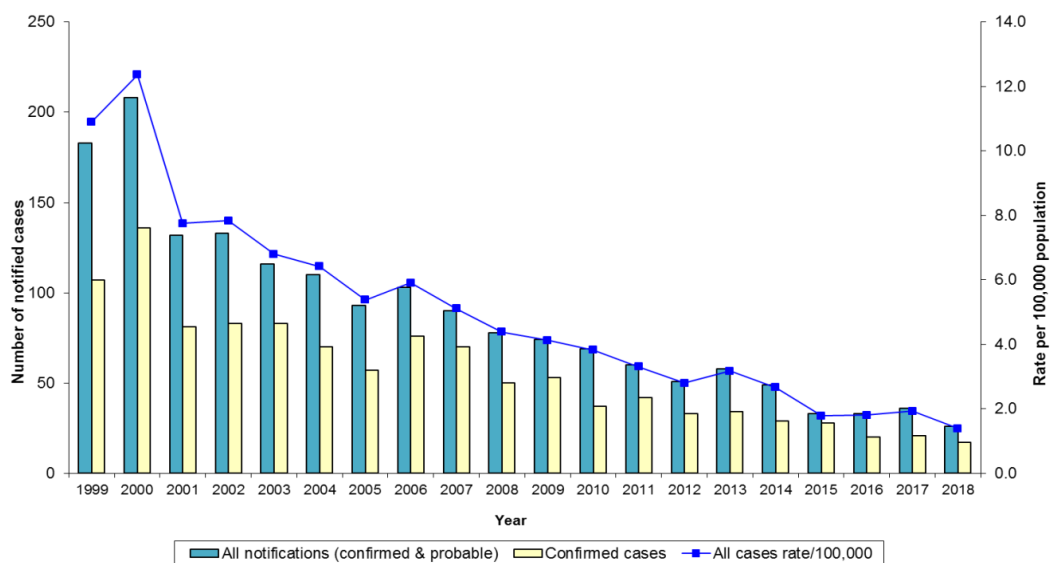
# Meningococcal Disease

Meningococcal disease is caused by the bacterium *Neisseria meningitidis* (meningococcus) and is a normal inhabitant of the human nasopharynx. It is transmitted from person to person by aerosol, droplet and direct spread. Up to 10% of adults are colonised at any time and develop no signs or symptoms of disease. There are five main meningococcal serotypes, A, B, C, W, and Y that can cause disease in humans. Meningococcus can cause invasive disease, including meningitis, septicaemia and pneumonia. Young children and teenagers are at highest risk of meningococcal disease. Meningococcal serotype vaccination programmes have changed the incidence of disease over time.

## Epidemiological situation

There were 26 notifications of clinically suspected invasive meningococcal disease; notification rate of 1.4 per 100,000 population. Seventeen (65%) were laboratory confirmed cases, crude incidence rate 0.9 per 100,000 population observed. Between 1999 and 2018, the number of notifications and laboratory confirmed cases has fallen with the notification rate falling by 87% from 10.9 per 100,000 to 1.4 per 100,000 population (Figure 1).

**Figure 1. Number of notified and confirmed cases of IMD and overall rates per 100,000 population, 1999-2018, Northern Ireland**

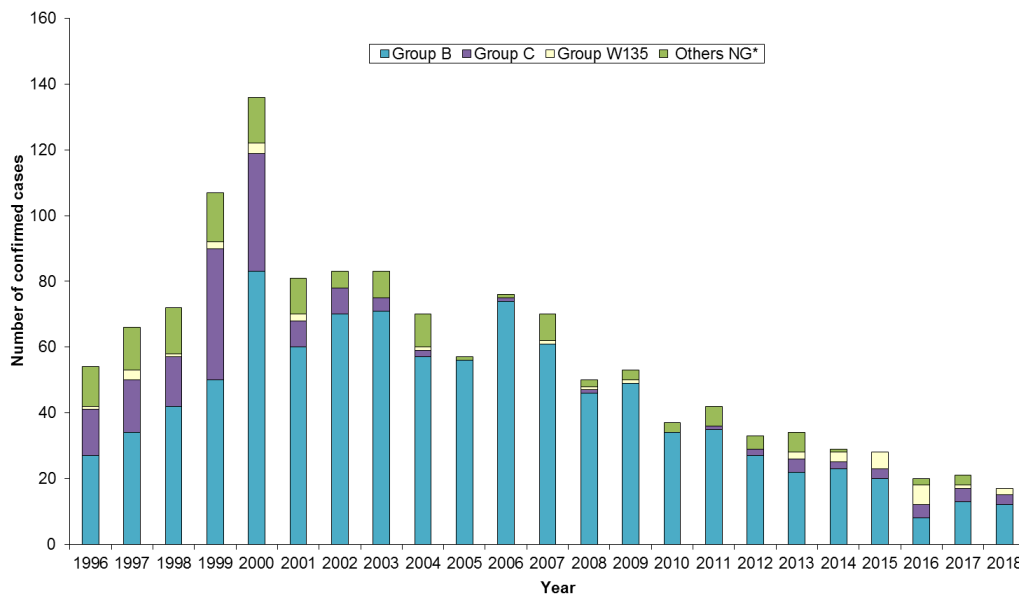


Source: Enhanced Surveillance of Meningococcal Disease (ESMD) in Northern Ireland

## Serotypes

Of cases confirmed by either the Regional Virus Laboratory (RVL) or Manchester Reference Unit (MRU), serogroup B remains the most common serotype as in previous years, accounting for 71% (12) of confirmed cases. Remaining cases were seen in serogroup C, W135 and Y (Figure 2).

**Figure 2. Laboratory confirmed cases of IMD by serogroup, 1996-2018, Northern Ireland**



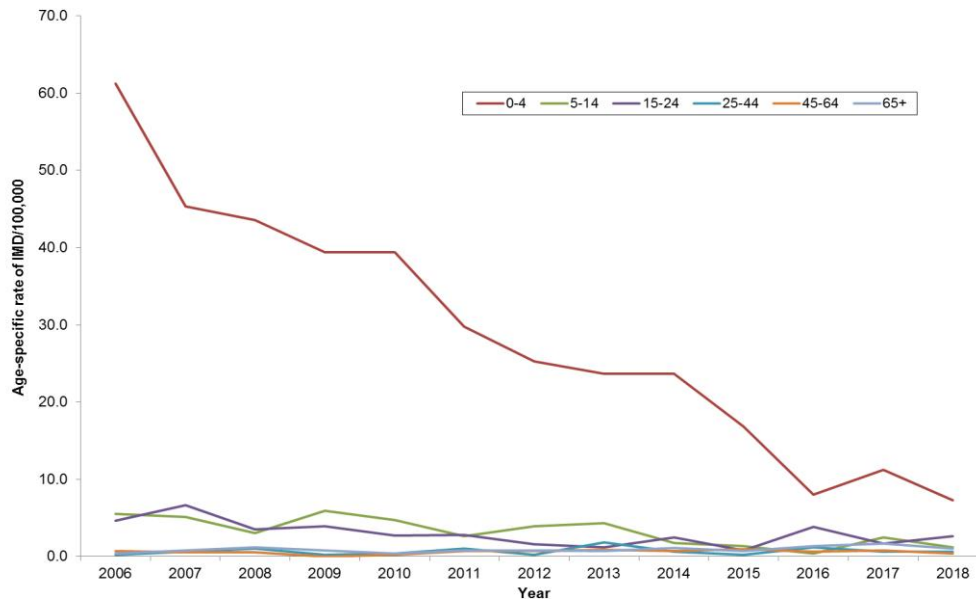
Source: Enhanced Surveillance of Meningococcal Disease (ESMD) in Northern Ireland

\*Others NG refer to cases that are not groupable for various reasons

## Age

The median age of confirmed cases was 16 years (range under 1 month to 84 years). Consistent with previous years, age-specific incidence was highest in infants and young children 4 years of age and under (7.3 per 100,000). The incidence rate in this age group is over eight times lower in 2018 compared to 2006 (61.2/100,000), showing a dramatic decrease between 2006 and 2016, and a less dramatic fall in the last two years, which may reflect fluctuations from small numbers (Figure 3).

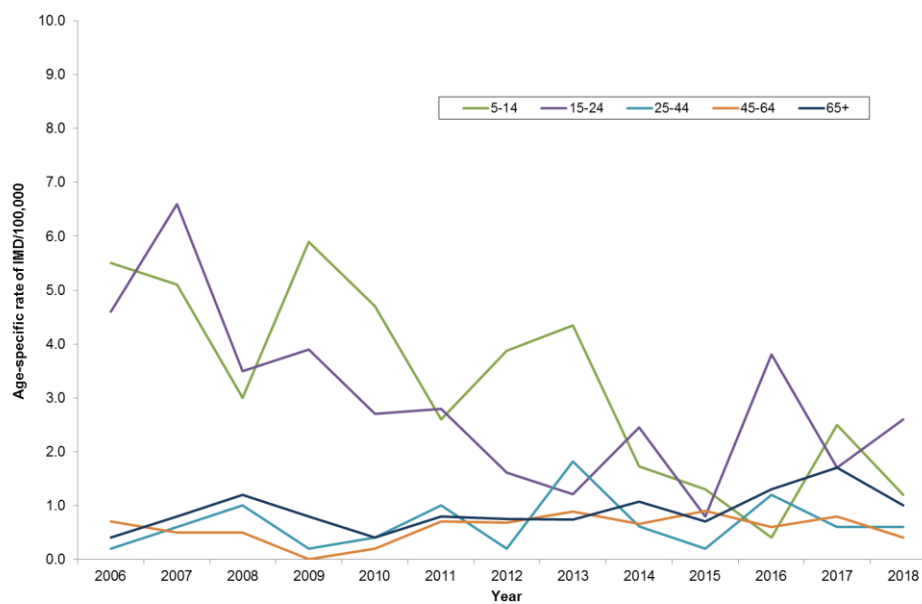
**Figure 3. Age-specific incidence rates of IMD per 100,000 population, 2006-2018, Northern Ireland**



Source: Enhanced Surveillance of Meningococcal Disease (ESMD) in Northern Ireland

The incidence rate for age groups over 5 years is lower than those under 5 years and have also further decreased in younger age groups (under 24 years). There is a suggestion of a small increase in those over 65 years of age (Figure 4).

**Figure 4. Age-specific incidence rates of IMD per 100,000 population, with age group 0-4 years removed, 2006-2018, Northern Ireland**



Source: Enhanced Surveillance of Meningococcal Disease (ESMD) in Northern Ireland

The case fatality rate of confirmed cases where meningococcal disease may have been a contributory factor decreased in 2018 (6%) compared to 2017 (14%).

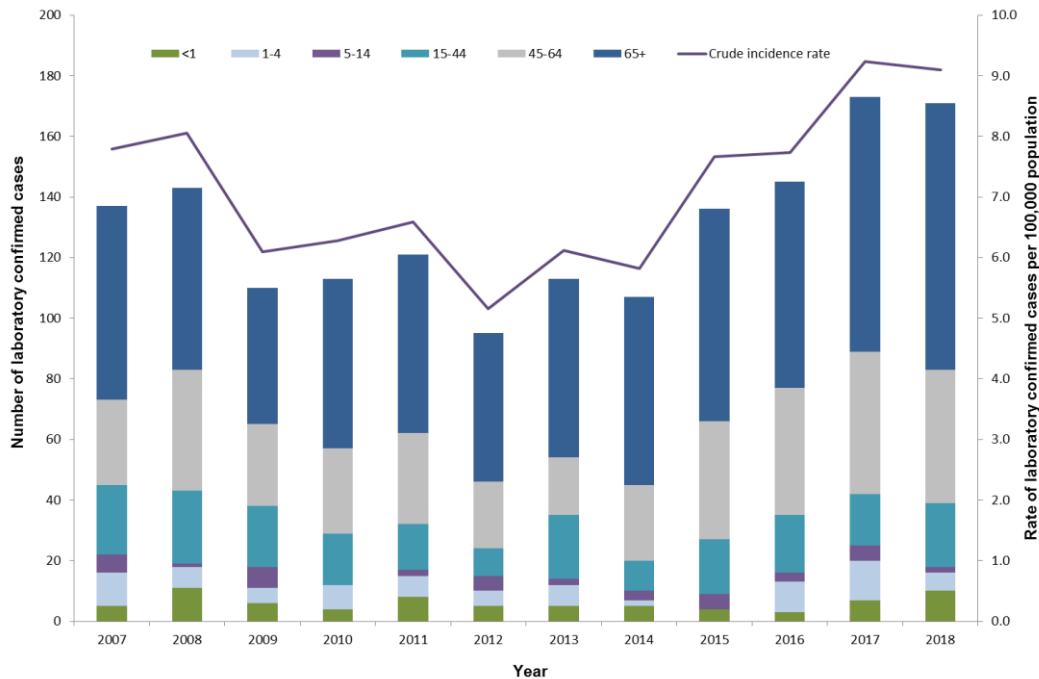
## Pneumococcal Disease

Pneumococcal disease is caused by the gram-positive bacterium *Streptococcus pneumoniae* (pneumococcus). It occurs throughout the world and is a major cause of morbidity and mortality globally. There are more than 90 different pneumococcal serotypes that can cause disease in humans. It is transmitted from person to person via droplet or aerosol spread. Humans are the only reservoir for infection and carriage of the bacteria in nasopharynx is a prerequisite for disease. Disease ranges from milder non-invasive infections, such as otitis media, sinusitis and bronchitis to severe Invasive Pneumococcal Disease (IPD) such as meningitis, septicaemia, pneumonia, empyema, arthritis and peritonitis. It particularly affects very young children, the elderly and people with impaired immunity. Pneumococcal vaccination programmes have reduced the incidence of disease from vaccine-preventable strains. Recommendations for the pneumococcal vaccination have undergone a number of changes over the years.

### **Epidemiological situation**

There were 171 laboratory confirmed cases of IPD; crude incidence rate 9.1 per 100,000 population. This is largely unchanged to the number of cases reported in 2017 (173) (Figure 5). Since 2012, there has been an upward trend in both number of cases and crude incidence rate.

**Figure 5. Laboratory confirmed cases of Invasive Streptococcus Pneumoniae by age group, 2007-2018, Northern Ireland**



Source: Regional CoSurv Laboratory System

## Age

As with previous years, cases predominantly affect the older age groups with 77% (132) over 45 years of age. Of the older age groups, 17% (23/132) were over 85 years of age (Figure 5).

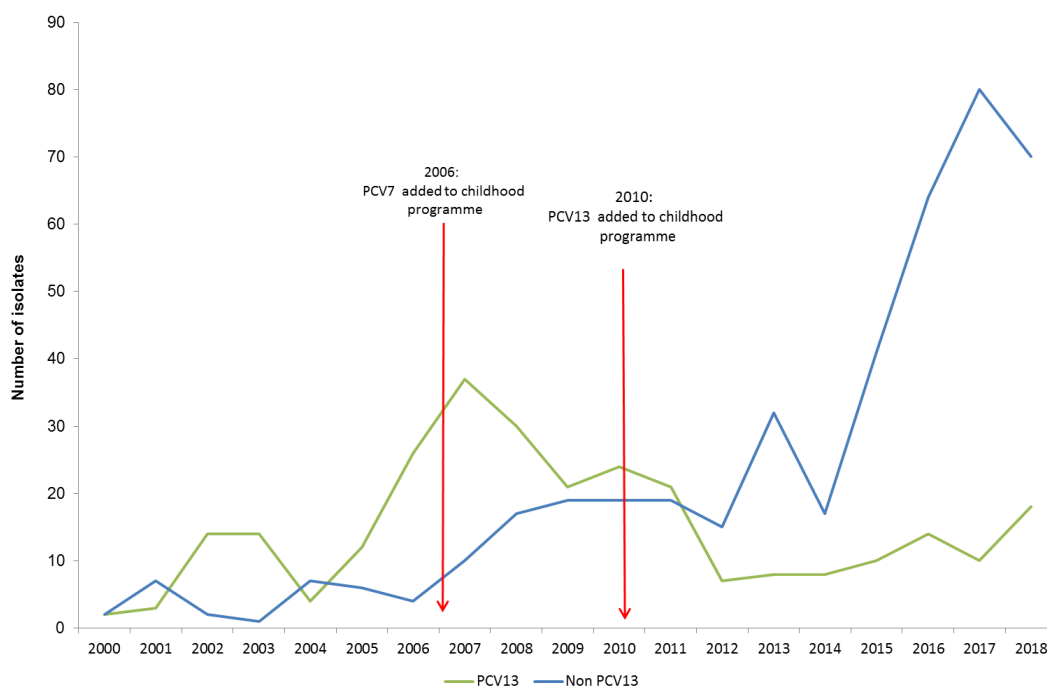
## Serotypes

Typing information was available for 52% (88) of cases. Of these cases, the most common serotypes reported were 8 (20%), 12F (7%) and 3 (9%) which is consistent with the picture seen across the United Kingdom. The majority 70 (80%) of cases were caused by vaccine-preventable strains not contained in the pneumococcal conjugate vaccine 13 (PCV13) offered routinely at 2, 4 and 12 months of age. Of the 18 (20%) PCV13 type cases, the majority were over 65 years of age.

Since pneumococcal conjugate vaccine was introduced into the routine childhood programme (PCV7 in 2006 and PCV13 in 2010), the number of cases from PCV13 serotypes has declined from a peak of 37 cases in 2007 to a low of 7 in 2012 and overall remains low. However, since 2012, there has been a slight upward trend,

with 18 cases in 2018 compared to 10 in 2017. As numbers overall are small, the significance of this increase has to be interpreted with caution and will continue to be monitored. In contrast, since 2012 the number of cases from non-PCV13 strains has increased annually although a reduction has been observed in 2018 (70). Whilst this is reassuring, the pattern across the UK is of increasing numbers of non-PCV13 strains and we will continue to monitor this alongside national surveillance systems (Figure 6).

**Figure 6. Laboratory confirmed cases of IPD by PCV/non-PCV serogroup, 2000-2018, Northern Ireland**



Source: Regional CoSurv Laboratory System

### Enhanced Surveillance in children under 5 years

The number of cases in children under 5 years of age is low, accounting for only 9% (16/171) of all reported cases of IPD in 2018 and largely unchanged from 2017 (12%). Where typing information was available none were caused by PCV13 strains.

Where vaccination information was available, the majority had received the appropriate number of doses of PCV13 vaccine for their age.

# Haemophilus Influenzae

*Haemophilus influenzae* (Hi) is a gram-negative bacterium carried asymptotically in the nasopharynx. There are two major categories: encapsulated and non-encapsulated. Encapsulated strains are classified by their capsular antigens where there are six recognised serotypes: a, b, c, d, e, f. The non-capsulated bacterium are non-typeable because of the absence of a capsule and are defined as 'non-capsulated' Hi. Acquisition most commonly results from asymptomatic carriers. Individuals may transfer the organism to close contacts through airborne or droplet spread by coughing and sneezing.

Before the introduction of the vaccination, the most prevalent strain was HiB. Disease caused by HiB can cause severe life-threatening disease in healthy individuals and is a major global cause of childhood meningitis, pneumonia, epiglottitis, septicaemia, cellulitis, osteomyelitis and septic arthritis. Non-capsulated Hi strains rarely cause disease outside the respiratory tract, ranging from non-invasive diseases such as otitis media, conjunctivitis, sinusitis, to pneumonia with systemic upset.

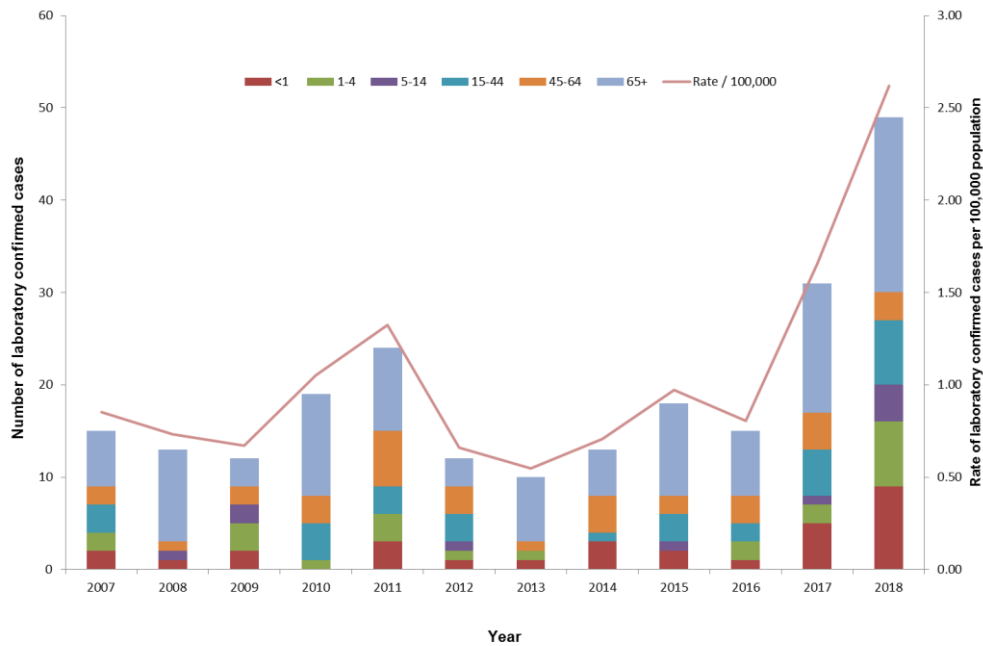
## **Epidemiological situation**

There were 49 laboratory confirmed cases of invasive Hi disease; crude incidence rate 2.6 per 100,000 population. Between 2007 and 2016, there has been no discernible trend but a three fold increase between 2016 (15) and 2018 (49) (Figure 7).

## **Age**

The largest proportion of cases were those over 15 years of age (59%) with the majority of these over 65 years of age (39%). Since 2016, the number of cases have increased across all age groups and is likely to be as a result of increased case ascertainment from use of culture and PCR testing (Figure 7).

**Figure 7. Invasive Haemophilus Influenzae cases by age band, 2007-2018, Northern Ireland**

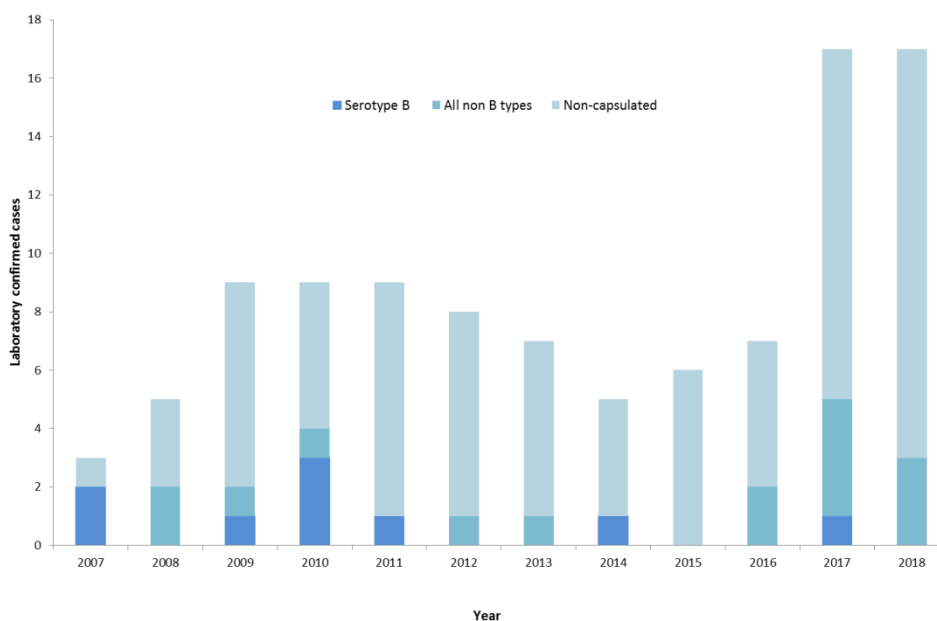


Source: Regional CoSurv Laboratory System

### Serotypes

Typing information was available for only 35% of cases and of these, the majority (29%) were 'non-capsulated' Hi strains (Figure 8). Since 2007, the number of cases of HiB has remained constantly low highlighting the success of the Hib vaccine.

**Figure 8. Invasive Haemophilus Influenzae cases by serotype, 2007-2018, Northern Ireland**



Source: Regional CoSurv Laboratory System



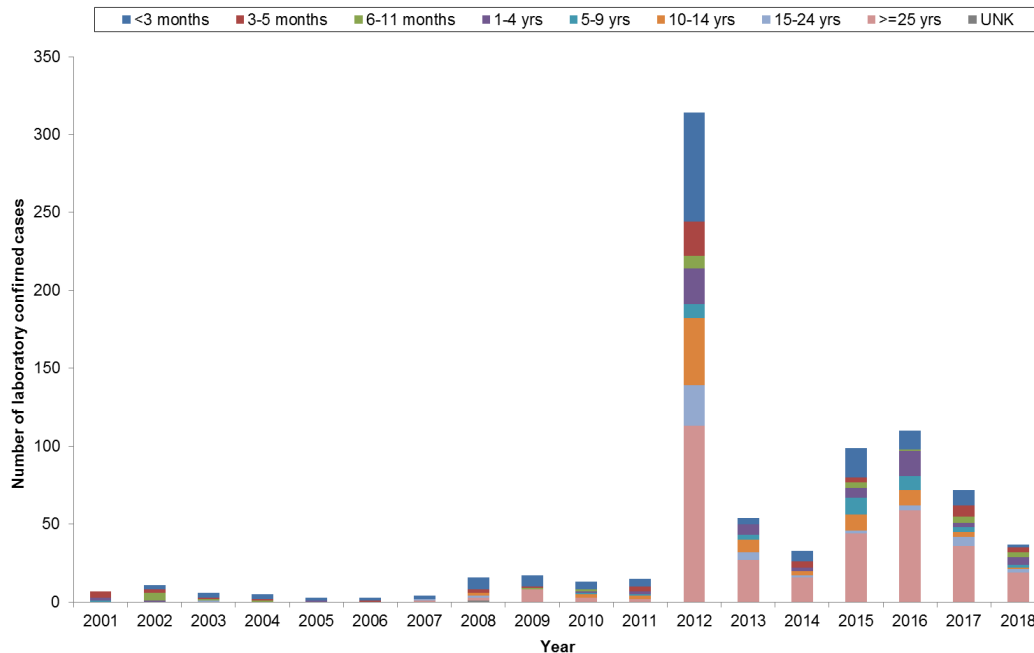
# Pertussis (whooping cough)

Pertussis (whooping cough) is caused by the *Bordetella pertussis* bacterium. It is an acute respiratory disease that can cause serious and life-threatening complications, including pneumonia, apnoea and seizures. Severe complications and deaths occur mostly in infants under 6 months of age. Adolescents and adults usually suffer a milder disease with a cough that may persist for many weeks.

## Epidemiological situation

There were 37 laboratory confirmed cases which is a 49% decrease from 2017 (72) and consistent with the 3 year cyclical pattern seen with pertussis infection. Since 2012, when cases peaked (314) and a national outbreak was declared, the mean number of cases (68; range 33-110) has remained higher than the pre-outbreak baseline (9; range 3-17) (Figure 9).

**Figure 9. Laboratory confirmed cases of Pertussis by age group, 2001-2018, Northern Ireland**



Source: Regional CoSurv Laboratory System/Pertussis Enhanced Surveillance System

## Age

The greatest number of cases was in those aged over 25 years (51%; 19/37), followed by <6 months of age (14%; 5/37), (followed by the 1-4 years (14%; 5/37), with 6-11 months, 5-9 years, 10-14 years and 15-24 years accounting for 8 cases in total (22%; 8/37).

# Measles

Measles disease is caused by a morbillivirus of the paramyxovirus family. It can affect people of all ages but infants less than one year are at increased risk of complications and death. It typically causes fever, malaise, conjunctivitis, cough, coryza and Koplik spots followed by a widespread maculopapular rash. Complications occur in around 1 in 15 notified cases and include otitis media, pneumonia, convulsions, encephalitis and death. A rare complication of measles is subacute sclerosing panencephalitis (SSPE), a fatal degenerative neurological disorder. The case fatality ratio is approximately one death per 5,000 cases, highest in children under one year.

The measles virus is transmitted from person to person by respiratory droplet. It is very infectious, with one case having the potential to infect another 12-18 individuals in susceptible populations. Measles cases are infectious in the four to five days before rash onset and the four days after.

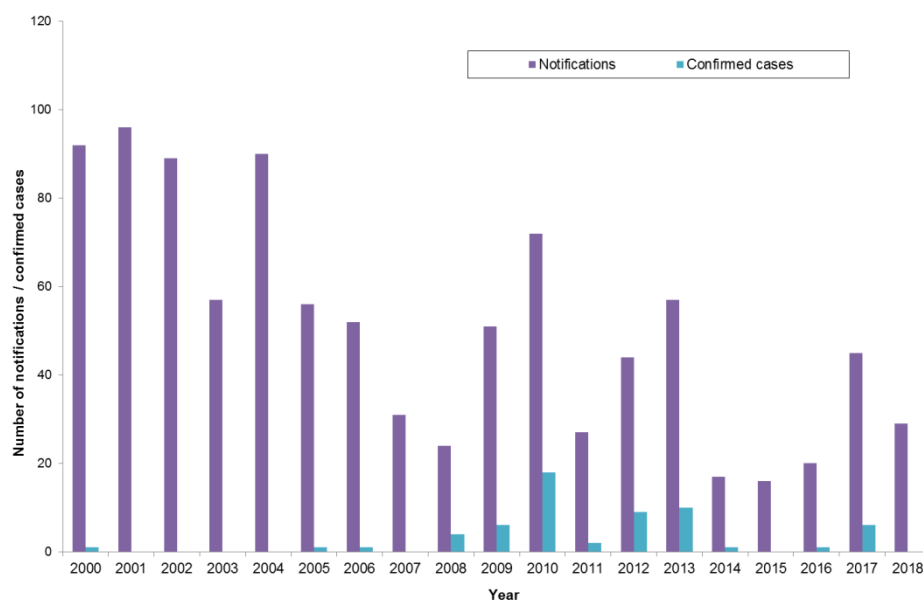
Throughout 2018, European Union (EU) Member States reported 12,352 cases of measles, with the highest number of cases reported in France (2,913), Italy (2,517), Greece (2,293), Romania (1,087), United Kingdom (953), Slovakia (572) and Germany (542). It is noted that delays in reporting have likely led to an underestimate of cases, particularly in Romania, where there has been a sustained outbreak within the country<sup>7</sup>.

## Epidemiological situation

There were 29 notifications of clinically suspected measles all of which had PCR and/or serology testing and were discarded as cases. There were therefore no confirmed cases with the last confirmed cases during the summer of 2017.

The number of notifications have decreased compared to 2017 (45) on a background of an overall downward trend in notifications since 2000 (10).

**Figure 10. Notifications and laboratory confirmed cases of Measles, 2000-2018, Northern Ireland**



Source: Measles Enhanced Surveillance System and HPZone

## Age

Suspected measles cases were observed in both adults and children with 62% of cases in children aged under 4 years. The median age was 2 years, ranging from 2 months to 45 years. The age distribution of suspected measles has been variable for the past four years. The majority were unvaccinated children and young adults.

## Mumps

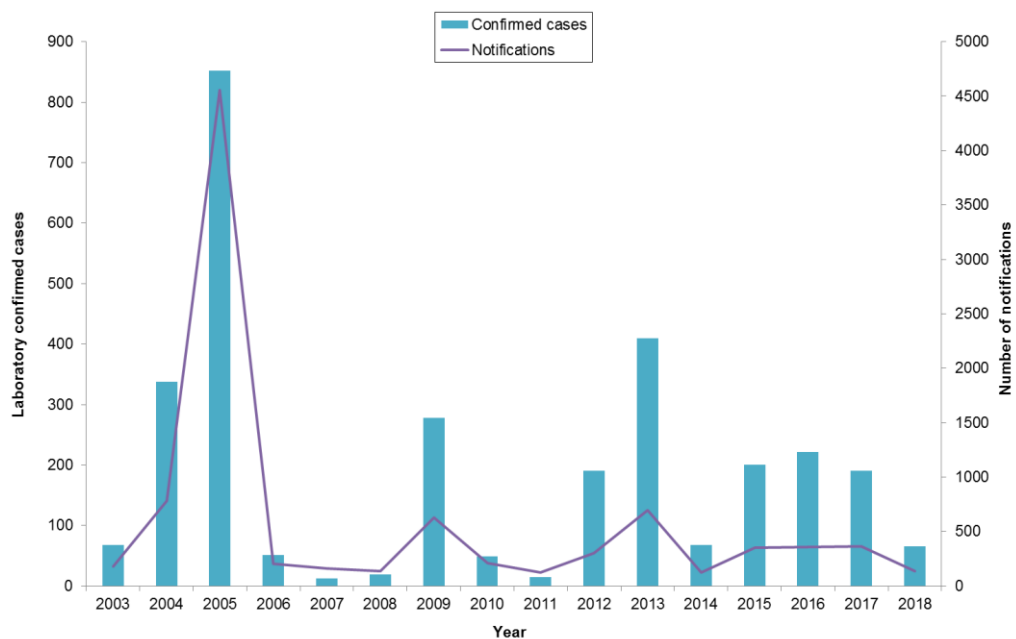
Mumps disease is caused by the mumps virus. The disease is characterised by parotitis, fever, headache and lymphadenopathy. Infection can lead to serious complications, including aseptic meningitis, encephalitis, orchitis, pancreatitis,

oophoritis and permanent deafness. Neurological involvement can also occur. Orchitis is the most common complication of mumps in adult males. Person to person transmission occurs by respiratory droplets with cases infectious from around 6-7 days before the onset of parotitis until 9 days after. However, infected individuals with no apparent clinical symptoms can also transmit the virus.

### Epidemiological situation

There were 66 laboratory confirmed cases of mumps, which is a 65% decrease compared to 2017 (191). A sharp rise in confirmed cases was observed in 2004, with the number of cases peaking at 850 in 2005. Since then there has been fluctuation in the number of confirmed cases that follows the cyclical epidemiological pattern of mumps virus (Figure 10).

**Figure 10. Notifications and laboratory confirmed cases of Mumps, 2003-2018, Northern Ireland**

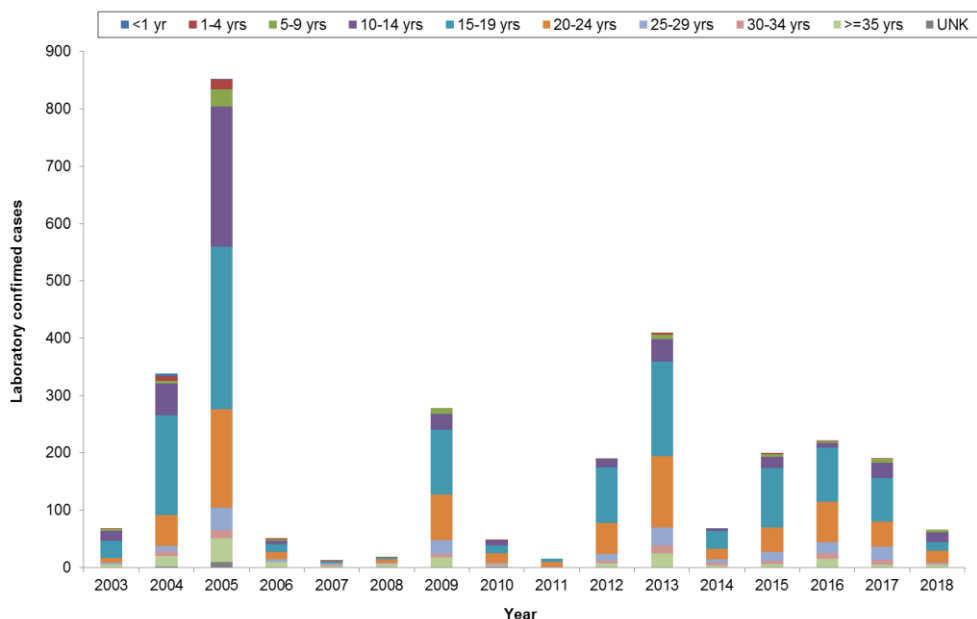


Source: Mumps Enhanced Surveillance System and HPZone  
 NB: Two different scales used

## Age

The majority of cases were aged 15-24 years (53%; 35/66) (Figure 11). The majority of cases (79%) had received two doses of MMR vaccine. This may represent waning immunity within the fully and/or partially vaccinated population.

**Figure 11. Laboratory confirmed cases of Mumps, by age group, 2003-2018, Northern Ireland**



Source: Mumps Enhanced Surveillance System and HPZone  
Note: salivary antibody testing for mumps ceased in May 2010

## Rubella (German Measles)

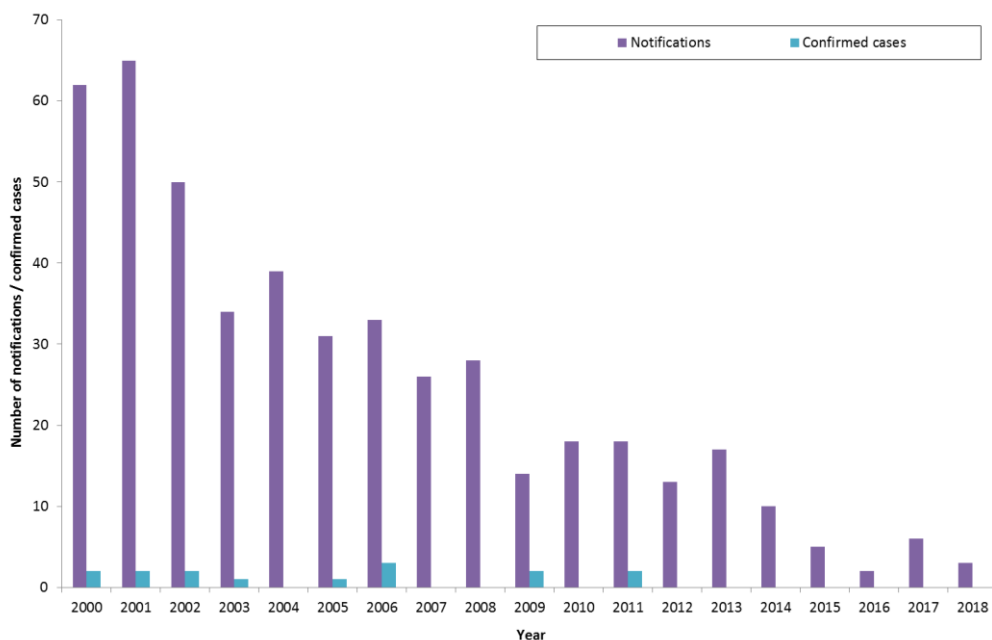
Rubella is an acute infection caused by rubella virus. It is generally a mild illness, but can have devastating effects if acquired by women in the first 16 weeks of pregnancy, leading to congenital rubella syndrome in the unborn baby. The infection may begin with a prodromal illness. Occipital and post-auricular lymphadenopathy may also occur before onset of an erythematous rash. Complications include thrombocytopenia, arthritis and arthralgia in adults, especially women, and encephalitis.

The disease is spread by droplet transmission from person to person. Cases are considered infectious from one week before the start of symptoms and are most infectious in one to five days after the onset of the rash.

### Epidemiological situation

There were less than 5 clinically suspected notifications of rubella, all discarded on PCR and/or serology testing and therefore no laboratory confirmed cases. Since 2012, there have been no laboratory confirmed cases of rubella and the number of notifications has been declining over time (Figure 12).

**Figure 12. Notifications and laboratory confirmed cases of Rubella, 2000-2018, Northern Ireland**



Source: Rubella Enhanced Surveillance System and HPZone

## Diphtheria

Diphtheria is an infection caused by diphtheria toxin produced by gram-positive toxigenic bacterium *Corynebacterium diphtheriae*. It occurs throughout the world and is a major cause of morbidity and mortality globally. Incidence has fallen dramatically since introduction of diphtheria vaccine into the childhood programme. However, it continues to cause high mortality in some parts of the world associated with

outbreaks. It is an acute disease that affects the upper respiratory tract and occasionally the skin. The infection is transmitted from person to person via droplet or aerosol spread with humans the only reservoir for infection.

### **Epidemiological situation**

No clinically suspected notifications or laboratory confirmed cases reported in 2018. Following the introduction of vaccine into the routine childhood programme, the incidence of disease has fallen dramatically with no cases in Northern Ireland in recent times.

## **Tetanus**

Tetanus is a rare disease caused by a neurotoxin produced during infection with *Clostridium tetani*. The disease is characterised by rigidity and spasm of muscles, with the jaw usually affected (lockjaw) before becoming more generalised. The case-fatality ratio can range from 10%-90% with it being higher in the young and elderly.

*C. tetani* are common environmental bacteria and can form spores which are highly resistant to heat and freezing. They are present in soil and manure and commonly enter the body through a wound, burn, puncture or scratch. Tetanus cannot be transmitted from person to person.

### **Epidemiological situation**

No clinically suspected notifications or laboratory confirmed cases reported. Since introduction of vaccination, the incidence of disease has fallen dramatically with no cases in Northern Ireland in recent times.

## **Poliomyelitis (Polio)**

Poliomyelitis is an acute illness caused by the poliovirus. There are three serotypes of the virus: 1, 2, 3. Transmission occurs through contact with the faeces or pharyngeal secretions of infected individuals who can excrete virus for up to 6 weeks in faeces and two weeks in saliva. The virus infects and replicates in the gastrointestinal tract before spreading through the body to susceptible tissues or

rarely the central nervous system. The majority of infections cause no clinical symptoms but there is a range of symptoms, from fever to aseptic meningitis or paralysis. Gastrointestinal symptoms, malaise, stiffness of the neck and back and headache can also occur, with or without paralysis.

### **Epidemiological situation**

Since introduction of vaccine, the incidence of disease has fallen dramatically with no cases in Northern Ireland in recent times.



# Conclusions

Overall, the burden of disease from vaccine-preventable infections is low in Northern Ireland and in 2018, cases across VPDs have fallen further with the exception of Haemophilus influenzae and Pneumococcal disease. This is undoubtedly due to the success of regional vaccination programmes that continue to experience high levels of uptake across the region. The increase in Haemophilus influenzae and Pneumococcal disease cases highlight the importance of monitoring the epidemiology of VPDs to identify changes following introduction of vaccine programmes particularly with high vaccine coverage.

Although there have been no confirmed measles cases observed locally during 2018, the small outbreak of measles from an imported case in 2017 and continued outbreaks during 2018 in the UK and Europe serve as a reminder that the risk of imported cases remains and the importance of maintaining high vaccine uptake.

During 2018 the PHA Immunisation Team commissioned a professional marketing company to carry out focus groups with a harder to reach community group to better understand attitudes and factors influencing vaccinations. Findings showed a general acceptance of vaccinations but highlighted communication issues and access as barriers to receiving vaccines. The PHA has developed a promotional video resource with limited text and language to promote MMR vaccine across the population and in harder to reach groups where literacy and language may act as barriers to knowledge and during 2019 plan to disseminate widely<sup>8</sup>.

For the next year the PHA Immunisation Team also plan to review the enhanced surveillance systems for vaccine-preventable bacterial infections to ensure the clinical, microbiological and serotyping information is continuing to meet the needs of the population.

## Priorities for 2019

1. The PHA Immunisation Team plans to review the vaccine-preventable bacterial infections enhanced surveillance systems.

2. The PHA will continue to monitor vaccine coverage and target interventions to improve uptake, such as use of the PHA MMR promotional video amongst groups in which vaccination uptake is known to be low.

## Sources of Further Information

The most useful resource for health professionals is the on-line version of The Green Book, which contains the most up-to-date information on immunisation.

| Name  | Link  |
|---|---|
| Immunisation against Infectious Diseases (“The Green Book”)                 | <a href="https://www.gov.uk/government/collections/immunisation-against-infectious-disease-the-green-book">https://www.gov.uk/government/collections/immunisation-against-infectious-disease-the-green-book</a>   |
| Public Health Agency Immunisation page                                      | <a href="http://pha.site/immunisationvaccine-preventable-diseases">http://pha.site/immunisationvaccine-preventable-diseases</a>   |
| Public Health England Immunisation page                                     | <a href="https://www.gov.uk/government/collections/immunisation">https://www.gov.uk/government/collections/immunisation</a>   |
| Chief Medical Officer (CMO) letters (Northern Ireland)                      | <a href="https://www.health-ni.gov.uk/publications/letters-and-urgent-communications-2019">https://www.health-ni.gov.uk/publications/letters-and-urgent-communications-2019</a>   |
| Country Specific Vaccine schedules  | <a href="http://apps.who.int/immunization_monitoring/globalsummary/schedules">http://apps.who.int/immunization_monitoring/globalsummary/schedules</a>   |
| Vaccination of individuals with uncertain or incomplete immunisation status | <a href="https://www.gov.uk/government/publications/vaccination-of-individuals-with-uncertain-or-incomplete-immunisation-status">https://www.gov.uk/government/publications/vaccination-of-individuals-with-uncertain-or-incomplete-immunisation-status</a> |
| Public Health Agency Publications   | <a href="http://www.publichealth.hscni.net/publications">http://www.publichealth.hscni.net/publications</a>   |

# References

1. World Health Organization. Global Vaccine Action Plan 2011-2020. 2013. Available at: [http://www.who.int/immunization/global\\_vaccine\\_action\\_plan/GVAP\\_doc\\_2011\\_2020/en/](http://www.who.int/immunization/global_vaccine_action_plan/GVAP_doc_2011_2020/en/).
2. Public Health Agency. Epidemiology of Tuberculosis in Northern Ireland. Annual Surveillance Report 2017. Available at: <http://www.publichealth.hscni.net/sites/default/files/2019-01/N%20Ireland%20TB%20Surveillance%20Report%202017.pdf>.
3. Public Health Agency. HIV surveillance in Northern Ireland 2018. 2018; Accessed January 2019. Available at: <http://www.publichealth.hscni.net/sites/default/files/2019-01/HIV%20report%202018.pdf>.
4. Northern Ireland Hepatitis B+C Managed Clinical Network. Northern Ireland Against Hepatitis. Annual Report 2018. Available at: <http://superstarsystems.co.uk/sites/default/files/2018-09/2018%20Annual%20report%20Final.pdf>.
5. Public Health Agency, Gastrointestinal infections in Northern Ireland, annual surveillance report 2017. Available at: <https://www.publichealth.hscni.net/sites/default/files/2019-03/N%20Ireland%20Gastrointestinal%20Surveillance%20Report%202017.pdf>
6. Public Health Agency, NI Regional Infection Prevention and Control Manual, List of Notifiable Diseases. Available at: <https://www.niinfectioncontrolmanual.net/sites/default/files/One%20for%20the%20records.pdf>
7. European Centre of Disease Control (ECDC), monthly measles and rubella monitoring report, January 2019 (January-November 2018). Available at: <https://ecdc.europa.eu/sites/portal/files/documents/measles-rubella-monthly-surveillance-report-january-2019.pdf>
8. Public Health Agency, MMR vaccine advice, social media video, April 2019 <https://www.publichealth.hscni.net/news/mmr-vaccine-advice>

