New challenges in control measles outbreaks (in Dublin mostly) in the era of measles elimination

TODAY'S MEASLES LOOK A LITTLE DIFFERENT...

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Presentation


Why are we seeing outbreaks

What we are doing and can we do better
MMR1 uptake by CHO at 24 months
Uptake of MMR2 (junior infants)

HPSC. Immunisation uptake statistics for junior infants.
Measles

• Highly infectious viral disease
• Symptoms: cough, coryca, conjunctivits, fever and rash (koplik’s spots)
• 9 out of 10 susceptible persons with contact to an infective individual will develop measles
• Incubation period typically 10-12 days (range 7-21 days)
• Complications occur in 30%.
Measles is a serious disease

Measles is not a harmless childhood disease. It is a highly contagious viral disease that spreads easily among unvaccinated people. Symptoms usually appear 10 to 12 days after infection, initially resembling a cold, with a runny nose, cough and a slight fever. The eyes become red and sensitive to light. As the illness progresses, and usually on the third to seventh day, the temperature may reach 39–41 °C, and a red rash appears that lasts four to seven days.

Approximately 30% of reported cases have one or more complications, especially among children under five years of age and adults over 20. Measles can be more severe in people with weakened immune systems.

Complications from measles infection

7 to 9 out of 100 children develop ear infection, which can result in hearing loss.

8 out of 100 patients report diarrhea.

1 to 6 out of every 100 patients suffer from pneumonia. This is the most common cause of death from measles in young children.

1 in every 1000 patients develop acute encephalitis (swelling of the brain). This can lead to convulsions and leave a child deaf or with mental disability.

Eye disorders, such as destruction of the cornea (outer layer of eyeball) may lead to blindness. This condition affects, in particular, malnourished children and is linked to vitamin A deficiency.

A rare but fatal brain complication known as subacute sclerosing panencephalitis (SSPE), can occur several years after measles.

1 out of 4 people who get measles will need hospitalization.

Up to 1 in 1000 measles patients die as a result of the disease.


Measles vaccination protects you and your family. By vaccinating against measles you contribute to a healthy community.
Measles is more contagious than you think

Measles is an acute, highly contagious viral disease capable of producing epidemics. It is very infectious and spreads easily among unvaccinated people. A person with measles infects an average of 12 to 18 previously uninfected people. Vaccination is the best way to protect yourself and others against measles.

The centre dots represent one person affected by a disease. The connected dots indicate the maximum and minimum number of previously uninfected people who could get infected by a single case of the disease.

Measles affects all age groups

Measles is an acute, highly contagious disease capable of creating epidemics. It can be contracted at any age. Vaccination is the best way to protect yourself and others against measles, regardless of age. Check your vaccination status.

Data extracted from The European Surveillance System (TESSy), ECDC, Stockholm, 2018. Countries which are represented reported the majority of cases in the period 2014-2017.

Proportion of measles cases above 14 years of age, 2014-2017, EU/EEA countries

- 2014: 63%
- 2015: 52%
- 2016: 33%
- 2017: 45%
Measles Notifications and Years of Vaccination Changes, 1948-2016

Number of notifications

Year

MMR1 introduced in 1988

MMR2 introduced in 1992

MR campaign 1995

Measles vaccine, introduced in 1985

MMR campaigns* 2009, 2012-2014

*MMR vaccination campaign started in April 2009 for students in 4th, 5th and 6th year of second level schools
*MMR catch-up campaign 2012-2014
Three children died as a result of measles that year. I remember their eyes

Consultant paediatrician John Fitzsimons writes about his experiences with measles, and why it's important to vaccinate.

I had measles when I was seven. There was no MMR vaccine available in Ireland at that time.

I was lucky, I wasn't that sick and I don't remember much of the experience. Twenty years later, I had my second experience of measles and I won't forget it.

It was January 2000 and I was working as a senior doctor in the Emergency Department at the Children's University Hospital, Temple Street.

Every day for the first few months of the year, a steady stream of misery arrived: babies, toddlers and older children, covered in a rash, feverish, coughing, some struggling for breath - but what I remember most was their eyes.

Measles causes a painful conjunctivitis, a red discharging inflammation of the eye. That year at least 7,000 people contracted measles and hundreds of children attended Temple Street with the disease.

'I remember their eyes'

More than 100 children needed to be admitted to hospital and one in 10 of them went to the intensive care unit (ICU). Three children died as a result of measles that year, of them, I knew their families. I remember their eyes.

Eighteen years later we are in the midst of another measles outbreak in Europe.

Measles epidemic confirmed with 1,221 cases

The march of measles

Measles is a contagious illness which can be prevented by vaccination. The vaccine is given in two doses on the first and second birthday, and is highly effective in preventing measles. The two doses of the vaccine are given one month apart.

Background. An outbreak of measles occurred in Ireland between December 1999 and July 2000. The majority of cases were in north Dublin, the catchment area of The Children's University Hospital (TCUH).

Methods. Details of all of the 111 children attending the diagnosis of measles between July 2000 were prospectively captured. Charts were reviewed to identify the diagnosis which caused by parainfluenza and other causes for approximately 50% each year. Monovalent varicella vaccine doses for attenuated vaccine was also used, with a dose of MMR was recommended in 1999 that year, for children.

1407 cases

355 TSCUH

111 admitted

Dehydration, Pneumonia, Tracheitis
Five admitted to ICU

No vaccinated child admitted to ICU
26 had pre-existing conditions
Three died

Median age 14/12

National uptake rate 79%
North Dublin <70%
In 2011, there was a large measles outbreak in Dublin. Nationally 285 cases were notified to the end of December 2011, and 250 (88%) were located in the Dublin region. After the first case was notified in week 6, numbers gradually increased, with 25 notified in June and a peak of 53 cases in August. Following public health intervention including a measles-mumps-rubella (MMR) vaccination campaign, no cases were reported in the Dublin region in December 2011. Most cases (82%) were children aged between 6 months and 14 years, and 46 cases (18%) were under 12 months old. This is the first outbreak in Dublin to utilise a geographic information system for plotting measles cases on a digital map in real time. This approach, in combination with the analysis of case notifications, assisted the department of public health in demonstrating the extent of the outbreak. The digital map age of 12 months from their family doctor. The second dose of MMR vaccine (MMR2) is given at the age of 4–5 years generally through the school-based vaccination programme [1].

Although the number of measles cases in Ireland has decreased substantially since the introduction of the MMR vaccine [2], there have still been a number of significant measles outbreaks in Ireland [3]. In 2010, a total of 426 measles cases were notified nationally. These cases clustered among certain population groups, including members of the Irish Traveller and Roma communities and children whose parents object to vaccination on philosophical or religious grounds [4].

The World Health Organization (WHO) recognises
Measles outbreak in Dublin, 2011.

- 285 cases
- 250 North Dublin
- 24 hospitalisations

National uptake rate 90%
North Dublin (CCA7)<75%

Dehydration, Pneumonia, seizures
No reported admissions to ICU
92% school going (<19 years)
Median age 5 years
40 cases, 10 Nosocomial, 4 international flights.
National Measles outbreak linked to imported case 2016.

Median age 8

19 hospitalised
Measles Outbreak July 2018

HSE issues warning as four new cases of measles identified in Dublin

Two adults and two children have been diagnosed with measles after a previous outbreak in July.

HSE warn of further measles outbreak in Dublin among adults and children

The HSE has been notified this week of four more cases of measles.

HSE issues warning as four more measles cases identified this week

The HSE has issued a public warning after four cases of measles were reported in Dublin.

Low vaccination rates raise fear for measles elimination status

Ireland may lose its status of having eliminated measles because of low vaccination levels in the Dublin region. The World Health Organisation (WHO) said it was great...
Measles notifications by HSE area, weeks 1-34, 2018
7 discrete outbreaks (n=66)
Epidemiological Curve

Measles cases (confirmed) by vaccination status, 17/07/18 - 07/10/18
(n=17)

- Two Doses Verified
- One Dose Verified
- No MMR
- Unknown MMR

8/17 were adults median age 16 years
Transmission Pathways

Family Transmission  
Nosocomial Transmission  
Unknown Transmission

Date of Rash Onset

7/17 Nosocomial transmission
Index Case

- 6 year old child
- Attended ED on 3 occasions with
  - Rash/Fever/Cough/Coryza/Conjunctivitis
- Isolated and admitted on 3\textsuperscript{rd} attendance
  - Confirmed Measles
Vulnerable Unvaccinated Populations

Date of Rash Onset

Notified Tuesday 17th July
Confirmed & probable measles cases HSE-E from week 4 - week 15 to 14/05/2019

- Lithuania
- Poland
- France
- Romania

![Bar chart showing the number of measles cases from week 4 to week 15.](image-url)
Family

Family illness

Exclusion from school & childcare

"While we realize it's difficult having a sick child at home, Mrs. Mote, we believe you sent Philip back a little soon."
Primary care

Case management: isolation, MMR & HNIG to vulnerable contacts

Community Health
School: timely re-arranging vaccination schedule in affected areas.

Member of OCT.
New challenges in measles control

<table>
<thead>
<tr>
<th>OLD</th>
<th>NEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vulnerable unvaccinated populations</td>
<td></td>
</tr>
<tr>
<td>Nosocomial transmission to patients &amp; healthcare workers.</td>
<td></td>
</tr>
<tr>
<td>Delayed recognition of measles facilitating nosocomial transmission</td>
<td></td>
</tr>
<tr>
<td>Unusual clinical presentations in adults</td>
<td></td>
</tr>
<tr>
<td>Post exposure prophylaxis vulnerable contacts &lt; 9 months</td>
<td></td>
</tr>
<tr>
<td>Travel associated cases (Europe and US)</td>
<td></td>
</tr>
<tr>
<td>Social media and antivaxers</td>
<td></td>
</tr>
</tbody>
</table>
Nosocomial Transmission to healthcare workers. (NIAC Dec 2017)

All health care workers, both clinical and non-clinical, who have direct patient contact should be immune to measles.

- work requires face to face contact with patients, or
- normal work location is in a clinical area such as a ward, ED or OPD, or
- work frequently requires them to attend clinical areas.

Written documentation of vaccination with 2 doses of MMR vaccine at least 1 month apart
- or

Serological evidence of prior measles exposure (from an Irish National Accreditation Board (INAB) accredited laboratory.)
Delayed recognition of measles facilitating nosocomial transmission.

Unusual clinical presentations in adults

- Communication to GPs, hospital consultants (including ED, Micro, paeds and adult physicians).
- Developed guidelines with D-doc on suspect measles.
- Highlight on HPSC/NIO website.
- Interviews on national and local media.
- Clinicians part OCT.
- Hospital infection control teams
Exposed infants *aged* <9 months

Administer a single dose of HNIG.

Ideally this should be administered within 72 hours of exposure; however, it may be administered up to 6 days post exposure.
Travel associated cases (Europe and US)

Pre-travel measles vaccination for those travelling to countries or regions where measles is endemic or where outbreaks are occurring:

Infants 6 months to ≤11 months of age should receive one dose of MMR vaccine.

ii. Children 12 months of age and older
   • a) If unvaccinated should receive two doses of MMR vaccine separated by ≥28 days. To ensure protection, the second dose should be given ≥2 weeks prior to travel.

   Teenagers and adults without evidence of immunity to measles should get two doses of MMR vaccine separated by ≥28 days.
Social media and antivaxxers

Communication department used geo-targeted social media messages (Outbreak 2018).

Health workers, especially those in communities, remain the most trusted advisor and influencer of vaccination decisions, and they must be supported to provide trusted, credible information on vaccines (WHO 2019).
What works?

- Vaccine coalition/alliances
- Understanding parental attitudes
- Social media
- Training health professionals
- Media campaign, videos
- Peer led education
- High level political support
- Extra opportunity to get vaccine
Acknowledgements:

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