

The Leeds Measles outbreak; Epidemiology, Risk and Response

IPC sub committee

20th January 2025

Presented for:	Discussion and Information
Presented by:	Dr Jessica Martin, Medical Lead for IPC
Author:	Dr Jessica Martin, Medical Lead for IPC
Previous Committees:	None

Our Annual Commitments for 2024/25 are:	
Reduce wait for patients	
Reduce Healthcare Acquired Infections by 15%	✓
Reduce our carbon footprint through greener care	
Use our existing digital systems to their full potential	
Strengthen participation and growth in research and innovation	
Deliver the financial plan	
Be in the top 25% performing Trusts for staff retention	

Risk Appetite Framework				
Level 1 Risk	(✓)	Level 2 Risks	(Risk Appetite Scale)	Impact
Workforce Risk		Choose an item.	Choose an item	Choose an item.
Operational Risk		Choose an item.	Choose an item	Choose an item.
Clinical Risk	✓	Choose an item.	Cautious	Moving Towards
Financial Risk		Choose an item.	Choose an item	Choose an item.
External Risk		Choose an item.	Choose an item	Choose an item.

Key points	
-------------------	--

To describe the Leeds Measles outbreak between September 2024 and January 2025; epidemiology, risk and response	Discussion / information
---	--------------------------

1. Summary

- Measles is the most infectious disease transmitted through the respiratory route
- It can cause severe infection, especially in young children, pregnant individuals and immunocompromised patients
- Since September 2024, 94 probable and confirmed cases have occurred in Leeds, the majority reside in [REDACTED], [REDACTED]
- A small number of cases, and secondary cases, have been linked to possible hospital exposure to measles
- A number of clinical, operational, IPC and collateral risks were identified as part of this incident, and mitigations were targeted to these where feasible
- The response was led by the IPC team in November 2024, and escalated to an emergency preparedness response in December, action was taken by many teams across the trust with a focus on early identification of cases, rapid contact tracing and delivery of post-exposure prophylaxis and communication to staff, visitors and patients about measles
- A collaborative city-wide response ran concurrently to the LTHT response

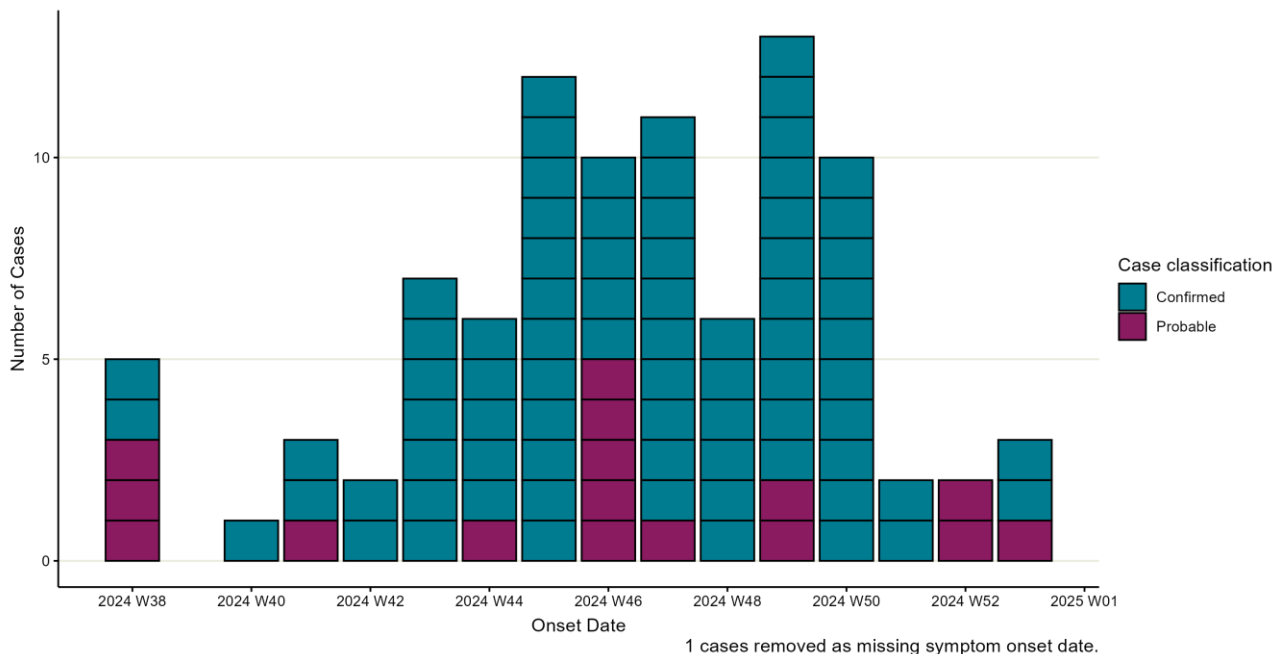
2. Background

- Measles is the most infectious disease transmitted through the respiratory route
- It can cause severe infection in young children, pregnant individuals and immunocompromised patients
- The measles mortality in 0-4 year olds is reported between 1 in 100 (low income countries) and 1 in 5000 (high income countries), and 0.1% measles patients develop severe complications such as encephalitis or pneumonia. A long-term rare complication of measles is SSPE, which occurs in 0.01% of cases and is more likely following measles in infancy
- The most effective protection against measles is 2 doses of MMR vaccine, though vaccine uptake in the UK is <90% nationally, which is lower than previously and risks sporadic cases and outbreaks occurring
- Vaccine uptake in Leeds is lower than the national average~85%, with some city areas having extremely low uptake e.g ~55% uptake of 2 MMRs at 5 years old
- The incubation period for measles is 7-21 days, with infectivity lasting from 4 days prior to the rash to 4 days after the rash onset
- New cases must be notified to UKHSA on first clinical suspicion, and public health action is recommended for probable and confirmed cases, as outlined in [National Measles guidance](#)
- Healthcare workers can be a source of transmission, and require assessment and possible exclusion from work once exposed to measles
- The index case of this outbreak returned from Romania in September 2024, having acquired measles abroad and being infectious during their trip home to Leeds

3. Epidemiology, risk and response at LTHT

Epidemiology

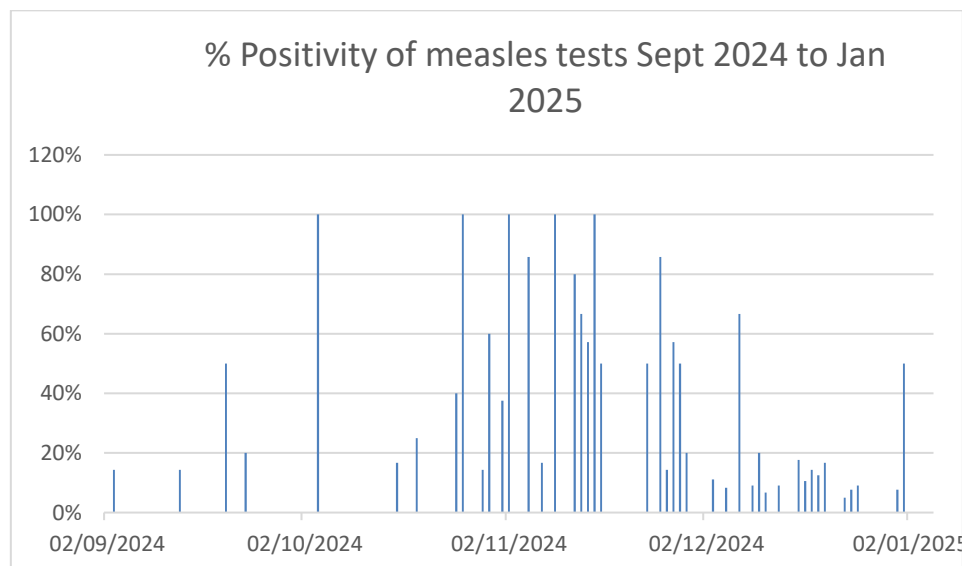
- Information on the epidemiology of the outbreak is taken from UKHSA reports ([REDACTED], 3/1/25) and LTHT hospital data (7/1/25)
- Since October 2023, there has been a rise in measles in the UK with large outbreaks in Birmingham and London, and sporadic cases country wide
- A rise in sporadic cases of measles was seen in Leeds from Spring 2023, and the IPC, OH, virology and clinical teams developed a response based on national guidance, the robustness of response was highly complimented by UKHSA in 2023
- Since September 2024, 94 probable and confirmed cases have occurred in Leeds, and the increase in case numbers exceeded the capacity/modality of local responders in IPC, virology, Children's, community teams and urgent care
- The majority of cases reside [REDACTED]
- The outbreak is characterised by large family groups, for many English is a second language, others are non-English speakers and culture differences exist including suspicion of public services, making delivery of public health actions difficult
- The median age of cases is 5 years old, cases have attended 10 different schools and 3 nurseries. A small number of adult measles cases have occurred.
- The following shows an epidemiological curve showing week of onset and case classification



- The outbreak has been characterised by a high rate of hospital attendance, with low conversion rates to inpatient admission, attendance at GPs has been lower than expected
-

Case attended			
Hospital	n	%	Date last attended by case during infectious period
LGI	41	44	30 Dec 2024
St James Leeds	5	5	13 Dec 2024
York Hospital	1	1	10 Dec 2024
LGI & St James's	1	1	12 Nov 2024

- 67% cases have had epidemiological links to known cases, 36% attended school of a confirmed case and 21% were linked to household exposure
- 10 cases, and secondary cases, living outside LS8/9 have been linked to possible hospital exposure to measles when attending ED for other reasons
 - For the cases not in the main outbreak area of LS8/9, LTHT contact was identified as follows
 - [REDACTED] – one case – confirmed, LTHT contact occurred
 - [REDACTED] – one case – probable, LTHT contact occurred
 - [REDACTED] – one case – confirmed, LTHT contact occurred
 - [REDACTED] – one case – confirmed, LTHT contact occurred
 - [REDACTED] – five cases, the index had LTHT contact
 - [REDACTED] – one case – probable, LTHT contact occurred
 - [REDACTED] – one case each – no LTHT contact identified
 - Information on the likelihood of acquisition at LTHT has not been sought for those living in LS8/9, as community contacts would be likely. Additionally, UKHSA investigate each case and have informed LTHT IPC of any measles cases where the patient has attended LTHT <21 days prior to infection.
- Acquisition of measles at LTHT ED is concerning, but on discussion with the microbiology and IPC team of Birmingham, this rate of hospital linkage affected a third of patients in their outbreak. Thus, the percentage acquiring measles through this route of exposure is likely to be much lower in the Leeds outbreak
- From September 24 to January 25, the number of tests processed for Leeds patients was 906, with 94 (10.4%) testing positive for measles. In total, these positive tests occurred in 84 patients
- Further testing occurred through community swabbing (sent to UKHSA laboratory elsewhere), and some families declined testing. Therefore, the case rate is likely to be significantly higher than reported in these data
- The graph below shows percentage positivity of tests, high rates suggest under detection of infection and rising incidence.



Risk

A number of risks were identified as part of this incident, and mitigations were targeted to these where feasible. The risks are categorised into clinical, IPC, operational, collateral.

Clinical

- Clinical risks included poor outcome from measles, this was especially concerning for a pregnant individual admitted with measles in November 2024, and her neonate. A separate paper has been submitted to the quality committee regarding this, which is added as an appendix below.
- Clinical risks of poor outcome of measles cases in the short-term, none identified at the time of writing, all cases have been discharged home well
- Long term (very low) risk of sub-acute sclerosing panencephalitis in patients who have had measles, especially those who are <12 months at the time of infection
- Clinical misdiagnosis of measles occurred, especially early in the outbreak, and included scarlet fever, Kawasaki's, HHV 6 (Roseola) and parvovirus B19. Unnecessary exposure to antibiotics occurred, and misdiagnosis also created risk of unnecessary admission and investigation (Kawasaki's) for a small number of children
- Contact tracing and delivery of post-exposure prophylaxis (PEP) was delayed/missed for some individuals. Early review suggests the high number of cases and contacts, lack of 7 day laboratory service and limited clinical time available for those contact tracing resulted in clinical risk for some individuals
- Three infants found to be eligible for PEP were missed due to delays in Children's CSU, each family was contacted as soon as this delay became apparent, and duty of candour was employed and documented
- Post exposure prophylaxis using human normal immunoglobulin (HNIG) was administered to 28 infants, MMR was delivered to other contacts. As HNIG is a pooled blood product there is a small risk associated relating to acquisition of as-yet-unknown infectious pathogens. MMR is a live vaccine, but risks of adverse effects are very low. A more rapid contact tracing process may have allowed a greater proportion of exposed infants to receive HNIG rather than MMR, with a lower associated risk in the long term.

Infection prevention and control

- There was a risk of transmission of measles to other patients/visitors in ED and occasionally in radiology
- There was a risk of transmission of measles to staff, and if non-immune, a risk on onward transmission through working when infectious
- There was a risk of transmission of measles in inpatient areas to patients, staff and visitors. Again, the appendix I summary below describes the risk and mitigations associated with caring for measles in neonatal areas and intensive care.
- Lack of fit-tested staff creates risk of measles acquisition, work continues to increase the proportion of staff able to wear FFP3 masks
- Lack of positive pressure ventilation lobby rooms in children's CSU, ED and adult critical care means that national guidance for measles cases admitted to these areas cannot be followed
-

Operational risk

- The requirement to identify and isolate possible, probable and confirmed measles cases impacted the patient flow in urgent care and CAT unit primarily. This had impact on other cases requiring isolation, and took time for staff to deliver routine care (e.g. due to requiring PPE including FFP3 masks)
- The additional resource required to identify, sample, contact trace and provide post exposure prophylaxis was significant and processes were time-consuming, this put pressure on many teams. The operational impact of this was exacerbated by the outbreak occurring in Winter time, during which teams are already very stretched.
- The teams most affected by the measles response were urgent care CSU, Children's CSU, IPC, occupational health and virology teams. Other essential work could not be completed by these teams due to the pressure from measles.
- The radiology, facilities and portering teams regularly made themselves available for meetings to support the response, which was incredibly helpful. However, this was less likely to limit their ability to fulfil normal work commitments.

Collateral risks

- There is a reputational risk due to the ED acquisition of measles in a small number of cases, a complaint has been received by Children's CSU relevant to this
- A number of inpatients were isolated with possible measles (later testing negative), which was based on local epidemiology and clinical presentation, but may have minimally impacted on care (as source isolated etc.)

Response

- Details of the response are included in measles meeting minutes and action lists from IPC and emergency preparedness. The following is a high-level summary only.
- The response was led by the IPC team in November, and escalated to an emergency preparedness response in December 2024. At the time of writing, the incident remains open.
- Communication
 - The LTHT communications team supported a trust wide response, local signage in ED, staff emails relating to measles and operational updates
 - A 'measles pack' with all information and guidance was shared with teams regularly through late November and throughout December.
- Case ascertainment
 - A measles vetting document was introduced to detect and isolate cases in first minutes of attendance at LTHT
 - Testing algorithm developed and implemented with success
 - Educational material provided for all staff on clinical presentation of measles
- Testing and incident management
 - 7-day week testing was difficult to deliver due to the technical demands of the test, though was maintained for some weeks. 6 days/week otherwise.
 - All confirmed cases, probable cases and inpatients were investigated using a standardised incident management process aligned with national guidance.
 - Incident management occurred 7 days a week during the high incidence period, involving IPC, virology, OH, urgent care and other teams as needed
 - A source isolation SOP was developed in case Children's CSU was required to provide care for a high number of inpatient measles cases

- Contact tracing
 - Early in the outbreak, high numbers of contacts were identified and not all could be investigated for highrisk features (pregnancy and immunocompromise), as individual records had to be searched for this information. However, all infant contacts were identified from the outset and all but 3 (see above) offered PEP as per guidance
 - All contacts were sent a warn and inform letter which highlighted the additional risk to pregnant and immunocompromised individuals
 - Contact tracing processes were refined and improved through the outbreak, and by early-December all contacts could be rapidly and completely assessed
 - IPC rapidly identified and assessed inpatient contacts to prevent transmission from exposed cases in LTHT. Again, guidance was developed for this
- Post exposure prophylaxis
 - Children's CSU provided a rota to provide PEP for infants 7 days a week, training and guidance was provided by infection team members and the paediatric infectious disease consultant
 - Pharmacy supported availability of MMR and HNIG
 - PEP patient information was developed (redacted) and provided to families
 - PEP for adult immunocompromised patients was arranged on an individual basis
- Protection of vulnerable patients
 - A letter went from the CMO to all clinicians, highlighting actions required as per UKHSA guidance. Teams were supported to implement this advice.
- Interventions for staff
 - Staff exposed to measles were offered OH intervention and follow up as per local and national guidance.
 - A small number of staff were requested to stay off work following measles exposure due to non-immunity
 - MMR was available for staff requiring it, and communications were sent out regularly recommending staff check their immunity status for measles
- Working with city partners
 - A large number of interventions occurred in the city, including a catch-up MMR campaign in LS8/9
 - A measles MMR clinic offer was developed, as GPs were not commissioned to deliver PEP and mostly were unable to offer HNIG or MMR urgently
 - Regular communication occurred between LTHT and city partners

4. Financial Implications

Whilst it is accepted that the measles response carried a financial cost, this was small and distributed across a number of teams. There are no financial implications resulting from this paper.

5. Risk

The Infection Prevention and Control (IPC) Sub Committee provides executive oversight of the Trust's IPC programme, reporting to the Quality Assurance Committee. There was no material change to the risk appetite statement related to the level 2 risk category

(Healthcare Associated Infection) and the Trust continues to operate within the risk appetite for the level 1 risk category (clinical risk) set by the Board

6. Communication and Involvement

This report is developed by the Infection Prevention and Control Team in conjunction with the virology team. Review, assurance, and actions where agreed are undertaken at Trust and CSU level and where required and monitored through the various boards and committees outlined above.

7. Equality Analysis

This paper includes epidemiological data on patients affected by the measles outbreak.

8. Publication Under Freedom of Information Act

This paper is exempt from publication under Section 22 of the Freedom of Information Act 2000, as it contains information which is in draft format and may not reflect the organisation's final decision.

9. Recommendation

1. The IPC-SC is asked to accept this paper as a brief overview of the 2024-2025 measles outbreak in Leeds, recognising this is an ongoing issue and full de-brief and further learning is likely to follow
2. Accept information on the EP response and clinical model developed to recognise measles cases, assess contacts and provide post-exposure prophylaxis, and discuss any recommended improvements
3. Consider a IPC leadership and delivery model for urgent additional 7/7 resource from IPC, OH, ED and paediatrics for contact tracing that is more reliable, avoiding the reliance on discretionary effort from teams and more rapid access to operational and staffing resources
4. Consider if the current clinical and non-clinical staffing and laboratory model in virology can support future similar outbreaks, recognising IPC is not a part of the clinical commitments of this team and that it is a regional UKHSA service
5. To provide feedback to the UKHSA national team (in collaboration with Birmingham colleagues) on the challenges involved in delivering the national measles guidance at scale, especially with respect to contact tracing and PEP, as experienced both by NHS inpatient and community providers.
6. Continue to review opportunities for further PPVL rooms in high risk areas as capital projects are developed, and maintain the risk of lack of PPVL in our estate on the trust risk register
7. Recommendations for staff
 - a. Fit-testing to continue to be a priority for all clinical teams at LTHT
 - b. MMR staff vaccination now offered for all new starters

10. Supporting Information

Measles pack for LTHT employees



Christmas measles
pack.zip

Dr Jessica Martin, Medical Lead for IPC

Appendix i

Measles incident involving maternity, adult critical care and neonatal servicesDescription of incident

- On 1st November a patient (NHS 7121853647) was admitted at 37 weeks pregnancy with fever, confusion and agitation, she had a florid measles rash. The working clinical diagnosis was measles encephalitis. She was known to live in a household with her child who had measles on 11/10/24.
- The household included the patient's partner, her mother and nine of her ten children. The family were known to social services, a child protection order was in place. All adults were had not received MMR vaccine and about half of the children were unvaccinated.
- On 1st November, the patient he did not attend the maternity assessment centre, but was admitted direct to J03, delivery suite. Measles was identified rapidly on arrival, she did not spend time in any waiting rooms. Her daughter attended with her, but she had had two prior MMR vaccinations so was not a risk of measles transmission.
- The maternity teams recognised the requirement for airborne PPE including FFP3 mask, and sought the use of hoods for staff who were not fit tested.
- Within two hours of arrival, the patient deteriorated and was seen by the critical care outreach team. To stabilise her, she was intubated and ventilated and moved to J54, ICU.
- At some point overnight 1st to 2nd November, respiratory airborne PPE precautions were stepped down, with the closed ventilation system quoted by staff as the reason for this.
- On 2nd November, IPC and the on-call microbiologist (and deputy DIPC) were called, respiratory /airborne PPE was reimplemented and an incident meeting was held to identify and mitigate the risk of measles transmission to staff, visitors and patients. The patient remained on J54, intubated, and a positive measles PCR was confirmed at 5pm.
- During the day on 2nd November, a large cohort of family /community members were seen in the café in Gledhow wing, due to an ongoing outbreak of measles in their community, they were requested to leave the building. Over the following 24 hours, steps were taken to encourage the families to stay off the hospital site each time they attended, support was provided at the door of ICU (and later J01) by the trust security team and private company, Chroma.
- On 3rd November, a further incident meeting was held to better elucidate a safe plan for the baby's arrival, including preparation for both an unexpected vaginal delivery on ICU and delivery in theatre. The patient remained on J54, intubated and ventilated. CT head was performed, this was inconclusive, possibly showing a diffuse oedematous cerebral process.
- On 4th November, the patient failed to respond positively to a sedation hold, with signs of cerebral agitation. Sedation and ventilation continued. The baby developed signs of distress in the early evening and a decision was taken to deliver her by caesarean section.
- The baby (NHS 7351804117) was born at 6pm on 4th November in Lincoln wing theatres, no evidence of measles rash was present at birth. The baby was intubated and ventilated, mostly a precautionary measure due to the effects of maternal medication, overall the baby was in a good clinical condition. Care was provided on J01 and post-exposure prophylaxis was administered (human normal immunoglobulin) to the baby as planned.
- On 5th November, the mother had further head imaging with MRI which was concerning for measles encephalitis. By this time, family members were becoming increasingly anxious, communication between them and the ICU team was carried out using language line. Linguistic limitations meant that clinical information was lost in translation and it was clear the family could not appreciate an accurate understanding of the clinical situation.
- On 5th November, a multi-disciplinary meeting was held with community teams, information was provided that social media was being used to share images of the mother (when she was unwell), and seek community support. Concerns were raised that restriction of visitors

attending LTHT was creating community tensions and people may congregate at SJH, this was an echo of prior tensions in Harehills related to a child protection issue leading to rioting in August 2024.

- In the evening of 5th November, J54 was contacted by border forces where family members/friends were requesting urgent entry to the UK to see the patient, they were concerned she was dying.
- On 6th November, the IPC provision for both mother and baby were reassessed as an MDT, clinical treatment review was also reassessed, the mother was moved to the conservatory area of ICU and beds cleared to prevent onward transmission. After detailed reassessment, the baby remained on J01 as no safer area was available.
- On 7th November, a visit was facilitated to J54 for two family members, including the patient's partner. As they were known to be exposed to measles and had no proof of prior immunity, and due to the high risk of measles in neonates, the visitors were not permitted to visit J01. ICU and IPC supported safe passage of the family through the building to J54, spent time with the family and escorted them again.
- On 8th November, the mother was extubated successfully, though remained weak and there were concerns reintubation may be required. Contingency plans for the weekend were worked up and handed over to on call teams, including ward step-down if required.
- On 9-10th November, mother and baby progressed well, by the evening of the 10th, the mother was keen to leave the hospital. This was arranged, and she was discharged the following day, 11th November.
- On 12th November, her baby was discharged home.
- Throughout admission for the mother and her baby, both were managed with IPC precautions consistent with preventing onward transmission of measles to staff, visitors and patients. Data was lacking on the time period to safely step them down, prolonged viral shedding was reported in the literature for perinatal cases and thought likely in this case.

Modality of LTHT response

- LTHT incident meetings were held on 2nd, 3rd, 4th, 6th, 8th and 11th November including (only as required) IPC, ACC, obstetric team, neonatal team, facilities, radiology, security, clinical site managers and occupational health. Chaired by medical lead for IPC. An additional meeting was held with the director on call, 3rd and 4th Nov.
- The director on call 2/3rd November alerted the trust communications team, and led the security response. At this time, there were concerns the family would persist with attempts to visit with risk of measles incubation/infection. Attempts ceased after 3rd November.
- Community meetings were held on 4th and 5th November, regular communication between the community IPC, LTHT IPC team, city public health and social work team took place throughout the incident. Information was shared transparently in order to keep all staff safe from infection, and provide accurate and compassionately focused communication with the family and teams who were supporting them.
- A de-brief meeting was held at LTHT on 15th November to assess learning from the response

Risks identified

- Clinical risk of measles encephalitis in mother
 - MDT discussion with infectious diseases, national brain infection group, virology and microbiology team
 - Review of literature for management of previous cases, very little available
 - Review of treatment options, limited evidence for ribavirin and IVIG, unable to obtain appropriate ribavirin preparation

- Clinical risk of peri-natal measles infection in infant, again little published evidence on efficacy of post-exposure prophylaxis (PEP) and clinical course of infection in neonates
 - Expert advice sought from national team, and colleagues with experience working in countries with high measles incidence
 - MDT discussion locally
 - National guidance followed
- Risk that PEP offered to baby against mothers wishes, previously she did not consent for children to receive vaccinations (though HNIG is passive immunity, not vaccination)
 - Clinical best-interest decision taken collaboratively, mother could not consent
 - Baby considered at high risk of measles acquisition and severe infection
- Risk of measles transmission from mother to patients in maternity and ICU
 - No waiting room time/contacts
 - Source isolated at all times in side room
 - PPVL room not available in maternity or ICU, this is on trust risk register
 - IPC supported staff to minimise risk, daily discussion and support provided
- Risk of measles transmission from baby to other patients and visitors in J01
 - No safe alternative ward for baby's care, source isolated on J01 from delivery
 - Baby isolated with ante-room, other patients moved away from bay opposite.
 - Expertise in NNU required for baby's safety as intubated at birth, and expertise and equipment not available in other areas.
 - Daily risk assessment and support provided by IPC team
- Risk of measles transmission to staff.
 - Robust contact tracing for early hours of admission, no contacts after this.
 - Staff had regular advice about MMR vaccination and PPE in weeks prior to incident
 - Staff were advised not to care for the patient if pregnant, immunosuppressed or unvaccinated. Reiterated at all incident meetings as new teams involved in care.
 - Occupational health support, national guidance followed
- Risk of measles transmission from family visitors
 - This was assessed with MDT at all meetings, with strong compassionate advocacy for family weighed against risk of measles transmission to staff, patients and visitors at LTHT. Escalated to risk team and DIPC from Monday 4th November.
 - All teams sought confirmation of measles immunity in family, including collaboration between LTHT and community IPC and UKHSA teams and offer of testing at home.
- Risk of negative psychological/social impact resulting from prevention of family visiting on site, and prevention of mother and baby being together (though mother unconscious for first 7 days of admission)
 - Discussed as an MDT daily, by email and at all incident meetings
 - Teams communicated regularly and extensively with patient's sister and partner
 - Visit on site agreed with IPC support, despite ongoing risk on 7th November
 - Photos of baby shared with mother and family members via email
- Risk of rising community tensions, relating to prevention of family attending on site and limitations with effective communication between LTHT and family which prevented thorough explanation of infection risks and understanding of the reasons why.
 - Director on call, communications and security team made aware
 - Escalated by community team to police, who attended community incident response meeting
- Clinical and operational risk of time taken to address incident, whilst providing safe care for other patients and the requirement to reduce bed use in conservatory area of ICU, and reduced cots in J01 due to 1:1 nursing
 - Daily contact to assess risk, reviewed at incident meetings
 - No escalations from clinical team, e.g. for additional staff

- Support offered to minimise impact, e.g. for extra J01 nursing provision – staff limited cot numbers, not geography of cots on ward

Escalations

- Regular contact between medical lead for IPC and DIPC
- Regular contact between medical lead for IPC and associate director for risk
- Director on call briefing through the week, attended some meetings
- CSM and IPC on call informed of contingency plans

Learning from incident and de-brief - 15/11/24

- The format of the incident response team was felt to be proportionate, collaborative and effective. Clinical teams offered sincere thanks to the IPC and trust for the support provided during the incident. Similarly, IPC was extremely grateful for the calm professionalism shown under pressure and rapid response to incident meeting actions.
- Teams felt attendance of CSM at all incident meetings would have provided better continuity of support in hours and out of hours
- Adult critical care reported seeing inconsistent advice on PPE required for measles prior to the incident, IPC took an action to double check. All recent communications were correct, but amendment made to historic document on IPC site.
- All agreed that step-down of airborne transmission PPE requires IPC input, and that ideally this would not have happened 1/2nd November on J54
- Good support provided by LTHT procurement team, no issues with FFP3/PPE availability
- Information sharing between obstetric K2 patient records and PPM+ patient records had gaps, this made things more difficult for ICU team at times
- Neonatal team had short time to prepare for baby's arrival, improved communication between obstetric and neonatal team may have facilitated better preparation. Though no lapses in care or PPE were identified as a result, just greater stress/pressure in the moment.
- All staff measles contacts were referred promptly and correctly to occupational health, just 2 people required a period off work following measles exposure due to being unvaccinated. This did not have operational impact as they were from different teams.
- Maternity and Children's CSU had insufficient staff fit-tested to provide care for patients where airborne transmission of infection is a risk. This is relevant to TB and HCID as well as measles, and a trust-wide escalation has occurred since this incident to prioritise fit-testing
- Fit-testing for FFP3 masks is led by heads of nursing in each CSU. In this incident, excellent mutual aid was provided by CSUs not involved in the incident to rapidly fit-test staff involved. Ideally this would not have been required, and sufficient fit-tested staff would be available at all times in all CSUs.
- IPC advice for security staff was provided during the incident, ideally they would have training and fit-testing to be able to provide support in similar future events
- The clinical lead for microbiology felt the number of infection specialty consultants involved was high, this relates to CSUs have different microbiologists and the additional input from virology consultants. It was acknowledged that the case was unique and all expert input helpful.
- Hoods provided to maternity had incorrect power packs, making use un-safe. This has now been corrected.
- Staff in ICU found FFP3/PPE for airborne transmission reminiscent of difficult experiences in the COVID-19 pandemic, the head of nursing for ACC is providing access to psychological support and de-briefing for this

National guidance

[National measles guidelines July 2024 \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/123456/national-measles-guidelines-july-2024.pdf)

[NHS England » Guidance for risk assessment and infection prevention and control measures for measles in healthcare settings](https://www.nhs.uk/publications/nhs-guidance-for-risk-assessment-and-infection-prevention-and-control-measures-for-measles-in-healthcare-settings/)

Recommendations

1. Fit-testing to be prioritised for CSUs unable to provide staff protected from airborne transmission on all shifts. Given measles epidemiology, Children's CSU, maternity and urgent care are most likely to require this in coming weeks.
2. Measles communications to be shared with staff regularly until case numbers reduce.
3. Communication of K2 notes on PPM+ is feasible with download, to be considered for inpatients admitted to non-maternity specialties if clinically indicated.
4. Information sharing between community IPC, Leeds public health team, social workers and LTHT offered joined up support for the family, and facilitated household vaccination and visiting on the ward. We would recommend using this again, providing IG is not an issue.
5. CSM to be invited to meetings for multi-CSU IPC incidents to support response in and out of hours and maintain communication
6. IPC to support security team on airborne transmission preparedness
7. ACC tri-team to provide access to senior and psychological support for staff expressing distress from prior memories of the pandemic
8. Email expressing thanks to all teams (sent)

[NHS England » Chapter 2: Transmission based precautions \(TBPs\)](https://www.nhs.uk/publications/nhs-guidance-for-risk-assessment-and-infection-prevention-and-control-measures-for-measles-in-healthcare-settings/)