Guidelines on the Management of Pregnant and Postpartum Women with Suspected Influenza

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Please note that this document should be used in tandem with other relevant [insert name of Guidance documents/Disease] applicable legislation, national policy, local procedures, and professional standards. While every effort has been made to ensure the accuracy of the information contained in this document at the time of publication, users should exercise appropriate clinical, public health, professional and managerial judgement in its interpretation and application.

This guidance is intended to support decision-making and should not be relied upon as the sole source of information when making clinical, public health, operational or management decisions. Consideration should be given to the specific circumstances of individual cases and to any relevant local, national or international guidance.

This guidance is reviewed regularly in light of emerging national and international evidence, evolving public health priorities, and policy developments. In addition, it will undergo formal review at least every three years to ensure it remains current and fit for purpose.

For further information please contact rgdu@hpsc.ie

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CONTENTS

1.0 Introduction

1.1 Influenza during pregnancy and the postpartum period

Pregnant women are at increased risk of severe and complicated influenza, including associated hospitalisation and death, compared to non-pregnant women of reproductive age. Normal physiological alterations in heart rate, lung capacity, and immunological function that occur in pregnancy put pregnant women at increased risk of being more severely affected by certain infections, including influenza.

Complications of influenza in pregnancy may include increased risk of hospitalisation, severe pneumonia, preterm labour (premature birth), reduced fetal growth, low birth weight, stillbirth and maternal death. The risk of these complications is higher in the second and third trimesters of pregnancy and is greater for pregnant women with at-risk medical conditions.[1]

Postpartum women, who are in transition to normal heart, lung and immune function, are also at increased risk of severe and complicated influenza up to two weeks postpartum (including following pregnancy loss). Of note, the most effective way to minimise the risks of influenza infection and associated complications during pregnancy is through vaccination. Influenza vaccination should be recommended and offered to all women pregnant at any time during the seasonal vaccine campaign that usually runs from October to April of the following year. The vaccine can be given at any stage of pregnancy.

These guidelines provide recommendations for managing pregnant, postpartum and breastfeeding women presenting with an influenza-like illness (ILI) or confirmed influenza. The diagnosis of influenza should also be considered in all pregnant or postpartum women presenting with acute respiratory infections (ARI) regardless of their vaccine status.

1.1.1 Additional considerations for women with social or accommodation-related vulnerabilities

Some pregnant and postpartum women may have circumstances that make standard infection-control, isolation or discharge recommendations difficult to implement,

including homelessness, congregate accommodation, limited access to healthcare, language or communication barriers, or responsibility for other dependent children without an alternative caregiver. Clinical management should remain based on clinical need, but assessment and discharge planning should take account of these circumstances and identify practical supports required to enable timely treatment, reduce transmission, and support safe care of the woman, newborn and other dependent children.

These guidelines focus primarily on the clinical and public health management of influenza during pregnancy and the postpartum period. While social, accommodation and caregiving circumstances may influence the implementation of recommendations, detailed assessment and management of these issues should be undertaken through appropriate maternity, public health, primary care, social care, housing and community support services, as are available.

Implementation of the recommendations contained in this guidance should take account of the woman's individual circumstances, including accommodation arrangements, caring responsibilities, availability of support networks, and practical access to healthcare services. Where recommended infection prevention and control, isolation, or caregiving measures are not feasible, healthcare professionals should apply clinical judgement and seek appropriate multidisciplinary support to achieve the safest practicable alternative.

1.2 Case definitions

1.2.1 Influenza-like illness

Sudden onset of symptoms

AND at least one of the following four systemic symptoms:

1. fever or feverishness
2. malaise (a general feeling of being unwell)
3. headache
4. myalgia

AND at least one of the following three respiratory symptoms:

1. cough
2. sore throat
3. shortness of breath

1.2.2 Acute Respiratory Infection

An Acute Respiratory Infection† (ARI) is defined as:

Sudden onset of symptoms

AND at least one of the following four respiratory symptoms:

1. Cough
2. Sore throat
3. Shortness of breath
4. Coryza

AND

A clinician's judgement that the illness is due to an infection

Pregnant women should be advised of the signs and symptoms of ILI/ARI and encouraged to contact their GP or maternity unit early if they develop ILI/ARI symptoms or any respiratory symptoms after close contact with a person who has ILI/ARI or laboratory-confirmed influenza. They should be assessed, diagnosed and managed on clinical grounds, noting that there are a number of differential diagnoses for people presenting with ILI or ARI. Influenza typically involves symptoms such as fatigue, headache, muscle aches and pains, and persons usually have a fever. In addition, during Autumn/Winter **Influenza**, **Respiratory Syncytial Virus**, **SARS-CoV-2,** and other respiratory viruses continue to circulate and can be difficult to distinguish from symptoms alone without a laboratory test. This needs to be considered when a clinical assessment is being undertaken. The most effective way to avoid the risks of influenza infection is through vaccination.

Pregnant and postpartum women who experience barriers to accessing routine healthcare, including women experiencing homelessness or living in State-provided accommodation for refugees and applicants seeking protection, may require additional support to access timely clinical assessment. Where possible, services

†ECDC/EC case definition: Available online from: **https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D0945&from=EN#page=24**

should facilitate direct access to appropriate maternity, primary care or outreach/in-reach services rather than relying on the woman to independently navigate referral pathways.

Clinical Caveat: A high index of suspicion should be maintained where clinical presentation may be non-specific or masked by co-occurring physical or mental health conditions, substance use, or other complex needs.

2.0 Testing/Diagnosis

Nose and throat viral swabs should be taken for all pregnant women admitted to hospital with symptoms of ILI or ARI and for women with symptoms of ILI or ARI being considered for hospital admission (whether for ILI/ARI or obstetric reason). SARS-CoV-2 and influenza can be difficult to distinguish from their symptoms alone and require a laboratory test.

For pregnant women managed in the community, testing should be undertaken in accordance with the current Acute Respiratory Infection (ARI) testing guidance.

3.0 Prevention

3.1 Influenza vaccine

The World Health Organization (WHO) has stated that pregnant women are one of the highest priority groups for seasonal influenza vaccination.[2]

In Ireland, the **seasonal influenza vaccine is recommended** by the National Immunisation Advisory Committee (NIAC) for all pregnant women. Influenza vaccine **can be administered at any stage of pregnancy** during each influenza season. Pregnant women are recommended to receive the non-live influenza vaccine. As this is not a live vaccine, it is very safe in pregnancy.

Influenza vaccines recommended by the WHO are prepared each year, using virus strains similar to those considered most likely to circulate in the forthcoming season.

Pregnancy increases the risk of complications from influenza because of alterations in

heart rate, lung capacity and immunological function. Influenza infection during pregnancy can lead to premature birth, lower birth weight, stillbirth and hospitalisation. The flu vaccine given during pregnancy has been shown to protect both the mother and her baby (up to 6 months old) from influenza infection and associated complications.[1] It takes approximately two weeks after the vaccine has been given to be protected. See further information on influenza vaccine during pregnancy at **flupregleaflet.pdf**

4.0 Treatment

Scientific evidence attests to adverse outcomes in pregnant women who develop influenza during pregnancy, including increased likelihood of ICU admission.[3] Antiviral treatment is recommended for pregnant women or women up to two weeks postpartum (including following pregnancy loss) with suspected or confirmed **severe influenza** and can be taken during any trimester of pregnancy.[3]

Severe influenza‡: Influenza virus can also cause severe illness (such as sepsis, septic shock, severe pneumonia, acute respiratory distress syndrome [ARDS], multi-organ failure, exacerbation of chronic medical conditions) or death. These conditions would normally require hospitalisation and in some severe and critical cases the provision of oxygen, mechanical ventilation (invasive or non-invasive) and/ or vasopressor therapy.

Pregnant or postpartum women with novel influenza A associated with high mortality, or with an unknown risk of severe disease, should be considered as "severe influenza" even if they do not otherwise fulfil the criteria.[4]

During the influenza season, treatment for suspected severe influenza should not be delayed while awaiting laboratory test results. Empiric antiviral treatment should be started as soon as possible, ideally within 48 hours of symptom onset, as studies demonstrate that early initiation of treatment is more likely to confer benefit.[3]

‡ For surveillance purposes nationally and internationally - severe cases includes all hospitalised and ICU cases and deaths

However, some studies of hospitalised persons with influenza, including an analysis of hospitalised pregnant women, suggest benefit from antiviral treatment even when started more than 48 hours after symptom onset.[3]

Multiple observational studies have shown that antiviral treatment with oral oseltamivir is safe during pregnancy and does not increase the risk of adverse pregnancy outcomes.[5-14] Oseltamivir remains the first line option for the vast majority of pregnant women with severe influenza and is generally well tolerated, although side effects can occur. There are no data suggesting that tolerability differs between pregnant and non-pregnant women.[15]

Standard dose and duration of treatment with oseltamivir is 75mg orally twice daily for 5 days. Hospitalised persons with severe influenza may require a longer duration of treatment, extension of treatment will be based on clinical assessment.

For pregnant women who meet additional criteria for requiring zanamivir, further assessment (i.e. rapid diagnostics) and antiviral treatment should be discussed with a local infection specialist.

Summary of Product Characteristics *(Intravenous Zanamivir):*

"There are limited data from the use of zanamivir in pregnant women. Animal studies do not indicate direct or indirect harmful effects with respect to reproductive toxicity (see section 5.3). Reproductive studies performed in rats and rabbits indicated that placental transfer of zanamivir occurs and there was no evidence of teratogenicity. Results from a rat peri- and postnatal study showed no clinically meaningful impairment of offspring development. However, there is no information on placental transfer in humans.

As experience is limited, the use of zanamivir in pregnancy should only be considered if the possible benefit to the pregnant or postpartum woman is thought to outweigh any possible risk to the fetus.

For pregnant women admitted directly into critical care, please follow guidance as per "***Guidance on the use of antiviral agents for the treatment and prophylaxis of***

influenza"

5.0 Chemoprophylaxis

Post-exposure antiviral chemoprophylaxis can be considered for certain pregnant women and women who are up to two weeks postpartum (including following pregnancy loss) who have had close contact§ with someone likely to have been infectious with influenza and who

- **Did not receive an influenza vaccination** due to a contraindication or because vaccine is not available, or
- have **severe immune deficiencies or other medical conditions** that make them unlikely to respond to influenza vaccination

Clinical judgement should be exercised in individual cases to determine if the benefit of receiving chemoprophylaxis outweighs the risk. Previous influenza vaccination does not preclude the use of post exposure prophylaxis. Pregnant women and women who are up to two weeks postpartum (including following pregnancy loss) who are given post-exposure chemoprophylaxis should be informed that the chemoprophylaxis lowers but does not eliminate the risk of influenza and that protection stops when the medication course is stopped.[3] Those receiving chemoprophylaxis should seek advice from their doctor if they develop respiratory symptoms that might indicate Influenza infection.

Some women may have additional risk factors, such as underlying co-morbidities which should be considered by the relevant clinician when making decisions regarding chemoprophylaxis.

An alternative approach for pregnant and postpartum women (up to two weeks postpartum, including following pregnancy loss) who have had close contact with a person with laboratory confirmed influenza is to provide information on the early signs and symptoms of ILI/ARI and influenza, and advise them to contact their doctor

§ Close contact is defined as having cared for or lived with a person who has confirmed, probable or suspect influenza or having been in a setting where there is a high likelihood of contact with respiratory droplets of such a person, including having talked face-to-face with them.

immediately for evaluation and possible early anti- viral treatment if clinical signs or symptoms develop following a risk assessment.[3]

Oseltamivir is used for chemoprophylaxis in pregnant women who are eligible as outlined above. Standard dose and duration of oseltamivir chemoprophylaxis is 75mg orally once daily for 10 days. For further guidance see *"**Guidance on the use of antiviral agents for the treatment and prophylaxis of influenza**"* on the HPSC website.

6.0 Pre-Delivery

- Prior to antepartum admission, a hospitalised pregnant woman with ILI/ARI or influenza should be managed in accordance with the **Infection Prevention and Control, National Clinical Guideline No. 30.** Standard and droplet precautions, with additional precautions for aerosol generating procedures (AGPs) should be employed. This includes placement in a single room, **cough etiquette**, including wearing a facemask if being transported outside of their room, and additional personal protective equipment (PPE) for staff. Facilities should refer to the **Infection Prevention and Control, National Clinical Guideline No. 30** for more detailed information.
- Health and Care Workers (including catering, and healthcare assistance) entering rooms of pregnant women with suspected or confirmed influenza should adhere to standard and droplet precautions, including wearing a facemask, performing hand hygiene, wearing gloves for any contact with potentially infectious material and wearing a gown for any activity where contact with the pregnant woman's body fluids may occur.[16]
- International recommendations in relation to the duration of droplet precautions for cases of influenza vary from country to country. As a general rule, the duration of isolation precautions for hospitalised persons with confirmed influenza should be continued for 5 days after illness onset. This may be extended to 7 days for persons who are immunosuppressed following consultation with their doctor. Pregnant and postpartum women on droplet precautions should be discharged from hospital when clinically indicated, NOT based on the period of potential infectiousness or recommended duration of droplet precautions.

- The partner/support person of the pregnant woman should be informed of the risks of influenza virus transmission and instructed to adhere to respiratory hygiene and cough etiquette, hand hygiene, and use of PPE according to local policy.[16]
- Where a pregnant woman with suspected or confirmed influenza is being managed outside hospital and lives in congregate accommodation, advice on reducing transmission should take account of the practical circumstances of the accommodation. Where effective isolation cannot be achieved, particularly in emergency homeless accommodation or other shared accommodation, early IPC/Public Health advice should be sought and alternative arrangements considered where indicated.

7.0 Delivery

- Women with suspected or confirmed influenza who are in labour ward/birthing suite and /or obstetric theatre should remain on droplet precautions. Mothers should not be asked to wear a mask during labour and birth. Health and care workers in the labour ward/birthing suite and /or obstetric theatre should adhere to all necessary **Infection Prevention and Control** precautions including practicing **hand hygiene** before and after handling the newborn.
- If delivery is by planned induction or elective caesarean section, consider deferral, if appropriate. This decision should be taken at senior level weighing up obstetric indication for delivery with risk to the pregnant woman and baby of delivery while unwell.

8.0 Postpartum

- Infection control precautions for mothers with ILI/influenza should continue as above.
- Breast feeding should be strongly encouraged. Appropriate efforts should be made to reduce the likelihood of the baby becoming infected, while minimising the effect on the mother-baby relationship. These include:
    - Treating the mother to reduce the risk of transmission.
    - Where practicable, the mother and baby should sleep at least 2 metres apart (6 feet), separately in a bed and infant cot in the same room (at least while in hospital). This is in line with the **National Infant Feeding Policy for Primary**

Care Teams and Community Health Organisations.

- Where this separation cannot reasonably be achieved because of the woman's accommodation circumstances, emphasis should be placed on other measures to reduce transmission, including maternal treatment, hand hygiene, respiratory etiquette, use of a surgical mask during close contact while infectious, and appropriate IPC/ Public Health advice where required.
- When breastfeeding, bathing, caring for, cuddling, or otherwise being within 2 metres of the baby, the mother should wear a surgical mask and clean her hands thoroughly with alcohol hand rub or soap and water before interacting with her baby.
- The mother should try to avoid coughing near the baby and practice **cough etiquette**.
- If expressing breast milk using a pump, this should be cleaned as per the manufacturer's instructions.
- While these measures can be ceased when the mother is no longer infectious, usually five days following symptom onset, continued good hygiene should be encouraged at all times.
- These measures should also apply to any carer or family member with influenza.
- Mothers requiring hospital care should not be prematurely discharged because they have influenza.
- If discharged while still infectious, mothers should be provided with a sufficient supply of surgical masks to take home.

8.1 Post exposure prophylaxis for neonates born to mothers with laboratory confirmed Influenza

A particular clinical challenge arises with regard to the neonate if a pregnant woman develops laboratory confirmed seasonal influenza shortly before the onset of labour. The potential mode of transmission to the neonate in such a scenario is via direct contact with the infected respiratory secretions of the mother rather than via breastmilk. The **Summary of Product Characteristics (SPC)** for oseltamivir oral suspension states that the medicine can be used for post-exposure prevention of influenza in infants less than 1 year of age during a pandemic influenza outbreak.

The recommended prophylaxis dose for infants less than 1 year of age is 3mg/kg once daily as per SPC for oseltamivir. This dosing recommendation is not intended for premature infants, i.e. those with a post-conceptual age less than 37 weeks. Use of post exposure prophylaxis in an infant less than 1 year, outside of a pandemic influenza outbreak, would represent an unlicensed use.

There are **three potential options** which may be considered by mothers and clinicians in relation to neonates born to women with laboratory confirmed Influenza.

1. **Oseltamivir oral suspension for post-exposure prophylaxis in the neonate**, which would be an unlicensed indication if used outside a pandemic influenza outbreak. As prophylaxis reduces but does not eliminate the risk of infection, infants should be closely monitored for signs and symptoms of Influenza.
2. **Temporary physical separation of the symptomatic mother and asymptomatic neonate may be considered in selected circumstances following individual clinical assessment.**

   Potential disadvantages include adverse effects on breastfeeding, maternal-infant bonding and family functioning. The potential benefits of reducing transmission should be balanced against these considerations when discussing management options with the woman. Throughout any period of temporary separation, and if the mother is severely ill, feeding and care may be provided by a healthy caregiver where one is available and the mother agrees. The availability of a suitable caregiver and the mother's wider caring responsibilities should form part of the decision-making process. Temporary separation should not be recommended without consideration of whether safe and appropriate care for the newborn can be provided. Women should be encouraged to express breastmilk so that the neonate can receive the benefits of breastmilk, and to maintain the mother’s milk supply in order that breastfeeding can continue once mother and baby are reunited. Detailed advice on use of Oseltamivir during breastfeeding should be sought from the Summary of Product Characteristics (SPC) or **https://sps.nhs.uk/articles/using-oseltamivir-and-zanamivir-during-breastfeeding/**

3. **No prophylaxis for the neonate and no separation of neonate and mother.**

   This will require careful monitoring for symptoms of influenza, a discussion in advance with the mother about prompt antiviral treatment of the neonate, and advance arrangements for rapidly accessing oseltamivir oral suspension if required. An oral suspension may be compounded from the oseltamivir capsules if suspension is not available, please consult the patient information leaflet or the **SPC** for instructions. There should also be consideration of laboratory testing of a symptomatic neonate, as per existing local arrangements.

In both scenarios 1 and 3, which does not involve physical separation between mother and baby, the mother should be advised of measures to reduce risk of transmission, including respiratory hygiene and cough etiquette, use of facemasks during close contact including during breastfeeding, and handwashing with soap and water, particularly before breastfeeding or touching any other item that the neonate may come in contact with. If expressing breast milk using a pump, this should be cleaned as per the manufacturer's instructions.

Decisions regarding the most appropriate course of action should be made on a case-by-case basis and must involve detailed discussion between the mother and her healthcare team, taking account of her clinical circumstances, values, and preferences regarding the relative advantages and disadvantages of each potential option. Decisions should take account of the woman's individual social and accommodation circumstances, including whether she is the sole or primary caregiver for the newborn or other children, whether another suitable caregiver is available, and whether her accommodation permits safe separation.

Where the woman has other dependent children, particularly where she is their sole or primary caregiver, assessment and discharge planning should consider whether suitable arrangements are available for their care during maternal illness, hospitalisation or any recommended period of isolation. This should not delay clinically necessary admission or treatment, but relevant maternity, social work,

accommodation and community services should be engaged early where additional support is required.

This advice does not constitute a specific endorsement of the routine use of oseltamivir oral suspension for prophylaxis in neonates but recognises that this may occur as an off-label use in specific circumstances. Such clinical scenarios highlight the importance of seasonal influenza vaccination of pregnant women; previous research has shown that this was 71% effective in preventing influenza infection in infants aged less than 6 months in England.[16-17]

Further advice on the use of antiviral agents for the treatment and prophylaxis of Influenza can be found **here.**

9.0 Neonatal Unit

- **Symptomatic mothers, care givers, and family members should not enter the neonatal unit**. Digital technology may be used for mother to see her baby.
- **Appropriate signage** should be displayed at the entrance to the neonatal unit to discourage visitors with ILI/ARI from entering.
- If a newborn infant of a mother with suspected or confirmed influenza is housed outside of the mother's room, infants without symptoms of influenza can be cared for by a healthcare professional using standard precautions and should be closely observed for signs of infection.
- A newborn that develops symptoms should be placed on droplet and contact precautions and be assessed by a neonatologist/paediatrician.

10.0 Visitors

As a general rule during an outbreak, visitors are prohibited from attending the maternity hospital/unit or labour ward as they are a possible source of influenza infection for pregnant or postpartum women. A partner or support person will be permitted to attend, subject to the following recommendations:

- Visitors should be instructed to limit their movement within the facility.

- Appropriate signage to discourage those visitors with ARI/ILI from entering the hospital should be placed prominently at hospital entrances.
- Facilities should provide instruction, before visitors enter pregnant or postpartum women's rooms, on hand hygiene, limiting surfaces touched, and use of PPE while in the person's room.

11.0 Discharge

- Pregnant women are recommended to receive the inactivated influenza vaccine. As this is not a live vaccine, it is very safe in pregnancy. One influenza vaccine is recommended in each influenza season. For women who are postpartum, influenza vaccine should only be offered to those who are in recommended groups as per the NIAC guidelines. **https://www.hiqa.ie/areas-we-work/national-immunisation-advisory-committee/immunisation-guidelines-ireland**.
- The postpartum woman and baby should be discharged from hospital as soon as it is safe to do so. Discharge planning should include consideration of whether the woman's accommodation enables the recommended infection-control measures to be followed safely. This is particularly important for women experiencing homelessness or living in congregate accommodation, where shared sleeping, dining or sanitary facilities and limited isolation capacity may increase the risk of onward transmission.
- Where safe isolation cannot be achieved, this should be identified before discharge and the maternity team should liaise, as appropriate, with relevant local homeless action/response services (to explore appropriate temporary accommodation or other arrangements that support safe isolation), IPC/ Public Health, primary care or outreach services to support a safe discharge plan.
- The postpartum woman should be provided with the remaining course of antiviral treatment on discharge, or arrangements should be confirmed to ensure timely access to it, and she should be advised to complete the course.
- Ensure that the GP and Public Health Nurse (PHN) are informed of the discharge and influenza status of the postpartum woman and newborn baby. Where the woman is receiving care from a specialist homeless health service, migrant health team, in-reach/outreach service or other relevant community service, these

services should also be included in discharge planning, with the woman's consent and in accordance with normal information-sharing requirements.

- Ensure the postpartum woman has information on:
    - Influenza and knows that it is important to contact the GP/hospital promptly if the newborn baby develops ARI/ILI symptoms.
    - Avoiding contact, as far as possible, with any individuals in the home who develop ARI/ILI symptoms to minimise exposure to herself and the newborn baby.
    - Hand hygiene and respiratory etiquette when having contact with the newborn baby.

Where available and acceptable to the mother, a vaccinated non-ill adult may assist with care of the newborn while the mother is symptomatic. Where no such person is available, this should be recognised in discharge planning and practical alternatives considered rather than relying on the mother to arrange alternative care herself.

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