Chicken Pox in pregnancy

University Hospitals of Leicester NHS Trust

Trust ref: C16/2015

Contents

1. Introduction and Who Guideline applies to

This guideline is intended for the use by all UHL staff involved in the care of pregnant people who have been exposed to or have acquired chickenpox.

Background:

Chickenpox (varicella) infection is caused by the varicella zoster virus (VZV). This is a common childhood disease with over 90% of those aged 15 years and above in England and Wales immune to VZV. Individuals born and raised in tropical climates are less likely to be immune to varicella and a history of chickenpox can be a less reliable predictor of immunity in this population. It is estimated that VZV infection complicates about 3 in 1000 pregnancies.

The virus can remain dormant in sensory nerve root ganglia after a primary infection and can then be reactivated to cause a vesicular erythematous skin rash in a dermatomal distribution known as herpes zoster (shingles).

This virus is highly contagious and is transmitted by respiratory droplets and aerosols, direct personal contact, and contact with fomites. The incubation period is between 1-3 weeks. Chicken pox is infectious from 24 hours before the rash appears until the vesicles are dry or have crusted over, usually 5 days after the onset of the rash (this period may be longer in people who are immunocompromised).

Shingles infection is primarily transmitted by direct contact with vesicle fluid and is considered infectious from onset of rash until all of the lesions have crusted over.

Both chickenpox and shingles pose a risk to susceptible pregnant persons.
The majority of pregnant people are immune to varicella and infection with VZV is uncommon in pregnancy.

Varicella infection in pregnancy can lead to maternal mortality or serious morbidity. About 10-20% of infected pregnant people develop varicella pneumonitis which can lead to severe sepsis, disseminated intravascular coagulopathy, acute respiratory failure and death. Other severe maternal morbidity includes hepatitis and encephalitis.

Maternal VZV infection in the first 20 weeks of pregnancy can lead to fetal varicella syndrome (FVS). FVS is a multi-system disorder of the fetus with skin lesions, neurological and cardiovascular abnormalities, limb and muscle hypoplasia, mental retardation as well as abnormalities of the genitourinary and gastrointestinal systems.

The risk of embryopathy with maternal varicella infection is highest between 13-20 weeks gestation and is estimated to be around 2%(UKHSA)[2] <1%.(RCOG)[1] The risk of embryopathy before 13 weeks gestation is around 0.4% (UKHSA)[2] 0.55% (RCOG)[1]
Maternal VZV infection in the third trimester can lead to severe neonatal varicella in the first week of life.

Post-exposure Prophylaxis (PEP) is offered to pregnant people if they fulfil PEP criteria of 'significant exposure' and 'no antibodies to VZV', to attenuate maternal disease and reduce complications such as pneumonitis, infections in late pregnancy and to reduce the risk of severity of neonatal disease.

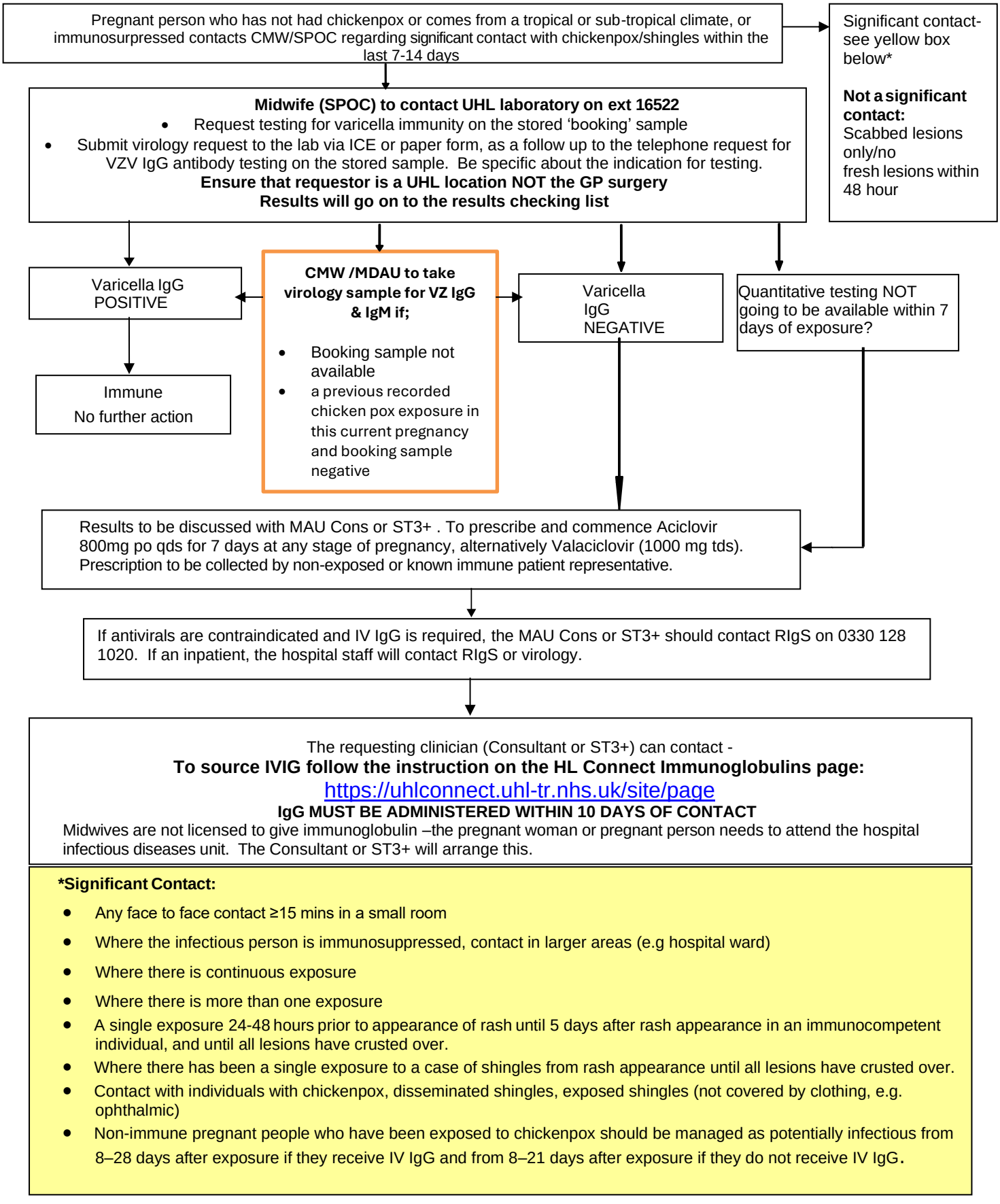
Related documents:

Chickenpox in Pregnancy (Green-top Guideline No13) January 2015 minor update 2024
https://www.rcog.org.uk/media/1vtnn25h/gtg-13-cpox.pdf

What's new?

- Individuals born and raised in tropical climates are less likely to be immune to varicella and a history of chickenpox can be a less reliable predictor of immunity in this population.
- Consider a pregnant woman or person who is immunosuppressed for a reason other than pregnancy to be at risk when exposed.
- The infected period is from 24 hours before the onset of rash until all lesions have crusted over; this period may be longer in immunocompromised individuals
- A/N history section added
- If immunosuppressed, and VZV IgG ≥ 150mIU/ml – reassure, PEP is not indicated
- Added indications for considering hospitalisation
- Appropriate treatment should be decided with a multidisciplinary team.
- GP services no longer assess and treat pregnant people exposed to varicella. Assessment for PEP requirement, prescribing and dispensing PEP will be conducted by maternity services.

Flowchart 1: Process for pregnant people booked at the University Hospitals of Leicester NHS Trust who are exposed to Varicella (Chickenpox/Shingles) infection in pregnancy



***Significant Contact:**

- Any face to face contact ≥15 mins in a small room
- Where the infectious person is immunosuppressed, contact in larger areas (e.g hospital ward)
- Where there is continuous exposure
- Where there is more than one exposure
- A single exposure 24-48 hours prior to appearance of rash until 5 days after rash appearance in an immunocompetent individual, and until all lesions have crusted over.
- Where there has been a single exposure to a case of shingles from rash appearance until all lesions have crusted over.
- Contact with individuals with chickenpox, disseminated shingles, exposed shingles (not covered by clothing, e.g. ophthalmic)
- Non-immune pregnant people who have been exposed to chickenpox should be managed as potentially infectious from 8–28 days after exposure if they receive IV IgG and from 8–21 days after exposure if they do not receive IV IgG.

2. Guideline Standards and Procedures

2.1 Antenatal consideration

Pregnant women and pregnant people booking for antenatal care should be asked about previous chickenpox/shingles infection or varicella vaccination.

Those who have not had chickenpox, or are known to be seronegative for chickenpox, should be advised to avoid contact with chickenpox and shingles during pregnancy and to inform healthcare workers of a potential exposure without delay via the single point of contact tel: 0116 258 6111.

Pregnant women and pregnant people with an uncertain or no previous history of chickenpox, or who come from tropical or subtropical countries, who have been exposed to infection should have a blood test to determine VZV immunity or non-immunity. (Please see references for more information re- tropical and sub-tropical climates). For blood sample collection, contact the community office (ext 14834) to arrange an urgent sample to be taken by the community midwife. Alternatively, contact MDAU to arrange last appointment of the day for blood sampling. Ensure that requestor is a UHL location and NOT the GP surgery.

All pregnant women and pregnant people who develop a chickenpox rash should immediately contact their maternity unit via the single point of contact tel: 0116 258 6111. Telephone triage midwives arrange for booking virology samples to be reviewed and assessment made for PEP requirement. (please refer to flowchart page 2)

2.2 Risk assessment of pregnant people following exposure to varicella or shingles

History Testing Treatment
A past history of chickenpox/ shingles **OR** 2 recorded doses of varicella vaccine.
Do not test. Assume immune.
No need for PEP.

History of chicken pox in a pregnant woman or pregnant person born and raised in a tropical / subtropical climate OR Uncertain or no history of chickenpox/ shingles **OR**
a pregnant woman or pregnant person who is immunosuppressed for a reason other than pregnancy,
AND
Unknown or negative varicella vaccine history

Test antenatal booking bloods* (if available) for VZV IgG.
This can be arranged by phoning the virology lab (ext 16522) in working hours
If VZV IgG quantitative assay is ≥100 mIU/ml – reassure, PEP is not indicated.
If immunosuppressed, VZV IgG ≥ 150mIU/ml – reassure, PEP is not indicated
If the result from quantitative testing will not be available within 7 days of exposure, then treat with antivirals.
*For people with an uncertain or negative history of chickenpox, antenatal booking bloods should be tested unless there is a recorded chickenpox exposure in this pregnancy, in which case a fresh sample should be taken for testing if the booking sample is negative. Contact the community office (ext 14834) to arrange an urgent sample to be taken by the community midwife. Alternatively, contact MDAU to arrange last appointment of the day for blood sampling. Ensure that requestor is a UHL location and NOT the GP surgery.

2.3 Definition of significant exposure to VZV

Three aspects of exposure to VZV during the infectious period are relevant when considering the need for PEP:

A. Closeness and duration of contact - in addition to household contacts, PEP should be offered in the following circumstances:

- Any face-to-face contact, for example having a conversation
- 15 minutes or more in a small room (in the home, classroom, hospital bay)
- Where the infectious person is immunosuppressed, contact in larger areas (e.g. hospital ward) may also require PEP to be offered as immunosuppressed individuals may have higher viral shedding

B. Timing of exposure - PEP should be offered to pregnant people;

- Where there is continuous exposure to chickenpox or shingles (e.g. household member, nursery or care worker)
- Where there has been more than one exposure (e.g. infected friend visited more than once during infectious period)
- Where there has been a single exposure to a case of chickenpox from 24-48 hours before onset of rash until 5 days after rash appearance in an immunocompetent individual, and until all lesions have crusted over in an immunocompromised individual
- Where there has been a single exposure to a case of shingles from rash appearance until all lesions have crusted over

C. Type of VZV infection in index case - PEP should only be offered following contact with individuals with chickenpox, with disseminated shingles, exposed shingles (not covered by clothing, for example ophthalmic) or with immunosuppressed individuals with any kind of shingles.

Non-immune pregnant people who have been exposed to chickenpox should be managed as potentially infectious from 8–28 days after exposure if they receive VZIG and from 8–21 days after exposure if they do not receive VZIG.

2.4 Post Exposure Prophylaxis

Without PEP, risk of developing chickenpox following significant exposure is high (>70%).

A. Antivirals (Aciclovir or Valaciclovir)

In light of the existing evidence on the safety of aciclovir, the efficacy of aciclovir in preventing clinical chickenpox in healthy and immunosuppressed contacts and the relative sub-optimal efficacy of VZIG as PEP in pregnant people, antivirals are now the treatment of choice for exposure to varicella and shingles for susceptible people exposed in any stage of pregnancy. (UKHSA 2022)

Although oral aciclovir and valaciclovir are not licensed in pregnancy, there is extensive evidence of safety, including from 2 large registries of infants whose mothers were exposed to aciclovir in pregnancy. From follow up across 24 countries between 1984 to 1999 of over 1,200 pregnancies that received either oral or IV aciclovir across all stages of pregnancy, no unusual defects or patterns of defects were observed. In a Danish national cohort study of 1,804 exposures to antiviral agents (aciclovir, valaciclovir, famciclovir) in pregnancy, no increase in major birth defects was reported in people exposed to either aciclovir or valaciclovir in the first trimester.

As for any prescribing of medications not licensed for use in pregnancy, this should be

discussed with the pregnant person and documented in their health record.

Any susceptible pregnant woman or pregnant person who, after risk assessment, is deemed to require PEP should be advised to take antivirals from day 7 to day 14 after exposure. The day of exposure is defined as the date of onset of rash in a household contact, or the date of first or only contact in multiple or single exposures respectively. If the person presents between days 7 and 14 of exposure, a 7-day course of antivirals can be started.

Aciclovir (800 mg 4 times a day for 7 days) is recommended. Oral valaciclovir 1000 mg 3 times a day can be used as a suitable second line alternative.
Immunoglobulin (IgG) should only be offered if the pregnant person is unable to take oral antivirals due to malabsorption or renal toxicity or hyperemesis.

The dose of aciclovir may need to be adjusted in people with renal impairment. Individuals with glomerular filtration rates less than 10 mL/minute/1.73m2 may need the frequency or dose altered (please see BNF).
In individuals with severe renal impairment or intestinal malabsorption, for example inflammatory bowel disease, IV IgG may need to be considered, and these people should be discussed with the Maternal Medicine team.

The most commonly reported side effects from aciclovir include dizziness, headache, nausea, vomiting, diarrhoea, abdominal pain, skin rashes, photosensitivity, pruritus, urticaria and fatigue. Further information about side effects on aciclovir and valaciclovir are available in the BNF.

Prescriptions for oral PEP should be collected from MAU/MDAU by a representative who has either been not exposed to the virus or is known to be immune.

B. Immunoglobulin (IgG)

PLEASE NOTE: VARICELLA ZOSTER IMMUNOGOBULIN (VZIG) IS NO LONGER AVAILABLE AS AN INTRAMUSCULAR INJECTION.

For individuals who are unable to take oral antivirals, intravenous IgG may need to be administered.

To source IVIG follow the instruction on the HL Connect Immunoglobulins page: https://uhlconnect.uhl-tr.nhs.uk/site/page

Pregnant women and pregnant people requiring intravenous IgG will need to be admitted to hospital to receive the infusion. Infusions will be administered on the infectious diseases unit. The obstetric team must be notified of the admission to enable appropriate MDT management of individual cases.

Contacts who cannot receive antivirals should be given IVIG at a dose of 0.2g per kg body weight (4ml/kg for a 5% solution) instead. This will produce serum VZV antibody levels equivalent to those that were achieved with VZIG. (gov.uk/post-exposure-prophylaxis-for-chickenpox-and-shingles)

2.4 Subsequent exposure to chickenpox or shingles during the same pregnancy

Pregnant women or pregnant people who have a second exposure during pregnancy should be risk assessed and may need to have a repeat VZV antibody test, given the rates of seroconversion with aciclovir. If presenting late after the exposure, there may not be sufficient time to perform VZV IgG testing within the 7 day window. Discussion with virology advised in these instances.

Given the short half-life of aciclovir or valaciclovir, if there is a second exposure immediately after a course of antivirals, a second risk assessment and course should be given in the same way starting 7 days after the subsequent exposure.

Individuals who have previously received IV IgG as PEP require a new risk assessment if a second exposure occurs:

- within 3 weeks of administration of IV IgG, further PEP is not required
- between 3 and 6 weeks following administration of IV IgG, further PEP (dose of IV IgG) should be administered without further testing
- more than 6 weeks following administration of IV IgG, retesting of a new sample is required

3. Management of pregnant women and pregnant people who develop chicken pox in pregnancy

- Pregnant women and pregnant people presenting with a chickenpox rash should be started on a therapeutic dose (aciclovir 800 mg 5 times a day or 1,000mg valaciclovir 3 times a day for 7 days, starting from the day of onset of the rash).

1.1 Criteria indicating that hospitalisation is required:

ABSOLUTE

- Respiratory symptoms
- Neurological symptoms other than headache e.g. photophobia, dizziness, seizures
- Haemorrhagic rash or bleeding
- Severe disease – Dense rash or numerous mucosal lesions
- Significant immunosuppression
- Requires IV IgG administration

CONTRIBUTORY FACTORS

- Pregnancy approaching term
- Poor obstetric history
- Smoker
- Chronic lung disease
- Poor social circumstances
- History of systemic corticosteroid use in the preceding 3 months

Pregnant women or pregnant people reporting any of the above symptoms should be advised to attend ED. ED will liaise with the obstetric team and infectious diseases unit to arrange admission and treatment.

They should not attend MAU/MDAU or Antenatal clinic due to the risk of transmission.

- Isolate from other pregnant women and pregnant people, babies and non-immune staff when attending for medical assessment.

- Appropriate treatment should be decided with a multidisciplinary team that includes an obstetrician or fetal medicine specialist, a virologist and a neonatologist.
- Advise to avoid contact with other susceptible individuals (other pregnant persons and neonates) until lesions have crusted over, which is typically five days after the onset of rash.
- Pregnant women and pregnant people with chickenpox should be advised regarding hygiene measures to avoid superimposed bacterial infections.

IgG has no therapeutic benefit once chickenpox has developed and should therefore not be administered to pregnant women and pregnant people who have developed a chickenpox rash.

3.2 Risks

- Pregnant women and pregnant people should be counselled about the risks of chickenpox to themselves and their baby.
- They should be advised about the signs and symptoms of chickenpox which include pruritic rash, crops of vesicles, fever and malaise.
- Chickenpox can have potentially life-threatening complications like pneumonitis, hepatitis, encephalitis, maternal death, fetal varicella syndrome and varicella infection of newborn.
- Pregnant women and pregnant people should be advised that there is no apparent increase in miscarriage if chickenpox occurs during first trimester.
- If a pregnant woman or pregnant person develops chickenpox in the first 28 weeks of pregnancy, their fetus will have a small risk of developing fetal varicella syndrome and this should be discussed with them.
- All pregnant women and pregnant people who develop chickenpox in pregnancy should be referred to a fetal medicine specialist at 16-20 weeks gestation or 5 weeks after infection if outside this range, for detailed ultrasound examination of the fetus and discussion.
- Pregnant women and pregnant people who develop chickenpox during pregnancy should be counselled about risks and benefits of amniocentesis to detect varicella DNA in amniotic fluid; however amniocentesis should only be performed once the skin lesions have completely healed. Amniocentesis has a strong negative predictive value but a poor positive predictive value in detecting fetal damage that cannot be detected by non-invasive methods.

3.3 Delivery

- Delivery timing and mode should to be considered on an individual basis.
- Delivery while the vesicles are still active may be hazardous and poses a very high risk of maternal morbidity and mortality and therefore should be avoided. There is also a high risk of varicella infection of the newborn with significant morbidity and mortality.
- Ideally, a minimum of 7 days should elapse between onset of rash and delivery providing continuing the pregnancy does not pose any additional risk to mother or baby.
- The newborn is at high risk of varicella infection which has significant morbidity and mortality. The risk of acquiring this is highest if maternal infection occurs in the last 4 weeks of pregnancy.
- Pregnant women and pregnant people with chickenpox requiring delivery should be reviewed by the anaesthetist. There's no evidence to inform decisions on the optimum method of anaesthesia. General anaesthesia may exacerbate respiratory compromise

associated with varicella pneumonia and theoretically there is risk with spinal anaesthesia transmitting the virus to the CNS. Epidural anaesthesia may be safer than spinal anaesthesia as the dura is not penetrated, however the larger needle required carries the theoretical risk of transferring a greater viral load from the skin to the epidural space. A site free of cutaneous lesions should be chosen for needle placement.

- A neonatologist should be informed of the birth of babies to people who developed Chicken pox at any gestation during pregnancy. Paediatric alert form should be completed.
- People who had chicken pox can breastfeed unless otherwise contraindicated. If there are active lesions close to the nipple they should express milk from the affected breast until the lesions crust over. The expressed milk can be used if baby has received treatment with aciclovir or IVIG.

3.4 Postnatal care of pregnant women or pregnant people who are found to be VZV IgG negative

- Pregnant women or pregnant people who are found to be VZV IgG negative should consider varicella vaccination postpartum.
- If vaccination is administered to a non-pregnant person, they should avoid getting pregnant for 4 weeks after completion of the course of vaccine and also avoid contact with other pregnant people and neonates if a rash occurs.
- If the vaccine is administered postpartum, they can be reassured that it is safe to breastfeed.

4. Education and Training

None

5. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
People with significant, exposure should be treated appropriately	Review of case notes	Named Consultant	As occurs	Perinatal Review Group

6. Supporting References

1. Chicken Pox in Pregnancy Greentop Guideline RCOG 2015 (minor update 2024) https://www.rcog.org.uk gtg-13-cpox.pdf
2. Guidance on the investigation, diagnosis and management of viral illnesses (plus syphilis), or exposure to viral rash illness, in pregnancy UKHSA August 2024
3. www.gov.uk/government/publications/post-exposure-prophylaxis-for-chickenpox-and-shingles/guidelines-on-post-exposure-prophylaxis-pep-for-varicella-or-shingles
4. gov.uk viral-rash-in-pregnancy-guidance-syphilis-august-2024.pdf
5. Management of chickenpox exposure in Paediatrics UHL guideline (2024) https://www.metoffice.gov.uk/weather/climate/climate-explained/climate-zones

7. Key Words

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

EDI Statement

We are fully committed to being an inclusive employer and oppose all forms of unlawful or unfair discrimination, bullying, harassment and victimisation.

It is our legal and moral duty to provide equity in employment and service delivery to all and to prevent and act upon any forms of discrimination to all people of protected characteristic: Age, Disability (physical, mental and long-term health conditions), Sex, Gender reassignment, Marriage and Civil Partnership, Sexual orientation, Pregnancy and Maternity, Race (including nationality, ethnicity and colour), Religion or Belief, and beyond.

We are also committed to the principles in respect of social deprivation and health inequalities.

Our aim is to create an environment where all staff are able to contribute, develop and progress based on their ability, competence and performance. We recognise that some staff may require specific initiatives and/or assistance to progress and develop within the organisation.

We are also committed to delivering services that ensure our patients are cared for, comfortable and as far as possible meet their individual needs.

CONTACT AND REVIEW DETAILS			
Author N Archer, B Trivedi, S Agarwal and N Clark **Guideline Lead (Name and Title) S Agarwal- Consultant**			**Executive Lead** Chief medical officer
Details of Changes made during review:			
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
April 2017	**1**	N Archer and H Ulyett	No need to ring Collingdale, can ring LRI so flow chart amended
May 2020	**2**	Dr Rakhee Saxena and N Archer	Flow chart amended to include updated contact details updated from NUH to UHL. General Update
January 2022 May 2022 August 2022	**3**	C Webster Maternity Governance Committee A Akkad – Consultant Maternity guidelines	Updated actions following significant exposure and unsure of previous infection. Non-immune and has had significant exposure before 20+0 weeks' gestation, she should be given VZIG. 20+/40 either VZIG or oral Aciclovir (800mg 4 times a day from days 7 to 14 after exposure). Valaciclovir 1000mg 3 times a day can be used as a suitable alternative. Women who have a second exposure during pregnancy, should be risk assessed given the high rates of seroconversion VZIG is no longer stored at UHL Approved to allow VZIG request process to be up to date and available for staff to follow whilst HAS recommendations for PEP are under review. Oral aciclovir or valaciclovir now first line treatment unless contraindicated
September 2024	**4**	Oluwatosin Salami ST Sonia Agarwal – Consultant Manjiri Khare Consultant Maternal Fetal Medicine	Added those born in tropical climates (to be defined) less likely to be immune to varicella Infectious period for immunocompromised individuals added Added hepatitis and encephalitis as possible associated severe maternal morbidities Changed the time frame of treating if test results are not available from 10 days exposure to 7 Added hospitalisation criteria Added MDT discussion Updated anaesthesia section GP services removed from assessing, testing and prescribing.