Congenital Varicella Zoster Virus in the Newborn Neonatal Clinical Guideline

V3.0

September 2019
Summary

Treatment algorithm\(^1\) - VZIG is held by pharmacy but needs discussion with microbiology before it can be released.

Index case is the mother

- mother has chicken pox

  Was the onset of maternal rash in the period from 7 days before to 7 days after delivery?

  - Yes
  - No

  Onset of maternal rash more than 7 days after delivery?

  - Yes
  - No

  VZIG is not required

Index case is not the mother

- mother has Herpes zoster

  VZIG is not required

- Was contact “significant”? (see below for definition)

  - No
  - Yes

  Was contact within the first 7 days of life?

  - No
  - Yes

  Onset of maternal rash more than 7 days after delivery?

  - Yes
  - No

  Pre-term or on NNU?

    - Yes
    - No

    Infant born <28/40 or <1kg?

      - Yes
      - No

Give VZIG 250 units IM

- Negative

  Check urgent maternal or infant VZV serology

    - No / unknown
    - Yes

  VZIG is not required

- Positive

  VZIG is not required

Positive maternal history?
1. **Aim/Purpose of this Guideline**

1.1. To provide guidance on the diagnosis and management of Varicella Zoster virus in the newborn

1.2. This version supersedes any previous versions of this document.

1.3. **Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation**

The Trust has a duty under the DPA18 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed and documented. We can’t rely on Opt out, it must be Opt in.

DPA18 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the DPA18 please see the ‘information use framework policy’, or contact the Information Governance Team [rch-tr.infogov@nhs.net](mailto:rch-tr.infogov@nhs.net)

2. **The Guidance**

2.1. **Background**

2.1.1. **Clinical manifestations**

Chickenpox is the commonest manifestation of primary Varicella Zoster Virus (VZV) infection. Following primary infection VZV establishes latency in dorsal root ganglia. Reactivation results in herpes zoster (“shingles”). Chickenpox remains a common childhood infection; consequently 90% of adults are immune to VZV\(^1\), so varicella is uncommon in pregnancy and peri-partum. However, fetal or perinatal exposure can have serious consequences.

2.1.2. **Transmission**

Infection occurs via droplet spread from someone with the disease. It may also be transmitted from vesicles. Patients are infectious for around 1 – 2 days before the rash appears until the last lesion has crusted over. The incubation period is from 7-24 days. Infection is endemic in UK, with over 90% of adults showing previous infection, usually in childhood, sometimes sub-clinically. Trans-placental infection can occur but is uncommon (see below).

2.1.3. **Congenital varicella**

Fetal exposure to VZV before the peripartum period has no clinical consequences in the great majority of fetuses\(^2\). However, in-utero exposure before 28 weeks gestation can cause varicella embryopathy (“fetal varicella syndrome”), characterized by limb atrophy, scarring of the skin of extremities, central nervous syndrome and ocular abnormalities.
The risk of varicella embryopathy has been estimated at 0.5% if maternal chickenpox develops at 2-12 weeks gestation, 1.4% if it develops at 12-28 weeks, and 0% after 28 weeks\(^3\). A large prospective cohort study has estimated risk for all stages of pregnancy at 0.4% (95% CI: 0.1-2.4%)\(^2\), and overall risk in the first 20 weeks of pregnancy is estimated at 0.9%\(^3\).

In-utero VZV exposure in the second half of pregnancy can lead to inapparent VZV infection and carries a small (approximately 0.7%) risk of subsequent zoster early in life without a prior history of chickenpox.

### 2.1.4. Perinatal varicella

The clinical course of neonatal VZV infection is moderated by the presence of passively transferred maternal antibody. Very preterm (<28 weeks gestation) or extremely low birth weight neonates, and those whose mothers develop the rash within the period from 7 days before to 7 days after delivery do not have this protection and are at risk of severe disease\(^1\)\(^5\). Without specific intervention severe neonatal varicella develops in approximately 25% of infants in the latter group, symptoms developing 1-16 days after delivery. Morbidity includes pneumonia, encephalitis, visceral dissemination and hemorrhagic varicella and the mortality is up to 30%.

### 2.2. Management and Prevention of secondary cases

*Infants born to women following VZV infection in pregnancy*

Routine neonatal examination should include inspection for scarring skin lesions, limb atrophy, measurement of head circumference, and examination of ocular red reflexes, as well as universal neonatal hearing screening. However, detailed ophthalmological examination of exposed infants has a very low yield, and is not necessary in the absence of other clinical features\(^2\).

### 2.3. Infants of women with peripartum VZV infection

#### 2.3.1. The flow chart above\(^1\) should be used to determine neonatal eligibility for Varicella zoster immunoglobulin (VZIG). The dose is 250 mg IM, regardless of weight.

#### 2.3.2. In situation where the index contact is not the infant’s mother, significant contact is defined in terms of type, timing, closeness and duration of contact. For detailed guidance see the full DH Chapter\(^1\).

#### 2.3.3. VZIG is obtained from pharmacy, it cannot be issued until a consultant microbiologist has authorised its use.

#### 2.3.4. Prophylactic intravenous aciclovir should be considered for infants whose mothers develop varicella four days before to two days after delivery as they are at the highest risk of fatal outcome despite VZIG prophylaxis\(^6\).

#### 2.3.5. Mother and baby should be nursed in a side room. Breastfeeding should be encouraged.
2.3.6. Senior review and early treatment with high dose IV aciclovir 10 mg/kg 8hourly is essential in suspected neonatal chickenpox.

2.3.7. The Infection Control Team should be notified of any cases or suspected cases on the NNU or maternity wards.

Discuss management with Neonatal and Microbiology Consultants; where possible this should be before the birth of the baby.

3. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>In order to monitor compliance with this guideline it will be included in the neonatal clinical audit programme with findings presented at the Child Health directorate audit meeting. Any deficiencies/ action plan will be presented at the Clinical Governance meeting. Any clinical incident reports relating to this guideline will be monitored against it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>Neonatal Unit Governance Lead Consultant</td>
</tr>
<tr>
<td>Tool</td>
<td>Clinical Audit</td>
</tr>
<tr>
<td>Frequency</td>
<td>Within neonatal audit programme</td>
</tr>
<tr>
<td>Reporting arrangements</td>
<td>Any incident arising or audit findings will be presented at Child Health Directorate Governance meeting</td>
</tr>
<tr>
<td>Acting on recommendations and Lead(s)</td>
<td>Any case where these criteria are not met will be discussed and additional training needs identified and acted upon.</td>
</tr>
<tr>
<td>Change in practice and lessons to be shared</td>
<td>Lessons will be shared with all relevant stakeholders</td>
</tr>
</tbody>
</table>

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the 'Equality, Inclusion & Human Rights Policy' or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.
### Appendix 1. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Congenital Varicella Zoster Virus in the Newborn Neonatal Clinical Guideline V3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>08/08/2019</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>September 2019</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>September 2022</td>
</tr>
<tr>
<td>Directorate / Department responsible (author/owner):</td>
<td>Neonatal Unit. Dr Chris Bell</td>
</tr>
<tr>
<td>Contact details:</td>
<td>01872 252667</td>
</tr>
<tr>
<td>Brief summary of contents</td>
<td>To provide guidance on the transmission, diagnosis and management of Varicella Zoster virus in the newborn</td>
</tr>
<tr>
<td>Suggested Keywords:</td>
<td>Neonatal. Neonate. Newborn. Varicella Zoster Virus. Chickenpox</td>
</tr>
<tr>
<td>Target Audience</td>
<td>RCHT</td>
</tr>
<tr>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Executive Director responsible for Policy:</td>
<td>Medical Director</td>
</tr>
<tr>
<td>Date revised:</td>
<td>August 2019</td>
</tr>
<tr>
<td>This document replaces (exact title of previous version):</td>
<td>Congenital Varicella Zoster Virus in the Newborn Neonatal Clinical Guideline V2.0</td>
</tr>
<tr>
<td>Approval route (names of committees)/consultation:</td>
<td>Neonatal Guidelines Group</td>
</tr>
<tr>
<td>Care Group General Manager confirming approval processes</td>
<td>Debra Shields</td>
</tr>
<tr>
<td>Name and Post Title of additional signatories</td>
<td>Not Required</td>
</tr>
<tr>
<td>Name and Signature of Care Group/Directorate Governance Lead confirming approval by specialty and care group management meetings</td>
<td>{Original Copy Signed}</td>
</tr>
<tr>
<td>Name: Caroline Amukusana</td>
<td></td>
</tr>
<tr>
<td>Signature of Executive Director giving approval</td>
<td>{Original Copy Signed}</td>
</tr>
<tr>
<td>Publication Location (refer to Policy on Policies – Approvals and Ratification):</td>
<td>Internet &amp; Intranet</td>
</tr>
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</table>
### Related Documents:


### Version Control Table

<table>
<thead>
<tr>
<th>Date</th>
<th>Version No</th>
<th>Summary of Changes</th>
<th>Changes Made by (Name and Job Title)</th>
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<tbody>
<tr>
<td>Dec 2015</td>
<td>V1.0</td>
<td>Initial Issue.</td>
<td>Dr Paul Munyard. Consultant Paediatrician</td>
</tr>
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</table>
August 2019  V2.0  Full review.
Re-formatted and reference updated – no other changes.  Dr Chris Bell

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Act 2000

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This document is only valid on the day of printing

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Policy for the Development and Management of Knowledge, Procedural and Web
Documents (The Policy on Policies). It should not be altered in any way without the
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## Appendix 2. Initial Equality Impact Assessment Form

<table>
<thead>
<tr>
<th>Name of the strategy / policy / proposal / service function to be assessed</th>
<th>Congenital Varicella Zoster Virus in the Newborn Neonatal Clinical Guideline V3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Directorate and service area:</strong></td>
<td><strong>New or existing document:</strong></td>
</tr>
<tr>
<td>Child Health Neonatal</td>
<td>Existing</td>
</tr>
<tr>
<td><strong>Name of individual completing assessment:</strong></td>
<td><strong>Telephone:</strong></td>
</tr>
<tr>
<td>Dr Chris Bell</td>
<td>01872 252667</td>
</tr>
</tbody>
</table>

1. *Policy Aim*

   **Who is the strategy / policy / proposal / service function aimed at?**

   This guideline is aimed at all staff responsible for the care of newborn infants with a suspected or actual diagnosis of Congenital Varicella Zoster.

2. *Policy Objectives*

   **As Above**

3. *Policy – intended Outcomes*

   Consistent management of the care of newborn infants with a suspected or actual diagnosis of Congenital Varicella Zoster.

4. *How will you measure the outcome?*

   Audit

5. *Who is intended to benefit from the policy?*

   Neonatal Patients, Medical and Nursing staff

6a. Who did you consult with?

   - Workforce
   - Patients
   - Local groups
   - External organisations
   - Other

<table>
<thead>
<tr>
<th>Workforce</th>
<th>Patients</th>
<th>Local groups</th>
<th>External organisations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b). Please identify the groups who have been consulted about this procedure.

   **Please record specific names of groups**

   Neonatal Guidelines Group

What was the outcome of the consultation?

   approved guideline
7. The Impact
Please complete the following table. **If you are unsure/don’t know if there is a negative impact you need to repeat the consultation step.**

Are there concerns that the policy could have differential impact on:

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>Rationale for Assessment / Existing Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex (male, female, trans-gender / gender reassignment)</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race / Ethnic communities /groups</td>
<td>X</td>
<td></td>
<td></td>
<td>Any information provided should be in an accessible format for the parent/carer’s needs – i.e. available in different languages if required/access to an interpreter if required</td>
</tr>
<tr>
<td>Disability - Learning disability, physical impairment, sensory impairment, mental health conditions and some long term health conditions.</td>
<td></td>
<td>X</td>
<td></td>
<td>Those parent/carers with any identified additional needs will be referred for additional support as appropriate - i.e to the Liaison team or for specialised equipment. Written information will be provided in a format to meet the family’s needs e.g. easy read, audio etc</td>
</tr>
<tr>
<td>Religion / other beliefs</td>
<td></td>
<td>X</td>
<td></td>
<td>All staff should be aware of any beliefs that may impact on the investigation and treatment of Congenital Varicella Zoster Virus in the Newborn and respond accordingly</td>
</tr>
<tr>
<td>Marriage and Civil partnership</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy and maternity</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:
- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation- this excludes any policies which have been identified as not requiring consultation. or
- Major this relates to service redesign or development

8. Please indicate if a full equality analysis is recommended. **Yes** | **No** | x

9. If you are **not** recommending a Full Impact assessment please explain why.

Not indicated
This EIA will not be uploaded to the Trust website without the approval of the Policy Review Group.

A summary of the results will be published on the Trust’s web site.