Investigating pregnant women exposed to a rash

This is a common duty doctor scenario...and however many times it happens to me, I still have to look it up!

This practice pointer article in the BMJ provides a useful summary (BMJ 2012;344:e1790)

Which rashes should I be worried about?

There are four viral illnesses that can cause problems for the non-immune pregnant woman. Varicella and parvovirus are common in children in the UK. This is because varicella vaccine is not part of the routine childhood schedule and there is no vaccine against parvovirus. Rubella and measles are less common in UK but should be considered. The table below gives you the key features of each, how to confirm and risks:

- If possible try to establish the diagnosis of the source of exposure.
- This will be based on the nature of the rash, clinical features and in some cases laboratory testing (though in practice testing pregnant woman’s immunity as an initial step may be more practical!).
- Decide whether the pregnant woman needs further testing. Testing should be arranged as quickly as possible and discussed with the lab to ensure speedy processing of samples.

<table>
<thead>
<tr>
<th>Varicella zoster (chickenpox)</th>
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<tbody>
<tr>
<td><strong>Infective period and incubation period</strong></td>
</tr>
<tr>
<td>Infectious from 48h before rash appears until all lesions crusted</td>
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<tr>
<td>Incubation 10–21d</td>
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<table>
<thead>
<tr>
<th>Be reassured if:</th>
<th>Test if:</th>
<th>Action*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear personal history of chickenpox/shingles (90% of women brought up in UK)</td>
<td>No history of infection or vaccine</td>
<td>Check varicella IgG urgently (ideally on stored booking bloods):</td>
</tr>
<tr>
<td>Received varicella vaccine</td>
<td>History uncertain</td>
<td>If IgG +ve no action is needed</td>
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<tr>
<td></td>
<td>Woman from the tropics/subtropics (only 50% are immune)</td>
<td>If IgG –ve refer for administration of VZIG.</td>
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<td>This should be given within 72h of contact (or 10d of appearance of rash in the index case)</td>
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<td>If they do not develop chickenpox consider post-natal vaccination</td>
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### Rubella (notifiable)

<table>
<thead>
<tr>
<th>Infective period and incubation period</th>
<th>Symptoms (in childhood)</th>
<th>Risks of infection</th>
</tr>
</thead>
</table>
| Infectious 7d before rash to 10d after incubation 14–21d | Low grade fever (1–5d)  
Mild URTI  
Maculopapular rash (begins at hair line and spreads down)  
Pale pink, discrete lesions fading to light brown over 4d | <11w: 90% congenital rubella syndrome  
11–16w: 20% congenital rubella syndrome  
16–20w: small risk of deafness |

**Be reassured if:**  
**Test if:**  
**Action**

- Full course MMR vaccine  
- Two doses of rubella-containing vaccine  
- Confirmed immunity on booking bloods (IgG >10IU/ml)

Unvaccinated or incomplete vaccination  
No immunity demonstrated on booking bloods

Check rubella IgM and IgG:  
If both negative repeat at 1m  
If IgG >10IU/L and no IgM reassure  
Refer if IgM detected  
Consider termination if confirmed maternal rubella <16w gestation  
HNIG for seronegative women who would not consider termination (though no evidence)  
Post-natal MMR vaccine

### Measles (notifiable)

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<thead>
<tr>
<th>Infective period and incubation period</th>
<th>Symptoms (in childhood)</th>
<th>Risks of infection</th>
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</thead>
</table>
| Infectious 4d before rash to 4d after incubation 7–18d | High fever (2–4d)  
Cough, coryza, conjunctivitis  
Koplick spots  
Maculopapular rash (begins at hair line and spreads down)  
Dark red–purple may coalesce | Severe pneumonia in mother  
0–40w: increased fetal loss, premature delivery, low birth weight  
Perinatal: severe measles |

**Be reassured if:**  
**Test if:**  
**Action**

- Full course MMR vaccine  
- Two doses of measles-containing vaccine

Unvaccinated or incomplete vaccination

Check measles IgG:  
If +ve reassure.  
If –ve refer urgently for HNIG (human normal Ig); should be administered within 6d of exposure  
Post-natal MMR should be given
### Parvovirus B19 (slapped cheek)

<table>
<thead>
<tr>
<th>Infective period and incubation period</th>
<th>Symptoms (in childhood)</th>
<th>Risks of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious from 10d before rash to rash onset&lt;br&gt;Incubation 13–18d</td>
<td>Low grade fever/ URTI (2d)&lt;br&gt;May be asymptomatic&lt;br&gt;‘Slapped cheek’ spares perioral area and nasal ridge&lt;br&gt;Lacy maculopapular rash</td>
<td>&lt;20w: 9% excess fetal loss&lt;br&gt;3% develop hydrops with 50% mortality</td>
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</tr>
</thead>
<tbody>
<tr>
<td>Don’t be! Clinically more difficult to diagnose – many will be immune without realising they had the illness!</td>
<td>Any pregnant woman with a good history of likely exposure</td>
<td>Test for parvovirus B19 IgM (remains positive for 1m) and IgG: If IgG and IgM –ve and within 1m exposure, reassure&lt;br&gt;If IgM and IgG –ve, repeat test in 1m&lt;br&gt;If at any stage IgM +ve, discuss with and refer to obstetrics for fetal monitoring&lt;br&gt;No post-exposure prophylaxis is available</td>
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</table>

*If serology results are not going to be available within the timeframe that immunoglobulin should be given in, then discuss with obstetricians and infectious disease teams for plan of action.

### What is significant exposure?

- 15min in the same room or face to face contact.
- For measles, a lesser exposure may be significant.

### What about varicella vaccine?

This DTB article focuses on the varicella vaccine (DTB 2012;50:42). Varicella vaccine is available and licensed in the UK. It forms part of the routine childhood vaccination schedule in many high income countries.

In the UK recommended for certain non-immune groups:

- Health care workers
- Laboratory staff
- Susceptible contacts of immunosuppressed patients.

The problem with targeted vaccination is that uptake is often poor and identification of individuals most likely to benefit may not occur.

### Why is it not part of the routine UK childhood vaccination schedule?

- Concerns regarding increased incidence of shingles in the adult population as ongoing exposure to chickenpox is felt to boost immunity.
- Concerns that if acquired immunity to vaccination wanes over time, the peak age of chickenpox incidence may be pushed to an older age group where it is a more serious illness.
- Cost utility analysis suggests vaccination of infants would not be cost-effective taking account of a higher incidence of shingles.

Thus far, there is no evidence that either of these phenomena have occurred in the USA where varicella has been part of the routine vaccination schedule since 1995.

### Shingles vaccination

Since the DTB article was written, a single herpes zoster vaccination for adults at 70 years of age was introduced in the UK in September 2013.

The aim of the programme is to reduce the incidence and severity of shingles in people aged over 70 years. In 2014/2015 there is also a catch up programme which will offer immunisation to adults aged 78 or 79 years (PHE Sept 2014. Vaccination against shingles for adults aged 70, 78 and 79 years of age. Information for healthcare professionals). As the programme only vaccinates older adults it is not likely to effect levels of immunity in women of child bearing age.
Exposure to viral rashes in pregnancy

- Exposure to varicella zoster, measles, rubella and parvovirus B19 in pregnancy can have adverse outcomes for non-immune mothers and their babies.
- Urgent serology testing is necessary for at-risk mothers and can often be done on a stored booking sample.
- Depending on the results, women may need referral for immunoglobulin therapy and increased antenatal monitoring/obstetric assessment.
- Post-natal vaccination should be undertaken in women identified at risk of rubella, measles and varicella.
- Routine varicella vaccination is now part of the UK immunisation schedule but only for adults aged 70, 78 or 79 years at present.

Does your local lab store booking samples?
Do you have a practice system to ensure urgent blood test results come back and are actioned?
Do you have a system to ensure women who are found to lack immunity to rubella, varicella or measles during pregnancy receive post-natal vaccination?

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