Rashes and exposure to rashes in pregnancy

The combination of pregnancy and a rash often raises alarm bells in the minds of both patient and healthcare professional. Moreover, febrile rashes are common in children, so consultations with an ill child can get complicated when Mum announces she is pregnant! When should we take action?

Here is a summary from Public Health England and two BMJ articles (PHE Guidance on the investigation, diagnosis and management of viral rash illness, or exposure to viral rash illness in pregnancy, 2019, BMJ 2017;356:j512; BMJ 2012;344:e1790).

Which rashes should I be worried about in pregnancy?

The following infections are important to identify in the context of pregnancy because interventions can reduce the risk of adverse outcomes, or allow obstetric monitoring:

Infection	Consequence	What can be done to mitigate this?
Parvovirus B19	Infection in early pregnancy can lead to foetal death or hydrops (severe foetal anaemia).	If hydrops develops, prognosis improved with intrauterine blood transfusion.
Measles	Can cause severe illness in pregnancy and foetal loss.	If exposed and susceptible, needs referral for prophylactic immunoglobulin within 6d.
Rubella	Infection in early pregnancy can lead to severe congenital abnormalities.	No treatment known to be of benefit but TOP may be considered, and ongoing pregnancy monitoring is necessary.
Varicella	Maternal illness can be severe and associated with small risk of congenital abnormality.	If exposed and susceptible, needs referral for prophylactic immunoglobulin within 10d.
Cytomegalovirus (CMV)	• Commonest cause of congenital infection in the UK (birth prevalence of around 3/1000). • Abnormalities range from neurosensory deafness to lifelong neurological disability. • Risk of harm is highest in the first trimester when one-third of babies will develop sequelae.	**Very difficult to recognise clinically! Maternal CMV infection is often asymptomatic or associated with mild flu-like symptoms (with or without a rash).** Predisposing factors include: • Age <35y. • Seronegativity in first pregnancy. • Having a child at nursery (80% of toddlers shed CMV!). Women with these risk factors have an 8% risk of primary infection. No current established treatment (although some data suggests reduced vertical transmission with valaciclovir). **What does this mean in practice?** Because so many toddlers shed CMV, young mothers should theoretically avoid their children's bodily fluids, but this is not that practical. We should recommend basic hygiene measures, i.e.: • Regular and fastidious hand washing. • Washing toys and other items contaminated with urine, saliva, etc. • Avoiding sharing food and cutlery with young children. At present, PHE does not recommend routinely testing for CMV. An editorial in the BMJ suggests that development of a vaccine should be a public health priority (BMJ 2019;367:I6507).

Other common viral illnesses that may present with a rash

These include:

- Human herpes virus 6 and 7.

- Enteroviruses.
- Cox-Sackie virus A and B.
- Epstein-Barr virus.
- Hand foot and mouth disease.

There are no clear causal associations or adverse pregnancy outcomes with these infections, but any febrile illness (with or without a rash) may be associated with an increased risk of foetal loss in the first trimester.

Assessing a pregnant woman PRESENTING with a rash

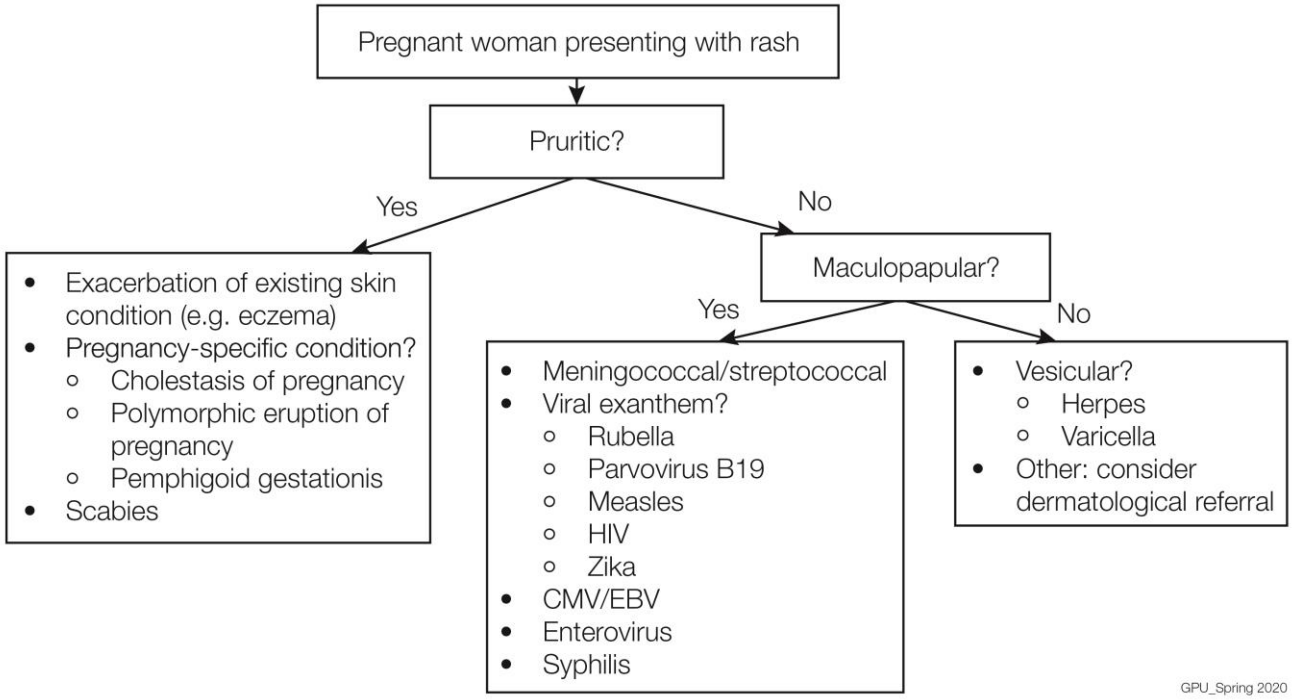
Assessment

- **Location of rash, date of onset, speed of onset.**
- **Associated symptoms:** fever, sore throat and malaise suggest an infectious cause. Itching usually suggests a non-viral cause.
- **Have they had contact with someone with a rash/illness?**
- **Vaccination/infection/antibody history:**
  - Remember, people born outside the UK may have been given different vaccinations, and coverage in some countries is so poor that many receive no vaccinations.
  - Have they had 2 doses of MMR? Remember, in some countries these are given as separate vaccines.
  - Have they had a definite chicken pox illness in the past (or varicella immunisation)?
  - What antibody tests have they had in previous pregnancies (e.g. rubella immunity)?
- **Recent travel to countries where measles or rubella are endemic**. Consider if there has been travel to Zika-affected areas (see separate article on *Zika virus*).
- **Sexual history if concern about Zika or HIV.**
- **Gestation of pregnancy?** The impact of infection can vary depending on stage of pregnancy (see table below).
- **Drug history**. If the patient is immunosuppressed, the risk is greater. Remember that some drugs cause rashes.

Examination

- For general wellbeing and to exclude sepsis.
- For nature and distribution of rash (vesicular or not?).

The following flow diagram helps to distinguish possible causes.



Investigations

- If there is doubt as to the cause of a rash, offer testing for: measles, rubella, parvovirus B19, varicella (see table below for test specifics) and Zika (if indicated).

- Tell the lab: the onset, clinical features, distribution of the rash, gestation, any previous antibody testing, vaccine/travel/infection history and any known contacts. If in doubt, talk to your lab!
- In general, a positive IgG and IgM suggests current infection, while a positive IgG alone suggests previous exposure or vaccination.

Follow-up

- Arrange follow-up to discuss results. If positive, foetal medicine follow-up is usually indicated (see table below for specifics on management of different infections).
- Ensure that women who are not immune to measles, rubella or chicken pox are vaccinated AFTER pregnancy (these are live vaccines so are not recommended during pregnancy – although there is no evidence of harm).

Assessing a pregnant woman EXPOSED to a rash illness but currently ASYMPTOMATIC

What is 'exposure'?

PHE considers contact (or exposure) to be sharing the same room (e.g. house/classroom/2–4-bed hospital bay) for >15 minutes, or having face-to-face contact. For measles, a lesser exposure may be significant.

Establish the diagnosis in the index case (exposer!)

This should be based on the clinical features and nature of the rash. If rubella or measles is suspected, this can be confirmed by oral fluid or serum testing through the health protection team (see other resources below).

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. See table below regarding testing and management.

Important viral rashes: characteristics, symptomatology and management

<table>
<tr><th colspan="3">Varicella zoster (chickenpox)</th></tr>
<tr><th>Prevalence & infectivity</th><th>Symptoms</th><th>Risks of maternal infection</th></tr>
<tr><td>• Really common: >85% of UK adults have been infected.
• Infectious from 48h before rash appears until all lesions crusted.
• Incubation period: 7–21d.
• Infectivity high (70–90% risk of transmission from close contact).
• Affects 2–3/1000 pregnancies/y.
• It is possible to get chicken pox twice but this is rare.</td><td>• Mild fever, malaise prodrome.
• Characteristic vesicular rash – usually starts on head and spreads down to trunk.
• Subclinical and mild cases occur which may be less obvious.</td><td>Chicken pox
• Severe illness in mother, including risk of pneumonitis and encephalitis.
• 0.4–2.0% risk of congenital varicella syndrome if maternal infection occurs in first 20w (characterised by low birth weight and multisystem abnormalities, including neurological, skeletal, ocular, skin problems).
• Maternal infection >20w can lead to neonatal shingles or chicken pox.
• Maternal infection around delivery associated with severe neonatal varicella which can be fatal.
Shingles
• There is no evidence of risk to foetus from localised maternal shingles.
• There may be a theoretical risk of transmission to the baby postnatally if exposed to affected area.</td></tr>
<tr><th>Exposure or infection?</th><th>Test if:</th><th>Action*</th></tr>
<tr><td>Exposure
Be reassured if:
• Clear personal history of chickenpox/shingles.
• Received 2 doses of varicella vaccine.</td><td>• No history of infection/vaccine or history uncertain.
• Woman from tropics/subtropics (only 50% are immune).</td><td>• Check varicella IgG urgently (ideally on stored booking bloods):
○ If IgG positive: no action is needed.
○ If IgG negative: refer for VZIG (immunoglobulin).
• VZIG needs to be given within 10d of contact.
• If they DON'T develop varicella, consider postnatal vaccination.
Note: If a neonate has possible exposure to chickenpox from someone other than their mother, refer to the VZIG guidance for risk assessment (see other resources at end of article).</td></tr>
</table>

Infection	Diagnosis of chicken pox or shingles is usually clinical, but, if in doubt, arrange laboratory confirmation of vesicular fluid.	**Severe infection** Admit! (especially if respiratory symptoms; neurological symptoms aside from headache; dense rash or multiple mucosal lesions; pregnancy approaching term; other co-morbidities; or haemorrhagic rash/bleeding). **If uncomplicated** • Advise avoidance of other at-risk people (pregnant women, neonates, immunocompromised). • PHE suggests daily review so liaise with obstetrics/ foetal medicine unit for monitoring and advice. • Seek advice if any deterioration. **Antiviral treatment** • Offer acyclovir 5x800mg/d for 7d if presents within 24h of onset of rash and is >20w gestation. • Acyclovir should be used cautiously <20w (although no evidence of teratogenicity), and there is no evidence of benefit if given >24h after onset of rash (note that although for other conditions acyclovir can be given up to 72h after onset of rash, PHE guidance suggests acyclovir is only offered to those presenting within 24h of the rash as there is no evidence for efficacy after this in this setting.) • Neonates may be given VZIG if maternal infection occurs perinatally.
Rubella (notifiable)		
Prevalence & infectivity	**Symptoms**	**Risks of maternal infection**
• Rare (0.23 cases/100 000 pregnancies in the UK). • Infectious 7d before rash to 10d after. • Incubation 14–21d. • High infectivity (90% risk of transmission from close contact).	Clinical signs unreliable but include: • Low-grade fever (1–5d). • Mild URTI. • Maculopapular discrete pale-pink rash (begins at hair line), fades to pale brown in 4d. • May be complicated by arthritis.	• Infection <16w can lead to congenital rubella syndrome with substantial abnormalities (especially in the first 12w). • Infection >16w associated with small risk of deafness.
Exposure or infection?	**Test if:**	**Action***
Exposure Be reassured if: • 2 doses of rubella vaccine. • At least 1 rubella antibody test where rubella antibody was detected.	• Unvaccinated. • Incomplete vaccination and no positive rubella antibody test.	Check rubella IgM and IgG: • If both negative: repeat at 1m, offer postnatal MMR (2 doses). • If IgG positive and IgM negative: reassure. • Refer if IgM detected (most are false positives so require confirmatory testing).
Infection	Clinical features or rash.	There is no specific treatment for rubella, but refer to Foetal Medicine Unit to discuss management options (e.g. consideration of TOP if confirmed rubella <16w gestation). HNIG (human normal Ig) may be offered.

Measles (notifiable)		
Prevalence & infectivity	**Symptoms**	**Risks of infection in pregnancy**
• Low prevalence due to MMR: <1000 cases per year in the UK. • Infectious 4d before rash to 4d after. • Incubation period: 7–21d. • HIGHLY infectious (99% risk of transmission from close contact).	• High fever (2–4d). • Coryza, conjunctivitis, otitis media. • Koplick spots (white spots on red background in buccal mucosa). • Disseminated maculopapular red/purple rash (begins in hairline). May coalesce. • Can lead to encephalitis.	• Rare but associated with severe pneumonia and maternal morbidity. • Can lead to preterm delivery and foetal loss. • Neonatal measles can lead to subacute sclerosing panencephalitis (progressive neurological decline usually resulting in death). • Not associated with congenital abnormality.
Exposure or infection?	**Test if:**	**Action***
Exposure Be reassured if: • Two doses of measles-containing vaccine. • Known to be immune to measles.	Index case likely to have measles AND patient: • Unvaccinated. • Incomplete vaccination. • Not known to be immune to measles.	If exposure but no rash: check measles IgG only. If measles clinically suspected: also check IgM: • IgM is positive >4d of rash and until 1m after. • If IgM negative and IgG positive: reassure. • If IgG negative: refer urgently for HNIG (human normal Ig); should be administered within 6d of exposure. Give MMR postnatally. • Infants/neonates exposed to measles (e.g. maternal peripartum infection) should be given HNIG (human normal Ig).
Infection	Clinically suspected.	
Parvovirus B19 (slapped cheek, 5th disease, erythema infectiosum)		
Prevalence & infectivity	**Symptoms**	**Risks of infection in pregnancy**
• Common: 50–60% of young adults are seropositive. • Affects 1/512 pregnancies/y. • Medium infectivity (50% from close contact). • Infectious from 10d before onset of rash. • Incubation 4–21d.	May be asymptomatic, or present with: • Low-grade fever/URTI (2d). • 'Slapped cheek' facial rash which spares perioral area and nasal ridge. • Generalised 'lacy' reticular erythema. • Can cause arthropathies and aplastic crises.	• Risk of intrauterine death if infected <20w (9% excess foetal loss). • Around 3% of these develop hydrops, with 50% mortality without treatment. • Infection >20w rarely associated with developmental hydrops or foetal loss. • Permanent congenital abnormality rare.
Exposure or infection?	**Test if:**	**Action***
Exposure Note: clinically difficult to diagnose – many will be immune without realising they had the illness!	Any history of exposure to suspected parvovirus B19.	Test for parvovirus B19 IgM and IgG: • If IgG positive and IgM negative: reassure. • If IgM and IgG negative: repeat test in 1m. • If at any stage IgM positive: refer for specialist care. No vaccine or post-exposure prophylaxis currently available; however, prognosis of hydrops improved with intrauterine transfusion.
Infection	Clinical features suggestive or rash.	
* For all the above, if serology results are not going to be available within the timeframe that immunoglobulin should be given in, discuss with obstetricians and infectious disease teams for plan of action. GPU_Spring 2020		

Rashes/exposure to rashes in pregnancy

- Exposure to varicella zoster, measles, rubella, CMV or parvovirus B19 in pregnancy can have adverse outcomes for non-immune mothers and their babies.
- First, make a clear distinction: is this a woman presenting with a rash in pregnancy OR is it a woman who has been in contact with someone with a rash but who is currently asymptomatic?
- **In pregnant women presenting with a rash**, try to narrow down the cause (not forgetting all the non-viral causes!) and, if indicated, test for the viral causes. Refer any women who test positive to foetal medicine, and remember to offer postnatal immunisations if indicated.

	• **In pregnant women who are asymptomatic but have been in contact with a person with a rash,** 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. • Postnatal vaccination should be undertaken in women identified at risk of rubella, measles and varicella.
	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 postnatal vaccination?
	For guidance on VZIG see: www.gov.uk/government/collections/chickenpox-public-health-management-andguidance