Primary Health Care

Evidence & practice / CPD /

Evidence-based advice

Understanding the health risks of varicella zoster virus in pregnancy

Gwenda Jones, Nina Whittle

Citation  
Jones G, Whittle N (2019) Understanding the health risks of varicella zoster virus in pregnancy. Primary Health Care. doi: 10.7748/phc.2019.e1522

Peer review  
This article has been subject to external double-blind peer review and has been checked for plagiarism using automated software

Correspondence  
Gwenda.Jones@meht.nhs.uk

Conflict of interest  
None declared

Accepted  
3 December 2018

Published online  
February 2019

Abstract

Varicella zoster virus (VZV) is a common illness that causes varicella (chickenpox) and shingles. It is prevalent mostly during childhood but there are additional co-morbidities from this disease for a woman and her fetus, if she contracts it during pregnancy. Many developed countries vaccinate children who have not acquired immunity to prevent their developing complicated varicella as adults. Countries that have implemented widespread vaccination have fewer hospital admissions for such complications. The UK does not have a national VZV vaccination programme and there is no strategy for reporting and documenting the incidence of the illness, so it is difficult to determine the potential prevalence of gestational VZV and its associated outcomes. The aim of this article is to provide an understanding of the aetiology of VZV and the potential health risks to unimmune women who may contact it during pregnancy, to advise them about their healthcare choices.

Author details

Gwenda Jones, midwife, Broomfield Hospital, Chelmsford, England; Nina Whittle, senior lecturer, Anglia Ruskin University, Chelmsford, England

Keywords

antenatal, chickenpox, babies, child birth, child health, infection, medicines, vaccines, viral infections

Aims and intended learning outcomes

The aim of this article is to provide insight and pathways of care for pregnant women exposed to the varicella zoster virus (VZV). The article will provide an understanding of the effects it has during pregnancy and the perinatal period, and provide information for those caring for pregnant women who have been exposed to VZV.

After reading this article, you should be able to:

* State how VZV is contracted and presents.
* List the potential health risks to pregnant women and their fetuses from VZV.
* Summarise the risks and benefits of determining VZV status and vaccination before conception.
* State the care options during pregnancy for women with no VZV immunity.

Introduction

VZV is commonly thought of as a self-limiting, mild, childhood illness (Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9), NHS [2018](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\28)). Its incidence in childhood is high (Bothamley and Boyle [2015](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\4)), although as a non-notifiable condition (Public Health England (PHE) 2014) there are no exact figures.

It is a common misconception that VZV is of no concern in adulthood, by which time approximately 90% of people in countries with climates similar to the UK’s will have acquired immunity (Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)); it is actually more likely to cause complications if contracted in adulthood, with 80% of deaths from VZV occurring in this age group (Royal College of Obstetricians and Gynaecologists (RCOG) 2015). It is also sufficiently significant that midwives must ascertain at the first antenatal appointment if a woman is aware of her immunity status (RCOG 2015).

However, the data used by RCOG (2015) are 20 years old. In addition, there is no standard action to take in the UK when a patient has no definite history of VZV infection, other than to advise women to avoid exposure to VZV where possible and to inform their GPs or midwives if they are exposed to it.

Aetiology

VZV is derived from the herpes family (Wiwanitkit [2009](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\49)). Chickenpox is the common name for its primary infection and shingles for its secondary activation through its zoster element (Stover and Bratcher [1998](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\45)).

VZV is highly contagious through the transfer of respiratory droplets, as well as direct contact with skin cells shed from infected people or with the fluid inside the vesicles that present on infected people’s skin (Wiwanitkit [2009](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\49)). It is usually the presence of these vesicles that confirms the diagnosis, following a history of feeling unwell for a few days (Bothamley and Boyle [2015](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\4)).

The virus progresses through initial transfer via the respiratory system into the blood, and then two subsequent transfers via the bloodstream (viraemia) to reach the skin, causing a vesicular rash, after which it penetrates the central nervous system (Wiwanitkit [2009](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\49)). Complications arise from secondary bacterial infections caused by vesicular lesions (Wiwanitkit [2009](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\49)); pregnant women are at higher risk of developing pneumonia when they have more than 100 lesions at the peak of the illness (Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9)).

Time out 1

Symptoms

Reflect on women for whom you have cared for who have contracted VZV and read Chickenpox, NHS (2018). What four things might you observe that would show they had contracted VZV**?**

Incubation

The difficulty in containing an outbreak and monitoring exposure is related to incubation – an infected person is contagious 48 hours before a rash appears (RCOG 2015). A non-immune person may therefore come into contact with an infected person without realising it. There are differing reports about the incubation period after exposure and the period before vesicular lesions appear, which might range from 14 days to between 10 and 21 days (Stover and Bratcher [1998](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\45), Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9)). This makes it harder to limit the virus’ spread and for non-immune adults to protect themselves from exposure.

RCOG (2015) did not recommend serological testing of pregnant women for VZV immunity; instead, it recommended informing them they should avoid contact with VZV. This may prevent some infections, but some women will be unaware of having been exposed to VZV until they are already unwell.

Time out 2

Reducing exposure

Given that someone infected with VZV is contagious 48 hours before a rash appears, suggest how a pregnant woman might limit her exposure to the disease.

Incidence

Nearly all (95%) people who have had VZV will go on to be immune to it (Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9)). In the UK, immunity to VZV in the general adult population is 90%; only the 10% of women whose immunity is unknown would require screening. Of that 10%, 90% would be immune to VZV, which means only 1% of the overall population would require management and advice following screening (Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)).

The incidence of VZV during pregnancy in the UK is three in 1,000 (0.3%) (RCOG 2015); however, this may increase, due to the migration of people from countries with less overall immunity (Wiwanitkit [2009](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\49), Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)). The clinical management of adult and gestational VZV is diverse and the costs associated greater than VZV in childhood – there is a greater likelihood of needing intensive care and potential treatment for the neonate, depending on the trimester in which the illness is contracted (Harger et al [2002](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\21), Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9)).

Of the women with no history of VZV infection or who are unsure of their immunity, serum screening indicates that up to 80% of these women will already have immunity from a ‘subclinical’ episode, in which the rash did not fully develop and they may simply have felt unwell (Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9)). This again shows that VZV is unpredictable to manage, the infection does not follow a set path and outcome, and there are variables in its manifestation.

VZV in pregnancy

Illness from VZV in expectant mothers, if it is contracted in the first trimester and up to 20 weeks of pregnancy, is comparable to that in any other adult (Harger et al [2002](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\21)). However, the risks of morbidity and mortality increase if it is contracted in the third trimester, with varicella pneumonia the most concerning complication (Harger et al [2002](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\21), Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)). Pneumonia during pregnancy is further complicated by the greater demands placed on the respiratory system by the gravid uterus (RCOG 2015). In the US the mortality rate during pregnancy from varicella pneumonia has been as high as 41%, but this has been reduced to 13% with increased use of antivirals (acyclovir) at onset and improved airway management (Harger et al [2002](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\21)).

Of primary concern during the first trimester up to 20 weeks’ gestation are the development of the fetus and the 1-2% incidence of congenital varicella syndrome (CVS), which carries a 30% mortality rate (Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)). CVS manifests in various forms, the most prevalent of which are undeveloped limbs; neurological abnormalities ranging from microcephaly, cortical atrophy and hydrocephaly to mental development problems; and eye disorders (Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)). Other manifestations include skin lesions, cardiovascular, gastrointestinal and genitourinary anomalies, intrauterine growth restriction and prematurity (McIntosh and Isaacs [1993](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\26)).

No cases of CVS are reported to have occurred when VZV has been contracted in the third trimester (Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)). However, RCOG (2015) recommended that a fetal medicine specialist be present at the birth of any infant whose mother contracted VZV during pregnancy. Significantly, fetal loss is not increased by VZV but by maternal complications attributed to it (Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9)).

Neonatal varicella is a further complication of third-trimester maternal illness (Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)). This carried a mortality rate of 30%, which has now been reduced to 7% by the use of varicella zoster immunoglobulin (VZIG) and antiviral treatments (Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25), Sauerbrei 2015). The difficulty in managing this is the wide timeline before delivery during which the mother may have contracted VZV. It is suggested that if it occurs between one and four weeks before the birth, there is a 50% chance that the infant will be affected (Lamont et al [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\25)).

Time out 3

List the complications

Review the above discussion and pages 11-12 of RCOG (2015). List the potential complications to mother and fetus of contracting VZV in the first, second and third trimesters of pregnancy.

Vaccination

VZV is not a notifiable illness in the UK, despite there being a vaccine available for its prevention. This is unusual, as most vaccinations are for notifiable diseases (PHE 2010). The UK is also one of the few developed countries not to have implemented VZV vaccinations as part of a national vaccination programme (World Health Organization (WHO) [2018a](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\52)). The circulation of VZV is difficult to monitor and restrict, but countries such as the US and Germany have adopted a different approach, providing full vaccination programmes for VZV (WHO 2014) – Germany since 2004 (Sauerbrei 2015) and the US since 1995 (Zhang et al 2015).

Zhang et al (2015) is the most recent study of outcomes of pregnancies affected by VZV. The authors of this retrospective US study acknowledged that it was difficult to get an accurate representation of VZV infection rates, as it is not a notifiable illness in the US. However, the study indicated a change in outcomes compared to studies conducted before the VZV vaccine was added to the childhood vaccination programme, with the seropositive immunity rate increasing from 90% to 97% by 2003.

The study reviewed all births using data about inpatient admissions from the publicly available United States Healthcare Cost and Utilization Project Nationwide Inpatient Sample database between 2003 and 2010. It determined that 935 pregnant women had been admitted to hospital with VZV infections, or 2.5% of pregnancies during an eight-year period between 2003 and 2010. Rates of occurrence of VZV infection in pregnancy remained low, yet varicella pneumonia remained a significant complication for women, with a tenfold increase compared to the non-pregnant population in admission to hospital for treatment exceeding one week (Zhang et al 2015).

The lack of a national vaccination programme in the UK suggests that a review here would reveal a similar or greater relative number of cases with comparable complications. Lamont et al’s (2011) US authors recommended that obstetric units in the UK should have a standardised protocol for the management of VZV, since vaccination is not distributed nationally; however, these recommendations may have been influenced by the US practice of vaccination.

The VZV vaccine is well tolerated and poses few health threats. Risks tend be limited to localised rashes, with 10% of adults and 5% of children developing a rash. The herpes zosta included in the vaccine may reactivate, but the chance is significantly lower than in those contracting ‘wild’ VZV. Vaccination of pregnant women when they were unaware of their pregnancy, in the US, has not identified any teratogenic effects to foetuses (Lamont et al 2011).

The availability of a vaccine and the increased rates of morbidity and mortality from VZV in adulthood suggest the UK should be more robust in its management of the disease. However, the Department of Health (DH) is first reviewing developments in other countries following implementation of childhood vaccinations (PHE [2014](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\38)), because it is concerned that restricting the transmission of the ‘wild’ virus might increase rates of shingles in adulthood, as a result of changes in the immune system’s response to the vaccine version of the virus (Carville et al [2010](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\6), Gershon [2017](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\17)).

The current WHO recommendation regarding vaccination is to consider achieving and maintaining an immunity status of 80% and to vaccinate ‘at risk’ groups (WHO 2018a, WHO 2018b, WHO 2018c). Non-immune healthcare workers should be vaccinated in order to protect immunosuppressed patients (McIntosh and Isaacs 1993). Pregnancy and the neonatal period are times where the patient’s immunity is not at its optimum, therefore they can be considered to be immune suppressed). However, not all hospital trusts in the UK vaccinate healthcare workers (Breuer [2005](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\5)). The Oka vaccine was licenced in 2003 for use in the UK to prevent varicella in susceptible healthcare workers (Breuer 2005). However, WHO (2014) states that there is still not enough data to assess the efficacy of this vaccine.

WHO (2014) suggests that the VZV vaccine should be used on a scale wider than is current in the UK. WHO (2018c) recommended that childhood and adolescent vaccination programmes should be considered in areas where VZV is being contracted by people who are more than 15 years old and that vaccination should be considered in relation to pregnancy (WHO 2018a). The VZV vaccine is also on WHO’s ([2017](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\51)) list of essential medications that should be available.

Informing women about VZV

VZV is serious enough that it is valuable to educate women of child-bearing age about the risks to them and fetuses, if they have not had VZV. Henry et al ([2012](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\22)) reviewed the reduced severity of cases of VZV since the updated vaccination programme in Australia and found evidence that the public needed to be updated and educated about the management of VZV. RCOG (2015) recommended that vaccination be offered to women before conception, but it is difficult to ascertain immunity as 40% of pregnancies are unplanned (Sedgh et al [2014](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\44)).

Time out 4

Education

Review RCOG (2015) and NHS (2016). What guidance do you think healthcare professionals should disseminate to educate females approaching child-bearing age about the need to know if they are immune to VZV before they are pregnant? Suggest a method to do this.

Information and advice about VZV and vaccination are sometimes contradictory. In Australia, people in households with immunosuppressed people are vaccinated (Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9)) and communities must be made aware of the potential serious outcomes of VZV on child-bearing women. In the UK, distributing information about VZV is not a public health indication, as it is not part of the vaccination programme (PHE 2014). Despite this, PHE ([2018](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\40)) recommended that index cases of VZV around susceptible pregnant women should be offered VZIG to limit the length of the illness – this indicates a need to recognise the illness and restrict the potential for poor outcomes in pregnancy.

The difficulty for midwives is they typically first interact with women when they are already pregnant, so rarely get to educate them about their health choices or offer them prophylactic vaccination before they become pregnant.

Time out 5

What advice?

Compare the information contained in RCOG (2015) and NHS (2018). Do the web sites offer the same advice? What do you consider to be the most appropriate advice to provide to pregnant women regarding the infectious nature of varicella?

VZV can take longer to resolve, depending on the patient’s clinical picture (Harger et al [2002](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\21)), particularly in the immunosuppressed, including pregnant women (Stover and Bratcher [1998](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\45)). Women would not necessarily be aware of this from the information available. If healthcare professionals direct women to evidence-based websites that offer differing advice, further anxiety may ensue. Women must be able to assess evidence-based literature in an understandable format so they can make a fully informed choice about their care (Nursing and Midwifery Council (NMC) [2015](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\30)).

In relation to VZV, this would mean that they should be advised to avoid known contact until they can be sure that there is no chance of infection, which could take up to five days. This could create a challenge for a woman caring for a child who has chickenpox, for example. The psychological effect of this and how to manage the effect is not something addressed in the literature.

The value of VZIG

Presently, pregnant women are advised to have serological testing to assess their immunity, before they can be offered VZIG (RCOG 2015). VZIG is only effective when given within ten days of exposure to VZV (RCOG 2015), but there are cases where women have still developed VZV and pneumonia while pregnant after receiving VZIG (Harger et al [2002](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\21)).

VZIG reduces the likelihood of severe complications, but has no effect on CVS if exposure is in the first 20 weeks (Sauerbrei [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\42)). Therefore, a woman receiving VZIG still requires counselling on potential congenital abnormalities and input from fetal medicine specialists.

Consideration of ethnicity

Talukder et al ([2007](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\46)) and Pembrey et al ([2013](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\33)) established that immunity to VZV in adulthood is affected by ethnic origin – seropositivity rates were approximately 80% in some communities, compared to 90% in people born in the UK (Pembrey et al [2013](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\33)). Sauerbrei (2015) also highlighted differences relating to antibody prevalence between immigrant and native-born communities. This is important when planning effective care provision and increasing awareness in affected communities – areas with large proportions of immigrants from hotter climates may need further assessment of women’s immunity status before pregnancy. This may indicate additional local disease surveillance needs to be considered in local joint strategic needs assessments (DH [2011](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\11)).

Time out 6

At-risk populations

Review the above information. Which UK populations do you consider least likely to be immune to VZV?

More information and robust management in communicating the risks of contracting VZV in at-risk populations need to be considered. WHO (2018a, 2018b, 2018c) recommended maintaining an immunity rate of 80%. Vaccinations could be offered on a wider scale in these areas, as is already the case with the bacillus Calmette-Guerin (BCG) in areas of the UK at greater risk of tuberculosis infections, such as Newham and Tower Hamlets in London (PHE 2014).

Notably, Pembrey et al ([2013](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\33)) found that rates of immunity to other viruses with potentially detrimental effects vary depending on ethnicity and migration status. VZV and cytomegalovirus can cause neurological problems and hearing loss in fetuses (Bothamley and Boyle [2015](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\4)), and Pembrey et al (2013) found that women from South Asia had higher seroprevalence rates of cytomegalovirus than white British women did, while the opposite was the case with VZV. This is of significance when one considers the limited opportunity midwives have to provide information before conception.

Individualised care enhances the relationship between care providers and women, and improves outcomes: ‘Personal health and fitness are integral to safe and fulfilling childbearing’ (Cumberlege et al 2016). Trusting relationships in which women have access to information relevant to their circumstances are paramount to their mental and physical well-being (Cumberlege et al 2016).

Talukder et al’s ([2007)](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\46) and Pembrey et al’s ([2013](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\33)) studies were carried out in diverse areas in the UK, the number of foreign-born people living in the UK continues to increase. Vargas-Silva and Rienzo (2015) identified that this population in the UK was 13.5% in 2015 compared to 7% in 1993. This indicates a necessity for further investigation into VZV prevalence in adulthood as the population demographic evolves.

There is a lack of data relating to the socio-economic effects of VZV in the UK. However, studies carried out in Australia, New Zealand and the US following the implementation of childhood vaccination have shown a reduction in hospital admissions for VZV at any age of between 47% and 88%, depending on the area (Carville et al [2010](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\6), Zhang et al 2015). Zhang et al (2015) concluded that the incidence of varicella pneumonia and death from the illness during the pregnancy, birth and postnatal period is lower than previously determined. These figures may be related to population demographics, the wider immunisation programme and early interventions when the disease presents. Conversely the incidence of the illness may actually be higher, but not documented because the condition is not reportable; and some women may not have reported any uncomplicated episodes of VZV to their physicians.

Awareness of the potential outcomes of the illness needs to be improved (Henry et al [2012](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\22), Gershon [2017](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\17)) to increase uptake of vaccinations in countries where it is offered, and to encourage women to access health services in the UK to assess the need for fetal medicine input.

Points for discussion

Pregnancy may instigate a weakened immune response and prolong the duration of the virus (Sauerbrei 2015). This is a particularly significant consideration because of how a pregnant woman’s known exposure to VZV is managed.

Information about VZV needs to be easily accessible, comprehensive and evidence-based; health professionals need to incorporate this into their practice (NMC [2015](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\30)) to reduce patients’ anxiety if this occurs.

Vaccination is effective in preventing VZV in up to 90% of the population and is completely effective at preventing severe VZV (Daley et al [2008](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\9)). This is significant in preventing morbidity and mortality in unimmune women of childbearing age.

Vaccination before conception would reduce the incidence further, and if a woman still contracts VZV, the likelihood of viremia at a level that affects the fetus is minimal (Wiwanitkit [2009](file:///\\chenas03.cadmus.com\smartedit\Normalization\IN\INPROCESS\49)).

Time out 7

Conveying risk

Discuss with colleagues how you would convey relative risk to a woman who is not pregnant and does not know if she is immune to VZV, so you can help her to make an informed choice about whether to determine her immunity and consider vaccination before trying to become pregnant.

Conclusion

Midwives and nurses should provide patient-centred care to women, including preconceptual care (NMC 2009). To do this in the complete scope of midwifery practice, midwives need to have the opportunity to engage with women before pregnancy. They must have a deep understanding of the optimal health for pregnancy and how to allow patients to make fully informed choices about their immunity to VZV and any other illnesses that may be prevented. This would optimise the well-being of the patients and their families.

Midwives and nurses need to be cognisant of the decisions made by the DH and the responses to disease surveillance and how these are implemented, as well as be able to provide the most recent evidence-based advice to the women in their care, explaining the rationale behind the current management of any illnesses.

There is limited provision for midwives to engage in preconceptual care with women of child-bearing age, the implementation of which would improve women’s healthcare as would preconception care and advice from practice nurses.

Time out 8

Reflective account

Now that you have completed the article, you might like to write a reflective account as part of your revalidation. Guidelines to help you are available at rcni.com/reflective-account

References

Bothamley J, Boyle M (2015) Infections Affecting Pregnancy and Childbirth. Radcliffe, London.

Breuer J (2005) Varicella vaccination for healthcare workers. BMJ. 330, 7489, 433-434.

Carville K, Riddell M, Kelly H (2010) A decline in varicella but an uncertain impact on zoster following vaccination in Victoria, Australia. Vaccine. 28, 13, 2532-2538.

Cumberlege J, Chantler C, Baum A et al (2016) Better Births: Improving Outcomes of Maternity Services in England – A Five Year Forward View For Maternity Care. www.england.nhs.uk/wp-content/uploads/2016/02/national-maternity-review-report.pdf (Last accessed: 29 January 2019.)

Daley A, Thorpe S, Garland S (2008) Varicella and the pregnant woman: prevention and management. The Australian and New Zealand Journal of Obstetrics and Gynaecology. 48, 1, 26-33.

Department of Health (2011) Statutory Guidance on Joint Strategic Needs Assessments and Joint Health and Wellbeing Strategies. DH, London.

Gershon A (2017) Is chickenpox so bad, what do we know about immunity to varicella zoster virus, and what does it tell us about the future? Journal of Infection. 74, S27-S33.

Harger J, Ernest J, Thurnau G et al (2002) Risk factors and outcome of varicella-zoster virus pneumonia in pregnant women. The Journal of Infectious Diseases. 185, 4, 422-427.

Henry J, Richards C, Shafer E et al (2012) Immunization prevented varicella hospitalizations in Australia. Infectious Disease News; Thorofare. 26, 1, 16-17. (**Q21: PLEASE CHECK – CF** **https://www.healio.com/pediatrics/vaccine-preventable-diseases/news/print/infectious-disease-news/ and https://insights.ovid.com/crossref?an=00006454-201305000-00019)**

Lamont R, Sobel J, Carrington D et al (2011) Varicella zoster virus (chickenpox) infection in pregnancy. BJOG. 118, 10, 1155-1162.

McIntosh D, Isaacs D (1993) Varicella zoster virus infection in pregnancy. Archives of Disease in Childhood. 68, 1 Spec 1, 1-3.

NHS (2016) What is Preconception Care? www.nhs.uk/common-health-questions/pregnancy/what-is-preconception-care (Last accessed: 29 January 2019.)

NHS (2018) Chickenpox. [www.nhs.uk/conditions/chickenpox](http://www.nhs.uk/conditions/chickenpox/) (Last accessed: 29 January 2019.)

Nursing and Midwifery Council (2009) Standards for pre-registration midwifery education*.* London, NMC. <https://www.nmc.org.uk/globalassets/sitedocuments/standards/nmc-standards-for-preregistration-midwifery-education.pdf> (Last accessed: 07 February 2019.)

Nursing and Midwifery Council (2015) The Code: Professional Standards of Practice and Behaviour for Nurses and Midwives. NMC, London.

Pembrey L, Raynor P, Griffiths P et al (2013) Seroprevalence of cytomegalovirus, Epstein Barr virus and varicella zoster virus among pregnant women in Bradford: a cohort study. PLoS One. 8, 11, e81881.

Public Health England (2010) Notifiable Diseases and Causative Organisms: How to Report. PHE, London.

Public Health England (2014) Chickenpox: Public Health Management and Guidance. PHE, London.

Public Health England (2015) Varicella. In PHE (Ed) Green Book. PHE, London, 421-442.

Public Health England (2018) Updated restrictions on use of Varicella Zoster Immunoglobulin (VZIG) during supply shortage: advice to health professionals. Public Health England, London. <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/740539/VZIG_interim_guidance_for_health_professionals.pdf> (Last accessed: 08 February 2019.)

Royal College of Obstetricians and Gynaecologists (2015) Chickenpox in Pregnancy. www.rcog.org.uk/globalassets/documents/guidelines/gtg13.pdf (Last accessed: 29 January 2019.)

Sauerbrei A (2011) Preventing congenital varicella syndrome with immunization. CMAJ. 183, 3, E169-E170.

Sauerbrei A (2015) Diagnosis, antiviral therapy, and prophylaxis of varicella-zoster virus infections. European Journal of Clinical Microbiology and Infectious Diseases. 35, 5, 723-734.

Sedgh G, Singh S, Hussain R (2014) Intended and unintended pregnancies worldwide in 2012 and recent trends. Studies in Family Planning. 45, 3, 301-314.

Stover B, Bratcher D (1998) Varicella-zoster virus: infection, control, and prevention. American Journal of Infection Control. 26, 3, 369-381.

Talukder Y, Kafatos G, Pinot de Moira A et al (2007) The seroepidemiology of varicella zoster virus among pregnant Banglasdeshi and white British women in the London Borough of Tower Hamlets, UK. Epidemiology and Infection. 135, 8, 1344-1353.

Vargas-Silva C, Rienzo C (2015) Migrants in the UK: An Overview. www.migrationobservatory.ox.ac.uk/resources/briefings/migrants-in-the-uk-an-overview (Last accessed: 29 January 2019.)

Wiwanitkit V (2009) Chicken pox infection in pregnancy. In Canfield R (Ed) Infectious Pregnancy Complications. Nova Science, New York NY.

World Health Organization (2014) Varicella and Herpes Zoster Vaccines: WHO Position Paper. WHO, Geneva, Switzerland.

World Health Organization (2017) WHO Model List of Essential Medicines for Children. Sixth edition. WHO, Geneva, Switzerland.

World Health Organization (2018a) Table 1: Summary of WHO Position Papers – Recommendations for Routine Immunization. WHO, Geneva, Switzerland.

World Health Organization (2018b) Immunization, Vaccines and Biologicals. WHO, Geneva, Switzerland.

World Health Organization (2018c) Table 2: Summary of WHO Position Papers – Recommended Routine Immunizations for Children. WHO, Geneva, Switzerland.

Zhang H, Patenaude V, Abenhaim H (2015) Maternal outcomes in pregnancies affected by varicella zoster virus infections: population-based study on 7.7 million pregnancy admissions. Journal of Obstetrics and Gynaecology Research. 41, 1, 62-68.