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of answers—one test at a time.

Women and TORCH

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Answers for life.

Women and TORCH

A number of infectious diseases can be transmitted to a pregnant woman and passed on to her baby, increasing the risk of miscarriage, birth defects, and developmental problems. These infections are collectively known as TORCH, which stands for Toxoplasmosis, Other (e.g., syphilis, HIV, varicella-zoster, parvovirus B19), Rubella, *Cytomegalovirus*, and Herpes simplex virus.

It is important to educate women about these diseases and their risks, ideally prior to pregnancy. Vaccination is available for some of the diseases, and taking precautions to avoid exposure, such as frequent hand washing, can also aid in disease prevention. The best way for a woman to protect her unborn child from congenital diseases is to protect herself.¹



What Is TORCH?

TORCH is an acronym for a group of infections that can cause significant birth defects and even fetal death. The infections comprising TORCH are:

- Toxoplasmosis
- Other (Special ID)
- Rubella
- *Cytomegalovirus* (CMV)
- Herpes simplex virus (HSV)

The impact of these various infectious diseases can range from miscarriage or premature birth to congenital defects including mental disability, blindness, and liver, kidney, and cardiovascular disease, and even infant or childhood mortality. Newborns infected with one of these diseases may be born with cataracts, deafness, mental retardation, heart defects, seizures, jaundice, or low platelet levels.²

Generally, patient history and risk factors guide prenatal and perinatal maternal testing for TORCH organisms. These tests are performed in the first trimester of pregnancy, and neonates may also be tested for specific TORCH organisms based on clinical history.^{1,2}



The Global Burden of the Infections Comprising TORCH

- Worldwide, congenital HIV infection is a major cause of infant and childhood morbidity and mortality, responsible for an estimated 4 million deaths since the start of the HIV pandemic.³
- *Cytomegalovirus* (CMV) is the most common virus known to be transmitted during pregnancy, affecting approximately 0.5–1.5% of births.⁴ Approximately 40% of maternal CMV infections during pregnancy result in congenital infection.⁵
- In pregnant women with untreated early syphilis, 25% of pregnancies result in stillbirth and 14% in neonatal death, an overall perinatal mortality of approximately 40%.⁶

Cause

What causes these in utero TORCH infections?

A baby contracts a TORCH infection in the uterus when the mother is infected with the virus, parasite, or bacteria and it is carried through her bloodstream to the baby.

The developing fetus is especially vulnerable to illness because its immune system is not yet strong enough to permanently fight off infection.

Since a baby in utero cannot completely clear the infection, the disease remains in its body and can prevent the child's vulnerable organs from developing correctly.⁷

Risk Factors

Syphilis is one of a number of infectious diseases that can lead to pregnancy complications and cause birth defects in the developing fetus. The impact of the various infectious diseases that can cause complications can range from miscarriage or premature birth to congenital defects

including mental disability, blindness, and liver, kidney, and cardiovascular disease, and even infant or childhood mortality.

Cytomegalovirus (CMV) is a double-stranded DNA herpes virus and represents the most common congenital viral infection. The CMV seropositivity rate increases with age. Geographic location, socioeconomic class, and work exposure are other factors that influence the risk of infection. CMV infection requires intimate contact through saliva, urine, and/or other body fluids. Possible routes of transmission include sexual contact, organ transplantation, transplacental transmission, transmission via breast milk, and blood transfusion (rare).¹

For most TORCH organisms, the initial screening test is based on detection of antibodies to the organism. (In general, TORCH infections pose a greater risk to the fetus and neonate if the mother is actively infected during pregnancy. Primary infections (new infections acquired during pregnancy) are generally more damaging than secondary or reactivated infections.

Symptoms

The signs and symptoms of a vertically transmitted infection depend on the individual pathogen. It may cause subtle signs such as an influenza-like illness and may not even be noticed by the mother during the pregnancy. In such cases, the effects may be seen first at birth.

Symptoms of a vertically transmitted infection may include fever and poor feeding. The newborn is often small for gestational age. A petechial rash on the skin may be present, with small reddish or purplish spots due to bleeding from capillaries under the skin. Hearing impairment, eye problems, mental retardation, autism, and death can be caused by vertically transmitted infections. The mother often has a mild infection with few or no symptoms.⁸

Screening and Prevention

Generally, patient history and risk factors guide prenatal and perinatal maternal testing for TORCH organisms. These tests are performed in the first trimester of pregnancy, and neonates may also be tested for specific TORCH organisms based on clinical history.^{9,10} For most TORCH organisms, the initial screening test is based on detection of antibodies to the organism.

- Screening for common infectious agents utilizing the TORCH panel may help to prevent many of the potential birth defects, as some of the TORCH infections can be effectively treated if the mother is diagnosed early in her pregnancy.¹¹
- Testing for TORCH organisms can identify fetuses and neonates who are at significant risk. Serologic-based TORCH assays can identify infection and facilitate appropriate care, thereby effectively reducing the risk of birth defects and fetal demise.
- Prevention: Some of the vertically transmitted infections, such as toxoplasmosis and syphilis, can be effectively treated with antibiotics if the mother is diagnosed early in her pregnancy. Rubella and varicella-zoster can be prevented by vaccinating the mother prior to pregnancy. If the mother has active herpes simplex, delivery by Caesarean section can prevent the newborn from contact, and consequent infection, with this virus. Steps to prevent CMV infection include avoiding an infected child's urine or saliva and frequent hand washing when feeding and caring for children.^{12,13}

Siemens Solutions for TORCH Testing

	ADVIA Centaur® Systems	IMMULITE® 1000/2000/XPi Systems
Toxoplasma IgM	●†	●
Toxoplasma IgG	●	●
Syphilis	●*	●
Rubella IgM	●	●
Rubella IgG	●	●
CMV IgM	●**	●
CMV IgG	●**	●
Herpes I and II IgG		●

† Available on ADVIA Centaur XP system. Under development on ADVIA Centaur CP system.

* Not available for sale in the U.S. Due to local regulations, not all products are available in all countries.

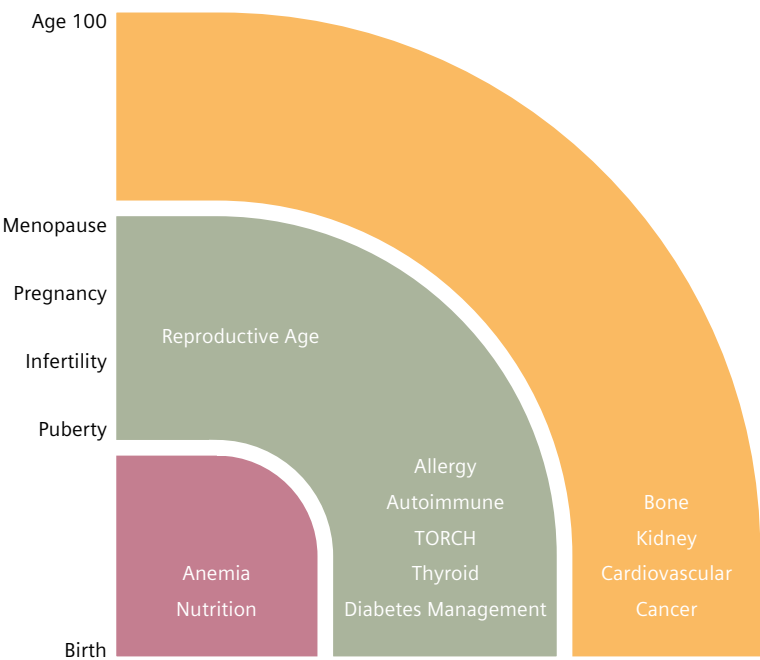
** Under development. Not available for sale. Product availability may vary from country to country and is subject to varying regulatory requirements.

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Women’s Lifetime Health Continuum

Throughout a woman’s lifetime, there are a number of conditions and diseases that affect her differently, or to a greater extent, than men. Many of these conditions and diseases are interconnected, where the onset of one leads to a greater risk of developing another. With an enhanced understanding and focus on the unique healthcare needs of women, healthcare providers across the continuum of care can be better equipped to prevent, detect, and treat the most threatening diseases affecting their female patients throughout all stages of their lives.





Your results. Her lifetime.

Empowering you to advance the
health and vitality of women
throughout the continuum of life.

Siemens Healthcare Diagnostics, a global leader in clinical diagnostics, provides healthcare professionals in hospital, reference, and physician office laboratories and point-of-care settings with the vital information required to accurately diagnose, treat, and monitor patients. Our innovative portfolio of performance-driven solutions and personalized customer care combine to streamline workflow, enhance operational efficiency, and support improved patient outcomes.

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Global Siemens Headquarters

Siemens AG
Wittelsbacherplatz 2
80333 Muenchen
Germany

**Global Siemens Healthcare
Headquarters**

Siemens AG
Healthcare Sector
Henkestrasse 127
91052 Erlangen
Germany

Global Division

Siemens Healthcare Diagnostics Inc.
511 Benedict Avenue
Tarrytown, NY 10591-5005
USA
www.siemens.com/diagnostics

www.siemens.com/diagnostics