Can you describe your role at Pescara General Hospital and explain what inspired you to study infectious diseases?

I have been working in the hospital since 1993 and have been Head of the Infectious Disease Unit since 2007. I originally specialised in genetics and became involved in many different research activities. However, I wanted to focus on the practical applications of my research and so moved into the clinical field; I have always believed that research in medicine should target the problems and questions that arise from clinical activity.

Your research endeavours have focused on cytomegalovirus (CMV). What have you discovered about it?

CMV is a very common virus that typically infects people from an early age. There is a highly variable prevalence of infection; some countries report between 50 and 90 per cent of their population is infected. In the majority of cases it is not dangerous but complications can arise, particularly in the case of immunosuppressed patients (cancer, HIV and transplant patients, or those taking severe immunosuppressive therapy, etc), where the immune system is unable to control the spread of the virus throughout the body.

If a pregnant woman has an active CMV infection, the virus can be passed on to her unborn baby. Since the foetus only has an immature immune system at this stage and only partial immunity can be passed from mother to foetus, CMV can create severe problems for the foetus. The major problems associated with the virus are neurological syndromes and hearing deficiencies. In the US, CMV congenital syndrome is the most common cause of birth defects and childhood disabilities, making it an extremely important sanitary issue.

Immunoglobulins have the potential to control the transmission of CMV from mother to foetus. Could you tell us more about this?

Immunoglobulins, also known as antibodies, are specific formulations that can be administered to increase passive immunity to pathogens. They are usually produced in the human body, but commercial formulations can be created through the extraction and purification of blood from donors.

Several studies available from international literature have demonstrated the efficacy of immunoglobulins in CMV control in immunosuppressed patients and recent evidence showed their efficacy in reducing transmission from mother to child during primary infection in pregnancy, as well as the reduction of clinical manifestations of congenital CMV disease in newborns.

You completed a longitudinal prospective study on intravenous immunoglobulins (IVIG). What were your results?

Our study administered IVIG infusions to patients with a confirmed diagnosis of primary CMV infection in pregnancy. We enrolled more than 350 subjects over the course of five years and, up to now, we know about the clinical outcome at birth of 280 newborns.

We documented encouraging results; for example, we noted a lower rate of transmission of the infection from mother to foetus compared to that reported in the literature. We also found a significantly lower rate of severe clinical manifestations in children born infected with CMV. These results are very encouraging and they inspired us to continue investing energy into our study.

Moreover, the burden of such symptomatic cases appears much lighter than reported in previous studies. We managed hearing deficits with antivirals in accordance with previous literature reports (with regression or improvement in all cases except one where antiviral administration was refused), and we saw that neurological syndromes were very far from the severe cases of motor retardation, seizures and microcephaly described in the literature.

Finally, have you faced any challenges throughout the course of this study?

The major challenge we faced was the financial cost of the study, as we only relied on institutional funds instead of securing pharmaceutical funding. This enabled us to maintain our scientific and intellectual freedom.

We have worked hard to avoid interruptions in our funding (which has been continuous up to this point), but we are now facing potential difficulties as institutional funding will no longer be available after the second half of 2015. We hope that other supporters from around Europe will trust us and let us continue the assistance we offer to the women and children who form part of our studies.
CYTOMEGALOVIRUS (CMV) is a common virus belonging to the herpes family. It can be spread through bodily fluids, close contact with children and bodily contact such as kissing. A person can contract CMV at any age, but the majority of people are infected during childhood and do not realise as, in the majority of cases, there are no symptoms. Indeed, even when there are symptoms, they so closely resemble those of flu or fever that an individual is unlikely to suspect it might be anything else.

Although the virus stays in the body for the rest of a person’s life, it rarely causes any further problems unless it is reactivated. This reactivation is often the result of a weakened immune system usually brought about by conditions such as untreated HIV, cancer or taking immunosuppressant medication. As there is currently no vaccine for CMV, immunoglobulins – a class of proteins present in the serum and cells of the immune system that function as antibodies – are used to treat thousands of patients at risk of reactivation and reinfection, with some efficacy.

However, serious health issues can occur when a pregnant woman is infected by CMV for the first time – or experiences a reactivation of the virus – and passes it on to her unborn baby. In the majority of cases the virus does not harm the child; however, in some instances, it can have serious detrimental impact on the development of the foetus and lead to symptoms such as jaundice, low birth weight and an enlarged liver and spleen. A small proportion of babies with congenital CMV will develop long-term problems including hearing loss, visual impairment and learning difficulties. Rather soberingly, CMV is the leading cause of birth defects and childhood disabilities in the US.

Researchers at the Infectious Disease Unit at Pescara General Hospital are investigating immunoglobulins and how they might help reduce maternal-fetus cytomegalovirus transmission, as well as limit the chances of foetal disease upon transmission.
Studies have shown that repeated infusions of immunoglobulins can be an effective means of reducing rates of CMV transmission and congenital CMV disease in newborns.