

US baby 'cured' of HIV: The experts respond

March 4 2013, by Georgina Scambler & Sunanda Creagh

US doctors have reported that, for the first time ever, [a baby has been cured of HIV](#) following drug treatment within hours of her birth.

[The findings](#), which centre on a child under the care of Dr Hannah Gay from the University of Mississippi Medical Center, were presented this week at the Conference on Retroviruses and Opportunistic Infections in Atlanta.

"This is the first well-documented case of functional cure in an HIV positive child and suggests that very early ART (antiretroviral therapy) may prevent establishment of a latent reservoir and achieve cure in children," the researchers wrote in their conference paper.

Reuters [reported](#) that the Mississippi child, born in July 2010 to a mother who was HIV positive but who had not been undergoing treatment, tested positive for HIV shortly after her birth.

Just 30 hours after her birth, doctors began treating the infant with a mix of three common anti-[HIV drugs](#): [zidovudine](#), lamivudine, and [nevirapine](#).

Tests done when the baby was 29 days old showed the virus was at undetectable levels in the child's body.

Treatment continued for the next 18 months but the child's mother then stopped bringing her to the doctor for 10 months. The doctors did not say why this happened.

Normally, stopping treatment allows HIV to return.

However, a series of tests conducted when the child returned to Dr Gay's care showed that, despite the cessation in treatment, there was no detectable virus in the child's blood.

Here are some expert reactions to the news:

Associate Professor David Wilson, Head of the Surveillance and Evaluation Program for Public Health at The Kirby Institute, University of New South Wales

It's very big news because it's only the second case of a cure in the world. That other case involved a very advanced, complicated treatment of [leukaemia](#).

There is real potential here [for this new treatment] to be rolled out on a wider scale.

People at risk of HIV can take drugs so that the drugs are in their system around the time of any exposure and if the HIV presents itself, then the drugs are there to try and block it.

However we just don't know the circumstances of why it worked in this case. In any case, it's very exciting and it's the first in any real world situation that's feasible to roll out on a wider scale.

It's common, if an infant is at risk, that their mother would receive antiretroviral drugs.

In Australia, it's extremely rare to have mother-to-child transmission. It's

not that common if you have a Cesarean section and no breastfeeding.

It's a different situation in Africa and Asia.

It appears to be elimination in the infant but it's possible it was a functional cure, which means the HIV may be lying dormant, hiding somewhere in the body, but it's not detected and may arise in future.

Dr Kersten Koelsch, Senior Lecturer at The Kirby Institute, University of NSW

This is a significant finding since there are very few cases worldwide of people infected with HIV where a functional cure has been achieved, and this is the first report of a child where this is the case.

Therefore, every such case may provide an opportunity to uncover mechanisms which may ultimately lead to applications within the wider community.

This case suggests, although not proven in larger samples, that very early application of antiretroviral drugs may prevent the spread of HIV within the body, even though infection has already taken place, and this may be applicable to other patients in similar circumstances as the case described.

One significant limitation at this stage is that the mechanisms that lead to this functional cure are yet not fully clear.

Another, and probably the main limitation, is that the time window appears to be very narrow.

The functional cure was not achieved in a patient with an already well

established infection, and we know from several studies in adults that early treatment may limit the number of infected cells but does not achieve a functional cure.

So the findings in this case are most likely not relevant for the vast majority of cases where HIV infection has spread within the body beyond a certain limit.

Professor David Isaacs, Professor of Pediatric Infectious Diseases at University of Sydney

It's just a report at the moment, which means we're always a tiny bit sceptical.

What they're talking about is the fact that very early on, we can detect the virus. You can test to see if the virus is there, usually by doing a test called a PCR (polymerase chain reaction) looking for the nucleic acid of the virus.

It's a very sensitive technique and there is a huge potential for contamination.

Possibilities are that the baby had an early infection that was very effectively treated, or that the baby's samples were both contaminated.

A sceptic would say that may be right or it may not be. But it's the right approach to get rid of the virus as quickly as you can.

The virus could have been in the bloodstream of the baby but not in its cells so perhaps what they were clearing was the virus from the blood rather than the cells.

It's terribly early, but it doesn't mean that if you've got a 20-year-old you could get rid of the virus.

For most people with HIV, it's well and truly established and you could never cure them, at least not by our current methods.

So this is a rather unusual situation, and they do point out that the only other situation where there's been an apparent cure was [a person with their whole bone marrow replaced](#) when they have leukaemia and they cured HIV at the same time.

So it's conceivable that you can cure HIV but it's in very unusual situations.

What happens now is if a mother comes to see me, we usually know that she's HIV positive.

In the old days about 40% of the babies would get infected, somewhere between 15% and 50% on average would get infected.

Now we treat the mums in pregnancy, we treat the babies as soon as they're born, we don't let them breastfeed, and now less than 1% of babies get infected. So the idea is that you prevent them getting infected.

This is saying that the baby was treated within 30 hours because they didn't know she was infected until she gave birth.

They gave this baby stronger treatment than we would usually give, they're saying they cured the baby. But the best thing is prevention, when you know the mother has HIV and not waiting until they're too late.

So the reason that they're excited about this is they're saying that it's proof of the concept that you can get rid of HIV, but we're saying a tiny

baby, only hours old.

The virus might be floating around but not really an established infection in the child, so I wouldn't be pulling too much out of it.

Wonderful news for that baby, but I don't think it's got huge implications. They're trying to say it's got implications in curing people with HIV but I wouldn't say that.

We've got millions of people in the world with HIV and this and [the other case](#) are the only two that have been cured.

Dr Ashley Watson, Associate Professor in the Australian National University's Medical School

It's definitely a wait-and-see situation. The potential importance of this is very clear to everyone but ideally the initial HIV positive test results should be confirmed in a separate lab with some sort of verification.

However, my understanding is that now may not be possible.

It would seem the baby was truly infected because they had two positive tests for HIV RNA. You don't normally get that in a newborn unless it's truly infected.

Most infection occurs in the passage through the birth canal. Perhaps the baby became infected in the birth canal and before the virus could establish latent reservoirs of infection, this treatment prevented that from happening.

At first glance, it seems plausible but the next thing is how can you test this hypothesis? You could repeat this natural experiment on a newborn

baby but most mothers infected should be treated before delivery.

Occasionally, mothers come along that are only found to be infected during labour.

Stopping treatment [of the infant] is, in some senses, unethical but one of the approaches in the past was to treat for the first year of life and then stop and observe.

Mostly though, once a child is treated, they stay on treatment through the early years of childhood.

It did seem a bit odd they don't have samples from the original positive diagnosis.

It's potentially exciting but the situation needs to be monitored closely. Maybe things will change with the passage of time.

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