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**Premature baby brains can't tell pain from touch**

* 17:00 08 September 2011 by [**Catherine de Lange**](http://www.newscientist.com/search?rbauthors=Catherine+de+Lange)
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Fetuses can tell the difference between [pain](http://www.newscientist.com/article/mg18725154.200-why-fetuses-do-not-feel-pain.html) and touch in only the last two weeks before birth, which could help to explain why babies born prematurely often have abnormal pain responses.

[Lorenzo Fabrizi](https://iris.ucl.ac.uk/research/personal?upi=LFABR39" \t "ns) from University College London and colleagues used EEG, a non-invasive way of measuring brain activity, on 46 newborn babies as they underwent a routine heel lance – a pinprick to the heel for taking a blood sample.

They also measured how the babies' brains responded to normal touch – a light tap to the heel.

Almost half of the babies were born prematurely – some at just 28 weeks – so the team were able to compare the responses of babies in the final stages of development with those of babies born at full term.

Premature babies up to the age of 35 weeks had bursts of activity across the whole brain in response to both pain and touch, but a change happened around 35 weeks.

Between 35 to 37 weeks – just before a fetus would normally be born – the brain seemed to become able to tell the two stimuli apart.

The responses to both pain and touch now took place in specific areas on the front, back and sides of the brain, but the signal was much stronger for pain.

**Welcome to pain**

"This is an important stage in the development of the brain," says Fabrizi, when changes occur to allow the brain to process sensory stimulation in a more sophisticated way in preparation for life outside the womb.

Fabrizi believes that the general bursts of brain activity experienced by developing fetuses are part of that development – they help connections to form between neurons in the brain.

That could be a reason to treat premature babies with even more care than usual: "By evoking [bursts of brain activity] when the baby is born prematurely we may be interfering with the normal wiring in the brain," Fabrizi says, adding that premature babies can be subjected to up to 10 painful procedures a day in hospital.

This might explain why children born prematurely have been found to have [abnormal pain responses](http://www.newscientist.com/article/mg19726404.400-morphine-may-leave-babies-sensitive-to-pain.html), although the long-term effects remain unclear, says Fabrizi.

Journal reference: *[Current Biology](http://www.cell.com/current-biology/" \t "ns)*, DOI: 10.1016/j.cub.2011.08.010

The Mirror

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**BABIES FEEL** **PAIN WHILE IN WOMB**;   
RESEARCH  
  
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BABIES can feel pain two weeks before they are born.

Infants distinguish the sensation from "general touch" at 35 to 37 weeks' gestation because of changes in their brain circuitry, scientists have discovered.

They examined 46 babies - some premature - as blood tests were made at University College Hospital, London.

At 35 to 37 weeks, their brain response changed from "general activity" to "localised activity" - indicating pain.

Dr Rebeccah Slater, of University College London, said: "It is vital to understand how the brain develops so we can give the best care."

Dr Lorenzo Fabrizi, author of the study published in Current Biology, said: "At a critical time in development babies respond with brain activity specific to the type of stimulation they receive."

The Sun (England)

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**Babies feel pain in womb says study**  
**BYLINE:** JOHN VON RADOWITZ  
  
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BABIES begin to recognise pain just before they are born, researchers have discovered.

They learn to tell the difference between pain and touch from around the 35th to 37th week of pregnancy.

Boffins measured the brain waves of 25 normalterm and 21 premature babies to look for differences in activity.

The infants had samples of blood taken by lancing their heels, a routine procedure.

Among premature babies, the lances produced general bursts of electrical activity in the brain.

But after 35-37 weeks the response switched to activity in specific brain areas, showing they perceived pain as an experience separate to touch.

Dr Lorenzo Fabrizi, who led the research, said it suggests important nerve connections are formed in the brain just prior to birth.