

Maths sheds light on what delays in getting pregnant means for prospects of having a baby

October 4 2012

A new mathematical method can help to predict a couple's chances of becoming pregnant, according to how long they have been trying.

The model may also shed light on how long they should wait before seeking medical help.

For example, the researchers have found that, if the woman is aged 35, after just six months of trying, her chance of getting [pregnant](#) in the next cycle is then less than 10 per cent.

The analysis, developed at Warwick Medical School at the University of Warwick and the London School of Economics, uses the number of [menstrual cycles](#) over which the couple has been trying for a baby to determine a probability of conception within the next month.

The method makes use of an important mathematical result first described by Thomas Bayes, an [18th century](#) Presbyterian minister, which allows [probabilities](#) to be calculated by combining prior information with new evidence.

Dr Peter Sozou of the London School of Economics said: "After several cycles without pregnancy, it becomes relatively more likely that a couple have low fertility. This is the main reason why it becomes less likely that conception will occur in the next cycle".

Professor Geraldine Hartshorne of Warwick [Medical School](#) added: "Many couples are not aware that chance plays a big role in getting pregnant. People expect to get pregnant when they want to, so finding out that it isn't happening can be a shock. Approaching a doctor about such a personal matter is daunting so knowing when is the right time to start investigations would be a useful step forward.

"We can't work out exactly when, or if, a woman will become pregnant – but this analysis can predict her chances, and give a percentage estimate of pregnancy in the next cycle."

A common rule of thumb is that couples should try having regular sex for a year before seeking help. But the new research shows that age also has a bearing on this decision.

When a woman is 25, it takes 13 [menstrual periods](#) before her chance of pregnancy in each new cycle has declined to below 10 per cent, according to the model. The number of months required to reach a conception chance below 10 per cent cycle is 10 at age 30, and just six at age 35.

Peter Sozou of the London School of Economics said: "Comparatively few young couples have low fertility, and so for these couples the most likely reason for failing to conceive in the first few cycles is simply bad luck.

"There is quite a good chance of conception if they keep trying.

"But older couples are more likely to have low fertility, so it's more likely for them than for younger [couples](#) that failure to conceive after a few months is due to low fertility."

The research, entitled Time to pregnancy: a computational method for

using the duration of non-conception for predicting conception is published in the open access journal *PLOS ONE*.

More information: [dx.plos.org/10.1371/journal.pone.0046544](https://doi.org/10.1371/journal.pone.0046544)

Provided by University of Warwick

Citation: Maths sheds light on what delays in getting pregnant means for prospects of having a baby (2012, October 4) retrieved 8 July 2024 from <https://phys.org/news/2012-10-maths-pregnant-prospects-baby.html>

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