

# Does Positive Actim Partus in Threatened Preterm Labour with a Closed Cervix Predict Preterm Birth Within 48hrs of Presentation?

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## Introduction:

Preterm birth (PTB) is an important contributor to neonatal morbidity and mortality, accounting for 8.6% of births in Australia and 15million or 11% of pregnancies worldwide. There are a number of investigations and interventions in current clinical practice that aim to reduce its impact. These can be divided into 3 main categories:

1. **Predicting preterm birth**, such as the Actim Partus test and cervical length measurements
2. **Reducing the risk** of preterm birth, such as vaginal progesterone therapy and cervical cerclage
3. **Optimising fetal condition** should preterm birth occur, such as betamethasone, antibiotics and magnesium sulphate.

Predicting PTB is notoriously difficult. the literature states >90% of women with symptoms will not deliver in the next 2 weeks and 50% will reach term. Transvaginal ultrasound assessment of cervical length (TVCL) is the most reliable predictor of PTB yet TVCL isn't routinely available for all women with threatened preterm labour (TPTL), requiring skilled sonographers with specialised equipment. Point-of-care tests like Actim Partus are used to guide management when TVCL isn't available. Unfortunately Actim Partus has a poor positive predictive value, quoted as low as 22% in some literature

Interventions to optimise fetal status in case of PTB, such as antenatal corticosteroids, can have negative short and long term effects if PTB does not ensue. Studies show increased risk of growth restriction, NICU admission, and increased rates of audiometry, visual and neurocognitive testing in their first 5 years of life. Though not a direct causative relationship, this trend means that clinicians should be judicious in their use of steroids.

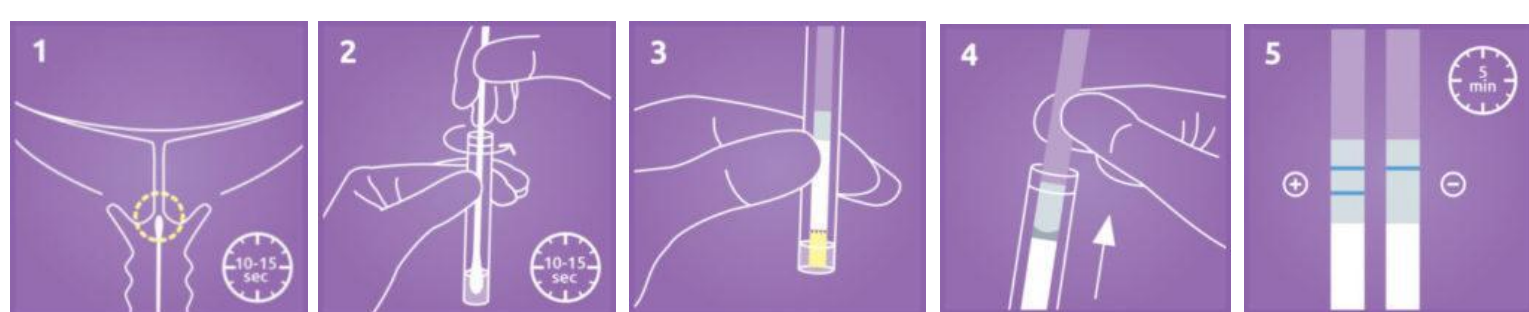


Image 1: How to use an Actim Partus. <https://www.actimtest.com/actim-partus/#how-to-use-it>

## Aims:

We analysed time to delivery for women presenting to our service with TPTL <34 weeks gestation and a closed cervix. The aim was to understand whether positive Actim Partus is a sufficiently reliable predictor of PTB to initiate time sensitive treatments such as steroids.

## Methods:

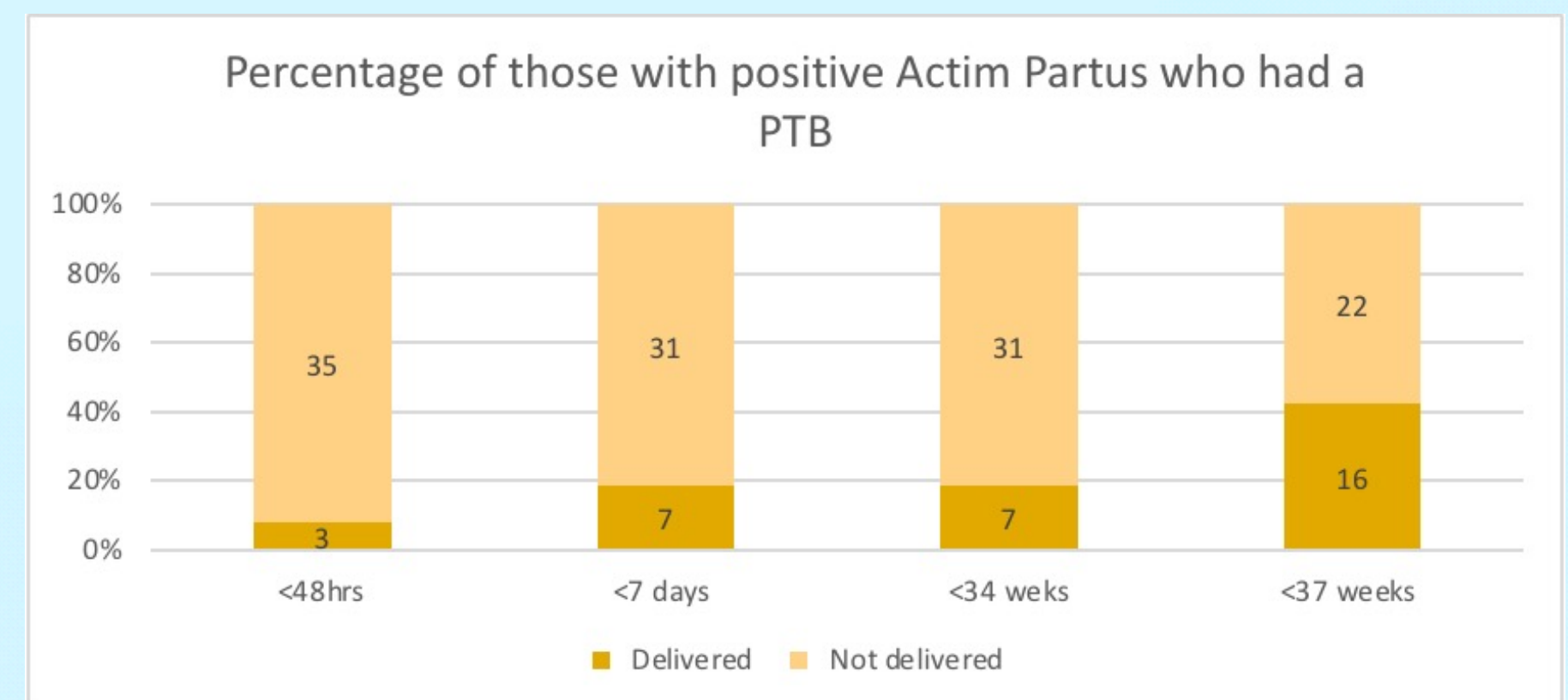
This retrospective audit was carried out by collecting data from women presenting to our service between July 2019 and June 2021 with TPTL <34 weeks and a closed cervix. Our primary data point was interval from presentation to delivery. Demographic data such as maternal age, parity, singleton versus multiple pregnancy status, was also collected. An ethics exception was granted prior to data collection.

## References:

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- Australian Institute of Health and Welfare 2021. Australia's mothers and babies. Cat. no. PER 101. Canberra: AIHW. Viewed 13 August 2021
- Varley-Campbell, J., Mújica-Mota, R., Coelho, H., Ocean, N., Barnish, M., Packman, D., Dodman, S., Cooper, C., Snowsill, T., Kay, T., Liversedge, N., Parr, M., Knight, L., Hyde, C., Shennan, A., & Hoyle, M. (2019). Three biomarker tests to help diagnose preterm labour: a systematic review and economic evaluation. *Health technology assessment (Winchester, England)*, 23(13), 1–226.

## Results:

301 women who presented with preterm labour <34 weeks gestations and a closed cervix had an Actim Partus test performed. Of these, 38 women had a positive Actim Partus. Three of the 38 (7.8%) delivered within 48hrs of presentation. Eight of the 38 (21%) delivered before 34weeks and 17 of the 38 (44.7%) before 37 weeks.



## Discussion

The low positive predictive value of 18.4% for Actim Partus for birth <34 weeks is similar to that seen in the literature. 92.2% of women with a positive Actim Partus did not deliver within 48 hours of presentation. Most delivered over 34 weeks and over half (55.3%) delivered at term. We can then extrapolate that the decision to administer corticosteroids to women with TPTL, a closed cervix and positive Actim Partus exposes many fetus' to unnecessary corticosteroids with the potential to cause unintended harm.

TVCL prior to commencing treatments such as corticosteroids may be beneficial in this group. Very few deliver within 48 hours of presentation indicating that the vast majority could wait to have treatments till they can access TVCL either in office hours when it is available, or after transfer to a tertiary facility.

Our findings add to the literature about predictive value of AP to guide treatment decisions in the first 48 hours. To our knowledge there are no published studies that look at the predictive value of Actim Partus in the first 12 to 24hrs after delivery, and very few that look at the first 48hrs. Of those that did look at predictive value in the first 48hrs, none were robust enough to provide any conclusive answers, but pooled data did confirm a trend towards poor positive predictive value.

Though 2 years of data yielded a 301 presentations, because positive Actim Partus is found in <15% of cases, the overall numbers in this study are small. The findings from this initial audit highlight the need for larger studies to assess the predictive value of Actim Partus to guide immediate treatment decisions, especially those in the first 12 to 24hrs of presentation.

Another useful area of study may be comparing positive AP to short cervical length measurement to assess predictive value in the first 48hrs of presentation.