

PPH Butterfly: A Novel Device to Treat Postpartum Haemorrhage

A simple, low-cost device that has been developed to make bimanual compression of the uterus simple and non-invasive.



Please note, header image is purely illustrative. Source: Delia Martinez, US Air Force, CCO

IP Status

Patented

Seeking

Commercial partner

About **University of Liverpool**

By facilitating access to our expertise, facilities and networks, the University of Liverpool offers the means to transform ideas into creative solutions, improved performance, new technologies, strategies, applications, products or skills.

Background

Excessive blood loss after childbirth (postpartum haemorrhage or PPH) occurs after 5% of births. Although death from PPH is rare in wealthy countries, worldwide it kills one woman every 4 minutes or 140,000 women each year. Although failure of the uterus to contract is the most common cause, tears to the birth canal and fragments of retained placenta can also cause bleeding. When bleeding occurs there are currently no good first aid techniques to stop the bleeding, and assessing the underlying cause of the blood loss is difficult and painful. Doctors generally start by giving drugs to contract the uterus, but these take time to work and can have no effect. If these fail then the woman is transferred to theatre for manual exploration of the uterus and birth canal for tears. All this takes time and as she continues to bleed she can end up losing considerable volumes of blood. A method for 'turning off the tap of PPH' is urgently needed. This would improve recovery worldwide, as well as saving many lives.

Tech Overview

The PPH Butterfly is a simple, low-cost device that has been developed to make bimanual compression of the uterus simple and non-invasive. This innovation is a slim, folding piece of polypropylene that is inserted into the birth canal if bleeding starts. It then unfolds once inside, and provides a platform against which the uterus can be squeezed by a hand on the abdomen (**Figure 1**).

The device was developed by University of Liverpool researchers in collaboration with the department of Clinical Engineering at the Royal Liverpool University Hospital.

The development and testing of the PPH Butterfly has been funded by two successive grants from the NIHR i4i scheme and the Sir Halley Stewart Trust.

The device for human use was designed electronically by Astarcor (formerly Interplex PMP Ltd) in collaboration with the University of Liverpool, injection moulded by Protolabs Ltd, and sterilised using ethylene oxide. The prototypes are made entirely of polypropylene PPM H250, with living hinges allowing the folding of the arms.

Benefits

- It enables the clinician to diagnose the source of the blood loss (will stop if atonic, but continue if from genital tears).
- Provides a faster method to treat blood loss than by giving a patient drugs and can be used in conjunction with drugs.
- Simple, low cost, non-invasive compression device.
- Allows a clinician to put constant pressure on the uterus without becoming fatigued and allows the clinician to ask a colleague to take over if needed.

Opportunity

A patent has been filed: WO 2015/136293 with a priority date of March 2014; the IP is owned by the University of Liverpool.

A mixed methods prospective cohort study to establish the usability and safety of the PPH Butterfly, has just been completed at Liverpool Women's Hospital, with very promising initial results. Full health economics report due to be completed by mid 2019.

The team are now seeking commercial partners to help move the device to market.

Patents

- Patent filed: GB20140004614 20140314

Appendix 1

Figure 1

