

## Improving birthing pool design

Sector: Healthcare

In the early 1990s, water birth was gaining in popularity. However, at the time, the state-of-the-art birthing pools resembled large barrels and had not been designed for any of the users.

Mothers found it very difficult to get into the birthing pool and almost impossible to get out in an emergency.

Midwives were not able to monitor and examine mothers in the pool without putting strain on their back and neck.



*Original design of birthing pool*

### Accommodating multiple users

The needs of people using the pool were identified:

1. The mother, who needed help to enter and exit the pool and who needed to be supported in a range of positions during labour.
2. The midwife, who needed a comfortable working position with knee room by the pool and the ability to reach the mother for examinations and monitoring.
3. The baby, who may need assistance very quickly in an emergency situation.
4. Maintenance, cleaning and infection control support staff, who need to be able to carry out their tasks quickly and effectively.

Activities from videos and interviews were then analysed before work with mothers, midwives and maintenance engineers began.

## Product design

Product design is user-centred if the key users of a product are identified early on in the design process and research is done to understand their needs.

This research feeds into the design process to inform all aspects of the design.

User testing may be repeated at various points in the design process and changes may be made to the design in order to ensure that the finished product is usable, safe and effective.

### Impact

- Improved user experience
- Improved safety
- Improved wellbeing
- Improved job design

“*I became aware of ergonomic design when I met a health service ergonomist who inspired me to incorporate the principles of ergonomic design into the creation of the original Active Birth Pool.*”

Keith Brainin, Active Birthpools

The key features were challenged and resulted in a new design. A prototype was then built and tested with staff and mothers before approaching a manufacturer to make the finished product.

## Making a difference

The pool was entirely redesigned to fit the needs of its users. The new design has:

- Steps and hand rails to assist entry and exit.
- Shaped edges to give armchair style support for the mother and range of supported positions such as sitting, kneeling and squatting.
- A concave side to provide knee room for the sitting midwife.
- An integral seat for delivery and perineal examination.
- A horseshoe-shaped seat that can also be used for rapid exit with the mother able to be floated onto the seat and then evacuated backwards onto a birthing bed much faster than could be achieved with a lifting device.



*New ergonomic birthing pool design*

This work has revolutionised the design of birthing pools with many hospitals in the UK and internationally purchasing ergonomic birthing pools ([www.dailymail.co.uk/news/article-2535103/10million-maternity-fund-hospitals.html](http://www.dailymail.co.uk/news/article-2535103/10million-maternity-fund-hospitals.html)).

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## Wider applications

The approach of constructing mock-ups to understand how a product will be used in practice is extremely useful, especially when a radical design change is proposed.

This approach has also been used in settings such as the design of future train carriages and can ensure that costs are reduced as designs are then 'right first time' when manufactured.

## Further information

S Hignett (2001). Embedding ergonomics in hospital culture: top-down and bottom-up strategies. *Applied Ergonomics* Vol 32, pp61-69.

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