# The Application of Operational Research Techniques to Service Improvement – Maternity: Direct Access to a Midwife

Llywodraeth Cymru
Welsh Government

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Research Summary | Social research | Number: 83/2014

1. The demonstration project was one of the projects funded under the Welsh Government's Programme to Maximise the Use of Existing Data. The demonstration project ran between 2011 and 2013 and relates to Direct Access to a Midwife.

2. Under Direct Access to a Midwife, expectant mothers would be encouraged to see a midwife rather than their General Practitioner (GP) as their first point of contact with maternity services, allowing public health messages to be delivered earlier, potentially improving outcomes for mother and/or child.

**Aims**

3. To demonstrate, by way of example, the contribution that Operational Research (OR) can make to the evidence base and to engage Welsh Government (WG) officials in service optimisation issues e.g. using computer modelling methods to simulate services to create "what-if" scenarios to test the impact of different service delivery options without running an expensive 'real life' trial.

4. The demonstration project aimed to use Office for National Statistics (ONS) Live Birth data and expert opinion from practitioners to examine the potential impact on the delivery of maternity services in Wales of pregnant women using the midwife rather than the GP as the first point of contact.

5. The study aimed to provide evidence to help policymakers communicate the move to 'Direct Access to a Midwife' to practitioners.

6. Within the limited scope of a demonstration project, it was not possible to examine whether improved health outcomes resulted for mother or child.

Dadansoddi ar gyfer Polisi
GSR Government Social Research
Analysis for Policy

E·S·R·C Economic & Social Research Council

## Methodology

7. The demonstration project involved a literature review, a data gathering exercise and the development of simulation models for each Local Health Board (LHB) in Wales.

8. All LHBs store maternity data electronically but not to the level of detail that would have been required for this Project. Whilst each of the 35,000+ women who give birth in Wales each year has a set of hand-held All Wales Maternity Notes, this data was not available electronically. In the absence of electronically held data containing an appropriate level of detail for this project, expert opinion was gathered about the 'maternity pathway' a woman follows. Information was gathered from the Heads of Midwifery for each LHB in Wales, from a consultant obstetrician, a specialist GP and from radiology managers.

9. Aggregate level ONS Live Birth data was acquired for each LHB for 2009-2011.

10. Computer simulations were developed for each LHB, representing a pregnant woman's pathway through maternity services as set out in the NICE guidelines for antenatal care. For each LHB, two models were created; the first model representing the current situation, where a proportion of pregnant women access their midwife as the first point of contact with maternity services with the remaining proportion accessing their GP; the second representing the way things would look if every pregnant woman went to the midwife when first accessing care. The model was developed in a package called SIMUL8. The model can be used to see how many women are waiting for each kind of antenatal appointment and scan in each LHB at a specific point in the pathway. The model can also be used to highlight whether there are any potential bottlenecks in the system or if any area is working close to its capacity.

## Findings

11. The literature review undertaken as part of this project provided little international evidence of midwives acting as the first point of contact. The only countries where this approach was used were Scotland and Iceland, with Finland having used it historically but no longer. The literature review did not provide evidence of previous simulation models in this area. However, it was discovered that the National Audit Office (NAO) were developing a simulation model for the Department of Health to consider how the birth of a baby might be affected by the introduction of one-to-one midwifery care in all settings (consultant led, midwife led care). The NAO project was not completed in time to include the findings

in this review but discussions with NAO analysts supported the approach taken in this Project.

12. The project demonstrated that the knowledge and experience of expert practitioners can be used to develop a simulation even where relevant data is either not available at all electronically or is not available to the required level of detail to inform the model.

13. The study demonstrated that simulation modelling can provide a useful virtual representation of a system to allow the impacts of different service delivery options to be discussed and compared.

14. The project demonstrated that simulation modelling can be used to answer "what-if" questions such as 'what would be the impact on the delivery of maternity services if all pregnant women in Wales accessed the midwife as their first point of contact with maternity services?'

15. The simulation models were presented to practitioners and analysts associated with the project (e.g. Heads of Midwifery Advisory Group Meeting, WG Challenge Meeting) and to external audiences at UK and International Conferences. The feedback from these events has suggested that the visual nature of the simulation models helped to engage a variety of audiences, including clinicians and policymakers.

16. The findings suggest that there was considerable variation across LHBs in whether women currently tend to use the GP or midwife as the first point of contact with maternity services. During the study period, the majority of women in Betsi Cadwaladr, Powys and ABMU contacted their midwife first, whilst women in Cardiff and Vale, Aneurin Bevan, Hywel Dda and Cwm Taf tended to contact their GP.

17. The simulation models show that if the introduction of Direct Access to a Midwife was completely successful across Wales, midwives would see around 65% of pregnant women earlier in their pregnancy, allowing them to deliver important public health messages earlier. This effect would be more noticeable in Cardiff & Vale University, Hywel Dda, Cwm Taf and Aneurin Bevan LHBs, where large proportions of pregnant women were using their GP as the first point of contact with maternity services.

18. Appointment time that was being used by pregnant women using a GP as the first point of contact would also be released for use by other patients. As a rough estimate, it was calculated that Direct Access to a Midwife could release appointment time equivalent to between 3 and 4 full-time GPs across Wales.

## Next Steps

19. The demonstration project relied heavily on data collected from the midwifery, consultant obstetric and radiologist experts as there was a lack of sufficiently detailed, electronically held maternity data. However, if the appropriate electronic data became available in future, it could be incorporated into the models to make them more realistic.

20. The findings will be shared more widely at appropriate events and conferences.

21. The challenges that emerged during the demonstration process and the benefits of using OR methods to inform service optimisation will be explored in more detail in a Lessons Learned report, publication of which is to follow.



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