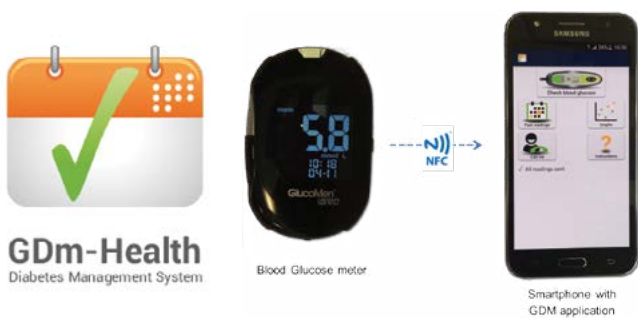


Smartphone Based Management of Gestational Diabetes

We have developed a digital, remote monitoring system to allow women with gestational diabetes to better track their blood glucose levels and communicate with their healthcare team. Results suggest improved glucose control and a reduction in the number of clinic visits for these women.

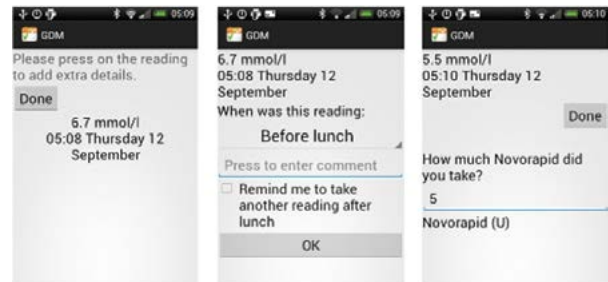
Gestational diabetes mellitus (GDM) is the new onset or recognition of glucose intolerance in pregnancy. Blood glucose levels must be tightly regulated during pregnancy to prevent adverse maternal and fetal outcomes. While finger-prick blood glucose (BG) testing with frequent clinic review is the most common method of managing diabetes in pregnancy, rising global GDM rates mean that services are increasingly pressured. New methods of managing patients are therefore required.



We have developed an intuitive, reliable, and accurate management system to record BG measurements and deliver management of GDM remotely. The system is composed of two parts:

1. Smartphone and blood glucose kit: Women monitor their BG using a glucose meter that connects to a smartphone via wireless technology (Bluetooth and NFC). A custom-designed application on the smartphone receives the BG information, uploads data to a secure NHS server, and allows for review of previous readings.
2. Website for data review: The GDM website allows the women's clinical care team to review patient data remotely, add patient notes, and prioritise patients who require more urgent review.

Our system allows two-way communication between women and healthcare professionals. BG data are uploaded in real-time, reducing errors from manual transcription and alerting to periods of missed readings. Nurses can respond quickly to patient data, potentially improving glycaemic control without the need for frequent time-intensive clinic visits. Women can add comments to each reading, and request a call back from a member of the clinical team.



The GDM management system was initially co-designed with patients and healthcare professionals to ensure it fulfilled the requirements of all users. After beta-testing and service development, a successful 200 patient randomized control trial was completed at the Oxford University Hospital NHS Trust in mid-2015. The GDM system is now being incorporated into standard gestational diabetes care for patients in several Thames Valley hospitals.



Dr Lucy Mackillop and the GDM team
Contact: lucy.mackillop@obs-gyn.ox.ac.uk

