Report on the National Pregnancy in Diabetes (NPID) audit Quality Improvement Collaboratives

The National Diabetes Audit Quality Improvement programme aims to help services to improve care and outcomes for people with diabetes across four of the National Diabetes Audit workstreams. This work is being undertaken through creating Quality Improvement Collaboratives (QICs) focused on:

- Inpatient care - National Diabetes Inpatient Audit (NaDIA)
- Pregnancy and pre-conception care - National Pregnancy in Diabetes Audit (NPID)
- Foot care - National Diabetes Foot Care Audit (NDFA)
- Transition from young peoples' to adult diabetes services – National Diabetes Transition Audit (NDTA)

(See Appendix 1 for map of QIC sites across all four audit workstreams)

Quality Improvement Collaboratives can support healthcare improvement (Schouten et al, 2008). The collaborative design features may affect the extent to which teams improve. Those features that may be associated with greater improvement were built into the NDA quality improvement collaboratives:

- Leadership support
- Teamwork
- Teams that remain intact and continue to gather data
- Facilitators perceived as being helpful
- The sharing of improvement ideas
- The use of Plan-Do-Study-Act
- Interactive learning sets and conference calls.

This report details the aims, interventions tested, lessons learnt, results and conclusions of the National Pregnancy in Diabetes (NPID) audit Quality Improvement Collaborative commissioned to run from 2017-19.

National Pregnancy in Diabetes audit

Since it was established in 2013, the National Pregnancy in Diabetes (NPID) audit has evidenced unacceptable levels of care for women with type 1 or type 2 diabetes who become pregnant. This is a high risk area for both the women and their infants. Consultation with health care professionals and people with diabetes clearly identified that the focus for the audit Quality Improvement Collaborative (QIC) should be on improving preparation for pregnancy. Although challenging, this was thought to give the greatest benefit to mothers and infants. The teams had aims relating to increasing the proportion of women who were well prepared for pregnancy, specifically:

- Using of 5mg folic acid supplements
- Keeping HbA1c below 48 mmol/mol where safely achievable
- Stopping / substituting oral glucose-lowering medications apart from metformin
- Stopping statins and ACE inhibitors/ARBs

NHS Digital and Diabetes UK invited services in England and Wales, who wanted to set local improvement aims related to the above aspects of care, to apply to become part of the NPID QIC. Each service was asked to identify a multidisciplinary team relevant to their local improvement aim(s) including, for example, a consultant diabetologist, a senior nurse, pharmacist, dietician and/or a quality improvement professional. Teams were also asked to provide evidence of support from their Trust Chief Executive and to make a commitment to meet monthly.

36 teams applied to be part of the NPID QIC. Selection was based upon diverse team membership, demonstrable executive support, geographical spread and measurable aims articulating what they wanted to improve and by how much. Twenty teams from across England and Wales were successful in their applications to become a part of the NPID QIC although several teams dropped out before the initial workshop. The teams that formed the NPID QIC were:

- Manchester University NHS Foundation Trust
- University Hospitals of Derby and Burton NHS Foundation Trust
- Epsom and St Helier University Hospitals NHS Trust and Sutton Clinical Commissioning Group
- Sheffield Teaching Hospitals NHS Foundation Trust
- The Dudley Group NHS Foundation Trust
- Taunton and Somerset NHS Foundation Trust
- Northumbria Healthcare NHS Foundation Trust
- King's College Hospital NHS Foundation Trust, Guy's and St Thomas' NHS Foundation Trust, Lambeth Diabetes Intermediate Care Team and King's Health Partners
- Royal Liverpool and Broadgreen NHS Trust
- Buckinghamshire Healthcare NHS Trust

- ABMU Health Board
- Royal United Bath NHS Foundation Trust
- BCU Health Board
- Bristol University Hospital NHS Foundation Trust
- Croydon University NHS Trust
- Queen Elizabeth Hospital, King's Lynn
- St George's Hospital NHS Foundation Trust
- Cardiff and Vale University Health Board
- Sherwood Forest Hospitals NHS Trust

The NPID QIC teams:

- Attended a workshop (Appendix 2) to develop the skills to improve the quality of care and outcomes, share practice and develop a tailored improvement plan to address local needs
- Took part in facilitated webinars and teleconferences
- Received coaching to deliver the developed local improvement plan(s)
- Shared resources such as patient information sheet, clinical systems templates and pop-ups
- Were given the opportunity to showcase improvements and share lessons at two further workshops at the end of the first and second years

Each NPID QIC team identified and tested interventions to achieve their aims of increasing the proportion of women being well prepared for pregnancy. Broadly, these interventions fell into six main types:

Educational approaches for health care professionals

Examples of this include:

- HCPs in each practice to undertake CPD accredited e-learning module
- Promotion of importance of preconception planning through local, regional and national networks
- Use every opportunity to provide education e.g. at the primary care events, midwife training, practice nurse forums and community pharmacy events
- Regular reminders on pre-pregnancy care via primary care e-bulletin (GP, practice nurse, pharmacist).

Use of clinical IT systems

Examples of this include:

- EMIS alert to identify women of child-bearing age with diabetes
- Use of Diabetes UK Information prescription embedded in EMIS
- Adaptations of EMIS/Systm1 templates

Educational approaches for women with diabetes

Examples of this include:

- Patient information leaflets and posters designed and disseminated
- Awareness raising with women with type 2 diabetes
- Modifying structured education programmes to ensure preconception care is included

Collaborative working

Examples of this include:

- Pathway for management of diabetes in the preconception period
- Improved collaboration across any service that may come into contact with women with diabetes of childbearing age e.g. community pharmacy, primary, intermediate, sexual health teams and secondary care
- Developed links with local councils and third sector organisations to work with specific groups e.g. BAME women

Building capacity

Examples of this include:

- Developing separate pre-conception clinics in the hospital and the community
- Developing business cases to increase staffing

Use of technology

- Offer Flash Glucose Monitoring to all women with Type 1 diabetes who are pregnant or planning a pregnancy
- Developing remote antenatal MDT clinics

Presented below are exemplar case-studies from nine of the 20 sites which formed the NPID QIC.

Case study 1: Manchester University NHS Foundation Trust

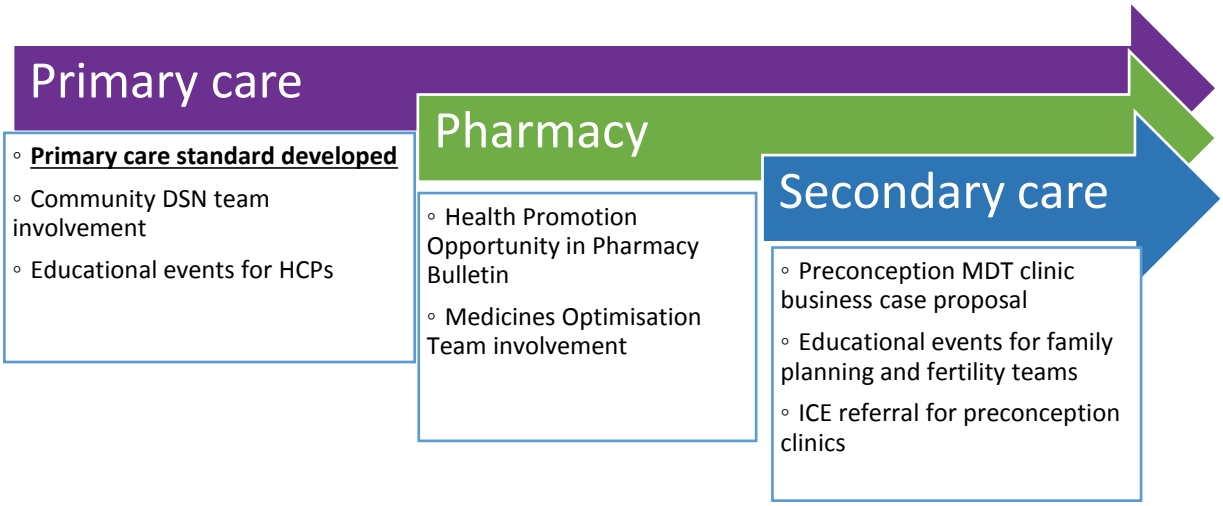
Aims:

- To raise awareness of the importance of safe, effective contraception and pregnancy planning in diabetes
- To provide all women across Greater Manchester with appropriate information and advice
- To raise awareness amongst health care practitioners of the importance of pregnancy planning in diabetes
- To ensure that women have access to specialist preconception care when required

Interventions tested:

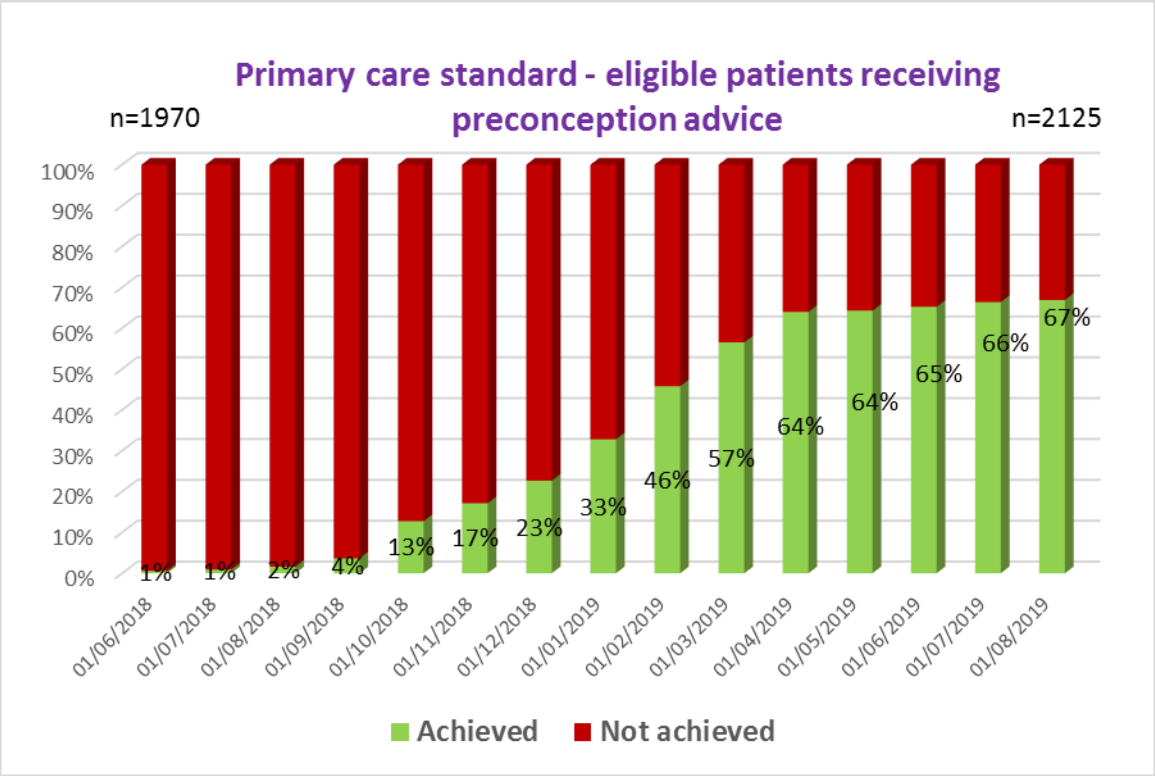
The effectiveness of the introduction of a Diabetes Preconception Primary Care Standard with financial remuneration, launched July 2018:

- EMIS alert to identify women of child-bearing age with diabetes
- Pathway for management of diabetes in the preconception period
- Use of Diabetes UK Information prescription embedded in EMIS
- HCPs in each practice to undertake CPD accredited e-learning module



Results:

- 100% of practices have enabled the Diabetes UK Information prescription on EMIS
- 60% of practices have achieved the HCP training standard (e-module completion)
- Practices reported increased confidence in giving preconception advice: from 7% to 73% over a 9-month period



Key lessons:

- Pathway development relies on good working relationships
- Align aims of project with current CCG priorities
- Stakeholder analyses are useful to identify target groups

Conclusions:

The team have successfully engaged with colleagues in primary care and the CCG to develop a primary care standard to enable brief preconception advice to be given by any health care practitioner in contact with women with diabetes.

Next steps:

- Target retinal screening attendees
- Produce multilingual information leaflets/posters

Case study 2: University Hospitals of Derby and Burton NHS Foundation Trust

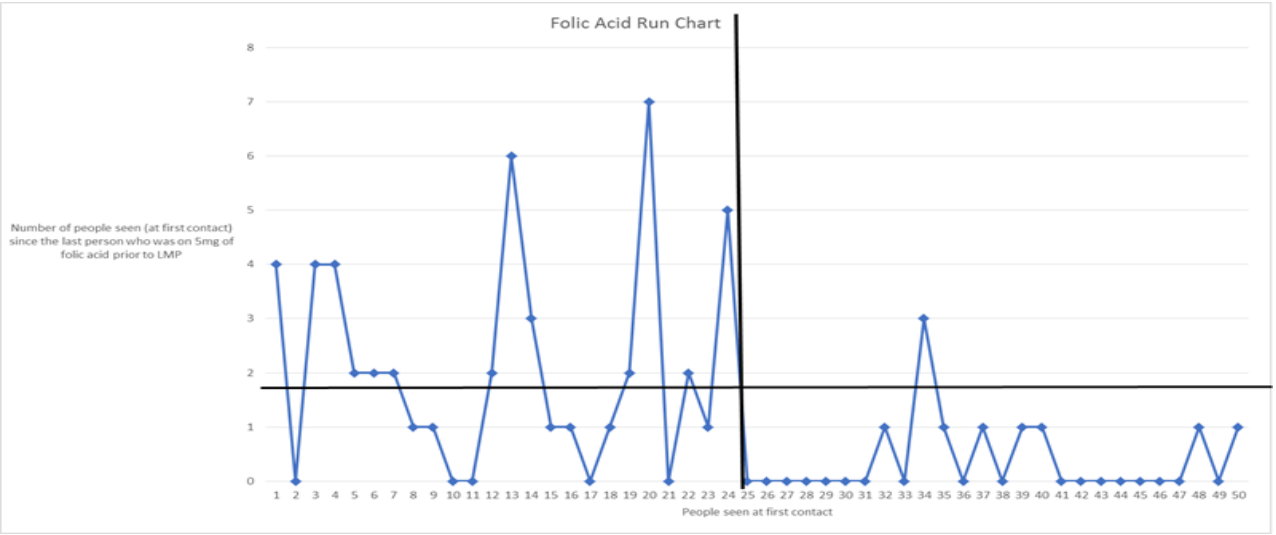
Aims:

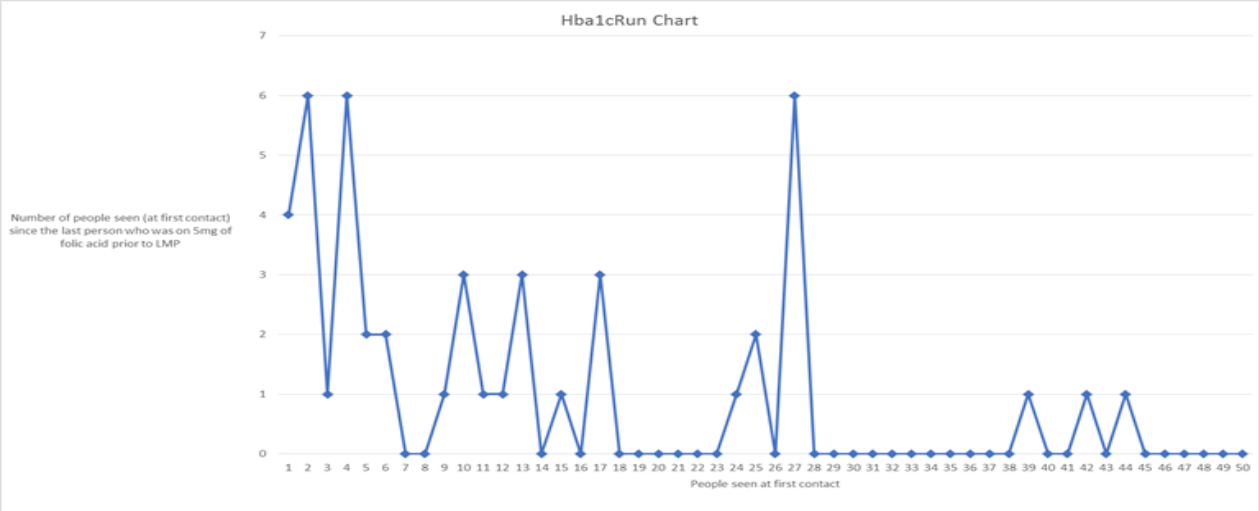
- Undertake local quality improvements targeting areas of suboptimal performance in the diabetes and pregnancy audit namely to:
    - Increase the percentage of women conceiving on Folic Acid 5mg daily from 34 to 50%
    - Increase the percentage of women with Type 1 diabetes who are pregnant or preconceptual accessing pumps from 15 to 25%
    - Increase the percentage of women having a third trimester Hba1c from 5 to 75%
    - Root cause analysis and driver diagrams were used to inform strategies to improve outcomes
- Share practice and learn from the collaborative
- Work on a regional and national level to promote preconception care generally and diabetes in particular

Interventions tested:

- The team shared practice as a collaborative e.g. examples of templates and information sheets
- Preconception was promoted:
    - **Locally** through update sessions for primary care and practice visits, and also through promotion of the team lead's NHS England award (Oct 2018).
    - **Regionally** through the diabetes and maternity networks (May 2018), and the complex pregnancies meeting (Nov 2018)
    - **Nationally** through presentations at meetings such as the National Diabetes and Pregnancy meeting

Results:





Lessons learned:

- The importance of root cause analyses in improving quality
- The value of using run charts to determine change particularly for small sample size
- The benefits of sharing knowledge to reduce duplication

Conclusions:

- 32 women (60%) were seen preconceptually
- The Folic Acid run chart supports improvement following the intervention. We have increased preconceptual Folic Acid uptake from 34% to 58% - above target.
- The Hba1c run chart also shows improvement, with 29/35 women who have delivered having a third trimester Hba1c (83%)- above target
- 7/29 women with Type 1 diabetes are on pumps- 25% on target

Next steps:

- Continue to share practice with the collaborative
- Continue to promote the need for preconception care generally and for diabetes in particular- work is planned through the regional maternity network.

Case study 3: Epsom and St Helier University Hospitals NHS Trust and Sutton Clinical Commissioning Group

Aims:

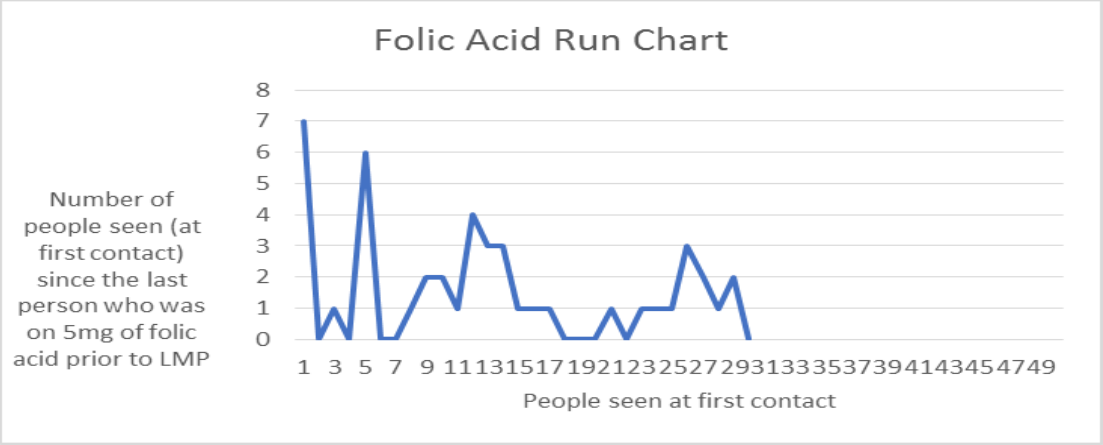
- There will be a 20% increase in the number of pregnant women with pre-existing diabetes who are already taking 5 mg of Folic Acid prior to pregnancy as identified at antenatal booking in 18 months. At baseline, only 28% of women were taking 5 mg Folic Acid pre-conception.

Interventions tested:

- Patient Education: The team designed a "Patient information leaflet (PIL)" and a Poster to be used and displayed in the hospital and GP practices to raise awareness in patients with diabetes.
- Healthcare professionals: The team adapted the current diabetes EMIS template to remind GPs and nurses about pre-conception care. The team used opportunities at the primary care events,midwife training, practice nurse forums and community pharmacy events to provide education.
- The team have started pre-conception clinics in the hospital (type 1 diabetes) and the Community (type 2 diabetes).

Results:

- Since April 2019, the team have provided pre-conception counselling to more than 20 women with type 1 diabetes and 8 women with type 2 diabetes.
- On average, per month, 30 PIL are being handed out to women with gestational diabetes at term advising on planning of future pregnancies so as to avoid "Overt Diabetes" in pregnancy.



Percentage of women on Statins at antenatal booking in the last 18 months	Percentage Of women on ACE/ARB at antenatal booking in the last 18 months	Percentage of women on other oral anti-diabetic medication except Metformin
0	2.9	2.9

Key lessons:

The key lesson learnt was that there is an absolute need to raise awareness among patients with diabetes as well as health professionals treating them of pre-conception counselling.

- Patient awareness: We identified multiple opportunities to raise patient awareness and distribute PIL by linking in with various services for example DESMOND education, retinal screening and Diabetes UK patient group meetings as well as in diabetes clinics in the hospital and the community. Social media was also utilised during the Diabetes week to raise awareness. The Black and Minority Ethnic (BME) group of patients were particularly difficult to reach and it was valuable associating with members of the Sutton Council who were already in touch with these individuals.
- Healthcare Professional Education: We presented at various meetings and highlighted the need for pre-conception counseling and signposted resources available. There was a positive response to the information provided and increased number of referrals to the pre-conception clinics. We communicated via the GP newsletter at the start and at the completion of 1 year.
- The pre-conception clinics were vital for improving Folic Acid uptake as well as for stopping teratogenic drugs and improving the HbA1c of the women before conception. The primary care physicians requested to widen the scope of the pre-conception clinics to other areas besides diabetes

Conclusions:

- We have succeeded in improving the 5 mg Folic Acid uptake from 28% to 50% in pregnant women with pre-existing diabetes before conception.
- We have successfully started pre-conception clinics for women with type 1 diabetes in the hospital and type 2 diabetes in the Community.

Next steps:

- Display at the diabetes event on 14th November 2019 organised in collaboration with Sutton Council health workers working with the BAME community.
- We have made arrangements to continue with the pre-conception clinics even after the project is over.
- We will also continue to use the PIL and the posters for the benefit of patients.

Case study 4: Sheffield Teaching Hospitals NHS Foundation Trust

Aims:

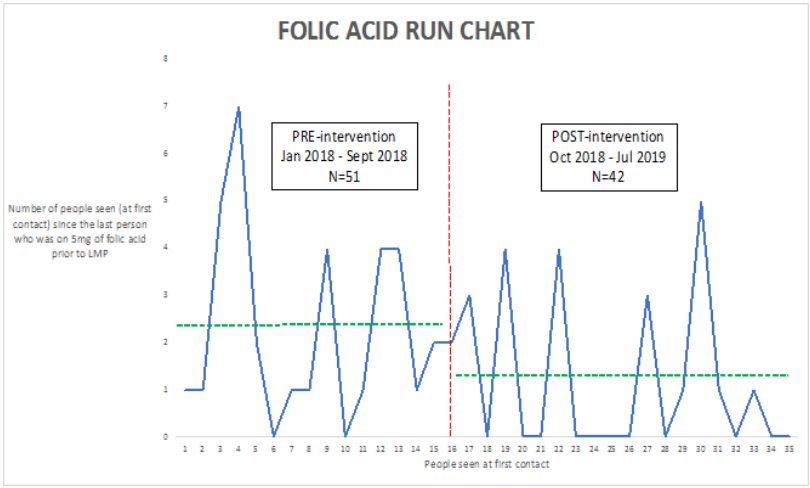
At booking:

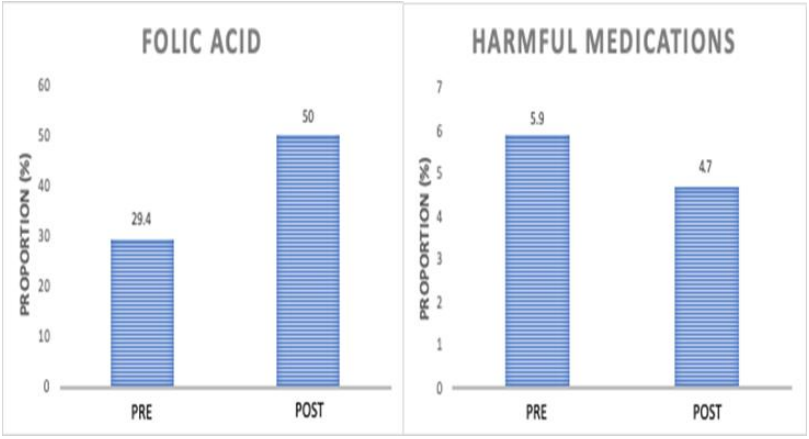
- 15% increase in the number of women on folic acid.
- None of the women taking harmful medications (statin/ACE-inhibitor/ARB).

Interventions tested:

- Pre-pregnancy leaflet and diabetes in pregnancy safety checklist uploaded into primary care diabetes template.
- SAFER posters distributed to all GP surgeries and community pharmacists.
- Regular 3-monthly reminders on pre-pregnancy care via primary care e-bulletin (GP, practice nurse, pharmacist).
- Pop-up message reminder in SystmOne on pre-pregnancy discussion for women with diabetes of child-bearing age.
- Meetings with practice nurses, health trainers and link workers in the community to raise awareness and upskill.

Results:





Key lessons:

- Engagement with key stakeholders (CCG Medicines Optimisation Team, Local Pharmaceutical Committee, GP Diabetes Lead, Primary Care Development Nurses and Sheffield City Council) is crucial to establish a multidisciplinary strategy.
- Interventions need to be strategic and focussed on different healthcare professional groups.
- Establishing a foundation to disseminate education and to raise awareness in primary care is important.
- Regular reminders are more effective than one-off education.
- Community-orientated approach is needed to reach out to women with type 2 diabetes of child-bearing age, an increasingly prevalent population.
- Unplanned pregnancy is a significant factor for suboptimal pre-pregnancy preparation.

Conclusions:

- The team increased folic acid uptake by 20% which exceeded our NPID QIC aim and reduced harmful medications.
- This was achieved by raising awareness on good pre-pregnancy care in the community via effective channels of communication.
- Collaboration between primary and secondary care is essential to improve pre-pregnancy care city-wide.

Next steps:

- DESMOND module on pre-pregnancy for young women with type 2 diabetes.
- Community diabetes specialist nurses to deliver pre-pregnancy care and support GP/practice nurses.
- Reinforce pre-pregnancy awareness in primary care.
- Midwives to reinforce pre-pregnancy awareness for women with diabetes prior to discharge from antenatal ward.

Case study 5: The Dudley Group NHS Foundation Trust

Aims:

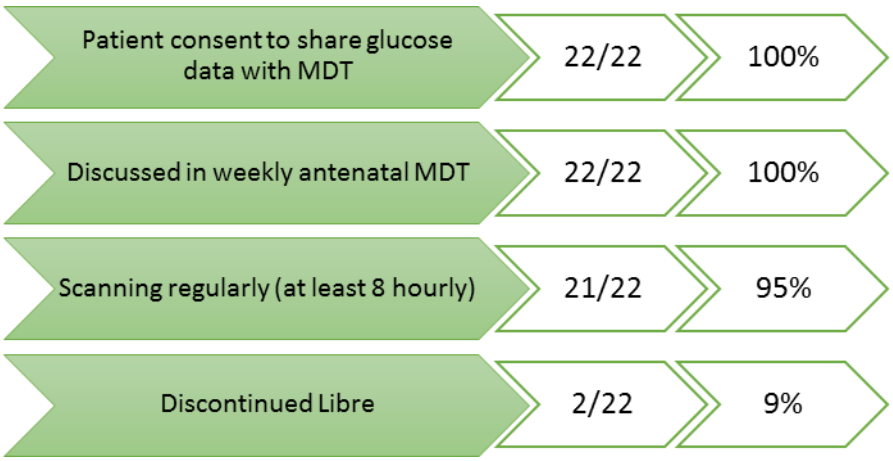
- Improve diabetes control pre-conception and during pregnancy by developing a Flash Glucose Monitoring service
- Develop an antenatal technology MDT to support remote monitoring of blood glucose
- Implement the NHS Plan 2019: 'Patients with Type 1 Diabetes will be offered Continuous Glucose Monitoring in line with clinical guidelines'
- All pregnant women with Type 1 diabetes will be offered continuous glucose monitoring to help improve neonatal outcomes

Interventions tested:

- Offer Flash Glucose Monitoring to all women with Type 1 diabetes who are pregnant or planning a pregnancy
- Develop a weekly remote antenatal technology MDT to support women using Flash Glucose Monitoring without the need for face-to-face visits
- Evaluate outcomes using audit and patient feedback

Results:

All women: Improvement in Glycemic control	Initial (mean)	Current (mean)	
Duration of use	-	175	days
Scans per 24 hours	13.0	10.9	N
True HbA1c	63.0	49.4	mmol/mol
Av Blood glucose	8.2	7.8	mmol/L
Hypos/day (<4.0)	15.0	14.1	N
Basal insulin	26	27	Units



Pre-conception to delivery	Ms A	Ms B	Ms C	Ms D
Change in HBA1c	60 to 45	53 to 38	61 to 46	72 to 51
Outcome	Delivered	Delivered	Pregnant	Pregnant
Birthweight	3500	4150	-	-
Libre after delivery	Y	Y	-	-

Key lessons:

- Flash Glucose Monitoring improves diabetes control both during preconception and throughout pregnancy
- Women with diabetes are highly engaged with the use of remote technology, and prefer this to face-to-face visits
- Establishing an MDT approach improves staff engagement and outcomes for women
- Work with CCG to approve funding criteria
- Protect dedicated clinician time for the MDT meeting and for contacting patients
- Visibility at Trust Board Level – a patient story was shown at a public board meeting
- Ensure new technology is fully supported by IT team

Conclusions:

- Great patient engagement – patient story
- Bringing the multi-disciplinary team together
- Significant improvement in diabetes control – mean HbA1c fell from 63.0 to 49.4 mmol/mol
- Reduction in face-to-face clinic visits

Next Steps:

- To offer CGMS supported by the MDT, to those patients who meet the criteria and would benefit from even closer monitoring
- To expand the MDT approach to women with Type 2 Diabetes who are planning a pregnancy

Case study 6: Taunton and Somerset NHS Foundation Trust

Aims:

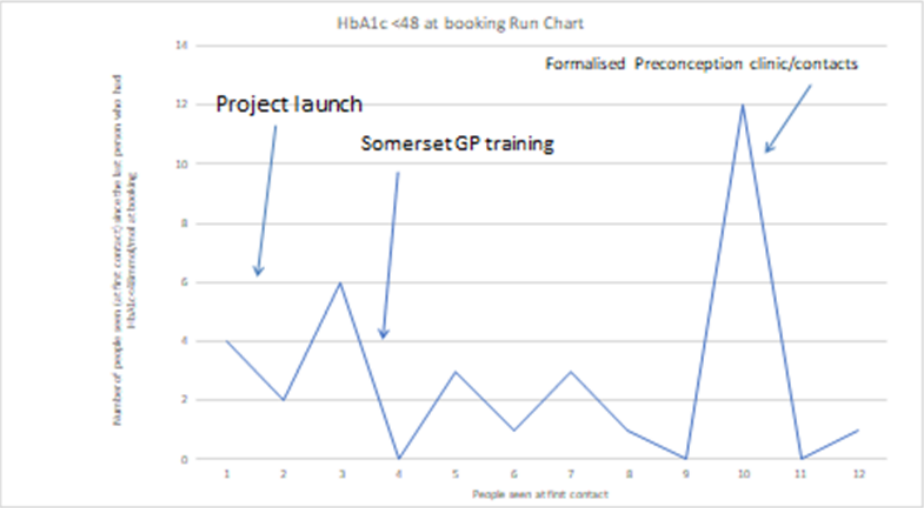
At conception to have:

- More women with pre-existing diabetes taking folic acid 5mg
- No woman with pre-existing diabetes taking a statin
- No woman with pre-existing diabetes taking glucose lowering medication apart from metformin or insulin
- BP treatment reviewed and only on labetalol, nifedipine or methlydopa
- Optimal diabetes control, HbA1c <48mmol/mol if appropriate

Interventions tested:

- Improved collaboration across community pharmacy, primary, intermediate, sexual health teams and secondary care
- Raising awareness of the importance of preconception care in diabetes with HCPs- visits, talks, CCG & LMC
- Giving HCPs who might see women with diabetes in any setting a "crib sheet" for advice, signposting and referral criteria
- DSN & Physician PCC formalised- clinics & email advice

Results:



Key lessons:

- Non specialist HCPs are key to raising awareness of the importance of preconception care to women with diabetes.
- However, they are often unsure of what advice to give.
- They found a one page summary of advice, including referral details, helpful – this has led to a higher number of women referred for preconception care (PCC)
- Identifying where to put the advice for maximum use within each group of HCPs was challenging

Conclusions:

- The team have raised awareness of the importance of preconception advice amongst HCPs, targeting those most likely to see these women in various settings – pharmacy, sexual health clinics, primary care diabetes reviews, specialist diabetes reviews
- HCPs are happy to give information and refer but want easily access to this information, this has been a challenging issue.
- Ongoing difficulty obtaining data showing when PCC advice given out of secondary care

Next steps:

- Testing EMIS Diabetes template –delayed, template contractor changed
- Maintaining community pharmacy involvement – time pressure & lack of financial incentive
- Patient signposting – somersetmydiabetes, paper, eye screening leaflets

Case study 7: Northumbria Healthcare NHS Foundation Trust

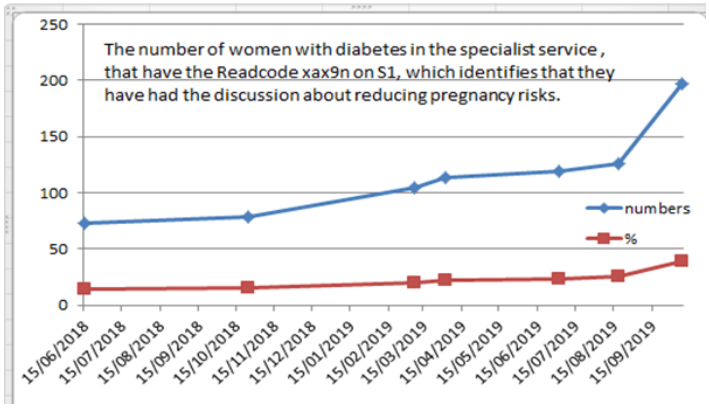
Aims:

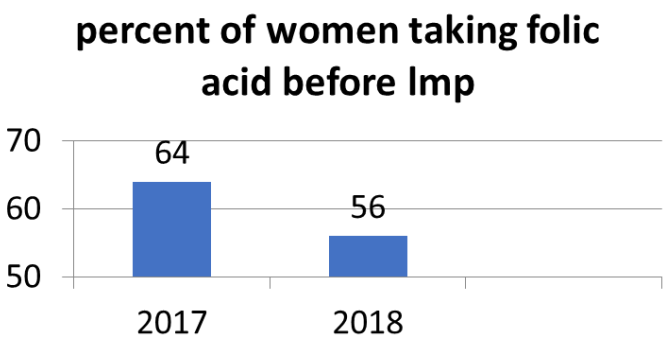
- 70% of women with diabetes aged between 16 & 50 years old to have the opportunity to learn more about reducing pregnancy risks in diabetes.
- First to start in Specialist Service and then move to Primary care..
- To increase the folic acid uptake.
- Ultimately to improve outcomes

Interventions tested:

- Identification of women on systm1 within the specialist service. 73 of 510 , (14%), women 16-50 years with diabetes Had a readcode xax9n on their record June 2019.
- Template development on systm1, (S1). Information prescription linked and pre-conception conversations readcoded.
- Delivered training to specialist service on quality conversations, information prescription and S1 documentation.
- Emailed out reminders to specialist team.
- Delivered training to primary care at GP meeting in North Tyneside.
- Preconception care made a regular item on the practice nurse training. Have delivered training 3 times now since start of project.
- Opened discussion with Practice Nurse lead at North Tyneside and set up further training for Feb 2020. Made links with CCG lead re. getting template into practices.

Results:





Key lessons:

- Team training – is it enough as messages can be diluted.
- People are busy therefore need reminding and reminding
- Staffing problems – 2 Dieticians have left the service and only 1 member of the original project team remains and they balance many priorities.
- Systems are easier than behaviours to change.
- Progress is being made, but slowly

Conclusions:

We have:

- Set up systems in Systm1 in specialist service
- Increased the amount of women with diabetes aged between 16-50 yrs that have received discussion about pregnancy risks.
- Started processes in Primary care
- Identified the need to focus on setting up systems in primary care.

Next steps:

- Focus on primary care – North Tyneside first and then further
- Make links to get the template into North Tyneside practices
- Hopefully have template in place for practice nurse training in Feb 2020
- Think about ways to remind specialist team ie. Alerts.
- Review data for 2019

Case study 8: King's College Hospital NHS Foundation Trust, Guy's and St Thomas' NHS Foundation Trust, Lambeth Diabetes Intermediate Care Team and King's Health Partners

Aims:

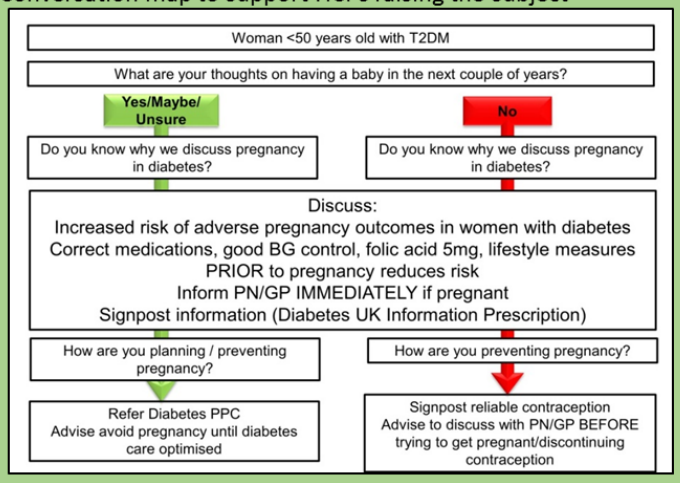
By March 2020 to increase proportion of women with T2DM with: 1st contact with antenatal diabetes team <8 weeks gestation from 50.8% to >65%; first HbA1c in pregnancy <48 mmol/mol from 30.4% to >45%; taking folic acid 5mg prior to pregnancy from 23.8% to >35%.

Interventions tested:

Intervention 1: primary care diabetes HCP education

To increase health care professional (HCP) awareness of possibility of pregnancy in women with T2DM & confidence in raising the issue.

- Lambeth CCG Diabetes Learning Event (Oct 2018) case-based
- Conversation map to support HCPs raising the subject



- eRS(electronic referral system) for pre-pregnancy clinics (PPC)

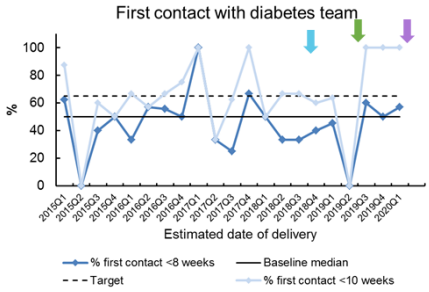
Intervention 2: flyer campaign (PREPARED)

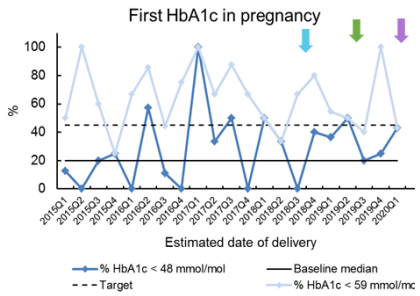
To increase awareness of diabetes & pregnancy in women with T2DM.

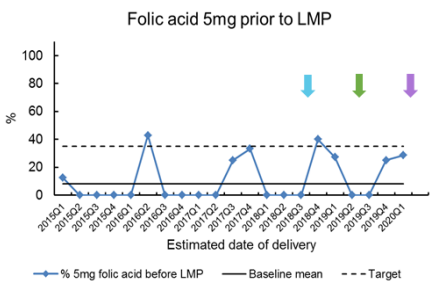
- Flyer co-designed with women with T2DM
- Flyer sent to women with T2DM age 18-50 in Lambeth (July 2019)
- Simultaneous articles in KCH & GSTT primary care newsletters

Print costs covered by small grant from Novo Nordisk UK Research Foundation

Results:







Baseline median & mean calculated from women with EDD 2015Quarter1-2018Quarter3. Timing of interventions indicated by arrows (start of project = blue; intervention 1 = green; intervention 2 = purple). Insufficient time has elapsed since interventions to comment on the run charts.

Key lessons:

- Intervention 1 targets primary care HCP to increase proactive discussion
- Think about (pre-)pregnancy in women with T2DM up to age 50 years
- Start the conversation by asking about thoughts about having a baby in the next couple of years rather than 'planning pregnancy'.
- Primary HCP role is to raise the issue, signpost & refer.
- Intervention 2 targets low awareness in women with T2DM that diabetes impacts on pregnancy.
- Insufficient time has elapsed since interventions to comment on run charts.

Next steps:

- Follow-up session at Lambeth CCG Diabetes Learning Event
- Patient feedback questionnaires on PREPARED flyer
- Modify EMIS diabetes template used across Lambeth
- Maintain & update run charts and include GSTT data
- Repeat in Southwark!

Case study 9: Liverpool University Hospitals NHS Foundation Trust, Liverpool Women's Hospital

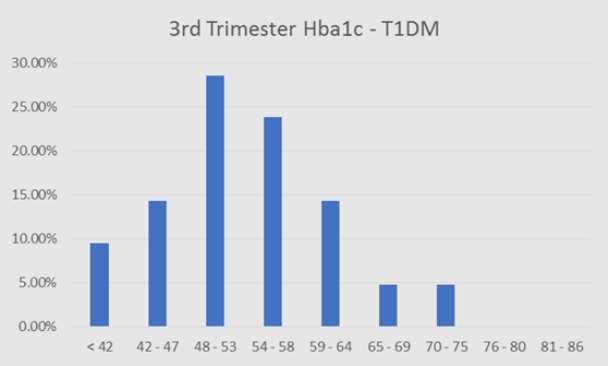
Aims:

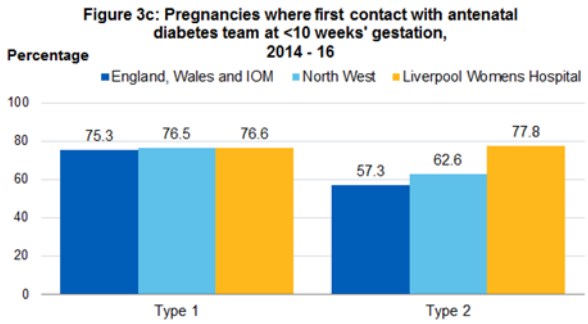
To increase the proportion of women with T1DM who have 3rd trimester HbA1c < 48mmol/mol up to national average i.e. from 19% to 40% in 2 years' time

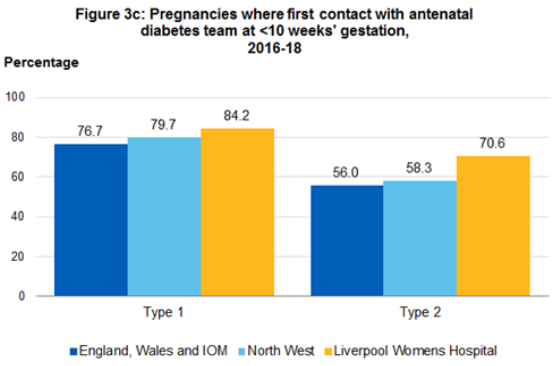
Interventions tested:

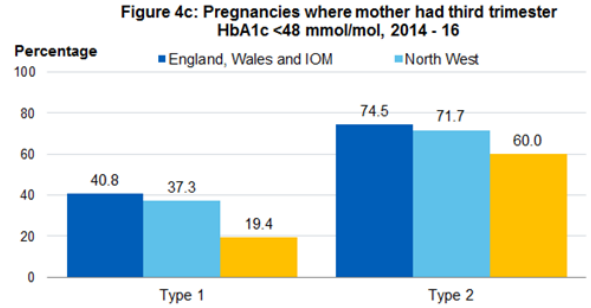
- Self referral to joint antenatal clinic
- Increased clinic staff (1 extra consultant)
- Monthly HbA1c to track improvements in control
- Telephone reminders for patients who DNA

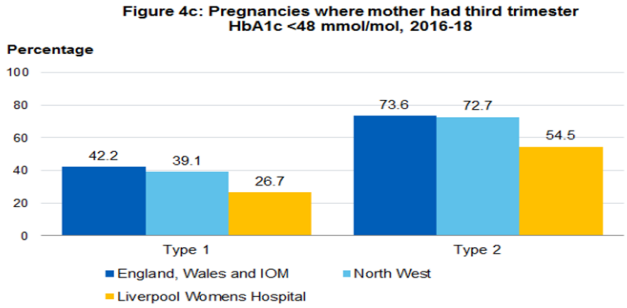
Results:











Key lessons:

Data is encouraging - improvements already apparent although full effect of current interventions will be seen only in 2019 deliveries

Conclusions:

Higher proportion of patients:

- attending JANC for 1st visit at < 10 weeks' gestation
- achieving Hba1c < 48 mmol/mol in 3rd trimester

Next steps:

- Publicise and consolidate pre-conception service
- Widely distribute pre-conception care infogram
- Provide personalised Information Prescription
- CGM for all patients on CSII
- Flash glucose monitoring for all other patients
- Ultra rapid acting insulin for all patients

The NPID Quality Improvement Collaborative:

The next steps:

During the teleconferences participants requested a further face-to-face meeting where they could get more detail about each other's projects. During this meeting members of the collaborative said they were keen to continue to collaborate. Diabetes UK have agreed to pilot a 12-month teleconference based structure that mirrors the multi-site calls during the funded collaborative. In addition, opportunities for face-to-face meetings of the QIC alumni will be sought at future diabetes events.

The collaborative provided a structure whereby teams could work together on a common challenge. This showed that they were willing to ask for and share resources and lessons. There remains to opportunity to consider how similar support might be provided to those teams that participate in the in-patient audit but were not able to be part of the NPID QIC.

Lessons learnt:

Teams were selected from those that applied, it is therefore possible that those teams that were part of the collaborative were different from those that were not. Nevertheless, a summary of the activity of teams is provided here to enable others seeking similar improvements to consider whether the tested interventions might be beneficial to them.

Participating teams identified a number of lessons, these included:

- The importance of developing relationships beyond existing clinical colleagues, and in particular, between diabetes specialists and those providing support and care in primary and public health settings.
- Aligning work to commissioner priorities was important. These priorities were not always well understood by clinicians. Developing diabetes specialists' understanding of the content and development of commissioner priorities may further support improvements in diabetes care.
- Developing links between the collaborative and others involved in supporting improvements in diabetes care, for example, retinal screening team and the transitions collaborative, may help identify further opportunities for improvement.
- Considerable work was needed to understand current performance and in particular where to target improvements. NHS Digital were extremely helpful in supporting members of the collaborative to understand their data. Automated data to understand performance over time may further support improvement.
- Collaborative members reduced duplication (for example, in the development of information resources), shared resources and described important improvements. They also shared lessons and supported each other through difficult change management experiences. In many cases, they did this against a background of staffing pressures. It is anticipated that providing an opportunity to collaborate in this way is cost effective, but there is a need for a formal evaluation of the process and outcomes of the collaborative.

Comment on the NPID Quality Improvement Collaboratives

Professor Helen Murphy - NPID Clinical Lead

Professor of Medicine (Diabetes and Antenatal Care), University of East Anglia

Honorary Consultant Physician, Cambridge University Hospitals NHS Foundation Trust

The case studies demonstrate how motivated individuals and teams can make a real difference to NHS service provision and patient outcomes. The Manchester diabetes team developed a pre-pregnancy care standard, supporting primary health care practitioners in contact with women with diabetes to provide preconception advice. Teams from Taunton and Somerset in the south, to Sheffield and Northumbria in the north, as well as Derby and Burton, Epsom and St Helier, King's College, Guy's and St Thomas' in London all succeeded in improving 5mg Folic Acid uptake before pregnancy and increasing attendance at pre-pregnancy clinics. The Liverpool team focused on using Flash and Continuous Glucose Monitoring for improving glucose control during pregnancy. While, Dudley expanded their Flash Glucose Monitoring service to include women planning for pregnancy, with benefits for glucose control, staff engagement and patient experience.

A key theme is that unplanned pregnancy remains is a challenge which requires a shift of emphasis to ensure that all women with diabetes between the ages of 15-50 years are offered access to safe effective contraception. For those seeking pregnancy, pre-pregnancy care to ensure adequate folic acid, reduce potentially harmful medications and optimise glucose control in the first 40 days of pregnancy is essential. This requires better systems and a co-ordinated effort both between primary and secondary health care providers and between diabetes and maternity teams. Meanwhile the shift to offering all pregnant women with type 1 diabetes Flash and Continuous Glucose Monitoring (starting from 01 April 2020) is underway. The 2020 NPID audit will be recording which women are using these technologies to better understand their impact on mother and new-born health outcomes.

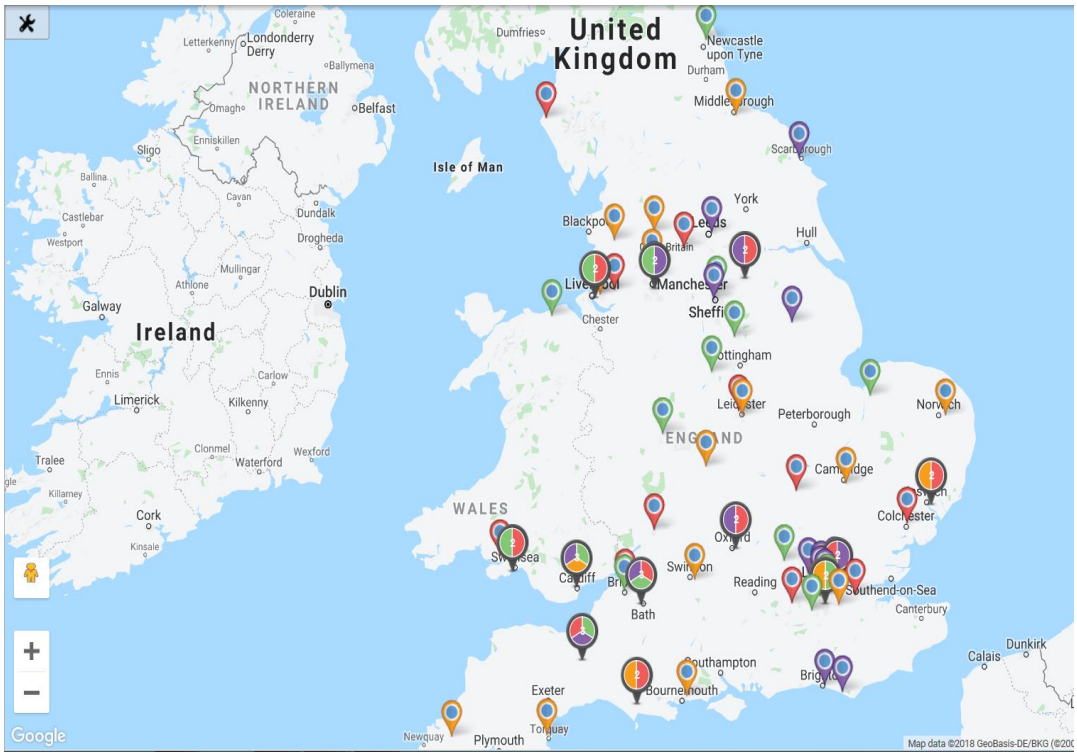
For further information on this work, contact: nda@diabetes.org.uk

Acknowledgements: We would like to thank all the teams who participated in the collaborative for their willingness to share their experience.

Appendix 1:

National Diabetes Audit

Quality Improvement Collaborative 2017-2020 sites



National Diabetes Foot Care Audit (NDFA)

National Diabetes in Pregnancy Audit (NPID)

National Diabetes Inpatient Audit (NaDIA)

National Diabetes Transition Audit (NDTA)

Appendix 2: Workshop programme

9.00 – 9.30	**Registration and Tea/Coffee**
9.30 – 10.00	Welcome and background
10.00 – 10.45	Setting aims and engaging others *Building upon the application and post-application support to set measurable aims.* *Patients, carers and colleagues on the team.*
10.45 – 11.00	**TEA/COFFEE**
11.00 – 11.15	Building an executable strategy *The use and population of driver diagrams*.
11.15 – 12.15	Tracking improvement and capturing plans *Reviewing data over time and developing a sustainable, local measurement plan*.
12.15 – 1.00	**LUNCH**
1.00 – 2.00	Analysing local practices and capturing plans *Developing process maps and using reliable design to improve care*
2.00 – 3.30	PDSA & COM-B **(and tea/coffee break!)** *The place and development of plan-do-study-act cycles within the model for improvement, and how they can be integrated with behaviour change theory.*
3.30 – 4.00	Driver action diagram *Extending local driver diagrams and making commitments about the next steps.*
4.00 - 4.30	Present driver diagrams and describe next steps *Learn what others are planning and have opportunity to win award!*
4.30 – 4.45	Next steps for the Collaborative