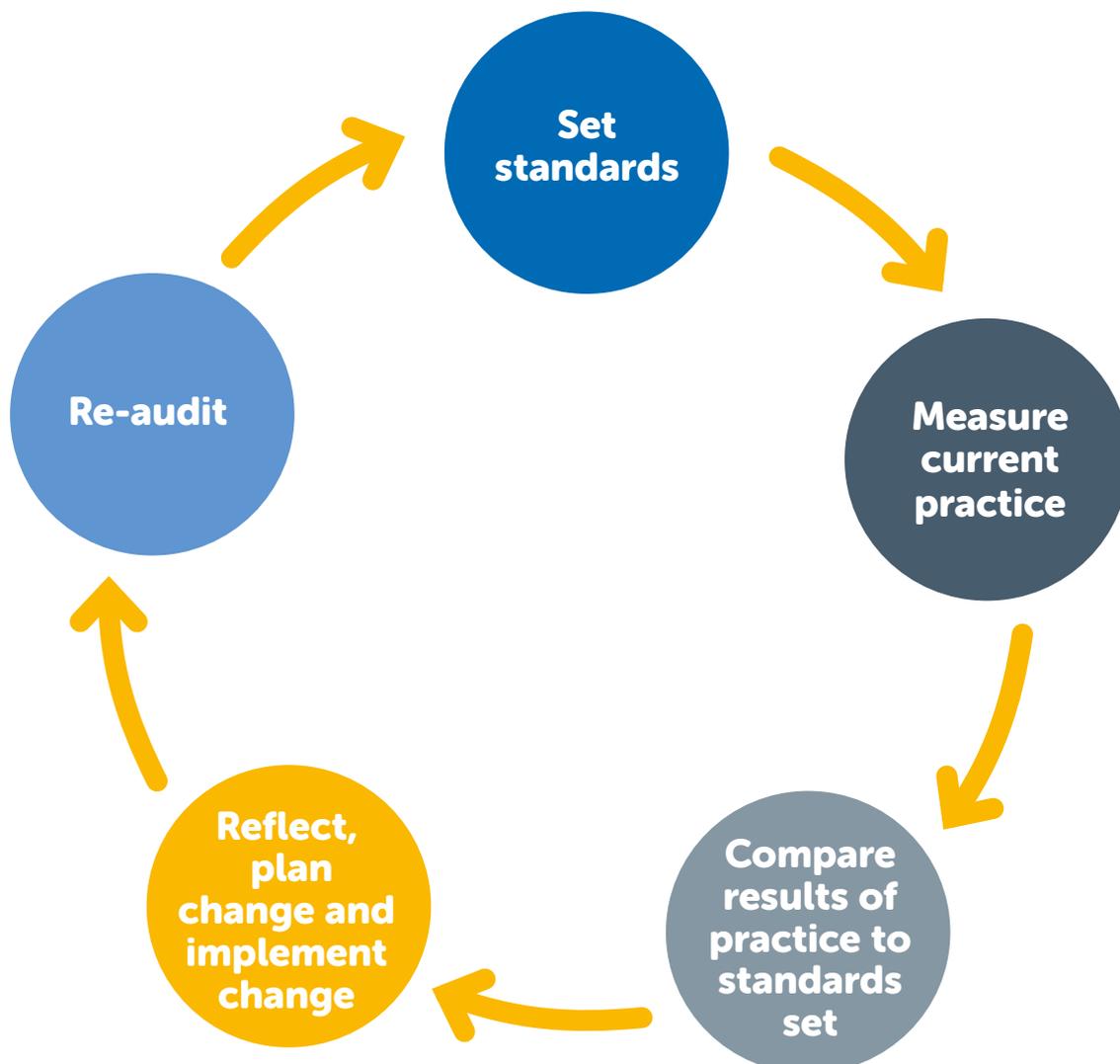


A Guide to Quality Improvement in Specialist Diabetes Services

from the National Diabetes Audit



Contents

Introduction	3
The basics of improvement	4
Factors that impact on improvement	5
Models for improvement	6
Effective improvement	7
Patient involvement	10
NDA recommendations	11
Where to go for further support and information	12

THE AUTHORS

Dr Bob Young, Specialist Clinical Lead, National Diabetes Audit (NDA)

Dr Gerry Rayman, Clinical Lead, National Diabetes Inpatient Audit (NaDIA)

Dr Nick Lewis-Barned, Clinical Lead, National Pregnancy in Diabetes (NPID) audit

Prof William Jeffcoate, Clinical Lead, National Diabetes Footcare Audit (NDFA)

Dr Justin Warner, Clinical Lead, National Paediatric Diabetes Audit (NPDA)

Prof Jonathan Valabhji, National Clinical Director for Diabetes and Obesity,
Chair of the NDA Partnership Board.

Introduction

The National Diabetes Audit (NDA) is a major national clinical audit. Covering the whole diabetes care pathway, the NDA measures the effectiveness of diabetes healthcare in England and Wales against National Institute for Care and Health Excellence (NICE) Clinical Guidelines and NICE Quality Standards.

The NDA collects and analyses data and produces reports for a range of stakeholders to use to drive change and stimulate continuous improvement in services and outcomes for people with diabetes (see box below). There have been huge improvements in diabetes care over the last 15 years. Nevertheless, each of the NDA reports illustrates that more needs to be done to raise standards overall and reduce unwarranted variation between services. (It is, perhaps, the nature of human endeavour that things will ever be thus!).

This guide is intended to give useful guidance and support to specialists who provide services for people with diabetes – including doctors, nurses, dietitians, podiatrists and managers responsible for delivering outpatient and inpatient specialist diabetes services. The guide offers a brief but comprehensive review of the principles and practice of improvement methodology, together with suggestions for how these examples can be applied to diabetes care. Guidance is included on how to select priorities for improvement, how to get an improvement programme underway, how to find improvement tools, and how to measure success.

WHAT IS THE NATIONAL DIABETES AUDIT?

The National Diabetes Audit (NDA) has been monitoring care provision for people with diabetes since 2003. It produces national benchmarked data for adult specialist care across England and Wales, including:

- NDA Core Audit – key processes and treatment targets of diabetes care
- NDA Complications and Mortality analysis
- National Diabetes Inpatient Audit (NaDIA)
- National Pregnancy in Diabetes (NPID) audit
- National Diabetes Transition Audit (NDTA)
- National Diabetes Insulin Pump Audit

For more on the NDA and how to access its reports, visit <http://content.digital.nhs.uk/nda>

The Royal College of Paediatric and Child Health (RCPCH) manages the National Diabetes Paediatric Audit (NPDA), which provides national, benchmarked data for children and young people with diabetes in England and Wales. For more on the NPDA, visit www.rcpch.ac.uk/national-paediatric-diabetes-audit-npda

The basics of improvement

Improvement is difficult, but it is always necessary. No service is ever perfect. There is always something that could be improved.

Improvement requires change. No one tries to do a bad job and very few healthcare professionals are unmotivated. But it isn't a question of working longer or trying harder. Simply doing more of the same produces, at best, marginal improvement. It is changing the way things are done – 'system change' – which leads to appreciable improvement. However, whereas all improvement requires change, not all change results in improvement. So measurement is critical, both to establish your baseline and to determine the impact of your change programmes.

Change requires focussed effort. In busy services, capacity for the extra effort required to change is limited. So priorities for change need to be selected carefully and reliably.

'Normal cause' statistical variation (random noise in measurement that will 'regress to the mean' – see box below) needs to be distinguished from 'special cause' variation (differences that are so large that there is little chance they will correct without change). Where something is 'special cause' (ie more than two standard deviations from the group mean), that is an obvious priority.

More commonly there will be measures that remain stubbornly in the lowest quartile of a national benchmarked distribution, such as are reported by the National Diabetes Audit or Public Health England locality profiles. Or there may be issues where average performance or outcome demands consideration by everyone (eg glucose control in Type 1 diabetes, inpatient DKA/HHS, NICU admission in pre-gestational diabetes, lower limb amputation due to diabetic foot disease).

WHAT IS CAUSE VARIATION?

'Normal cause' variation is the fluctuation caused by human and environmental factors resulting in a steady but random distribution of output around the average of the data (the width of a normal distribution). It is a measure of potential, or how reliably it is possible to achieve a goal when 'special cause' variation has been removed.

'Special cause' variation is a shift in output caused by specific factors, such as environmental conditions, pathways or ways of doing things. It is susceptible to being addressed directly and, potentially, removed.

Factors that impact on improvement efforts

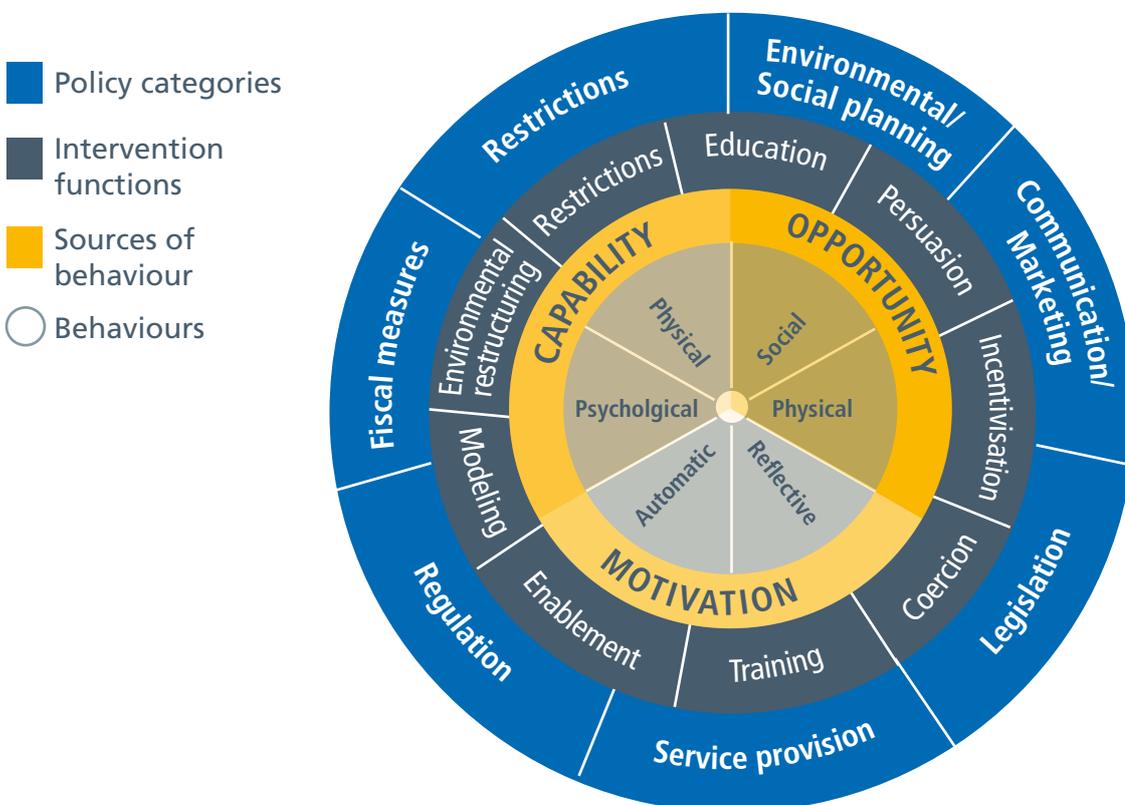
Most diabetes care is multidisciplinary and is often dispersed geographically and across health sectors. Effective change usually requires the enthusiastic support of all participants across the extended care pathway. Good leadership is an essential ingredient of all successful change, and is especially important in the context of the diverse teams and pathways that characterise most diabetes care.

As noted above, effective improvement requires 'system change' rather than 'people change'. But there is good evidence that the factors that facilitate or hinder change are many and complex (see Figure 1).

Sometimes such a vast array of factors can feel baffling or even insurmountable. But notwithstanding the complexity of human behaviours and systems, any motivated group of clinicians and the teams they work with can achieve real improvement in even the most unhelpful if not actually hostile environments.

Figure 1. The Behaviour Change Wheel

A new method for characterising and designing behaviour-change interventions. Michie et al. *Implementation Science* 2011, 6:42 www.implementationscience.com/content/6/1/42 (23 April 2011)

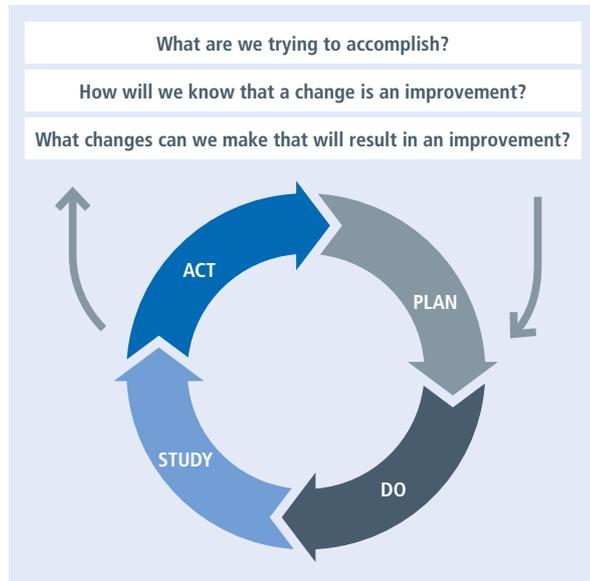


Model for improvement

One basic model for improvement has been shown to work (see Figure 2). Originally developed in engineering, it has proved to be applicable to any area of human endeavour where systems determine outcomes.

Figure 2. A model for improvement

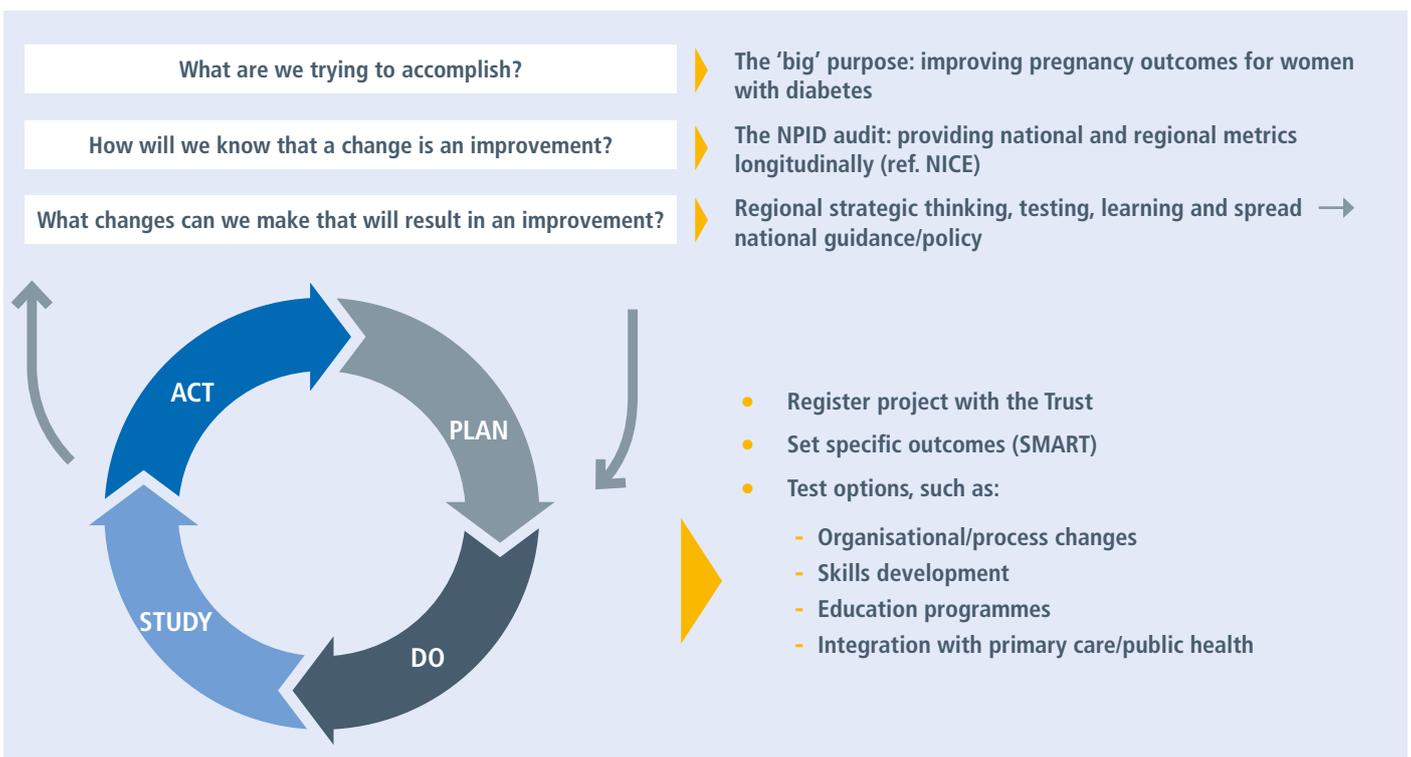
Developed by Associates in Process Improvement (API). www.apiweb.org



When translated into a diabetes project, this model might look something like Figure 3.

Figure 3. Model for improving specialist diabetes antenatal services

Adapted from Associates in Process Improvement (API). www.apiweb.org



Effective improvement

Much has been written about specific tools helpful to the processes of improvement (ie diagnosis, planning, implementation, assessment). The Healthcare Quality Improvement Partnership ([HQIP Guide to Quality Improvement Methods](#)) is a comprehensive and up-to-date compendium of these. (See page 11 for further links to resources and support.)

The following list summarises the key factors indispensable to effective improvement anywhere.

Leadership

Overwhelmingly the most important factor

- Vision
- Responsibility
- Drive and enthusiasm
- Commitment

Team meetings

Build trust, understanding, *esprit de corps*

- In the context of diabetes this often means seeking and engaging collaborators from different professions and health sectors
- Regular short meetings are very helpful

Good ideas

Encourage constructive criticism and suggestions for change; organise regular team meetings

- Often generated by those working most closely with patients
- May have been thought of already (it is worth checking what others have done before)

Good project management

Progress will be slow or non-existent without it

- All tests of change need an implementation plan including:
 - Tasks
 - Responsibilities
 - Resources
 - Timelines

Measurement

Without it you are feeling in the dark

- Strategic (peer benchmarking, usually case-mix adjusted)
 - Good for priority setting
 - Good for checking real impact of improvement programme
 - Strong statistical models (eg funnel plots)
- Tactical (operational, local progress monitoring)
 - Good for checking progress within management plan (eg run charts)
 - May need to adapt/adjust to different stages of change programme (multiple steps are usual)

Elements that are valuable adjuncts to effective improvement 'in the field' include:

A permissive organisational culture

Makes a tremendous difference, although much can be achieved 'under the radar'

- Senior management explicitly supports and encourages 'quality'
 - Clinical effectiveness
 - Safety
 - Cost effectiveness
 - Patient-centred care
 - Timeliness
 - Equity
- Staff are motivated to deliver the best
- Non-hierarchical approach to acknowledging weaknesses and finding solutions
- Time for QI, included in job plans
- Allocated budget for QI, and 'Quality Dimension' included in all resource-management decisions

A reliable evidence base

Engage them in QI activity, where appropriate

- Good randomised controlled trials
- Benchmarked performance by peer services (case-mix adjusted where appropriate)
- Stories of relevant improvement interventions

A willingness to change

- Acceptance that 'there is always something to improve'

A willingness to learn

- Acceptance that new approaches may be better

Diagnostic tools

- Driver diagrams
- Root-cause analysis
- Process mapping
- Critical-event analysis

Commissioners

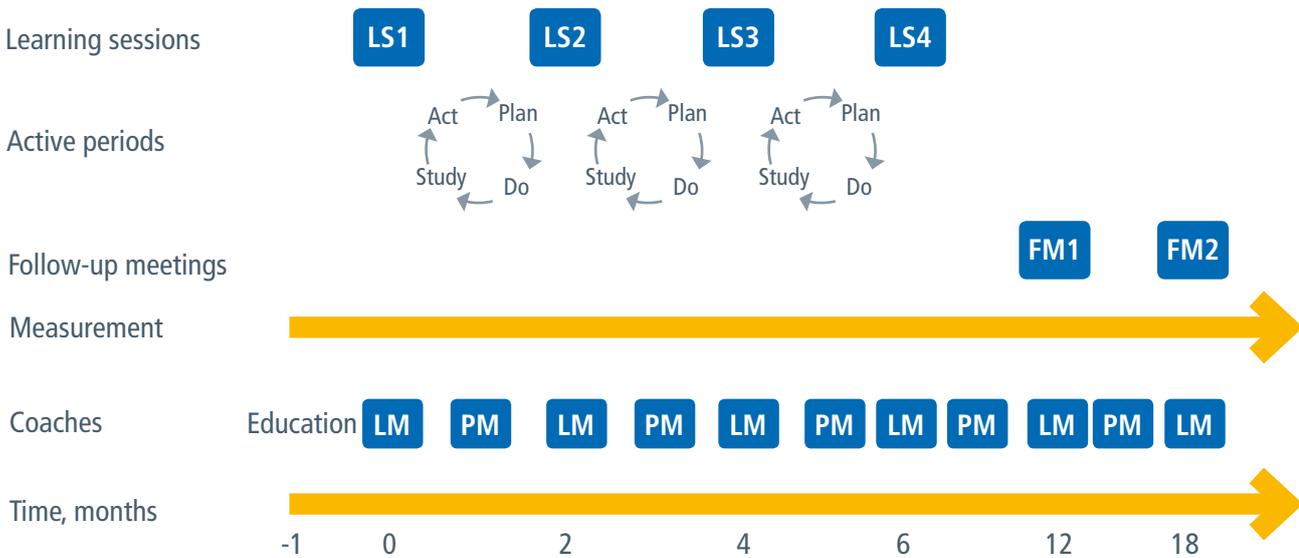
Engage them in QI activity, where appropriate

Collaboratives and networks of teams engaged in similar improvement endeavours.

Figure 4 gives an example of how paediatric diabetologists have used this approach to good effect.

Figure 4. Flow chart of a quality improvement collaborative

Published in Samuelsson U, et al. 'Continued improvement of metabolic control in Swedish pediatric diabetes care.' *Pediatr Diabetes* (2016). Doi:10.1111/pedi.12467



Flow chart presenting the time line and interventions of the quality improvement collaborative (QIC). The duration of the QIC was approximately 18 months with 4 learning sessions (LS) and 2 follow-up meetings (FM). The team coaches began with a 1-day education session followed thereafter by lunch meetings (LM) at every LS and phone meetings (PM) in between.

Patient involvement

Involving patients in quality improvement projects allows you to make sure you understand the needs of patients, their concerns and issues and their ideas for how things can be better. Patient stories are also a great way of enthusing and motivating staff to engage with change.

Most successful quality improvement has patient involvement as a key part of the process. Many failed quality initiatives have missed this vital step. Effective involvement will include:

- Involvement in the strategic direction and governance of quality improvement projects through representation in decision-making groups
- Partnership in defining the standards and outcomes to be measured
- Engagement with a broad range of patients, including minority and excluded groups
- Opportunities to actively participate through workshops, focus groups and other forms of group discussion (not just surveys)

To be effective, patient and public involvement should run through the full cycle of every quality improvement project, as an integral part of the fabric of the whole project.

A range of resources to support patient and public involvement are available on the NHS England website: <https://www.england.nhs.uk/participation/resources>

HQIP has produced a range of resources specifically around involving patients in quality improvement: www.hqip.org.uk/involving-patients

Recommendations

The NDA recommends that all diabetes specialists should take a lead role in at least one of the following services:

- Type 1 diabetes clinics
- Insulin pump clinics
- Transition care
- 'Whole systems' integrated care
- Inpatient diabetes care
- Pregnancy and pre-pregnancy care of women with diabetes
- Management of diabetic foot disease

To lead quality improvement activity, the diabetes specialist should:

- Foster an improvement culture in the whole team
- Familiarise themselves with the latest NDA report relevant to their service (see page 3 for links)
- Discuss the national and service level reports with the whole team responsible for the relevant service
- 'Piggy back' existing quality and safety endeavours where appropriate (such as systematic morbidity and mortality reviews)
- Debate and agree which benchmarked result(s) should be the focus for improvement over the forthcoming 12-24 months
- Look to see if services elsewhere have tackled the issue successfully; consider what might be learned from their approach
- Assign a leader to each improvement project (it can be anyone who will collaboratively diagnose, gather ideas, implement and drive through tests of change – eg nurse, podiatrist, dietitian, junior doctor)
- Make sure each leader is familiar with the referenced tools and case studies
- Review the plan and support its implementation
- Involve people with diabetes in selecting priorities and generating ideas for change

Priorities for improvement in diabetes care

Although each service must deduce its own priorities from benchmarked reports, the NDA findings highlight some stubborn issues that affect most localities. These include:

- Poorer rates of care-process completion and treatment-target achievement in the under 65s
- Inpatient onset severe hypoglycaemia and DKA/HHS
- Poor pre-pregnancy care and antenatal care
- Tortuous or absent diabetes foot-care pathways for treatment and secondary prevention of diabetic foot ulcers

Where to go for further support and information

Royal College of Physicians (RCP)

The RCP (www.rcplondon.ac.uk), via its [Quality Improvement Hub](#) Department, is keen to support the establishment of diabetes improvement collaboratives. It is particularly interested, in the first instance, in those linked to diabetes inpatient care and foot care. The RCP offers a range of resources to support quality improvement, including online training on using data to improve healthcare and their *Learning to Make a Difference* quality improvement toolkit. Further information can be accessed at: www.rcplondon.ac.uk/projects/quality-improvement-hub

Other organisations that promote quality improvement

The Institute for Healthcare Improvement (IHI). www.ihl.org

The Health Foundation. www.health.org.uk

Healthcare Quality Improvement Partnership (HQIP). www.hqip.org.uk

NHS Improvement. <https://improvement.nhs.uk>

NHS Wales Improving Quality Together. <http://iqt.pembrokeshire.ac.uk>

Diabetes UK. www.diabetes.org.uk

Resources and guides

The IHI's *Model for Improvement*
www.ihl.org/resources/Pages/HowtoImprove/default.aspx

The Health Foundation's *Quality improvement made simple*
www.health.org.uk/publication/quality-improvement-made-simple

HQIP's *Guide to quality improvement methods*
www.hqip.org.uk/resources/guide-to-quality-improvement-methods

BMJ Quality & Safety [archive of Quality Improvement Reports](#)
www.ncbi.nlm.nih.gov/pmc/journals/2839

Diabetes UK's [Shared Practice Library](#) provides a range of resources and case studies to support improvement.

www.diabetes.org.uk/Professionals/Resources/shared-practice/Quality-improvement

Case studies

The NDA team supports quality improvement activity. The team has carried out some specific work encouraging hospitals to make improvement based on the findings from the National Diabetes Inpatient Audit (NaDIA). This includes:

- NaDIA benefits case studies, which can be accessed on the NaDIA webpage <http://content.digital.nhs.uk/diabetesinpatientaudit>
- Diabetes Mortality and Morbidity project: a root cause analysis of serious diabetes harm that occur in hospital. Email nda@diabetes.org.uk for a copy of the project report.

Share what you've learned

Have you been involved in successful quality improvement activity? No example of good practice is too small to make a difference. If you have been involved in a project that improved care for people with diabetes we would appreciate it if details of your activity were logged in the Diabetes Improvement Project Library (NDA@diabetes.org.uk) so others can learn from your experience.

Got a question?

Need more information about improving diabetes care? Looking for examples of good practice? Diabetes UK's Shared Practice team can help.

Submit a question by completing their short [online form](#).

The National Diabetes Audit (NDA) is commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit (NCA) programme.

The NDA is managed by NHS Digital, formerly known as the Health and Social Care Information Centre (HSCIC), in partnership with Diabetes UK and is supported by the National Cardiovascular Intelligence Network (NCVIN), Public Health England.

The NDA receives invaluable support from people with diabetes, clinical staff and other health professionals across England and Wales.