

Innovating for Improvement

Safer Prescribing for Frailty

A Story of Polypharmacy Reduction in General Practice

Yorkshire & Humber Academic Health Science Network Improvement Academy
in partnership with Harrogate & Rural District Clinical Commissioning Group



About the project

Project title:

Safer Prescribing for Frailty

Lead organisation:

Harrogate and Rural District Clinical Commissioning Group

Partner organisation(s):

Yorkshire & Humber Academic Health Science Network, Improvement Academy, Bradford Institute of Health Research, University of Bradford, University of Hull and Connected Health Cities.

Project lead(s):

Sarah De-Biase, Chris Ranson, Tony Jamieson, Megan Humphreys

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Part 1: Abstract

People get a great deal of benefit from medicines. Medicines extend healthy lives and can maximise the opportunities for improved wellbeing. The use of medicines in the NHS is driven by one of the most robust regulatory systems in the world and the evidence base upon which decisions are made is beyond comparison.

However, the evidence that is available to inform decisions is not equitably robust. People living with frailty, a condition of accumulated physical and mental deficits leading to a state of vulnerability¹, are not well represented in the trials that are used to populate the evidence. At the same time, having multiple deficits (co-morbidity) leads to people using multiple medicines, which has become known as polypharmacy. People with frailty are more susceptible to the side effects of medicines. Indeed, a person with frailty is six times more likely to be on 10 or more medicines² and can be 300% more likely to be admitted to hospital as a result³. The challenge our project is trying to address is to help people with frailty get the best out of medicines, meeting their needs and reducing the problematic polypharmacy that might cause harm.

We provided an innovative primary care quality improvement programme combining behaviour change theory with Institute for Health Care Improvement (IHI) method of quality improvement.

The 12 GP practice teams in our Safer Prescribing for Frailty project achieved a 6% reduction in the average number of prescription items prescribed to people with frailty. This was achieved by embedding holistic medication review, targeted at problematic polypharmacy, which normalised shared decision making and improved the quality of the care provided (see figure 2).

Part 2: Progress and outcomes

The aim of our project was to work with GP practices to reduce inappropriate polypharmacy for people with frailty.

The design of our project had the following key components:

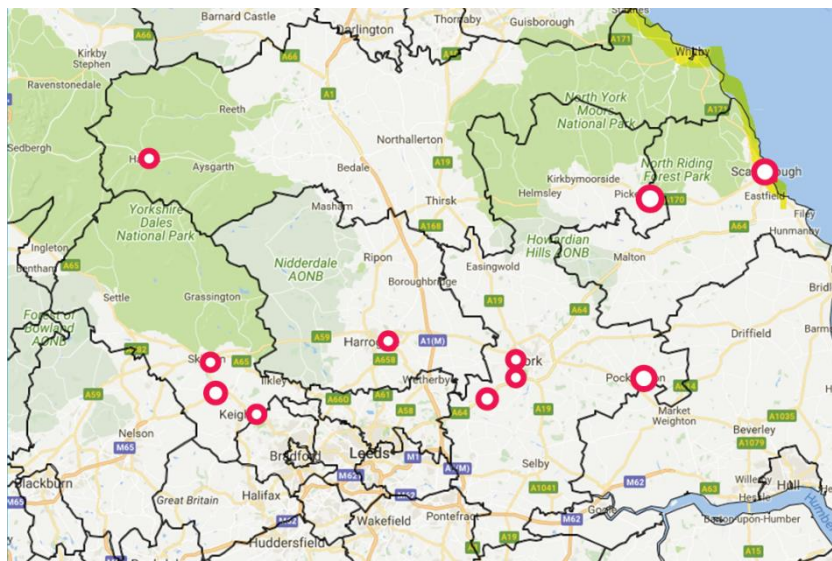
- A series of 4 learning workshops to be attended by members of GP practices.
- Quality Improvement (QI) activity by the GP practice members using IHI model of improvement. This activity was facilitated throughout the project.
- Measurement of improvement using run-charts.
- Application of psychological theories to tailor improvement activity to overcome cognitive barriers to stopping medicines.

Figure 1: Project Timeline.

Project Activity	Dates
Project Set-up	01/01/2017
Invitations to participants sent	16/02/2017
Deadline for expressions of interest	24/03/2017
Inform selected teams	27/03/2017
Develop materials for workshop	03/04/2017
Week 0: Orientation	28/04/2017
Week 1-4: First onsite visit	05/05/2017 - 02/06/2017
Week 5: 1-day Workshop	05/06/2017
Week 6-11: Second onsite visit	13/06/2017 - 14/07/2017
Week 12: Half-day Workshop	17/07/2017
Week 13-22: Third (optional) site visits/phone call	24/07/2017 - 15/09/2017
Week 23-24: Measurement data follow up	18/09/2017 - 29/09/2017
Week 25: Celebration event	03/10/2017
Project evaluation	09/10/2017 - Ongoing

Teams were recruited from Harrogate and Rural District CCG, Vale of York CCG, Scarborough and Ryedale CCG, Hambleton, Richmondshire and Whitby CCG and Airedale, Wharfedale and Craven CCG (see figure 2).

Figure 2: Practice teams included in the project.



Team 1: Airedale Wharfedale & Craven (AWC) Complex Care Team
Team 2: Central Dales Practice
Team 3: Cross Hills Group Practice
Team 4: Falsgrave Surgery
Team 5: Fisher Medical Centre
Team 6: Haxby Group Practice
Team 7: Holycroft Surgery
Team 8: Pickering Surgery
Team 9: Pocklington Group Practice
Team 10: Priors Medical Group
Team 11: The Spa Surgery
Team 12: Tadcaster Medical Centre

The project used the Training and Action for Patient Safety (TAPS) methodology⁴ to support practices to achieving the overall aim of reducing inappropriate prescribing in patients living with frailty.

The orientation learning workshop was a brief introduction to what the practices had let themselves in for. It introduced the problem we wanted to tackle, QI methods and psychological theories. We also used the event to validate the questionnaire we intended to use to assess the barriers to stopping medicines. This was designed by University of Hull using original research from Bradford Institute for Health Research. We shared the definition we had developed for the project for 'inappropriate' prescription item. This was:

Any prescription for drugs or appliances that is unnecessary (without indication or benefit), unwanted (by the patient) or unjustifiable due to its risk/benefit ratio.

At the orientation event 16 teams attended, 12 teams agreed to continue for the following 24 weeks of the project. 4 teams dropped out as they had misunderstood the initial invite and educational nature of the project. Over the next 5 weeks, prior to the second workshop (which would be the beginning of the intervention period) we worked with each of the GP practices to gather their baseline and define the cohort of patients they were going to work with.

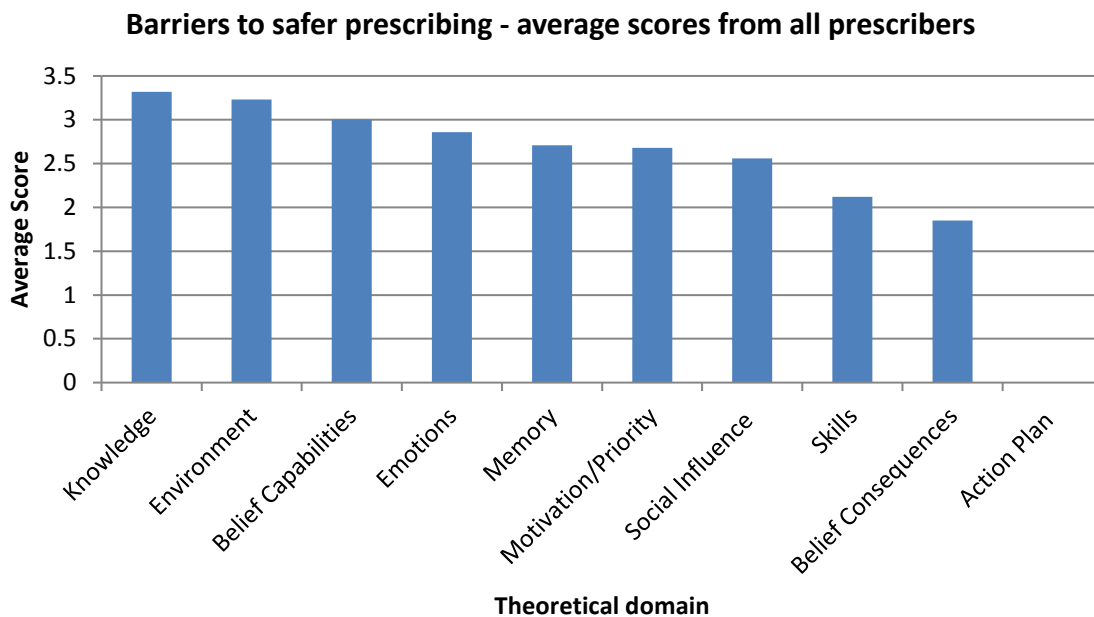
By the second workshop we had established the baseline for all the 12 GP practices. The data was extracted using searches of GP clinical records (SystemOne and EMIS). Data was represented as data points on their run-charts and an analysis of their team's cognitive barriers to stopping medicines. We provided:

10 weeks of data on the number of patients in the identified cohort.

10 weeks of data on the number of prescription items prescribed to each patient in the cohort.

When all the teams' cognitive barriers were collated for all the prescribers in the practices it showed a broad range of barriers. Lack of knowledge scored the highest with the environment (being time and process) coming a close second. However other barriers such as social influences and fear of consequences were also frequently cited.

Figure 3. Barriers to Safer Prescribing for Frailty.

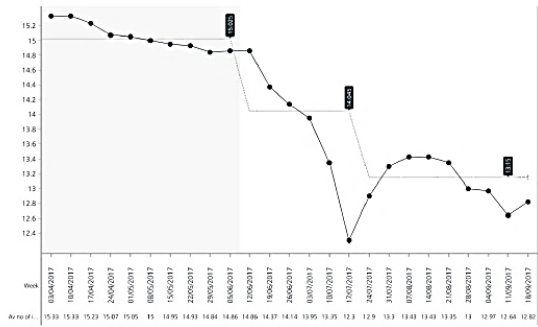


The design of the second workshop included:

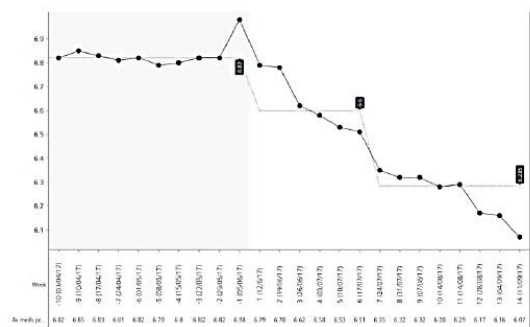
- An educational component delivered by a senior, authoritative clinical pharmacist, on the evidence basis and tools to support prescribers stopping medicines.
- Video of patient stories (provided by Bradford University) on patient's concerns about the medicines they are prescribed.
- Additional information on QI methods.
- Presentation of the results of the cognitive barriers to stopping medicines and workshop to match interventions to barriers to have the greatest effect.
- The practice teams were then supported to describe their first 'change ideas' and PDSA cycles in readiness for the start of the intervention period the next day.

In between the second and third workshop we contacted the practice teams every two weeks to facilitate QI activity and capture the data for the improvement measures.

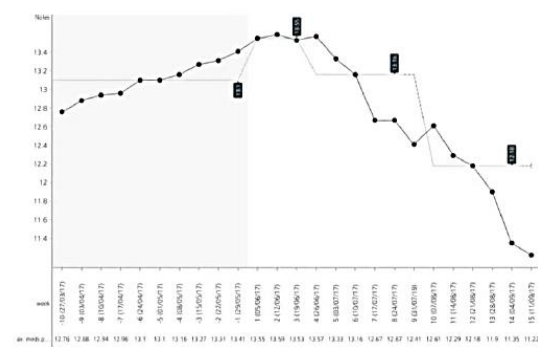
Run chart E:



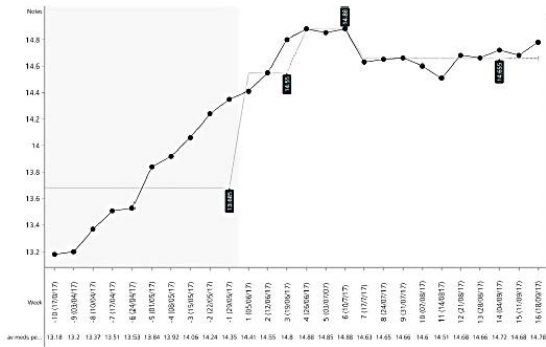
Run chart F:



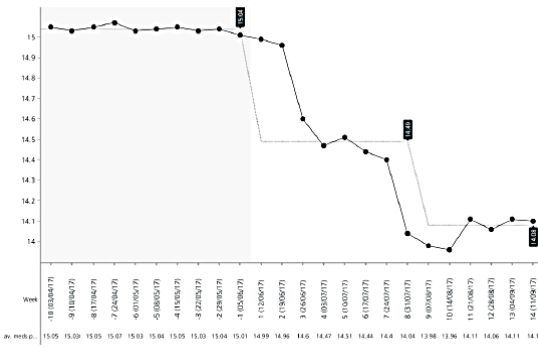
Run chart G:



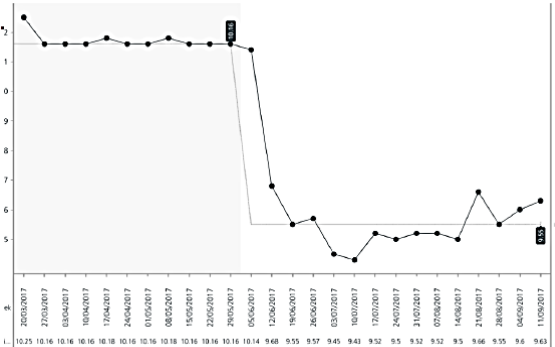
Run chart H:



Run chart I:



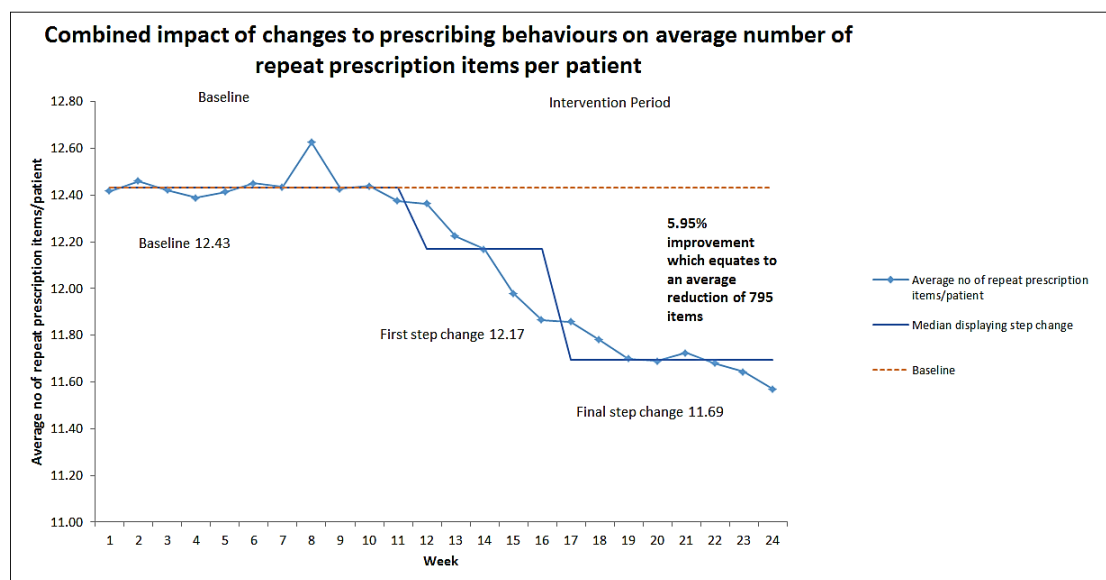
Run chart J:



Data was extracted locally at the practices and shared with the project team who developed the run charts. These were fed back to the practices biweekly with QI discussion prompts around improvement ideas and noted statistically significant changes. The teams shared these wider at the workshops. Practice level data quality support and project insight proved vital to facilitating this activity.

The aggregate data for the 10 teams demonstrated a ~6% reduction from baseline in the improvement measure.

Figure 5: Aggregate improvement measure.



Our improvement measure was a reduction in the number of prescribed items. But we wanted to show that the items being stopped were inappropriate. We were unable to find a way to determine whether any item that was stopped was inappropriate (by our definition) using routinely available data. The teams were also concerned that not all the benefits to the patients would be shown by the improvement measure. They felt that a dose reduction could reduce inappropriate prescribing and that, on some occasions, adding new items in would represent good practice where they had agreed with a patient that there was an unmet need.

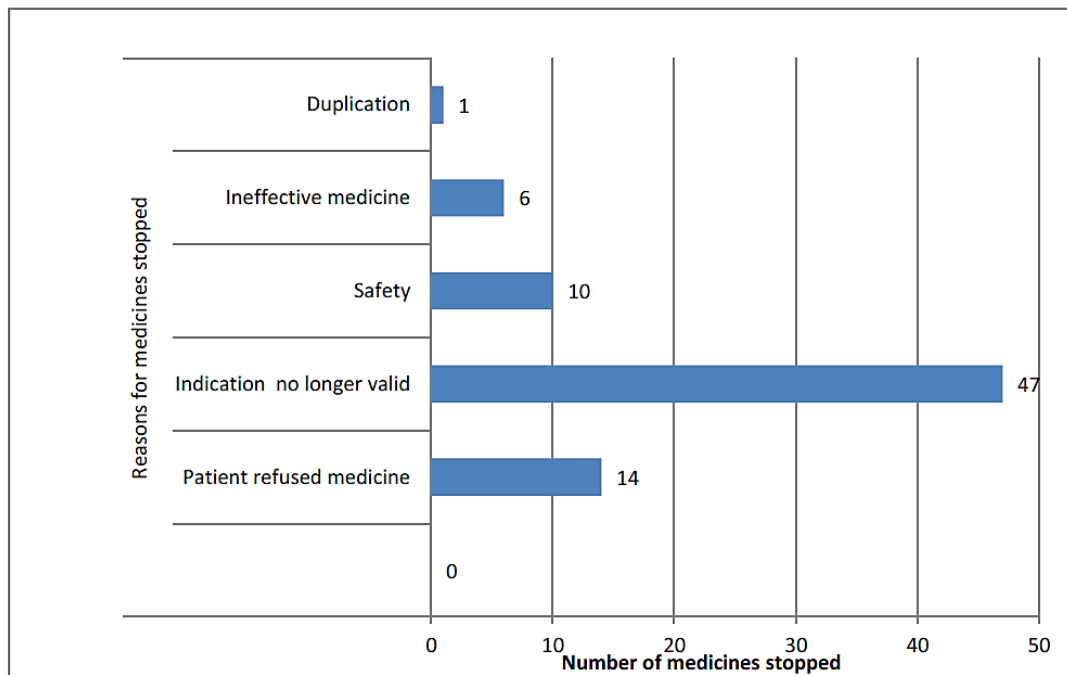
To make some of these issues visible we decided to do a deep dive into the records of one of the GP practice teams. An experienced senior pharmacist in our team audited the notes of 74 of the 111 patients in the practice’s cohort of patients with frailty (average age 83). This audit showed:

Table 1: Medication review summary.

No. of medicines stopped	78 (Average no. stopped per review = 1.05)
Total number of medicines started	12
No. of dose changes	18
Total saving (per year)	£5126
Average saving per review	£69.27

We established, through the audit, that all the medications that were stopped were done so for identifiable clinical reasons.

Figure 6: Reasons for medicines being stopped.



In this review over a third of the medicines stopped were deemed to be high risk in frail elderly patients according to the NHS Scotland Polypharmacy Guidelines⁵.

17% of medicines stopped resulted in a reduction in anticholinergic burden. This burden leads to increased mortality, falls and dementia.

Examples of dosage reductions include:

- **Proton Pump Inhibitors (PPIs).** The effect being a reduced risk of c.diff and long term fractures.
- **Anti-hypertensives.** The effect being a reduced risk of falls.

The deep dive showed that 100% of the changes in one practice could be demonstrated to be affecting inappropriate prescribing.

Our practice teams were ‘bought in’ to the idea of delivering patient centred care, not just chasing a target or numerical improvements (they had all volunteered to be part of the project). The ‘tweeters’ have been consistently positive using #WeStopMeds

The stories the practice teams shared were about how they felt they were improving the lives of their patients. We collected some quotes from patients to keep everyone motivated:

“I don’t miss the quinine, I’m not constipated now I’m not taking amitriptyline”

“I feel so much better, I can garden now, I’m not dizzy anymore, I’m very happy we’ve done this!!”

“You’ve hit the sweet spot...I’ve got my husband back.” (describing improvement in cognitive functioning)

The practice teams were making use of tools that were designed to reduce inappropriate prescribing (STOPP protocol and NHS Scotland Polypharmacy toolkit).

As a result of this quantitative and qualitative information we felt confident to say that the reduction in the average number of prescription items per patient represented a reduction in inappropriate polypharmacy.

In addition, in the video summaries our practitioners stated that they felt more confident to de-prescribe and that this had affected their outlook and the culture of prescribing within their practices.

Part 3: Cost impact

The outcome of stopping medicines is not just in the reduction in the cost of the medicines. A report by Simpathy⁶ states: “Appropriate polypharmacy avoids unnecessary work for all health and care professionals and carers at the same time as improving patient outcomes. Consequent improved adherence with medication can also contribute to improve outcomes.”

Inappropriate medication and drug errors account for around 6.5% of hospital admissions⁷ which has been estimated to cost the NHS £466m a year (at 2004 costs).

Some of the practice conducted local level cost impact calculations a selection of their results can be found below.

Table 2: Practice cost impact calculations.

Practice	Cost impact calculated by practices	Saving per patient per year
A	78 patients saved £5126 per year in medicines costs.	£69.27
B	38 patients had 88 items stopped which saved £8448 per year in medicines costs (assuming £8 monthly cost per item).	£222.32
C	116 medications were stopped (out of 666 total) saving £3660.12 per year in medicines costs.	
D	deep dive analysis into 5 sets of notes, cost savings of £41.40 to £638.40 per year in medicines costs (midpoint).	£298.50
D	2 patients had ineffective lidocaine patches stopped (£61 each per month) 1 patient was having £500 injection every 3/12 – started by Prof doing a trial several years ago and never challenged or stopped.	£732.00 £2,000.00

One element of the recruitment of the practice teams was that they were already routinely undertaking medication review for older patients. This has been reinforced with the change in the GMS contract which states that all patients with severe frailty should undergo an annual medication review⁸. This means that the medication reviews conducted as part of the project, for the most part, replaced existing practice rather than generating new work. This will have limited the impact on resources within the practise and thereby their implementations costs. Additional costs will

have been incurred by the practices due to their attendance at the learning workshops (even though some team members attended using their days off or annual leave) and by increasing appointment time or preparation time.

Y&H AHSN has commissioned a health economics evaluation from York Health Economics Consortium. It will evaluate the cost of practice level changes to reduce inappropriate polypharmacy for people with frailty and the benefits that result from it. The Improvement Project was fully funded by the Health Foundation and has cost £75,000 to develop and deliver. This has been used for management, leadership and educator time, QI facilitator time, evidence synthesis, data extraction, videography, conferencing facilities and a small amount on materials and expenses. Much of the effort and cost was devoted to the creation *de novo* of tools and techniques to enable the innovative elements of the project. These costs would not be incurred if the project was replicated elsewhere.

Part 4: Learning from your project

Quality Improvement in Primary Care

We set ourselves up with an ambitious educational programme to be delivered to the practices. We needed to upskill them in:

- The clinical subject matter: Reducing inappropriate polypharmacy for frail patients (including concepts of frailty, polypharmacy and shared decision making).
- Quality improvement using IHI method of improvement.
- Psychological theories of behaviour change.

The practice teams expected and wanted more of the clinical education than we had originally planned to deliver and we had to adapt our learning workshops accordingly. All the practices were happy to share their experiences and support each other with ideas advice and tools they had created in-house. They were also willing to share what hadn't worked for them. That being said, the feedback we had from the teams was that time away from the practice was precious and must be minimised for others who might take part in the future.

Despite the incredible functionality of the GPs' Electronic Health Records (SystemOne and EMIS) limitations obtaining prescribing data influenced key measures for improvement and our ability to collect the baseline data retrospectively. Planning for (and accounting for) data quality support to practices would be an integral part of any future primary care improvement project we ran.

Additional insight to the clinicians QI experience was captured on video - [Safer Prescribing for Frailty – A Quality Improvement Story](#)

Patient Perspective

We found the contributions of our lay representatives really valuable. Their challenges and suggestions have provided both context and motivation, as well as some credibility that the project is right for patients not just clinicians and accountants. Their contributions when used with video patient trigger stories from another project kept the focus firmly on the patient.

We encouraged the practice teams to capture patient stories and, as a result, we do have some motivational and uplifting anecdotes. However we did not find by the end of the project that we had collected any stories directly from patients. The stories were all recounted from the clinician's perspectives. On reflection we had not put a process in place for asking patients to share their stories with us and this was a missed opportunity.

Learning how to manage polypharmacy

The experience of the practice teams have demonstrated that there were two useful tools that could be readily incorporated into clinical practice:

- The STOPP tool template embedded into SystmOne and EMIS clinical systems.
- The NHS Scotland Polypharmacy toolkit (which includes App based access for mobile devices, see appendix 1).

The use of these tools needed to be underpinned by an element of formal 'education' or knowledge transfer from experts. In this project this was delivered in three different ways:

- Presentations from an expert geriatrician and senior pharmacist to the representatives of the practices.
- Production of evidence summaries.
- Cascade of the knowledge by the practice representatives (who turned up to the workshops) to the wider teams back in their practices.

The teams found that implementing effective and sustainable change within their practices was made possible because of the quality improvement methodologies we used namely:

- Plan-do-study-act cycles of improvement.
- Run-charts of the improvement measure.
- Generating change ideas that were intended to reduce the barriers to de-prescribing which were identified in the baseline questionnaire.

The change ideas were particularly practice specific. However, there was some commonality such as:

- The use of a template for recording the medication reviews.
- The skills available to the practice and how best to use them. Particularly the optimal use of practice pharmacists for those teams that had access to one.
- Protected time for polypharmacy medication review consultations.
- Consideration of doing home visits to do the medication review consultations.

The teams agreed that once a polypharmacy medication review had been completed and medications had been stopped it was difficult to mark the patient's records in such a way that showed that the patient's list of repeat medication had been optimised. This has caused some problems on transfer of care when a patient had had medication restarted by the hospital after their polypharmacy review by the practice. This raises the importance of a whole-system approach to safer prescribing for frailty whereby polypharmacy is continually reviewed for its appropriateness.

Part 5: Sustainability and spread

There are indicators that QI and de-prescribing activities will be sustained by the GP practice teams we worked with.

- Each of the 10 teams that completed the project and provided all their data have said that they will continue with the new ways of working that were established as a result of their PDSA cycles. One GP stated '*What's the most important part of the project is the legacy it has left*'. All 12 teams felt that their involvement had affected their prescribing practices and their beliefs about stopping medicines for the good.
- Three of the teams asked for other projects they could do with us and so far two have signed up to do QI projects on other subjects.
- Nine teams requested access to Life QI system to see if they could use it for their own projects.

Future projects should include an exit strategy that offers practices a handover to other QI opportunities and support long term sustainability planning of activities.

The project was delivered as a collaborative that included the CCGs. We have agreed that the CCGs will act as extension agents to spread the learning from the project to other practices.

We are using our connections with networks and education providers who have an interest in QI such as RCGP and Health Education England. We are also showcasing the project at awards and conferences to generate interest and awareness. One other AHSN (Wessex) has expressed an interest in adopting the methods we have used in their area.

Some Key highlights:

- We presented the project at the Pharmacy Management National forum in November 2017.
- Poster presented at the Yorkshire and the Humber Association of Directors of Public Health Sector Led Improvement Annual Conference in February 2018 (see appendix 1).
- One of the practice teams were awarded Patient safety achievement award at Yorkshire & Humber AHSN Innovation, Improvement and Impact Conference in January 2018.
- Finalist in the 2018 [HSJ value awards](#) (Pharmacy and medicines optimisation category).

- Approached to share in supporting a repository in line with Medication without Harm: WHO's Third Global Patient Safety Challenge.
- Publication of the Effective Matters: Reducing harm from polypharmacy in older people⁹, a summary of research evidence about the effects of important interventions for practitioners and decision makers in the NHS and public health.
- The opportunity to share project learning through a publication in the Pharmaceutical Journal¹⁰.

We are developing a change package to support the spread of the learning from the project. Our understanding is that there is no clearly defined “one best way” to reduce inappropriate polypharmacy for people with frailty. What we have learnt is that using Behaviour Change methods to inform QI activity is a successful strategy for improvement in innovator and early adopter practices. Our plan to influence the majority of practices is to provide easy access to the resources we found helped the practices and share key change ideas that did prove effective for the practices involved. We will use our website and webinars to do this and seek clinical champions to carry the message to their peers.

Appendix 1: Resources & References

Resources:

Learn about Quality Improvement with the Improvement Academy [here](#).

Learn about methods of Achieving Behaviour Change [here](#) and see the barriers to deprescribing found in the literature [here](#)

Find the NHS Scotland Polypharmacy Toolkit [here](#)

Explore more work on frailty and Active Healthy Ageing [here](#) and [here](#)

Read our evidence summary on [Frailty](#) and [Polypharmacy](#) from University of York

Take 5 minutes to listen to our GP practice teams and feel how rewarding [Safer Prescribing for Frailty](#) can be. In for the full experience? Watch the full version [here](#) and the benefits of doing a primary care QI project with the Improvement Academy [here](#)

Watch the interview with Pickering Medical Practice who won the Yorkshire & Humber AHSN Patient Safety Achievement Award for their project. Their interview from the event [here](#)

Project logo:



[#westopmeds](#)

Further information on the work of the Healthy Ageing Collaborative can be found on partner websites:

[Improvement Academy](#)

[Connected Health Cities](#)

[Academic Unit for Elderly Care & Rehabilitation](#)

[Yorkshire & Humber AHSN](#)

Setting the Scene

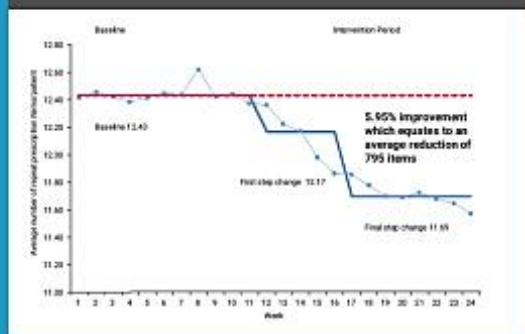
Frailty is synonymous with problematic polypharmacy. 3 million people in the UK have a long term condition managed by polypharmacy. A frail older person on 10 or more medicines has at least 6 times the risk of death than a person with robust health and is 300% more likely to be admitted to hospital. With 50% of medicines not being taken as prescribed and 6% of hospital admissions being related to medicines the impact of problematic polypharmacy on the lives of people with frailty is enormous.



Project Teams from wide and far



Combined impact of changes to prescribing behaviours on average number of repeat prescription items per patient



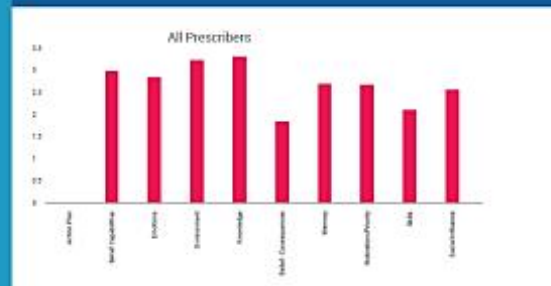
What we did

Our polypharmacy programme in General Practice gave 12 GP practice teams the skills, tools and structure they needed to engage frail patients in discussions about their medicines, sharing the goal of reducing medication burden and risk of side effects. We used behavior change psychology, quality improvement methodology and the e-PACT2 polypharmacy metrics to achieve reductions in repeat prescriptions.

Our Approach



We analysed the psychological barriers in the way of prescribers stopping medicines. These are the barriers we identified.



Case Study

- 86 year old nursing home patient
- PMH: vascular dementia, stroke, AF, heart failure, duodenal ulcer.
- Increasing BPSD and disturbing behaviour
- Medication review with wife and lead nurse
- Stopped carbocisteine, furosemide, tamsulosin, lansoprazole, fluticasone nasal spray, several creams and reduced bisoprolol and ramipril.
- At follow up stopped sertraline and zopiclone.

At last follow up the wife was almost in tears thanking the GP for the changes and said "please don't change anything I cannot remember when we last played dominos together and we have done it everyday this week"

Delivered by: **NHS** **YORKSHIRE & HUMBER** **UNIVERSITY OF Hull** **Interface** **EMBED HEALTH CONSORTIUM**
Harrogate and Rural District Clinical Commissioning Group Association for Business Services & International Academy Clinical Services

An Innovation for Improvement round 5 project funded by: **The Health Foundation**

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