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TITLE

Education around deprescribing: “spread and embed” the story so far.

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INTRODUCTION

In the editorial of this deprescribing themed issue, we begin by recognising that deprescribing is not easy. For many clinicians, the decision to deprescribe is hampered by the lack of evidence for safe methods of deprescribing. The motivation was identified as the need for education to support clinicians in their deprescribing endeavours. Here, we describe our strategy to educate around 'deprescribing', which emerged from the medicines optimisation work stream at the National Institute of Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care Northwest London (CLAHRC NWL). CLAHRC NWL is a research and implementation programme [1][2] that uses the model for improvement [3] as a central component of quality improvement (QI) initiatives. A patient safety initiative on professional co-ordination was found to be best facilitated by a combination approach to change.[4] We contend that education about medicines should adopt this approach to be both "top down" to include senior clinicians and managers, and "bottom up" to include junior staff and students. We will focus on the latter (hereafter: bottom-up approach): educating the soon to be qualified clinicians, that is the undergraduate clinicians, so that they enter the workplace with the confidence and skill to at least consider the need for deprescribing both at the point of initial prescribing and when undertaking medication review. We are conscious that the term bottom-up approach can have a number of meanings, here we use it to refer to the capacity to lead to grass-roots changes that will grow and pervade practice, rather than "command and control" regulations on actions.

The theory and practice of education are, at this level, androgogy (the education of adults), thus the principles of adult learning should be used;[5] yet the evaluation techniques used for child education may prove useful for long-term assessments of change, for instance those studies seeking to address differentials in earnings.[6][7] In this article, we will tell our story so far, note the need for evaluation, and provide recommendations for others who may wish to adapt or replication out approach to medication review and deprescribing; we include reference to a competency framework for all new prescribers.

OUR STORY SO FAR

A key theme of CLAHRC NWL's work has been medication review, including the development of the STOPIT tool,[8] a tool developed from the STOPP/START work, modified to focus on a small number of key themes and applied in a ward setting. In order to successfully implement STOPIT, our team recognised that clinicians needed to be confident in stopping as well as starting medicines. We therefore began to engage with the term deprescribing and found it resonated strongly with what we were trying to do in the North West London area of England in terms of tackling polypharmacy. Our literature reviews for other publications identified a tendency for papers to be aimed at senior clinicians, [9] with little mention of the need to educate about deprescribing generally and the need to educate healthcare students and novice practitioners in particular. The recommendations to incorporate tailored curricula in high-quality use of drugs that integrates deprescribing in all undergraduate, graduate, and postgraduate courses in medicine, pharmacy, nursing and others,[10] inspired our first survey of junior doctors that led to publication of our thoughts on the need for a bottom up approach.[9] Others have recognised this educational imperative, for example noting that clinicians are taught to prescribe, but there has been limited training to help make decisions about stopping medicines.[11]

Initial efforts focused on hospitals in North West London (NWL), where the STOPIT tool is now well established and is introduced to junior doctors and ward pharmacists during induction training. The STOPIT tool received Royal Pharmaceutical Society (RPS) endorsement.[12] Additionally, other CLAHRC NWL Quality Improvement (QI) projects include deprescribing, such as the Review of Medicines in Acute Care initiative (“ReMAC”, publication in prep.). At the same time, a team member’s wider links (BJ) provided the opportunity to spread the ‘bottom up approach to education’ more widely and to investigate what educational activity around deprescribing existed. Our “spread and embed” strategy involved approaching the following institutions:

1. The three university schools of pharmacy in London
2. The Royal Pharmaceutical Society joint Pharmacy Foundation School in London
3. School of Nursing, King’s College London
4. Imperial College and King’s College medical schools
5. The RPS single competency framework for prescribers [13]

One of the authors (BJ) has strong links with King’s College London (KCL) and University College London (UCL) and following discussion with the universities, this allowed exploration of opportunities embed deprescribing education in both undergraduate and postgraduate foundation training for pharmacists. Both schools of pharmacy have been provided with deprescribing teaching material for pharmacy students, including theory and workshop cases. The UCL School of Pharmacy have stated that deprescribing teaching will become a regular part of third year undergraduate teaching with the following learning outcome: *“Explore the principles of deprescribing and understand its place in medicines optimisation for older people”*. KCL and UCL have collaborated to form a joint foundation school to provide postgraduate foundation training for hospital pharmacists, [14] and a work-based learning objective has been added to the curriculum for foundation trainees to include in their work-based portfolio: *“Evaluate how medication review tools (e.g. STOPP/START/local tool) can be used to ‘deprescribe’ in patients with [problematic] polypharmacy”*. Since the introduction of this learning outcome, feedback from trainees during portfolio reviews has been encouraging. For example, one trainee stated that the medication review tool *“was what we should be doing anyway”* and that the term deprescribing was *“interesting and they hadn’t really thought about it before seeing the learning outcome”*. As NIHR CLAHRC NWL is hosted by Imperial College London (ICL), conversations to set up similar initiatives are ongoing.

Kingston University School of Pharmacy (KUSP) report already running deprescribing training for undergraduates, including *in vivo* simulation of care with patient actors and a GP, dealing with a case based on domiciliary medication review of elderly. Students learn to reduce pill burden while understanding the rationale by considering risk of falls, anti-muscarinic side effects, formulation change and high-risk medication. KUSP are keen to explore developing teaching for multi-professional education setting. We commend this development: multi-disciplinary approaches are a common feature of successful interventions to reduce polypharmacy.[15] Giving healthcare students from different professions cases of polypharmacy to work through together could be a powerful aid to embedding multidisciplinary collaboration on complex polypharmacy issues in practice supporting our bottom up approach.

Readers of this themed issue on deprescribing can read the forthcoming article by Naughton on deprescribing and nursing at KCL, which we believe is a unique contribution to the nursing literature. This has been an early engagement with a school of nursing about deprescribing, which may lead to inclusion in nurse education particularly with respect to older adults. Likewise, both ICL and KCL medical schools have been approached with a view to including deprescribing in their curricula and allowing us to provide some teaching.

In 2012, a single prescribing competency framework was published in Great Britain to support all prescribers to prescribe effectively. The RPS updated the framework in collaboration with all the prescribing professions and published in July 2016 for all regulators, professional bodies, prescribing professions and patients to use. CLAHRC NWL made a submission supporting the evidence from the literature review to emphasise the importance of deprescribing, which is specifically mentioned in the new framework.[13] This development has the potential to contribute to education ‘top down’ and ‘bottom up.’

THE NEED FOR EVALUATION

Although there is progress made in spreading the bottom up approach, we are still at an early stage in the journey: there is more work to do in order to spread the work nationally as part of the core curriculum for all clinical professionals engaged in patient facing aspects of the medication pathway. A key consideration from a QI perspective is how to demonstrate the effectiveness of this approach to establish whether it ultimately leads to patient benefit and a reduction in problematic polypharmacy.

CLAHRC NWL gave support to our approach, with an aim to improve practice in the long run, as opposed to rapid cycles of change associated with QI, [3][16] or the shorter-scale evaluations typically conducted for problem based learning programme. [17][18] Thus, this is not a typical QI initiative due to lag between intervention (i.e. education) and action (i.e. clinical practice); yet measuring the effectiveness of the intervention is important to justify its continuity. We contend that this evaluation can be aligned to the Kirkpatrick model. [19] We would seek to establish if the bottom-up approach has impacted Levels 3 (behaviour) and 4 (results). We would like to address how far trainees have changed their behaviour, and what the outcomes of that change are. This would include addressing questions such as whether knowledge is being used, and whether changes are noticeable in practice. Analysis of specific performance measures will be necessary (ideally referring to baseline data), such as the number of medications reviews, stopped, and temporarily held, and so on.

However, the evaluation of the educative programmes for behaviour change has challenges, in determination of cause, maintenance of the cohort size, resource availability, determination of program logic, and outcomes of interest, to name a few.[20][21][22][23] Furthermore, how should one collect data pertaining to behaviour change? Observed behaviour data could induce the observer (or Hawthorne) effect due to awareness of being watched, whilst self-reported behaviour data may suffer from social desirability and non-responder bias, in which answers perceived as good are provided, and responders are systematically different to non-responders.

In addition to the difficulty of measuring behaviour change, there are a number of factors that will make an evaluation of the bottom-up approach challenging. The educational intervention will occur at time remote from potential changes to practice, meaning that the assessment of knowledge changed is temporally separated from any outcomes. Consequently, the persistence of the intervention can be reduced through diminished memory of the intervention. This may be mitigated through continuing education and reinforcement. Additionally, there will be confounding factors between the education point and the changes to behaviour including news reporting, academic publications, work-place culture being amenable or not to deprescribing. This means it is difficult to separate the effect of the original intervention, from the ongoing education, with the signal obfuscated by confounding factors. A concerted effort needed by all stakeholders would be needed to provide a long-term support mechanism, as is being started in hospitals in North West London. Finally, the effect of educational interventions may be hidden, in that medications optimisation can

be conducted without apparent outward action if no changes are required, and yet the intervention would have stimulated the desired effect.

SUGGESTION FOR EVALUATION DESIGN

With these considerations in mind, how might an evaluation be designed? Two designs spring to mind: one contrasting those prescribers exposed to the educational intervention with a group who qualified the year before and thus were not exposed to it; the other to compare all those qualifying in a single year and case match against those qualifying from institutions without the intervention. Either way, a method to find impact without inducing a large cost, observer bias, and to account for confounding variable is required. A possibility exist to make use of the increasing presence of electronic prescribing records (EPRs).

The EPRs could be searched to determine the number of medications prescribed and deprescribed by an individual at various points in their career, with the hypothesis that those having undergone the intervention would deprescribe more than their counterparts. This has the advantage of being a non-direct observation so diminishing observer bias, and not self-report, removing risk on social desirability. Because UK prescribers have a unique identifier when prescribing in a general practice or on electronic prescribing systems in hospitals, and the EPRs persist, the risk of attrition is reduced, and case control becomes more easily attained. Furthermore, one could track the work-places of an individual prescriber and build up a picture of whether they had worked in any centres amenable to deprescribing, or any at which deprescribing would be anathema. This could help to account for spill over effects of inversions on peers, and to cultural reinforcement or otherwise. Similarly, continuing professional development courses could be tracked to determine if educational top-up had occurred. Control for particular specialties of practice could also be put in place, and news scrapers used to identify exposure to any high profile journalism on the issue. A model similar to Mincer's Human Capital Earning Function could be fitted,[24] equating the outcome to a function of the amount of exposure to the education, years of work experience since that education, and accounting for confounding variables, using an appropriate statistical modelling scheme.

CONCLUSION

We hope that the account of our bottom up approach so far may be helpful to European colleagues in terms of showing a way to embed education about deprescribing, with ideas on how this may be achieved. We recognise that educational and health system differences exist and anticipate that the strategies and learning outcomes in this article could be contextualised as necessary. We highlight the need for evaluation of educational interventions. This is likely to include carefully designing the cohort for study, and noting the existence of other influencing factors. A critical issue is that of the second question of the model for improvement: How will we know that a change is an improvement? The determination of appropriate outcomes measures and mechanisms to evaluate them will require attention, and we recommend using education literature to provide methods, as this evaluation can provide evidence of results of grass roots led change.

Drawing on the ideas of other behavioural change programmes will be useful, so as to prevent repeating work that has already been done. In an address to the International Society for Quality in Healthcare (ISQua) conference 2014, Sir Liam Donaldson spoke of 7 lessons from his career for large scale change:

- Ignite passion
- Form an expert community
- Identify a flagship element

- Harness power of signature (i.e. get people to commit)
- Inspire leadership
- Establish a model
- Make everyone want to join

We agree wholeheartedly with these sentiments. We hope that this article ignites passion for the subject, and that improved patient care through medications optimisation is considered to be a flagship: We have some signatories on board our medications education “ship”, and hope others might join the “crew”. The formation of the joint foundation school and acknowledgement within the RPS mark important first steps. We have a model of delivery for the intervention, and are keen to share with and learn from others, to form an expert community. Concerted efforts to raise awareness further and to inspire high quality intervention and evaluation will need good engagement and management of stakeholders, and could adopt the principles of the National Survivor User Network 4PI standards.[25]

Finally, we hope that our aspiration is shared by others, and we welcome comments on our suggestions and thoughts on evaluation strategies: we look forward to forthcoming dialogues and collaborations. Perhaps this is an opportunity to collaborate across border and share our thinking around evaluation?

CONTRIBUTORSHIP

BJ drew on his professional network to implement interventions. BJ and AJP co-wrote the first draft and all subsequent versions of the manuscript. NB redrafted manuscript.

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COMPETING INTERESTS

None known.

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