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Education and Learning

Online education for safer opioid prescribing in hospitals—lessons learnt from the Opioid Use Change (OUCh) project

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Abstract

Background: Opioids are often required for acute inpatient pain relief but lack of knowledge about common and less common long-term side effects can lead to inappropriate discharge prescribing. There are few validated educational tools available for junior prescribers on hospital wards. Education around opioid prescribing and deprescribing remains limited in the undergraduate curriculum and yet almost all controlled drug prescribing in hospitals is done by junior doctors.

Methods: A 5-minute video was developed with iterative feedback from medical students, junior prescribers, pain specialists, primary care educational leads, and a patient who had developed opioid addiction after hospital prescribing. It explained the need for clear stop dates on discharge summaries and the range of opioid side effects. It also highlighted the hospital admission as an opportunity to reduce inappropriate high-dose opioids. A short knowledge-based quiz before and after viewing the video was used to evaluate the impact on and change in knowledge and confidence around opioid prescribing. This tool was designed to be used entirely online to allow delivery within existing mandatory training.

Results: Feedback was positive and showed that knowledge of side effects significantly increased but also contacts with ward pharmacists and the acute pain team increased. Junior doctors highlighted that the undergraduate curriculum did little to prepare them for prescription addiction and that pharmacy and senior support was needed to support any changes in longer-term, high-dose opioids.

Conclusions: This short educational video improved knowledge of safe opioid prescribing and could be incorporated within wider opioid education in UK healthcare.

Key messages

What is already known on this subject:

- Education rather than legislation has been shown to have a greater effect on opioid prescribing and deprescribing but this remains limited for junior doctors.
- A hospital discharge summary needs to have a clear stop date for any prescribed pain relief to avoid immediate and long-term side effects—few of which will ever be seen by the initial prescriber.

What this study adds: A hospital admission should be seen as one opportunity to detect, and potentially prompt reduction of, harmful high-dose prescription opioids.
How this study might affect research, practice, or policy: A very brief online educational video can be used to improve education for all prescribers across hospitals but is likely to work best within a wider educational programme for primary and secondary care.

Keywords: opioids, online education, deprescribing, medicines safety

Introduction

Opioid prescribing in hospitals

Opioids are highly effective agents for treating moderate to severe pain and are used for the majority of patients having elective surgical procedures or following acute trauma [1]. However, they cause a number of short- and long-term side effects [2]. For those taking opioids for weeks or months, there are well-described risks of worsening pain with the phenomenon of opioid hyperalgesia (paradoxical worsening of pain with higher doses of opioids), tolerance, dependence [3], increased risk of falls, central and obstructive sleep apnoea, and increased mortality [2]. Reports show that those discharged from surgical care on opioids are 44% more likely to be taking opioids a year after discharge than those discharged without opioids [3], and prescription drug side effects are responsible for 6% of hospital readmissions [4] where opioids are one of the most significant contributors. National Institute for Health and Care Excellence (NICE) guidelines do not recommend opioids for primary chronic pain, and they provide

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stepwise guidance on acute pain opioid prescribing, emphasizing the importance of reviewing regularly and stepping treatment up or down as appropriate [5]. Although there is recognition of opioids as vital for acute pain relief after trauma or within end-of-life care, there is also a need to safely deprescribe those on longer-term high-dose opioids, where the side effects outweigh the benefits and there is a risk of diversion and dependence.

Acute pain relief is often started appropriately in hospital, but the lack of a clear stop date for primary care prescribers on discharge can lead to inadvertent overuse or unnecessarily prolonged courses of medication. A hospital admission, however, offers an opportunity to safely adjust opioids, educate patients and improve patient safety, and decrease the risk of readmission and accidental overdose. This requires education and behaviour change for all prescribers.

Opioid prescribing and importantly deprescribing is an area that has historically been lacking throughout medical training [6] and inadequate knowledge around appropriate analgesia is a problem amongst many junior and senior prescribers [7–9]. Limitations within prescribing guidelines have added to the issue, demonstrating a lack of detail in a number of areas, particularly opioid tapering [6, 8]. Education in opioid prescribing can empower prescribers to make well-informed, patient-specific decisions about when to initiate, alter, and terminate an opioid prescription.

Opioid Use Change

The North East of England has one of the highest opioid prescribing rates in England [10] and the highest accidental death rate due to prescription opioids in the UK [11]. Working within the region's largest acute trust, we wanted to understand the reasons for inappropriate prescribing and consider the barriers to change. This study's aim was to develop, and then evaluate the benefit of, a brief online educational tool for safer opioid prescribing suitable for, and potentially able to be used by, all hospital prescribers. An educational video (**O**pioid **U**se **Ch**ange—OUCh) was therefore developed. We additionally evaluated the acceptability of the video and impact upon knowledge and understanding with the key stakeholders, i.e. the junior doctors, nurse prescribers, and ward pharmacists prescribing within the trust.

Materials and methods

A professionally made 5-minute video entitled OUCh (**O**pioid **U**se **Ch**ange) (https://www.youtube.com/watch?v=hnqGvUlf3ic) had evidence-based information on the benefits of opioids but also the short- and long-term risks to taking opioids, and how the process of reducing patients' medications can be carried out with suggested dose reduction regimes. A real-life patient story, embedded within the video, was considered a particularly effective part of the intervention by all who viewed it. Ethical approval for this project was obtained from the South Central Oxford B local research ethics committee. The key message was the need to clearly document stop dates on discharge summaries and to explain the expected duration of pain (this was raised by primary care colleagues as often lacking within the discharge summary), but also to prompt reduction in primary care if opioid doses were high but there was persistent pain or opioid side effects. It was iteratively developed with input from medical students, general practitioners, and junior doctors working within surgical and medical wards as well as the hospital nursing and medical pain leads and pharmacy leads. The universal message from the medical students and junior doctors during development was that it needed to be short and that they already knew about sedation, constipation, and vomiting but very rarely thought about central apnoea or the concept of opioid hyperalgesia. The short duration and speed of presentation were determined by those most likely to write discharge summaries, i.e. the junior doctors.

A mixed-methods evaluation of the video was conducted using survey methodology, generating both quantitative and qualitative data. The quantitative data helped to identify barriers and facilitators to the effectiveness of the intervention in improving staff knowledge and attitudes towards opioid prescribing. The qualitative data were used to develop an understanding as to how opioid prescribers could be further supported in their work, and whether any changes would be made to their practice. The OUCh project was embedded within a range of educational resources supported by the funders (AHSN-NENC).

Feedback from the users

An initial evaluation of the impact of the video on behaviour and understanding around opioid prescribing was completed online by 106 hospital prescribers (98 junior doctors, 8 nurse prescribers and ward pharmacists) but all responses were anonymised beyond job role. In total it took ≤15 minutes. A pre-intervention survey was emailed to all participants, followed by the video link and then the post-intervention survey, which was completed having watched the video. The survey had eight questions that assessed baseline knowledge and attitudes towards opioid prescribing, and the post-intervention survey had the same questions but also assessed any changes in knowledge (see online supplementary material, Supplementary File 1). Free-text boxes in the post-intervention survey let participants suggest how they could be more supported in opioid prescribing and, if any, what changes they would make to their practice.

The video was delivered on three separate occasions during the mandatory online weekly training for junior doctors within the hospital but additionally emailed to prescribing pharmacists and prescribing nurse specialists working on wards previously identified as the trust's highest users of opioids (orthopaedic, neurosurgical, and an acute medical ward). Participation was voluntary. In total, 106 completed the pre-intervention quiz and viewed the video with 89 post-intervention responses. For further information on prescribing, contact details of the hospital pain nurses were made available.

Results

The quantitative data showed increased confidence in both prescribing and also adjusting a long-term opioid prescription, and a significant increase in knowledge of side effects. Of the 19 side effects mentioned in the video, increased knowledge was shown for 13 of 19. There was a significant change in the responses around the need to discuss side effects and put stop dates on prescriptions; 42% described this as altering future practice. Attitudes towards junior doctor versus primary care responsibility in dealing with discharge opioids showed the most significant improvement—the aim being to stimulate a change in behaviour that places more responsibility in the hands of the prescribers to discharge patients with a safe, clear opioid plan rather than leave this to the general practitioner to adjust.

In terms of qualitative data, when asked if there will be any changes made to their future practice (post-intervention only), the main themes that arose were to adjust a patient's long-term opioid plans, to discuss side effects with the patients, and to better

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detail patients' discharge letters; these were mentioned by 42%, 38%, and 19% of the participants, respectively:

> I need to explain to the patient about any changes that we make to his analgesia as in-patient and out-patient (discharge letter) so he/she can expect what will happen next. (Foundation Year 1 Doctor)

The participants also expressed an intention to deprescribe those already on long-term opioid plans on admission. Changes included taking a pain history and exploring the reasons behind the patient's prescription:

> I will consider exploring reasons behind long term opioids on admission and take pain history. (Foundation Year 2 Doctor)
> Questioning patients who are on long-term opioids to see if these can be reduced or stopped. (Foundation Year 1 Doctor)

Additional comments regarding what would be helpful support in opioid prescribing revolved around a number of themes. Firstly, participants suggested further teaching on adjusting long-term opioid plans:

> Short course on how to safely adjust long-term opioid doses. (Foundation Year 1 Doctor)

Secondly, further teaching was requested on weaning pain medication and how this approach changes for various pain medications:

> Which medication should be discussed/discontinued/reduced first—e.g. benzos vs opioids vs Gabapentin/Pregabalin, etc. (Foundation Year 2 Doctor)

Thirdly, many participants suggested teaching on alternative pain management options to opioids, especially when opioids may not be working:

> Lectures—especially for medications like Pregabalin, Gabapentin, and patches, what to do when analgesia is not working, how to reduce analgesia dosage. (Foundation Year 1 Doctor)

Discussion

Limitations and strengths of the study

Limitations of the study were a relatively small sample size of just over 100 prescribers comprising ∼30% of the current trust junior doctors and incomplete post-intervention questionnaire responses (89/106). However, this educational intervention did not seek to assess the long-term impact on prescriptions across the trust but instead to assess the acceptability of, and change in knowledge with, the video itself. The impact of the video on longer-term trust prescribing is part of ongoing work across the trust.

However, strengths included a short, entirely online and UK-specific training video developed free of copyright, that can be used by a wide variety of prescribers across hospitals, and targeting a key issue that contributes to inappropriate prescription opioids within the community. Junior doctors and other health professionals have many demands on education and training time and the positive feedback related in large part to ease of access to the resources and the short and simple messages.

Safer future opioid prescribing—onwards and downwards?

It is estimated that there are 261 294 high-risk opioid users in England between the ages of 15 and 64 [12], and that deaths caused by overdose in this group have increased by 20% between the years 2011 and 2016 [12]. A number of strategies have been developed around treatment of acute risk [13, 14]. However, the short- and long-term side effects of opioids are far broader than an increased risk of death; the true burden of the opioid crisis includes opioids now causing more than half of drug-related admissions [14]. The need to reduce long-term opioid prescriptions and to effectively deprescribe opioids is clear.

Previous studies attempting to decrease inappropriate opioid prescribing from hospitals found educational interventions targeted towards opioid prescribing to be effective. A systematic review and meta-analysis of the impact of a variety of strategies to reduce inappropriate opioids issued from emergency departments highlighted the impact of multimodal approaches, but particularly the benefit of educational interventions rather than legal guidelines [15]. A study of inpatient opioid use after acute trauma found that slow-release opioid prescription rates dropped by 19% post-intervention, whereas patients leaving hospital without opioids rose by 4%. This intervention, however, comprised 1-hour bimonthly face-to-face lectures to surgical residents for the entire study period and was therefore labour intensive [16]. A recent randomised controlled trial [17] developed and validated an educational intervention for junior doctors and pharmacists from surgical units and demonstrated a significant decrease in opioids issued at discharge. Their intervention was a single 30-minute, face-to-face group educational session delivered by hospital pharmacists, which suggests benefits from short educational interventions [17]. Two other studies also targeted surgical wards and again showed a benefit of face-to-face training [18, 19].

However, particularly since the COVID-19 outbreak, there is a need to develop and validate online educational interventions that are suitable for and accessible by a wide range of prescribers. Therefore, we looked to improve opioid prescribing with a freely available online educational video that could be used within existing education and training. One benefit of the training was that the pre knowledge questions, video, and post knowledge questions took an average time of <15 minutes to complete. This allowed flexible use within a range of hospital settings including education within clinical governance meetings and as a reminder to senior colleagues.

There is a need for effective education for hospital prescribers, and a need for behaviour change and awareness of the long-term consequence of a patient leaving a hospital on an opioid. Any educational intervention around opioids should ideally prepare the prescribers for a more holistic prescribing approach that encourages better patient involvement and education at the point of prescribing. The acute side effects of opioids are well understood but the longer-term side effects still less well known. Explaining the expected duration of pain and the key difference between short- and longer-term prescribing is key.

Evaluation showed a significant improvement in knowledge and understanding of opioid side effects and a better understanding of the need for clarity around stop dates at discharge. The use of a real-life patient who had developed a prescription addiction was described as important by many who helped to iterate this educational video. Self-rated confidence scores in opioid prescribing and in adjusting a patient's long-term opioid plan improved after the intervention. There were greater

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improvements in confidence around dose adjustment rather than initial prescribing, highlighting the need for support and training by the acute pain team and ward pharmacists.

Multimodal interventions have a greater chance of success and, therefore, we established a trust-wide opioid group and the lead was the senior nurse running the acute pain service. This involved all relevant stakeholders including pharmacists, all grades of medical prescriber and nursing staff, and also primary care who were able to explain the consequence day to day of poor prescribing within outpatient care. Given the success of the video and positive feedback, a poster was developed and then placed in a prominent position in every doctor's office on every ward in the trust showing a QR code linking to the video. This allowed tracking of video viewing across the trust but also highlighted further support around prescribing from the pain leads (see online supplementary material, Supplementary File 2). The contact details of the pain leads were then available and the poster was used to prompt discussion.

Hospital prescriptions remain a small percentage of the total number of opioids issued across the UK. There remains a need to develop interventions that bring primary and secondary care prescribers together. OUCh encouraged discussions and knowledge sharing across both primary and secondary medicine safety groups in our region and became embedded within the Medicines Safety Improvement programme. The National Patient Safety Improvement Programmes (SIPs) collectively form the largest safety initiative in the history of the NHS and are supported by the funders of OUCh and delivered by Patient Safety Collaboratives (PSCs). The patient safety collaboratives are hosted by the Academic Health Sciences Networks and as such OUCh is now within the AHSN-NENC – Transforming Patient Safety programme.

Conclusion

In conclusion, a hospital admission can be an opportunity to review a long-term and potentially harmful opioid prescription and to avoid or reduce the harm from opioids needed upon discharge. However, this needs improved education for those who prescribe in a format that is accessible, acceptable, and signposts to the necessary senior support within the hospital. Opioids will remain indispensable, gold-standard, and life-saving acute pain relief. It is easy to miss their long-term harm in a busy hospital environment with increasingly complex prescriptions. For education and learning, linking any medication to both short- and longer-term side effects and benefits is key.

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Supplementary data

Supplementary data are available at *Postgraduate Medical Journal* online.

Conflict of interest statement: None declared.

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Contributors' statement

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