


DRUG & ALCOHOL FINDINGS

Research analysis

This entry is our analysis of a study considered particularly relevant to improving outcomes from drug or alcohol interventions in the UK. The original study was not published by Findings; click [Title](#) to order a copy. Free reprints may be available from the authors – click [prepared e-mail](#). The summary conveys the findings and views expressed in the study. Below is a commentary from Drug and Alcohol Findings.

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► Do electronic health record prompts increase take-home naloxone administration for emergency department patients after an opioid overdose?

Marino R., Landau A., Lynch M. et al.

Addiction: 2019, 114, p. 1575–1581.

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Emergency department physicians regularly treat people who have had an opioid overdose, but they may not be making the most of the opportunity to provide take-home naloxone. Can a prompt in the patients' electronic health records boost prescribing of this lifesaving 'overdose antidote'?

SUMMARY Every day more than 115 people in the United States die of an opioid overdose, and patients who survive have a high risk of repeated overdose in the following year. The featured study examined whether an intervention in the emergency department could improve the distribution of the 'overdose antidote' naloxone, which if administered in a timely manner at future overdoses could stop them becoming fatal.

Naloxone has become the standard of care for the medical treatment of overdoses, and can be administered nasally, into a vein, into muscle, or under the skin. Through take-home naloxone programmes, naloxone has been made available to people likely to witness an opioid overdose, including people who use opioids, friends and family, and workers.

Although the emergency department represents an opportune setting for identifying people who have had an opioid overdose and then distributing naloxone to them as part of a harm reduction strategy, the practice is uncommon. For example, a survey of emergency department physicians in the US found that only 2% were prescribing take-home naloxone. As with other interventions seen as supplements to a person's role rather than their core work, barriers to prescribing may include a lack of time, knowledge, training, and institutional support. Clinical decision-making and practice may also be informed by conscious or unconscious bias – deeply engrained stereotypes or beliefs about groups of people (1 2 3 4 5).

Conducted in a single healthcare system in Western Pennsylvania between July 2016 and April 2018, this study examined the impact of electronic prompts in the healthcare records of overdose patients on the distribution of take-home naloxone. It sought to answer the following questions:

- Do electronic prompts result in an immediate increase in take-home naloxone distribution?
- Does the rate of take-home naloxone distribution increase over time after the introduction of electronic prompts?
- Do these changes only occur in certain emergency departments?
- Do the characteristics of patients given take-home naloxone (including age, sex and race, as well the hospital they attended) change before and after the introduction of electronic prompts?

The electronic prompt was written by researchers and displayed in a pop-up window (► [see image](#)) in patients' electronic records during the physician-led discharge process. The decision to prescribe was ultimately left up to the physician.

The analysis included the records of patients (18 years and above) attending nine emergency departments. Patients who died or who were admitted to the hospital for further treatment were excluded.

Main findings

Over the study period, 3,492 patients were discharged, and nearly half (47%) attended a single emergency department. In total, eight out of nine emergency departments increased their prescribing after the prompts were introduced, while the ninth emergency department, which saw the highest volume of overdose patients and had a pre-existing take-home naloxone programme, did not see any increase.

The overall rate of prescribing increased from 201 out of 2,059 overdose patients in the 11-month period before the

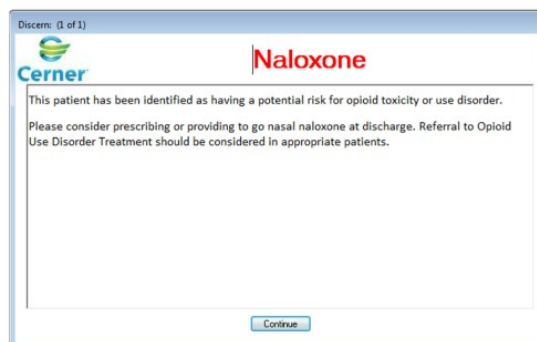


Key points From summary and commentary

The featured study examined whether a prompt in the electronic health records of patients attending emergency departments after an opioid overdose could increase take-home naloxone prescribing.

A year before the prompts were introduced, 16% of overdose patients received take-home naloxone and the rate of prescribing was on a downward trajectory, decreasing by 1% each month. The intervention seemed to turn this around, increasing the percentage of patients receiving take-home naloxone by 3% each month.

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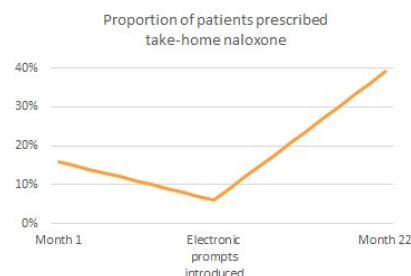
Pop-up window in electronic health records seen by physicians during the patient discharge process

intervention, to 190 out of 1,433 in the 11-month period after the intervention. This change from 10% to 13% did not reach the level of statistical significance. There was also no significant immediate effect in the month take-home naloxone prompts were introduced. However, there was a statistically significant downward trend in prescribing before the advent of electronic prompts, and a statistically significant upward trend in prescribing thereafter, suggesting that the electronic prompts were associated with a sustained effect on take-home naloxone prescribing. The rate of prescribing decreased by 1% each month (from a starting point of 16%) in the 11 months before the introduction of the prompts, and then subsequently increased by 3% each month (► [chart](#)). This increase in take-home naloxone prescribing closely mirrored the increase in the frequency of prompts for most emergency departments.

There were differences in the characteristics of patients prescribed versus not prescribed take-home naloxone in the period before the introduction of electronic prompts:

- white people were significantly more likely to be recipients of take-home naloxone than non-recipients;
- younger people were significantly more likely to be recipients of take-home naloxone than non-recipients;
- women were significantly more likely to be recipients of take-home naloxone than non-recipients.

For two of these demographic classifications, the differences evidently disappeared in the period after the electronic prompts were introduced. Where previously recipients were significantly more likely to be white and of a younger age, this was no longer the case once electronic prompts were in use. However, in the period after electronic prompts were introduced women were significantly less likely to be recipients of take-home naloxone than non-recipients.



Evidence of the reversal of a downward trend in prescribing after electronic prompts were introduced

The authors' conclusions

A year before the prompts were introduced, 16% of overdose patients received take-home naloxone and the rate of prescribing was on a downward trajectory (decreasing by 1% each month), which the intervention seemed to turn around – increasing the percentage of patients receiving take-home naloxone by 3% each month.

Overall, using electronic prompts to remind physicians to prescribe naloxone to at-risk patients was associated with a non-significant increase in prescribing across emergency departments in a single healthcare system in Western Pennsylvania. One emergency department, which had a pre-existing take-home naloxone programme, did not show any increase, and the prescribing level did not exceed 20% in any emergency department. It is possible that programmes such as this experience a 'ceiling effect' – an upper limit on the rate of take-home naloxone prescribing. Prior interventions using electronic prompts for harm reduction in the emergency departments have [noted limits](#) in provider adherence, and previous attempts at dispensing naloxone from the emergency department have had [similar limitations](#).

According to further analyses the electronic prompts may help to address disparities in the provision of take-home naloxone along the lines of race and age, which could suggest that implicit bias in clinicians can be corrected with external prompting. These findings are [consistent with](#) previous findings that an electronic alert can promote previously under-used harm reduction interventions in marginalised populations.

Although this was the first study to examine the use of electronic prompts for take-home naloxone prescribing, they have been tested in other harm reduction and medical scenarios. For example, a similar electronic prompt was [associated with](#) increase in the rate of hepatitis A vaccinations in the emergency department among high-risk patients during a regional outbreak.

FINDINGS COMMENTARY Electronic prompts were associated with an overall increase in the provision of take-home naloxone kits. As the increase did not rise to the level of statistical significance, the study could not rule out a chance increase as opposed to one associated with the intervention. However, adding weight to the hypothesis of a link between reminders and increased prescribing was evidence of a reversal of a downward trend in prescribing after electronic prompts were introduced. Prescribing was decreasing by 1% each month in the 11-month period prior to electronic prompts being introduced and then subsequently started to increase by 3% each month (► [chart](#)).

Secondary analyses found evidence to suggest that electronic prompts could help address disparities in provision, perhaps caused by implicit bias in clinical decision-making. Given entrenched [inequalities](#) in care and outcomes among racial minorities – particularly among Black people – this is an encouraging finding, and merits further research. Focusing on the findings about race, the point was not that it was a 'good thing' that prescribing among white people decreased after electronic prompts were introduced, but that being white may have previously given patients an unwarranted advantage in being supplied naloxone, which electronic prompts helped redress. However, the explanation might not be what it seems. If we look at the 11-month period before electronic prompts, prescribing was practically non-existent, except for one emergency department which had a take-home naloxone programme. This means that disparities in prescribing – for example, that take-home naloxone recipients were more likely to be white than non-recipients – could primarily be attributed to a single emergency department. During the 11-month period when electronic prompts were in use, this emergency department did not see an increase in

Reminders have been used in other contexts to varying degrees of success. Perhaps one of the largest bodies of evidence comes from the US Veterans Affairs or 'VA' health care system for ex-military personnel, which made a determined effort to implement routine brief alcohol counselling in its primary care clinics. At [one clinic](#) advice to risky drinkers only followed a reminder in 15% of cases, and just 6% of those patients were offered brief counselling. Clinicians gravitated towards advising abstinence to a few very heavy drinkers – not the public health role envisaged for brief interventions. In [other clinics](#), the reminder seemed to become routine, and advice to risky drinkers followed a reminder in 71% of cases.

[As discussed](#) in the Alcohol Treatment Matrix, these studies serve as an illustration of the difference organisational

prescribing: the increase was predominantly in emergency departments where there was little to no prescribing beforehand. Considering this, what we could reasonably take from the findings is that electronic prompts may have removed one of the ways that implicit bias can exert an effect by extending prescribing to other departments. What we cannot be sure of is that any implicit bias evident in clinicians before the intervention (ie, in the single emergency department) was 'corrected' with the introduction of electronic prompts.

context can make. In the first clinic there were no active implementation efforts, little leadership encouragement to use reminders of any kind, no culture of routinely responding to clinical reminders, and no incentives for their use or for brief alcohol interventions. Contrast this with the other clinics where the culture was that reminders were to be responded to and their use was routine.

The design of the study did not permit a follow-up with patients about their use or non-use of naloxone, attitudes towards naloxone, or thoughts on being prescribed naloxone in the emergency department after an overdose. Furthermore, it could not collect data about how many patients were offered naloxone but declined; based on other research, a [considerable proportion](#) (38%) of patients offered naloxone may have in fact said 'no'.

Another limitation of the featured study was the lack of a control group, which would have given the researchers a mechanism for comparing levels of prescribing between different sites with the primary difference being the presence or absence of electronic prompts. The design did feature a proxy control group of sorts – the 11-month time period in all settings prior to the introduction of electronic prompts, which was compared with the 11-month period after their introduction. This design renders it more difficult to conclude that the intervention *caused* the observed increase, because other factors may have been at play during the two time periods that contributed to the different levels of prescribing. For instance, all of the emergency departments were in a single healthcare system in the same state in the United States, and were potentially all subject to similar changes or continuity in the rate of overdose, overdose awareness, and availability of interventions to prevent (fatal) overdoses. However, findings supporting the specific contribution of electronic prompts included:

- a considerable (if non-significant) increase in overall prescribing, which seemed to be limited to emergency departments with little to no prior commitment to distributing take-home naloxone;
- evidence of a statistically significant downward trend in prescribing, followed by a statistically significant upward trend in prescribing that coincided with the introduction of electronic prompts.

Take-home naloxone in the UK

In 2005 naloxone became the [new hope](#) for harm reduction after UK law was amended to permit emergency administration by any member of the public. Its legal approval was seen as an important step to widening availability – meaning that GPs could prescribe naloxone kits to suitably trained drug users, friends and families. Scotland lifted these restrictions further, [allowing](#) emergency-use naloxone to be provided to services without prescription, enabling drug treatment and homeless hostel staff to have the drug ready for use. National naloxone programmes [have been](#) in place in Wales and Scotland since 2011, but in the name of localism, England has so far not established a centrally driven national programme.

As of 2019, the nasal spray format was being [tried](#) in a pioneering way by police officers in West Midlands Police, providing a potential model for other police forces and professionals who come into contact with people who inject in public places.

The UK's first naloxone peer training and supply programme was [launched](#) in Scotland, where it is hoped that "volunteers will contribute to increasing the availability of naloxone within the community so that it is more likely to be present when an overdose occurs".

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