CASE REPORT

Heroin overdose resuscitation with naloxone: patient uses own prescribed supply to save the life of a peer

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SUMMARY

Opiate overdose is the primary cause of death among injection-drug users, representing a major public health concern worldwide. Opiate overdose can be reversed through timely administration of naloxone, and users have expressed willingness to carry the antidote for emergency use (take-home naloxone). In November 2014, new WHO guidelines identified that naloxone should be made available to anyone at risk of witnessing an overdose. We present the case of a 46-year-old man in opioid-maintenance treatment who used take-home naloxone to rescue an overdose victim. This is the first-ever account of a patient using dose titration of naloxone to restore respiratory function while minimising the risk of adverse effects. To improve the safety of take-home naloxone, the authors call for clinicians involved in the treatment of opiate users to: prescribe take-home naloxone to all patients; forewarn patients of potential side effects; and instruct patients in naloxone dose titration.

BACKGROUND

Heroin and the opioids are the biggest contributor to drug-related deaths, accounting for three-quarters of all overdose deaths in the European Union.¹ In England and Wales alone, heroin overdose deaths increased by 32% from 2012 to 2013, highlighting the urgency for take-home naloxone distribution to prevent further overdose fatalities.^{2 3}

This case report illustrates the powerful peer-activation that clinicians can achieve by prescribing take-home naloxone to patients currently using or with a history of using opiates—a patient population characterised by a high risk of overdose and associated mortality. Take-home naloxone not only increases the likelihood of a patient's own resuscitation by a family member or peer, but also enables the patient to save others using their own naloxone kit.

What motivated us to share this patient's story was his commitment to save his hostel mate's life from heroin overdose by carefully administering naloxone to achieve return of adequate breathing without triggering withdrawal symptoms.

Through this case description, we hope to raise clinicians' awareness of the willingness and competency of opioid users to intervene in overdose emergency situations, and to administer take-home naloxone to the overdose victim while awaiting the arrival of an ambulance.

CASE PRESENTATION

We present the case of a 46-year-old man who was addicted to heroin for many years, complicated by co-abuse of alcohol, benzodiazepines, crack cocaine, GBL (γ -butyrolactone; a class C drug that acts as a central nervous system depressant) and methamphetamine. He had been known to addictions services since 2006. As a result of his poor response to a range of orthodox treatments, he had achieved only rare short-lived periods of sobriety, associated with several drug-related prison sentences and over 15 inpatient detoxification admissions. He had suffered a range of serious medical complications from his drug use, including at least one overdose experience with naloxone reversal. There was a family history of alcohol dependence in his father.

At the time of the interview, the patient was single and living in a South London-based hostel for the homeless. He had entered supervised injectable heroin treatment in April 2014, 10 months prior to the interview, necessitating daily treatment attendance.⁴ His treatment compliance had led to dramatic health improvements: "I've started to cut down on my diamorphine dose and am now down from 230 ml twice daily to a single 200 ml dose once a day. I also receive 90 ml of methadone daily [...] It took a couple of months of treatment for these changes to occur: all around the same time, I gave up drinking, quit benzos and stopped using street drugs. I'm feeling better."

In accordance with our practice, a presupply of naloxone (2 mg/2mL prefilled syringe) had been prescribed to the patient, with instructions on its emergency use accompanied by advice to pass this information to hostel staff or trusted peers; he also received training in basic overdose management.

In the following interview, the patient described how he used his presupply of naloxone to save a peer's life. During early evening, another resident of the hostel had entered the patient's room and urged him to attend to an overdose crisis that was occurring in another resident, in the room opposite:

Just after dinner time, a girl at the hostel came knocking on my room door: my neighbour from across the corridor was going over [had overdosed]. I was high myself when she told me. I was still using heroin at the time, even though I was mainly into benzos and drinking.

I knew that my neighbour was going to do heroin that evening. He wasn't a daily user, using perhaps once or twice a week to top off his methadone

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maintenance, but he was receiving DLA money [Disability Living Allowance], which meant that he sometimes had a bit of extra cash. As a result, [others] would try to persuade him to buy drugs, as had happened on that particular day.

No one else was around to help, so I went straight away to see him. His condition seemed to be worsening fast.

INVESTIGATIONS

The first thing I checked was his breathing, which was already shallow. The girl was eager to leave. She didn't want to get the staff involved. I told her to ask the hostel staff to call an ambulance on her way out.

When the girl left, he wasn't talking, his eyes were rolling, but he was still breathing. And then very suddenly, he was overdosing properly: his breathing got shallower and he was nodding off; even at shouting and slapping he showed no reaction whatsoever.

DIFFERENTIAL DIAGNOSIS

I knew my neighbour to be a heavy drinker. He was on methadone treatment, but often enough he would get so drunk that he would mess up his script. I did consider giving him naloxone straight away, but it's a tough call when someone is really drunk: he might have just passed out from the booze and been fine little later.

After the girl had left, I was waiting for the staff to come up, but they took a lot longer than I expected. While it was just me and him there, I straightened him up, and I could now see the colour of his skin change: his skin tone was turning ashy, then the lips started turning blue, and the breathing was getting shallower. It was obvious that the oxygen was no longer reaching where it's meant to go.

I've seen people overdose quite a few times in my life, and I could see by the colour of his skin that he was in a much worse condition than he'd normally get himself into, and I thought: 'This isn't just the result of him mixing drugs and alcohol and getting a bit too stoned. This is him OD'ing.'

TREATMENT

I was trying to shout at him, calling his name, trying to get through to him, but got no reaction. I knew that I had to act quickly.

I leaned him against the wall and went back into my room to get the naloxone [prefilled 2 mg/2 ml syringe].

I still really didn't want to give him the naloxone. I felt as though giving naloxone was doing something naughty, and I was worried about possible backlash from the staff. Also, I've been through naloxone detox [detoxification] before, and it felt horrible. Injecting someone with naloxone can be very uncomfortable for them. I've seen several people being given naloxone and some of them weren't very happy about it at all.

I was still hoping the staff would arrive and take charge of the situation, but they didn't, and I thought: 'he's OD'ing here, at some stage I have to give him the naloxone'.

I rolled his sleeve up, and only gave him a tiny squirt in the arm [intramuscular injection into deltoid] to test his reaction. I checked the syringe to work out roughly the amount I was giving. I remember being told in training to give the whole syringe, and I was prepared to give him the full dose, but I didn't want him to go through withdrawal. I wanted to give him as little as possible, enough to make him recover, but not enough to make him feel extremely uncomfortable, where he might even want to take more heroin afterwards. But after that first squirt

absolutely nothing happened: he was still down. I decided to give him a little bit more—no more than a fifth of the syringe [of total 2 mg/2 ml dose; ie, approx 0.4 mg]. After that second dose, he wasn't getting any worse for a while and was starting to come around, but then he was fading up again.

At that stage, two staff members came up. I explained that I'd given him some naloxone and that it might take a few moments to kick in. I asked if they had a naloxone kit of their own, so that they could take over, but they didn't have any naloxone and didn't seem to know what it was in the first place. They said the ambulance was on its way and that we should just wait for the ambulance team to arrive. I kept my naloxone syringe on me, so that I could give him a third dose if I needed to.

OUTCOME AND FOLLOW-UP

The ambulance crew must have come up shortly after, within about 3 minutes. And in those few minutes, he had lightened up a bit. The naloxone actually started to kick in, and the heroin seemed to wear off. He was still not great, but he was starting to recover.

The ambulance crew said I'd handled the situation correctly and done well for giving him the low dose. They didn't choose to give him any more naloxone either. I kept talking to my neighbour to calm him down, telling him that it was a good idea to go with the ambulance crew. And it was taken out of my hands then. [...] Following that incident, the hostel has started storing naloxone for emergency use.

The resident survived the overdose.

DISCUSSION

To the best of our knowledge, this is the first published account of a service user applying a dose titration approach to take-home naloxone administration. This case report brings together several key messages in relation to community-based and user-led overdose prevention.

First, our patient specifically attempted to reverse his hostel mate's overdose without triggering withdrawal symptoms by only giving him small dose increments of naloxone. This titration of dose against effect is a sensitive administration technique that is preferable over giving the full syringe's dose at once, as it reduces the likelihood of adverse effects. Moreover, our patient was himself struggling with his own personal recovery at the time of the event, and yet he very competently and responsibly delivered this intervention, lending further support to the level of skill and precision with which trained service users can administer the rescue medication.

Second, this case draws attention to the issue of a lack of staff overdose training and awareness. Our patient was surprised to discover that the hostel staff members (beyond calling for an ambulance) were unable to provide any help in managing the overdose crisis. As per the WHO recommendation that "... people likely to witness an opioid overdose should have access to naloxone and be instructed in its administration," we recommend that all service staff in frequent contact with opioid users (eg, hostels, treatment facilities) receive training in overdose recognition and naloxone use.

Finally, our patient made references to the fact that he was nervous about the potential negative consequences of administering naloxone. He expressed concern over disapproval from his hostel mate about potentially causing him to experience an unpleasant withdrawal state, and also over possible legal repercussions. While the latter is not an unusual concern, it is important to emphasise the UK legal situation, according to

which naloxone can be administered by any member of the general public in an emergency for the purpose of saving a life.⁵

Learning points

- ▶ Opiate users and patients receiving maintenance treatment are a trainable and competent on-site intervention workforce.
- ▶ Service staff at agencies with high level of attendance by individuals at risk of relapse/overdose require training in take-home naloxone administration and aftercare.
- ▶ Titration of dose in a non-medical setting is possible and can achieve the desired clinical outcome of overdose reversal while minimising undesirable side effects.
- ▶ Titration of dose should occur in dose increments of 0.4 mg. Titration in smaller increments would unnecessarily increase the risk of needle-stick injury.
- ▶ Prescribing of take-home naloxone should always be accompanied by training in overdose prevention and recognition as well as emergency response (calling an ambulance, correct administration of naloxone), recovery position and rescue breathing.

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Contributors IW acted as treating physician for the patient. IW, RM, BT and JS jointly conducted the patient interview. RM transcribed the interview. RM, BT and JS drafted the manuscript. IW reviewed the manuscript for accuracy of the medical information.

Competing interests JS is a researcher and clinician and has had, and continues to have, clinical responsibilities, and has worked with a range of types of treatment and rehabilitation service providers. He has also worked with pharmaceutical companies to seek to identify new or improved treatments, and also with a range of governmental and non-governmental organisations, from which he and his employer (King's College London) have received honoraria, travel costs and/or consultancy payments. The employing university (King's College London) has registered intellectual property on a novel naloxone formulation with which JS and RMCD are involved and JS has been named in a patent registration by a Pharma company as inventor of a potential overdose resuscitation product. For a fuller account of JS's interests, see his personal web-page at the Addictions Department of King's College London at <http://www.kcl.ac.uk/ioppn/depts/addictions/people/hod.aspx>. JS is supported by the National Institute for Health Research (NIHR) Biomedical Research Centre for Mental Health at South London and Maudsley NHS Foundation Trust and King's College London.

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