

Farrugia, A., Neale, J., Dwyer, R., Fomiatti, R., Fraser, S., Strang, J. & Dietze, P. Conflict and communication: Managing the multiple affordances of take-home naloxone administration events in Australia. Accepted for publication in *Addiction Research & Theory* (21 December, 2018). DOI: <https://doi.org/10.1080/16066359.2019.1571193>

Title: Conflict and communication: Managing the multiple affordances of take-home naloxone administration events in Australia

Abstract

Opioid overdose is a growing issue in Australia. Programs to provide opioid consumers with ‘take-home’ naloxone to reverse overdose exist internationally and in some Australian cities, but uptake remains inconsistent. As an opioid antagonist, naloxone has the capacity to stimulate distressing withdrawal symptoms. These sensations are shaped by complex factors – including the quantity and intervals of naloxone administration – and can contribute to conflict during, and immediately following, revival. This possibility of conflict is thought to negatively affect willingness to use naloxone. Researchers have not yet analysed this conflict in detail nor considered the potential positive social interactions that can occur in the context of take-home naloxone administration. We draw on interviews conducted as part of a broader Australian study of the use of take-home naloxone by people who consume opioids (or ‘peer administration’) to identify accounts of both conflict and appreciation. Additionally, we analyse the strategies people administering naloxone use to manage and avert potential conflict. Drawing on Science and Technologies Studies, we conceptualise take-home naloxone as a technology that takes shape in practice with effects that are produced through specific practices during particular administration events. Focussing primarily on titration and communication, we argue that those administering naloxone actively manage the potential for conflict during administration. We conclude that if efforts to increase the uptake of take-home naloxone highlight these strategies they have the potential to improve administration experiences and the reputation of take-home naloxone and, in the process, help challenge the stigma faced by people who consume opioids.

Keywords: Take-home naloxone, opioid overdose, Science and Technology Studies, conflict, communication

Introduction

The escalation of opioid overdose deaths in Australia (Roxburgh et al. 2017) and around the world has prompted increasing interest in the provision of the opioid antagonist naloxone as a

‘take-home’ medicine for people who consume opioids and those close to them (McDonald, Campbell & Strang 2017). These initiatives make naloxone available as a ‘take-home’ product for use by people likely to be present at an opioid overdose. As an opioid antagonist, naloxone reverses overdose symptoms if administered in a timely manner. In doing so, it enables people attending overdoses, often people who themselves consume opioids, to directly intervene and save lives. Importantly, however, naloxone also has the capacity to stimulate uncomfortable and, at times, painful withdrawal symptoms. A complex range of factors are likely to shape administration practices and the chance and severity of these sensations, including the amount and combination of drugs consumed and individual opioid tolerance (Cantwell, Dietze & Flander 2005, Fairbairn, Coffin & Walley 2017). However, and of particular significance for our article, naloxone administration practices – such as dosing, route of administration and administration intervals – also affect the occurrence and severity of withdrawal symptoms when administered to those who consume opioids regularly (Neale & Strang 2015). As explored in our article, when withdrawal sensations occur, conflict between the person receiving the naloxone and those administering it can arise. The possibility of such conflict, well-known among people who consume opioids, can negatively affect perceptions of naloxone and act as an impediment to its use. While this potential for conflict has been identified in previous research, it tends to receive a passing mention rather than close attention. Similarly, no detailed exploration has been conducted either of the more positive interpersonal interactions that can occur during and after naloxone administration events, or of the efforts people administering naloxone make to reduce the likelihood of conflict. Drawing on Science and Technologies Studies, we conceptualise take-home naloxone, both the overall initiative and the administration equipment and medicines, as technologies that takes shape in practice. In this approach, the effects of naloxone are not essential to the drug but are produced through specific practices during particular administration events (here taken to mean the moment of and period immediately following administration). By analysing interviews conducted with people who consume opioids who have knowledge and experience of take-home naloxone, we explore the conflicts that can emerge during administration. From here, we present accounts of administration that emphasise more positive interactions and moments of appreciation. We then focus on the strategies some use to reduce the potential for conflict and increase the likelihood of positive interactions. Specifically, we analyse the use of administration strategies that we call ‘titration’ and communication during naloxone administration events, arguing that people actively manage the potential for conflict and, in moments of life-saving administration, enact this technology in particular ways. We conclude that efforts to increase uptake of take-home naloxone should highlight the capacity to

administer this medication in ways that avoid conflict, and the efforts peer administrators already make in this area, and do more to recognise the life-saving actions of peer administrators. Emphasising these issues has the potential to improve the reputation of take-home naloxone and increase its uptake and, in the process, help challenge the stigma and discrimination faced by people who consume opioids.

Background¹

Reflecting worldwide trends, opioid overdose hospital admissions and deaths have increased in Australia (Roxburgh & Burns 2015). Recent Australian research identified 8,547 opioid overdose deaths during the period 2001-2012 (Roxburgh et al. 2017). Over the years, initiatives such as emergency resuscitation education and overdose response training for opioid consumers have been developed to prevent and respond to overdose (Moore 2004). The availability and supply of the opioid antagonist naloxone as a ‘take-home’ product is, in Australia and many other countries, another strategy aimed at reducing lives lost to overdose (Dwyer et al. 2018).

People who consume opioids are often willing to participate in overdose response training and to administer naloxone during an overdose (e.g. Lagu, Anderson & Stein 2006, Lankenau et al. 2013, Neale et al. 2018) (becoming what are sometimes called ‘peer administrators’). Australia’s first take-home naloxone program was initiated in 2012 (Lenton et al. 2015) and, as of mid-2017, formal programs where consumers are provided naloxone at the end of training had been established in all but three Australian jurisdictions² (Dwyer, Olsen, et al. 2018), but further efforts to expand to these areas are occurring. Despite this relatively wide availability, knowledge of take-home naloxone among people who consume opioids and may experience or witness overdose remains inconsistent, varying within and between different cities in Australia depending on a range of issues such as how recently it has been made available and promoted (Dietze et al. 2017).

The take-home naloxone provided in Australia has been packaged in several different ways, and is now either supplied in a multi-dose syringe for intra-muscular injection or as ampules with

¹ This background section is adapted from: Farrugia et al. (2018).

² Take-home naloxone initiatives of various scales have been established in New South Wales, Western Australia, Victoria, Queensland and the Australian Capital Territory. Take-home naloxone initiatives are beginning to emerge in South Australia, Tasmania and the Northern Territory.

needles and syringes for intra-muscular injection. These intra-muscular formats enable administration in incremental dosages rather than all at once, but also means some dose may remain within the now-nonsterile syringe. An intranasally administered naloxone product has recently been made available in Australia with the potential to make use easier (Paola, 2018).

Literature review

Research suggests that many opioid consumers who are aware of take-home naloxone choose not to access it (Dietze et al. 2015). Particularly important for our analysis, researchers have argued that naloxone's capacity to stimulate uncomfortable and painful withdrawal symptoms can reduce willingness to access, administer and be administered, the drug (Heavey et al. 2018, Hollow, Hills & May 2018, Neale & Strang 2015, Sondhi et al. 2016, Sporer & Kral 2007, Worthington et al 2006). Understandably, opioid consumers prefer and seek to avoid experiencing painful withdrawal symptoms or causing others to feel them, and naloxone administration in the context of overdose may provoke agitation and frustration during, and immediately after, revival.

While naloxone's potential to generate distressing effects such as withdrawal sensations and interpersonal conflict has been identified in the literature (Kerr et al. 2008, McAuley, Munro & Taylor 2018, Neale et al. 2018, Worthington et al. 2006), the issue has received little in-depth exploration. Kerr et al.'s (2008) study of Australian heroin consumers' views on peer naloxone distribution reported that some participants raised concerns about witnessing 'sudden and acute heroin withdrawal' among people revived by paramedics using naloxone. Holloway, Hills and May (2018) argue that fear of prompting withdrawal symptoms made opioid consumers reluctant to administer and be administered naloxone. This issue is also mentioned in Sporer and Kral's (2007) analysis of the feasibility of prescription take-home naloxone. In more detailed analyses, Worthington et al. (2006) and Neale and Strang (2015) found that opioid consumers experienced withdrawal sensations after being given naloxone by health care professionals such as paramedics and doctors in emergency departments. Importantly, such experiences can mean naloxone administration is experienced as a form of punishment rather than care (Neale & Strang 2015). Relatedly, McAuley, Munro and Taylor (2018) reported that negative encounters during take-home naloxone administration events, such as verbal or physical conflict, can generate resentment in those administering it. While such experiences, and the reputational damage they can do to naloxone, may reduce the likelihood that a witness to overdose will access it and use it

to save a life (Neale & Strang 2015; Strang et al. 2017), to date, the way these dynamics shape take-home naloxone uptake have not received the close analysis they warrant.

Depending on the dose, intervals and route of administration, the negative sensations associated with naloxone may vary from mild to severe or even be non-existent (Wanger et al., 1998). Some recent studies indicate that people who respond to overdose may be aware of this and actively avoid stimulating withdrawal when administering naloxone (Lankenau et al. 2013). For example, several participants in an overdose response training program in Lankenau et al.'s (2013) study reported titrating naloxone in order to reduce the severity of negative effects. In addition, a case study in Winston et al.'s (2015) article indicated sensitive titration of the dose to avoid adverse consequences. Likewise, Madah-Amiri, Clausen and Lobmaier's (2017) assessment of an overdose response training program that included instructions on how to titrate intranasal take-home naloxone reported that people who consume opioids are able to effectively administer careful doses of naloxone in stressful emergency situations (see, also, Dettmer, Saunders & Strang 2001). Other research suggests that careful titration is a skill that can be built up with experience (McAuley, Munro and Taylor 2018). Finally, a recent article analysing two case studies provides an in-depth exploration of careful naloxone administration practices that included titrating the dose with the aim of achieving revival while minimising discomfort (Farrugia et al. 2018). While titration has been mentioned in research on take-home naloxone, this and other practices aimed at reducing negative interactions during take-home naloxone administration have not been explored in depth. Overall, little is known about how people responding to overdoses with take-home naloxone manage the complexity and potential unpredictability of these events.

Our own analysis builds on this evolving area of research by offering in-depth exploration of interpersonal interactions that occur between those giving and receiving take-home naloxone during administration events. Additionally, we identify and consider two strategies used by peer administrators to reduce the likelihood of conflict when administering naloxone: titration and communication. While titration has been mentioned in past research, we offer a sustained analysis that emphasises the implications of these administration practices for the social relations and overdose encounters of people who use take-home naloxone. Further, we identify communication strategies that have yet to be explored in take-home naloxone research. In so

doing, our article expands knowledge of the factors that impede take-home naloxone uptake, and provides new insights into how to address them.

Approach

Our focus on take-home naloxone administration and the experiences linked to it necessitates an approach that can effectively analyse the relationships between people, circumstances and technologies and explain how these relationships shape the drug effects that can emerge during administration events. To address these mutually implicated issues, we return to the conceptual orientation deployed in a previous case study of take-home naloxone administration (Farrugia et al. 2018). In that article we drew on Science and Technology Studies (STS), in particular the work of Bruno Latour, to work through the interpersonal relations, desires and concerns that shape take-home naloxone administration practices.

Our work contributes to a growing body of research using STS to analyse drug consumption practices (e.g. Fraser, Treloar, Gandra & Rance 2017) and technologies (e.g. Fraser 2013, Neale et al. 2018, Vitellone 2017). In both analyses, we work with Latour's (2002) notion of 'affordance', a concept he uses to emphasise and characterise the mutually constitutive relationship between humans and technology. Latour argues that social science research generally conceptualises technological objects in one of two ways: (1) as neutral instruments for accomplishing human will or (2) as instruments with fixed meanings that determine their possible and expected uses across different circumstances. Moving beyond these options, Latour builds on James Gibson's original formulation of the concept to argue that particular capacities and possibilities, or affordances, are produced in human-technology encounters (Fraser, 2013). Here, affordances are not predetermined options between which the 'user' of a technology may choose, but non-determining possibilities and capacities that take shape in encounters between human and technological objects. In this way, affordances inform human will, intentions and desires and are also themselves made anew in unpredictable ways in specific encounters between humans and technologies.

In this article, we suggest that take-home naloxone initiatives and products are technologies that afford a number of possibilities, including the ability to reverse overdose in different ways depending on the conditions of administration (see, Farrugia et al. 2018). For example, an overdosing individual may be revived as rapidly and forcefully as possible, with the associated possibility of withdrawal sensations, or more carefully and gradually, in ways that produce different effects and possibilities. As a technology in Latour's sense, take-home naloxone also

affords other practices and possibilities, including those that do not focus exclusively on revival (see, Farrugia et al. 2018), for example, pride, fear, expertise, community and so on (Olsen et al. 2015, Nelson et al. 2016, Sherman et al. 2008, Wagner et al. 2014).

As with STS more generally, Latour's (2002) concept of affordance has implications for how we approach the notion of the 'drug' itself, or more specifically, naloxone and its 'effects'. As has been argued by a number of scholars drawing on cognate conceptual traditions, our approach does not conceptualise drug effects as purely pharmacological (e.g. Duff 2014, Fraser & Moore 2011, Neale et al. 2018). Rather, they are emergent possibilities which, much like technological objects, take shape in specific encounters or events coproduced by human and non-human forces (Dilkes-Frayne 2014). Drawing on the work of feminist science scholar Karen Barad, herself very influential within STS, Fraser and Moore argue this point succinctly:

Some of what most of us consider the most predictable effects of drugs on people turn out to be very heavily dependent upon other factors and how all these factors encounter each other in specific situations. (2011: 5)

In this way, even as an opioid antagonist, naloxone does not inevitably cause discomfort or suffering for those administered it nor generate conflict. Naloxone can afford a number of possibilities if the right engagements arise and are enacted. Whether and how these emerge depends on the conditions of the administration event including, as we illustrate below, specific administration and other practices.

Method

This article draws on data collected as part of a larger qualitative research project on take-home naloxone in Australia³. The project is exploring the impediments to scaling up take-home naloxone provision, considered from the perspective of both professionals and opioid consumers. For this article we analysed data generated from 28 semi-structured in-depth interviews conducted with opioid consumers with experience of take-home naloxone across the Australian states of New South Wales (NSW) and Victoria (Vic). Our original dataset also included interviews with people who consumed opioids for chronic pain (n=18), however, their accounts have not been analysed in this article as none had experience with take-home naloxone.

³ 'Understanding the impediments to uptake and diffusion of take-home naloxone in Australia' (Fraser, Dwyer, Dietze, Neale, & Strang, 2017). Australian Research Council Discovery Project DP170101669

Prospective participants were screened to ensure variation between the types of opioids consumed, experiences of take-home naloxone, gender, age, ethnicity, and socio-economic background. All participants provided informed written consent. Interviews explored participants⁴ experiences of opioid consumption and overdose; awareness of, and experience with, take-home naloxone; access to take-home naloxone; experience with, and opinions of, overdose response training; and views on different take-home naloxone products (e.g. intranasal or intramuscular administration equipment). Interviews were conducted in private rooms within alcohol and other drug services, university offices, or public places such as libraries and cafes. They were digitally recorded and transcribed. Participants were reimbursed AUD\$50 in recognition of their time and contribution to the research.

All interview transcriptions were imported into QSR Nvivo 11 for data management and coding. The first author and another member of the research team coded all the data. Codes were identified using a combination of methods: some were derived from the literature on take-home naloxone, some from the stated aims of the project, and some during data collection. Coding was discussed in research team meetings, and double checked to ensure consistency. The present article is based on a code entitled 'Experiences administering take-home naloxone'. Data were analysed using the inductive constant comparison method (Seale, 1999). The first author conducted an initial analysis (which drew out the issue of conflict and pointed to different management techniques), presented the initial analysis to the research team for discussion, and subsequently conducted another round of analysis once the topic had been refined and clarified.

This project has approval from Curtin University's Human Research Ethics Committee (HRE2017-0168/2017).

Analysis

The analyses conducted for this article generated insights into three interconnected issues that inform understandings of how they shape take-home naloxone uptake. The first issue relates to concerns about, and experiences of, conflict that can emerge during take-home administration events. The second focuses on positive interactions, primarily expressions of appreciation, which can emerge during and after revival with take-home naloxone. And the third covers the specific techniques people responding to an overdose use in order to reduce the likelihood of conflict

⁴ To preserve anonymity, all participants' names in this article are pseudonyms.

and potentially increase positive responses. In bringing together these three issues, our analysis highlights how take-home naloxone effects are afforded differently in practice, and illuminates the different ways these affordances can be addressed in take-home naloxone programs to improve experiences of, reputation and uptake of this technology.

The possibility of conflict

Reflecting research on take-home naloxone conducted in Australia and internationally (Heavey et al. 2018, Neale & Strang 2015, McAuley, Munro & Taylor 2018, Olsen et al. 2015, Nelson et al. 2016, Sondhi et al. 2016, Sporer & Kral 2007, Worthington et al. 2006), participants in our study often spoke of the conflict that can arise when an opioid consumer has been revived with naloxone. This conflict could be quite minor, such as that reported by Julia (age 54, female, NSW) who describes her friend as being ‘a bit cranky’ after revival. Conflict can also be more serious, such as in Emma’s (age 56, female, NSW) account of reviving a young man:

He came to and he was like, ‘What?’ All the boys were going, ‘Oh look, man, man, man! You were blue’. He was saying, ‘No, I wasn’t’. Then I told him I’d given him Narcan⁵, and he goes, ‘You bitch!’ He was really angry with me because he wanted to buy more [heroin] but he didn’t have any money. He said I should get him some more because I was the one that gave him Narcan. I was so outraged, and not once did he even thank me for doing it.

Here Emma’s life-saving actions received no thanks. Instead, she was subject to abusive name-calling, even in the presence of others who defended her actions. Russell (age 50, male, Vic) articulated another example of conflict. Discussing an interaction between his friend and the woman he revived, Russell relayed that ‘she shot up, and she abused the living shit out of him. She called him the biggest asshole, and then ran off’.

Importantly, although revival events can be quite conflict-laden, and may even present danger to the person administering the take-home naloxone, almost all of the participants in our research were very willing to respond to opioid overdose with naloxone. This is apparent in Andrew’s (age 41, male, Vic) comments:

⁵ Naloxone is often referred to as Narcan®, a brand name it is sold under.

I've told them all, and any of my friends will tell you, I carry it [take-home naloxone] and I'm not scared of using it. Wake up and punch me in the mouth – at least you woke up. Yeah, you just cop it on the chin. Don't drop [overdose] when I'm around.

While violence was a concern for Andrew, he remained committed to carrying and administering take-home naloxone. For Andrew, it was the responsibility of others not to consume opioids in such a way as to require his intervention.

In summary, the opioid consumers we interviewed administered take-home naloxone knowing that their life-saving actions may not result in accolades or even thanks, and sometimes even quite the opposite. As the experiences recounted here suggest, however, they continued to carry and use take-home naloxone in order to save lives (also, McAuley, Munro & Taylor, 2018).

The potential for appreciation

The positive interactions afforded in events of take-home naloxone administration have received little attention in the research literature to date (for an exception see, Wagner et al. 2014). Opioid overdose can be a distressing event for the people present and those in their social networks. However, we found that take-home naloxone's capacity to reverse overdose also afforded positive interpersonal interactions. Some participants, such as Dylan (age 33, male, Vic), discussed feeling grateful to the person who administered the naloxone, while Lenny (age 40, male, Vic), whose experience is explored in more detail below, described people thanking him for his intervention. Another example is found in Zippy's (age 59, male, Vic) description of a text message he received from a young woman whom he had revived:

Well, she couldn't thank me enough. I got this text on my phone and it took me a bloody five minutes to read it, she was going, 'I'm really grateful that you looked after me and thank you for helping me out [and] you are really kind and I'm ever so grateful that you helped me out'.

Unlike the events described by Emma and Russell, these examples show revival with take-home naloxone affording appreciation. Of course, such appreciation need not only be expressed by the person who has been revived. International research has documented positive interactions, including praise, initiated by others present at overdose events, including emergency service personnel, and the affordance of feelings of pride (Wagner et al. 2014). In our research, the experiences peer administrators had with others varied. Some, such as Dylan, also reported being

‘interrogated’ unpleasantly by paramedics after successfully administering take-home naloxone. In contrast, Lenny said that paramedics had emphasised the life-saving implications of his actions.

Given the multiple affordances of – and the complex feelings entangled with being revived with and administering – naloxone, it is perhaps unsurprising that these experiences, and the interpersonal relations implicated in them, are not easily organised into clearly defined categories such as ‘positive’ or ‘negative’. Karen’s (age 33, female, Vic) reflections on how she felt after reviving a friend with take-home naloxone highlight this:

[I felt] good, because she was alive. I didn’t feel too bad that I done it: I felt bad but I didn’t. It was like a catch-22. I felt bad because I kicked her fix [removed the embodied sensations of heroin], [but] at the same time, I felt good because at least she was still around the next day to do what she wants to do. So it was the pros and cons. She can be shitty with you for two days, but then she realised, ‘[if she hadn’t done it] I wouldn’t be here two days later whingeing about it’. So you’ve got your choice, you can either whinge about it for 24 hours [and then] get over it, or cark it [die] and your kids will suffer ten times harder because they know their mother died off of drugs. So it’s yeah ... it’s a catch-22.

Here, Karen describes feeling good about using take-home naloxone to save a life, but she also felt conflicted. Aware that her actions had removed the pleasure afforded by heroin to her friend, Karen’s sense of having ‘done the right thing’ was entangled with other concerns, such as her friend’s annoyance. This is consistent with other research that has suggested that the decision to access and administer naloxone, even though life-saving, is not as simple as may first appear. Rather, various competing issues need to be assessed and accounted for, such as whether the person is genuinely overdosing rather than just enjoying the pleasures of acute intoxication; fear of administering naloxone incorrectly and causing harm; and – an issue that did not emerge strongly in our data – wanting to avoid drug-related situations and technologies (such as needles) in case they undermined a personal period of abstinence (see, e.g., Black et al. 2017, Richert 2015). Importantly, however, although Karen suggests that take-home naloxone administration is a ‘catch-22’ (a paradoxical situation in which each alternative action leads back to the other), the latter half of her account indicates that she does not find making the choice too difficult. Saving her friend’s life far outweighed the initial negative response she expected to incur. She was prepared for her friend to ‘whinge’ for days about it, but then ‘get over it’. In this encounter, although naloxone administration initially afforded conflict, this response was followed by

another. Here, temporality and other factors can be seen to remake the affordances of the technology in such a way that acceptance can emerge.

Related to our questions about how naloxone administration events might positively shape relationships, Latour (2002) also argues that human-technology encounters afford subjectivities. Indeed, for Karen, as the following extract highlights, the affordances of take-home naloxone did not take shape solely in her interactions with the friend she revived; they also related to her position as a legitimate human subject:

So many thoughts go through your head when you're doing it [administering naloxone], but at the same time, you wouldn't be human if you didn't try and fix them [person overdosing], you know what I mean? There is a lot of people who will just leave them and walk [away...] but yeah, I can't do that.

Take-home naloxone scholarship emphasises that successful administration can lead to increased self-esteem and feelings of heroism and pride (Sherman et al. 2008, Wagner et al. 2014). While our research reflects similar dynamics, we argue that the experiences explored here push this line of analysis further. Take-home naloxone is not simply 'empowering' (e.g. Faulkner-Gurstein 2017) but administering it and directly saving a life (something that very few people outside of those working in specific professions will ever do) has subjectification effects. Beyond increasing self-esteem, these experiences afford Karen the opportunity to be a 'good' person and to reassert herself as a legitimate human subject. This is likely to be particularly important for Karen who, as a person who injects opioids and lives without stable housing, will almost certainly routinely encounter stigma and discrimination that undermine her sense of self and humanity (Farrugia 2016, Fraser et al. 2017).

Strategies to reduce conflict

Titration the dose of naloxone

As emphasised throughout this article, the multiple affordances of take-home naloxone are emergent rather than essential to the drug, and thus they shape, and are shaped in, practice. As such, positive or negative interactions during and after take-home naloxone events can be made more or less likely, depending on specific events and practices. These afford, but do not determine, outcomes and experiences. Aware of the conflict that can be afforded in naloxone administration events, participants in our research used different techniques to afford other

outcomes. As noted but not explored in detail in other research (e.g. Lankenau et al. 2013), titrating the dose of naloxone is one such technique described in our data. For example, Lance (age 48, male, NSW) had used naloxone ampoules in the past and recognised that violence is a possibility after administration. He explained how he avoided conflict in a past overdose event by reducing the dose of naloxone he administered:

A lot of people, if you Narcan them, they sort of come up swinging [ready to punch you].

The times that you have done it, has that happened?

No. Because we didn't use the full quantity.

As Lance explains, although physical violence is a common expectation, he did not have such experiences because he actively employed an administration technique likely to avoid withdrawal sensations and related conflict. Karen, also using naloxone ampoules, described using a similar administration technique. In further remarks about the overdose event described in the previous section, Karen explained how she cautiously administered a second dose of naloxone:

She was starting to breathe a bit better, but she still wasn't waking up or alert, so I gave her another little jab, but not as much. I didn't want to overdo it, but didn't want to underdo it either.

Exactly how naloxone was titrated in these events is not always described in the data, but it is clear they involved varying degrees of precision. For example, here the specific dose was not described in formal measurements. Instead it is described as a 'little jab' or not using the 'full quantity' in an ampoule. However, our primary focus here is on how our participants describe a sensitivity to titrating naloxone in ways that reduce conflict. Exactly how this is done will vary, but may be informed by overdose response training, personal experiences of drug consumption and overdose, and past naloxone administration events. Drawing on this knowledge and their experiences, Lance and Karen actively contributed to the technological affordances of naloxone to create a more positive experience for recipients. This is an especially careful use of naloxone in that opening ampoules and assembling injection equipment for use in an emergency is not immediately amenable to titration yet Karen and Lance put the technology to work in ways that overcome these potential limitations. Their practices worked not only to save lives but also to reduce the conflict and violence additionally afforded during administration events.

Communication

Communication was a second strategy that our research participants deployed as a means of contributing to particular naloxone affordances. Our first example of this practice is drawn from our interview with Gabrielle (age 48, female, Vic). Gabrielle, who was very experienced in administering take-home naloxone, emphasised the importance of communication during revival. She offered the following account of using naloxone ampoules to administer two doses to a man who had overdosed in the apartment block where she lived:

Within 30 seconds of the second one [naloxone dose], he gave a cough and a bit of spluttering and things were good. He started coming around slightly aggressive, but his girlfriend was with us and I had already asked her to start talking to him from before he was coming to [regaining full consciousness]. [This way] at least he could hear voices when he was coming around and wouldn't be so confused, because it's the confusion that makes people agitated and angry.

Gabrielle's account emphasises the intimately social nature of overdose experiences and naloxone administration. For Gabrielle, the conflict that can emerge during revival does not stem solely from withdrawal sensations stimulated by naloxone, but inextricably from the confusion experienced by the person being revived. While the recipient of the naloxone may initially feel fearful, confused and agitated, hearing a familiar voice during revival can, according to Gabrielle, afford a less frightening experience. Calm revival may be much less likely where revival occurs with unfamiliar people in an unfamiliar place, such as may occur during revival by paramedics.

Lenny, whose experience was briefly mentioned in the second section of our analysis, offers an account similar to Gabrielle's. Discussing a recent event in which he administered naloxone to a man who had consumed opioids in his house, Lenny also points to the importance of communication:

That was one of the calmest people I've ever woken up. They knew where they were once they saw my head and were like, 'What happened?' Because I was, like, freaking out, so [he asked], like, 'What happened, what happened?' But it was all easy, like smooth, like there was no coppers [police], there was no ambulance or anything like that. I just had two other people behind me, and they're just telling him what happened, like exactly how he dropped [overdosed] and then he sort of looked over to me and said 'thanks' and I was like, 'hopefully you'd have done the same thing for me' and he goes, 'yeah'. He didn't know how to respond, sort of.

As in Gabrielle's account, the overdose Lenny responded to occurred in a group. He describes being very anxious or 'freaking out', but was assisted by others who were able to explain what had happened to the recipient. This communication within the group helped make this otherwise very stressful event relatively calm. By offering an explanation and reassurance in familiar voices, the people present helped avoid the kinds of conflict described in the first section of this article. These calm affordances seem especially important in a context in which take-home naloxone administration events are often associated with panic and confusion (e.g. Holloway, Hills & May 2018, McAuley, Munro & Taylor, 2018).

Of course, as suggested by Emma's description in the section on conflict, communication strategies do not guarantee calm revival events. It is important to note that the lack of intervention from emergency services was one of the reasons Lenny described this administration event as calm. Other research has documented how concerns about emergency services attendance can discourage remaining present at an overdose; an issue that may have been especially important here as the overdose occurred at Lenny's home (McLean 2016). This is not to deny the benefits that can be afforded by the presence of paramedics or the transfer of people who have overdosed to hospital. However, it reminds us that naloxone experiences and outcomes take shape in relation to many forces, including who else is present and how they interact with those receiving naloxone. Both Gabrielle and Lenny's accounts highlight the potential communication strategies have for affording positive take-home naloxone administration events.

Conclusions

Take-home naloxone has life-saving affordances. In keeping with the notion of affordance, which encourages us to think about the complexity of causality and of the component contributors to any outcome, it can simultaneously shock, withdraw pleasure, and be experienced as punitive (Neale & Strang, 2015), and, in doing so, its life-saving affordances can diminish. As our STS-inspired approach emphasises, the effects of this technology are not fixed or guaranteed. Rather, what take-home naloxone can do, and does, takes shape in practice during specific administration events, situated in particular social contexts and attended by people with certain relationships, knowledge and expertise. These practices and events more or less readily afford withdrawal sensations, confusion, conflict, and associated negative interactions. These same practices and events also more or less readily afford positive interactions, such as

appreciation and shared understandings of mutual responsibility and care. An important aspect of our analysis is the recognition that peer administrators actively engage in these affordances in an effort to reduce the likelihood of negative outcomes. Our data highlight the importance of titration and communication, although, given the increasingly varied contexts in which take-home naloxone is being taken up, there are likely to be further practices we have not identified. More research in this area is clearly needed, but in the meantime we will conclude this analysis by drawing out two implications from our analyses.

The first implication to highlight is that while our theoretical approach focuses on the complexity of events and the many elements that act to produce them, we would not wish to draw attention away from the fact that people who administer this drug directly save lives. Take-home naloxone effects are dependent upon (while not wholly determined by) the actions of individuals. Aside from members of a few highly specialised professions, such as paramedics and emergency care doctors (who enjoy much higher material and social capital and community esteem than peer administrators), very few people ever directly save the life of another person. Many of the consumers who participated in our study had saved lives multiple times and took it for granted that they would do so again. This achievement is all the more impressive in that these actions are often met not only without appreciation but with interpersonal conflict. The peer administrator may also find her- or himself linked legally to a fatal drug overdose, wrongly accused of contributing to a death, or exposed to blood and other bodily fluids (Holloway, Hills & May 2018, McAuley, Munro & Taylor 2018). Peer administrators are saving lives without the least expectation of receiving bravery awards or any other form of public acknowledgement or commendation, yet research indicates (Dwyer, Olsen, et al. 2018) that they access, carry and administer take-home naloxone in slowly increasing numbers. This aspect of take-home naloxone programs needs more attention. Perhaps emphasising the significant life-saving role that people who access take-home naloxone play within public health may increase its appeal (Faulkner-Gurstein 2017), but equally importantly, it could be highlighted more actively in urgently-needed efforts to tackle the stigma and discrimination faced by people who consume opioids.

The second point to be made in concluding this article is that overdose response training programs could benefit by drawing on the affordances explored in our analysis. At present, common understandings of overdose reversal and naloxone administration often centre on the adverse and painful effects of immediate withdrawal. Yet, the accounts in this article illustrate that withdrawal and associated conflict are but two affordances of take-home naloxone, and can

be greatly mediated by local relations and forces, such as careful titration, assurances, communication and care. Alongside providing information and training on recognising overdoses, calling an ambulance, resuscitation, the recovery position, take-home naloxone administration and after care, response training programs that do not already emphasise that painful withdrawal sensations are not an essential or unavoidable affordance of naloxone administration could begin to do so. Training that does not already introduce people to strategies that make negative interactions less likely; for example, by sensitising them to the affordances of titration and – just as importantly – gentle and reassuring communication for actively mediating the effects of the drug, could begin to emphasise these possibilities. Of course, overdose emergencies are complex and will not always occur in situations that afford considered titration and careful communication. However, peer administrators are already employing strategies that overcome some of the limitations of these technologies, and associated possibilities may become more likely if they are routinely embedded and practised in training programs. Indeed, health professionals and emergency services personnel responding to opioid overdoses could also use similar strategies such as careful communication, thereby affording more positive interactions between people who overdose and emergency service personnel. Ultimately, this may not only improve individual experiences but reduce the negative reputation of naloxone amongst opioid consumers and thus possibly increase uptake (Strang et al. 2018). Together these strategies suggest that administration practices that reduce the likelihood of conflict are both possible and preferable.

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