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Commentary

Route transition interventions: Potential public health gains from reducing or preventing injecting

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ABSTRACT

Multiple factors are implicated in the diffusion of injecting drug use (IDU), including individual and demographic characteristics, drug markets, economics, social networks and political and cultural environments. However, studies show that individual transitions away from injecting are possible, and that a recent diffusion of non-injecting routes of administration (NIROA) has occurred in several countries. Injecting is more risk-laden than other routes of drug administration, yet relatively little attention has been paid to reducing or preventing injecting drug use by promoting NIROA. This commentary reviews the case for, and examples of, 'route transition interventions' which seek to do this. These include: prescribing oral substitutes; providing non-injecting equipment; providing safer smoking facilities; and training individuals to prevent transitions to injecting, promote NIROA, or prevent the initiation of new injectors. These initiatives have the potential—as yet largely unrealised—to offer public health gains and empower people to control and manage their drug use. Further research is needed to secure commitments at all levels to support this approach.

Injecting drug use (IDU) causes or exacerbates more drug-related harm than other routes of drug administration (Strang et al., 1998; Grund, 1993). The practice is widely held to have begun in North America in the late nineteenth century, with intravenous drug use becoming prevalent across the USA by the 1930s (Stimson, 1993). From there it spread to other developed countries in the middle of the twentieth century and then, most recently, to the developing world (Stimson, 1993). By 1992, IDU was reported in 80 countries (Stimson, 1993), rising to 121 countries by 1996 (Stimson, Adelekan, & Rhodes, 1996), 130 countries by 2004 (Aceijas, Stimson, Hickman, & Rhodes, 2004), and 158 countries by 2008 (Cook & Kanaef, 2008). As a result of this rapid diffusion, injecting is now a truly global problem.

Drug injecting is a complex and well researched phenomenon that has been linked to numerous factors—including individual characteristics, perceived drug effects, economics, social networks and broader political and cultural influences. Drug markets and drug control systems have a key role too, as drug producer and transit countries often become consumer countries. Policies which impact upon drug availability, purity and cost can also inadvertently make injectable drugs (or forms of drugs) more available or attractive as they are more cost-efficient. Crucially, however, some of these factors may be amenable to intervention and change. Since the late 1980s and early 1990s, attention has been paid to the possibility of promoting alternative, safer methods of drug use. This commentary builds upon, and updates, previous reviews (Hunt, Preston, & Stillwell, 2005; Southwell, 2005) to describe some of the interventions that can be implemented.

Transitions towards non-injecting drug use

Evidence shows that, in certain circumstances, a diffusion of non-injecting routes of administration (NIROA) can facilitate an overall reduction in rates of injecting. In Spain, a series of multi-city studies showed that, amongst a cohort of 909 heroin users, levels of NIROA increased over time, diffusing from the South-west of the country (where smokable brown heroin dominated) to the North-east (where injectable white heroin dominated) (Barrio, De La Fuente, Royuela, Díaz, & Rodríguez-Artalejo, 1998; De La Fuente, Barrio, Royuela, & Bravo, 1997). In the Netherlands, large cohort studies recorded falls in injecting as the dominant route of administration, from 66% of drug users in the mid-1980s to 36% in the mid-1990s. It is reasonable to assume that this was influenced by a "nationwide campaign" to promote NIROA at the time, demonstrating that "the health care system can be of assistance with methods to maintain non-injecting behaviour" (Van Ameijden & Coutinho, 1998, 2001). In New York, the percentage of people entering drug treatment who were intranasal heroin users reportedly increased from 25% in 1988 to 60% in 1999, and "has remained consistently high since" (Neaigus, Gyarmathy, Miller, Frajzyngier,

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Friedman, & Des Jarlais, 2006), helped by high local heroin purity. Similar trends in favour of NIROA have been recorded in Japan (Matsumoto et al., 2002), the UK (Robertson, Ronald, Raab, Ross, & Parpia, 1994; Strang, Griffiths, Powis, & Gossop, 1992), Brazil, and Myanmar (Stimson & Choopanya, 1998).

In each of these cases, older generations of people who inject drugs may have ceased their drug use or died, and new initiates into drug use may be avoiding injecting. However, it is also reasonable to assume that numerous individual 'route transitions' will have occurred—broadly defined as "a temporary or permanent transition in the way that a drug is administered" (Hunt et al., 2005). Such transitions are dynamic, gradual, complex processes which may take several attempts (Witteveen, 2008). Individual route transitions towards injecting are by far the most commonly reported, but transitions away from IDU have been documented in studies from the Netherlands (Witteveen, 2008), Spain (Bravo et al., 2003), the UK (Gossop, Stewart, Marsden, Kidd, & Strang, 2004; Strang, Griffiths, Powis, Abbey, & Gossop, 1997), and the USA (Des Jarlais et al., 2007).

There are numerous interacting factors which may support transitions away from injecting. For example, individual receptiveness to route transitions "is likely to be informed by two distinct but related processes: (1) the injector's attachment to injecting drug use may be reducing [...]; (2) the injector may be experiencing a desire to change their engagement with drug taking" (Southwell, 2005). Sibthorpe and Lear (1994) interviewed 855 people who use drugs, and documented that 21% had stopped injecting at least once—with 313 different reasons provided. These included attitudes towards life, relationships, incarceration, peer influences, employment and drug availability (although few cited drug treatment or health as a reason, and only one mentioned HIV). Qualitative research from the Netherlands documented 14 different methods used by individuals to facilitate their route transitions, including the use of methadone and other medications and the adoption of NIROA (Witteveen, 2008). Many of these factors and methods lend themselves to intervention, and expert commentary has long declared the "global urgency" of discouraging or preventing injecting (Stimson & Choopanya, 1998). However, public health interventions have largely focused on safer injecting over the past few decades.

Route transition interventions

Several 'route transition interventions' (RTIs) have been developed to relay the message that NIROA are far from 'safe', but are 'safer' than injecting. While smoking is associated with respiratory problems and clustered outbreaks of Spongiform Leukoencephalopathy (Strang et al., 1998)—and is also not necessarily protective from blood-borne viruses (Scheinmann et al., 2007) or overdoses (Darke & Ross, 2000)—injecting is closely associated with a vast array of harms including HIV, overdose, hepatitis, vein damage, thrombosis, respiratory complications, arterial damage, bacterial infections, gangrene, and many more. Therefore, the widespread adoption of smoking instead of injecting could offer net gains for public health.

The provision of oral substitute treatments is the most common and "almost certainly" the most effective RTI (Hunt et al., 2005). Although the primary focus of these interventions is often treatment (for instance, as a step towards abstinence), they also often encourage route transitions. For example, in the context of tobacco, many of the innumerable harms associated with use are actually caused by the common route of administration—cigarettes—as opposed to nicotine per se (McNeill & Bridge, 2007; Seanor, Alcabes, & Drucker, 2007). Oral nicotine replacement therapies and non-smokable tobacco products provide harm reduction options for continuing nicotine users to support transitions towards safer routes (Gartner, Hall, & Chapman, 2007). Similarly, for opiate users, a recent systematic review (Palmateer et al., 2009) concluded that "There is sufficient review-level evidence to support the effectiveness of [opioid substitution treatment] in reducing injecting risk behaviour by reducing the frequency of injection". For instance, a study of 488 participants from the Amsterdam Cohort Study in the Netherlands showed that "Steadily increasing individual methadone dosages may be useful in supporting IDUs in the process of giving up injecting" (Langendam, Van Brussel, Coutinho, & Van Ameijden, 2000). Methadone and other similar substitute treatments may therefore be viewed as effective route transition interventions.

In the absence of substitute prescriptions (for example, for people who use stimulant drugs), another common intervention is to provide equipment for NIROA—in much the same way that needle and syringe programmes provide sterile tools for safer injecting. In Canada, for example, some drug services provide 'safer crack use kits' which typically include a glass pipe, mouthpieces and lip balm. In Ottawa, a within-group pre- and post-intervention evaluation by Leonard et al. (2008) showed that supplying these products was effective in engaging clients, reducing injecting and promoting NIROA, but the study had no control group and the Ottawa intervention was discontinued. In Australia, the Netherlands, Spain and the UK, some needle and syringe programmes provide sheets of aluminium foil for people who want to smoke or 'chase' their drugs. There is limited research on this intervention, but one UK evaluation examined routine data from a local service and reported increased service uptake and widespread use of the product, confirming "the feasibility of providing foil as part of an intervention to promote a 'reverse transition' from injecting" (Pizzey & Hunt, 2008). In several European countries, 'safer smoking facilities' (SSFs) also exist—often alongside safer injection facilities (SIFs). The Netherlands, for example, provide SSFs alongside all of its 22 of SIFs (Shannon et al., 2006). Similar to the supply of NIROA paraphernalia, the provision of this non-injecting option alongside services for people who inject drugs may help promote transitions away from IDU.

There have also been a number of training programmes developed to prevent transitions to injecting, such as the 'Sniffer' programme for intranasal heroin users in New York. Based on social learning principles, this intervention challenged myths about IDU, reinforced motives for avoiding injecting, and developed coping skills. A randomised, controlled evaluation with 104 participants found that those in the intervention group were significantly less likely to have injected when followed up an average of 8.9 months after the training (Des Jarlais, Casriel, Friedman, & Rosenblum, 1992). Similar preventive programmes have been created for heroin and crack cocaine smokers, but without any formal evaluations or experimental trials taking place.

In the UK, a 'Break the Cycle' project was developed based on evidence that first injections were often modelled on, in the company of, or even delivered by experienced injectors. The intervention focussed on people who inject drugs to discourage them from initiating (or injecting in front of) 'new recruits'. A pilot evaluation ($N = 86$) showed promising results, albeit based on self-reported attitudinal changes rather than measuring transitions directly (Hunt, Stillwell, Taylor, & Griffiths, 1998). The intervention has since been delivered across the UK and also in Asia and Eastern Europe (AIDSMark, 2007). It was also the basis for a 'Prevention of Transition to Injecting' (POTTI) project in Australia which included the development of a short film depicting a typical initiation request (Brener, Spooner, & Treloar, 2009; Van Beek, 2009).

Also in Australia, Dolan et al. (2004) developed a five-session programme for people who inject drugs to promote transitions to NIROA. The course included elements of behavioural self-