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Saying goodbye to high-dead-space syringes

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“Moby Dick! Thar' she blows!” [as blood flows into the syringe]. “Hit the road Jack and don't come back...[as the blood and speedball solution is partially injected] come back...come back...[as blood is redrawn in to the syringe].”

Quote from Bourgois (1998)

The respondent above quotes the classic rhythm and blues tune, “Hit the Road Jack” made popular by Ray Charles. He is celebrating his success in finding a good vein to inject into and the ecstatic anticipation of the rush of a mixture of heroin and cocaine, also known as a speedball, hitting his cardiovascular and nervous systems. “Booting and jacking” is a culturally mediated ritual in which an injection drug user (IDU) repeatedly draws blood from their vein into the drug filled syringe (booting) and partially flushes the mixture back into their vein (jacking). This has been described in ethnographic research as reportedly boosting the intensity of the drug rush, usually from cocaine or speedball injections (Bourgois and Bruneau, 2000), as well as being a symbolic communal celebration (Bourgois, 1998), but at the cost of elevating HIV transmission risk (Koester, 1998). This practice likely evolved as a response to the fact that residual drug solution mixed with blood is trapped in the “dead space” of a high volume syringe and will not come out unless flushed out. It's a tiny amount, but IDUs don't typically like to waste any drug.

Zule and colleagues have extensively documented the HIV transmission risk of using high dead-space syringes (HDSS) and make a convincing case for globally transitioning IDUs from using HDSS to low dead-space syringes (LDSS) (Zule et al., in this issue). It is easy to agree with their findings and compelling arguments. The questions which remain include: how do we get there? What are the current reasons why IDU use HDSS across various settings? And what are the structural barriers to this transition?

In some parts of the world IDUs can only get HDSS and in some situations IDUs prefer HDSS (or high volume syringes which tend to be HDSS). The reasons for preferring of HDSS (according to Zule et al., in this issue) are use of high volume drugs, e.g., some pharmaceuticals and home made preparations, and more viscous drug solutions. The main reason as I have seen it is loss of peripheral veins, particularly due to injection of heroin and/or cocaine. Venous sclerosis leads to a struggle: a period of time in which the heroin user, fighting dependency, withdrawal and the increasingly elusive rush struggles to make a “direct deposit” – a most desired intravenous injection. After this struggle, as the veins

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continue to collapse, comes the choice: inject into muscles (“muscling”), or into subcutaneous tissue (“skin-popping”), or try to hit a large vein e.g., a femoral (groin) or jugular (neck) vein. Different types of heroin lead to different medical consequences (Ciccarone, 2009), including HIV (Ciccarone and Bourgois, 2003) and bacterial infections (Ciccarone et al., 2001; Passaro et al., 1998) and one of the main suspected causal routes is through differential loss of peripheral venous access. Injecting into muscles is done better with a longer needle. Injecting into the femoral vein almost mandates use of a high-volume/HDSS. Following our inquiry into why IDUs use HDSS, we uncover other questions: why the differential loss of veins? How do IDUs make their injection choices subsequently?

For these reasons and others, high volume syringes with low gauge (larger bore) needles will continue to be desired. For this Zule et al. propose a solution: high volume syringes with low dead-space detachable needles (Zule et al., in this issue). These are not without problems: they may cost more, while harm reduction suffers inadequate funding worldwide, and they still have greater dead space than 1 ml insulin syringes: a 5 ml high volume syringe with low dead space needle still has 14 µl of dead space, approximately 7 times that of the 1 ml insulin syringe. Clearly this is still a solution, albeit one in search of funding and global implementation scale-up.

Consumer choice is a big unknown. IDUs who “muscle” or inject in large central veins may be used to injecting with long 1½” thin (25 gauge) needles; will they accept thicker (and slightly more painful) 21 gauge low dead-space needles that are currently available? Likewise, peripheral vein injectors have the technological luxury of using 5/8” super fine 29 or 30 gauge needles: the trade-off of going to thicker 25 gauge needles may be seen as too great. US users are even fussier as they discuss the stickiness of the plungers of various brands and as vein access gets more difficult users get more picky and brand loyal.

Zule et al. should be applauded for their thorough structural interventional argument. The use of HDSS may be a choice, or may reflect structural impositions or cultural praxis. We need to understand why IDUs use HDSS in order to discourage their use. Just as behavioral interventions without attention to structural barriers are doomed to failure, structural interventions that fail to take into account culturally mediated behaviors will likely end up on the negative side of the meta-analysis. Clinically oriented ethnographic research can provide rich contextual data as well as social plausibility to aid epidemiology in causal explanations, as well as in tailoring interventions (Bourgois et al., 2006).

In the vignette that started this essay the participant is saying goodbye to the drug and blood mixture exiting the syringe and entering his body. Playing with the metaphor, we gesture goodbye to high dead space syringes, and say, “Hit the road...”

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