



Sterifilt® as an additional harm reduction tool for injecting drug users (IDUs): fewer particles for fewer complications

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Background (1)

- Besides injecting illicit drugs (heroin, cocaine, amphetamines), it is known that drug users divert certain pharmaceutical preparations.
- However, these diverted products are intended for oral and not intravenous administration (barbiturates, methadone, pentazocine).
- The major concern lies with fillers which are necessary for oral administration such as talc, cornstarch, cellulose and crospovidone.

Background (2)

- Tablets are crushed or capsules opened, the resulting powder is mixed with water and the suspension is injected, sometimes after being heated.
- Most fillers are insoluble: their particles are introduced into the vascular circulation and then move into the pulmonary system (talc, cornstarch).
- In addition to local complications due to infections and vascular problems at the site of injection, one of the serious consequences is lung emboli, severe and irreversible emphysema, pulmonary fibrosis, and high pulmonary blood pressure.

Background (3)

- To reduce these harmful consequences, drug users have been encouraged to use filters, most often a piece of cigarette filter or a piece of cotton wool.
- Sterifilt® has been invented to substitute these makeshift filters which may be unsafe.
- It may constitute an additional tool for harm reduction (including HCV risk reduction) paraphernalia, as it filters virtually no active drug and has single use properties.
- Sterifilt® is distributed in the majority of the French harm reduction programs, as well as some programs in other countries.

Background (4)

- Although easy access to Subutex® (buprenorphine) (BUP) has led to a reduction in HIV prevalence among IDUs and in deaths from overdose, its sublingual tablet formulation, containing starch, is known to be diverted by injection.
- Generic types of buprenorphine in sublingual tablet form are diverted to the same extent as the brand drug but the risk induced by their intravenous use is potentially higher, due to the presence, besides starch, of talc among tablet fillers.

Background

Objectives

To assess the **effectiveness of Sterifilt®** (filter pore size=10µm) versus no filtration, in terms of particle reduction of solutions of dissolved generic buprenorphine tablets, Ritaline tablets and cornstarch.

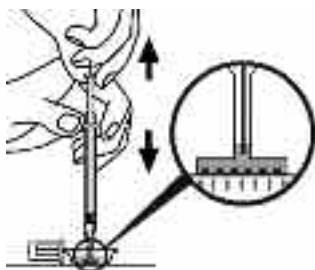
Methods (1)

Each solution was prepared with harm reduction paraphernalia (as drug users may do) using the following products :

- 30,5mg of cornstarch
 - 1 tablet of buprenorphine Mylan® 8mg
 - 1 tablet of Ritaline
- Dissolved in 0,7ml of pure water in a stericup (sample 1)

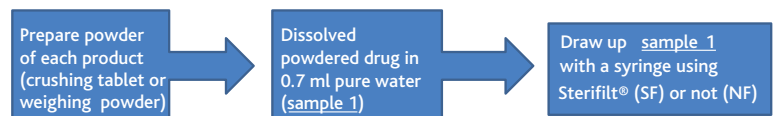
Methods (2)

- With a 1cc syringe (approximately 0,7ml), we drew up a sample of each solution using Sterifilt® (amidSF, ritaSF or bupSF) or without filtration (amidNF, ritaNF or bupNF)
- We added 10ml of pure water to 0.5ml of sample 1 (sample 2)
- We drew up a sample of 0.1ml of this latter solution and added 100ml of pure water (sample 3)
- We counted the number of particles (x) in a sample of 3ml of the 100ml solution of sample 3 using a particle counter (Liquid Syringe Sampler 3000A/HIAC/ROYCO)
- We calculated the number of particles (p) contained in the sample 1 : $p=x/0.024$

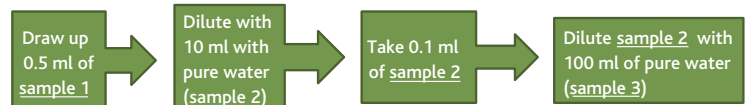


Methods (3)

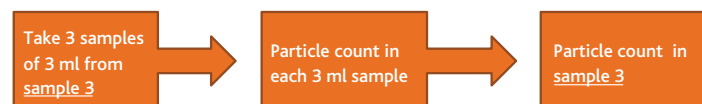
1. Dissolution



2. Dilution

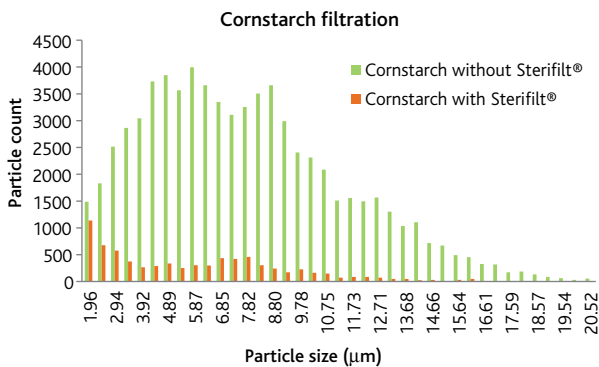


3. Particle count

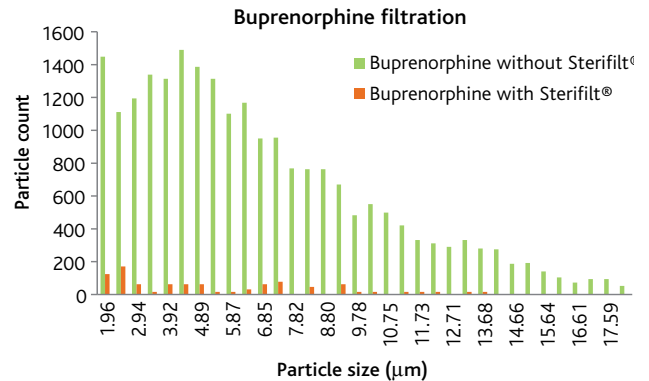


Methods

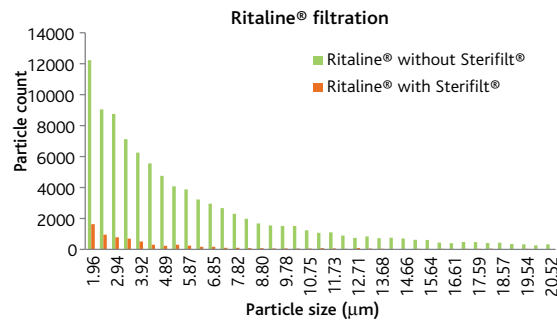
Results (1)

Figure 1. Number of particles according to particle size (μm) without filtration and after filtration with Sterifilt®

Results (2)

Figure 2. Number of particles according to particle size (μm) without filtration and after filtration with Sterifilt®

Results (3)

Figure 3. Number of particles according to particle size (μm) without filtration and after filtration with Sterifilt®

Conclusion (1)

- Preliminary results indicate that Sterifilt® significantly reduces the amount and size of those particles responsible for major harm to drug users.
- Although today there is an increase in drug use by sniffing, intravenous drug use, especially in drug opioid dependent individuals, is very prevalent.
- Harm reduction interventions are necessary to prevent pulmonary as well as venous and local complications.
- Promoting Sterifilt® as a useful and effective element of harm reduction paraphernalia should be encouraged.

Conclusion (2)

- Deaths from pulmonary complications due to injecting practices have been documented in literature only within case reports (since 1950).
- Further studies on fillers' effects and potential diversion must be implemented to help prevent such risks (drug safety assessment)
- Implementation of Sterifilt® in HR programs should be progressive and accompanied by training of drug workers and drug users.

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All drug users who shared their own experiences of injecting practices, the CEREGE which permitted us to carry out our experiments