Predicting harms posed by the illicit injection of pharmaceutical preparations in New Zealand

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Introduction

- The administration of a drug by injection poses risks of:
  - overdose
  - accelerated venous damage
  - bacterial and fungal infections
  - harm from contaminated drug material
- The injection of solutions produced by extraction of a drug from oral or transdermal pharmaceutical preparations poses additional risks: these formulations contain other ingredients (excipients) alongside the active ingredient
- Excipients aid the manufacturing process, help in the identification of the medicine or its strength, allow delivery of the drug via the intended route or alter the release characteristics (such as in slow release tablets).
- The injection of some of these excipients results in complications.
- The isolated nature of New Zealand means that drug users frequently resort to injecting diverted pharmaceutical products such as morphine, methadone and methylphenidate (Harris, 2013).

Aim

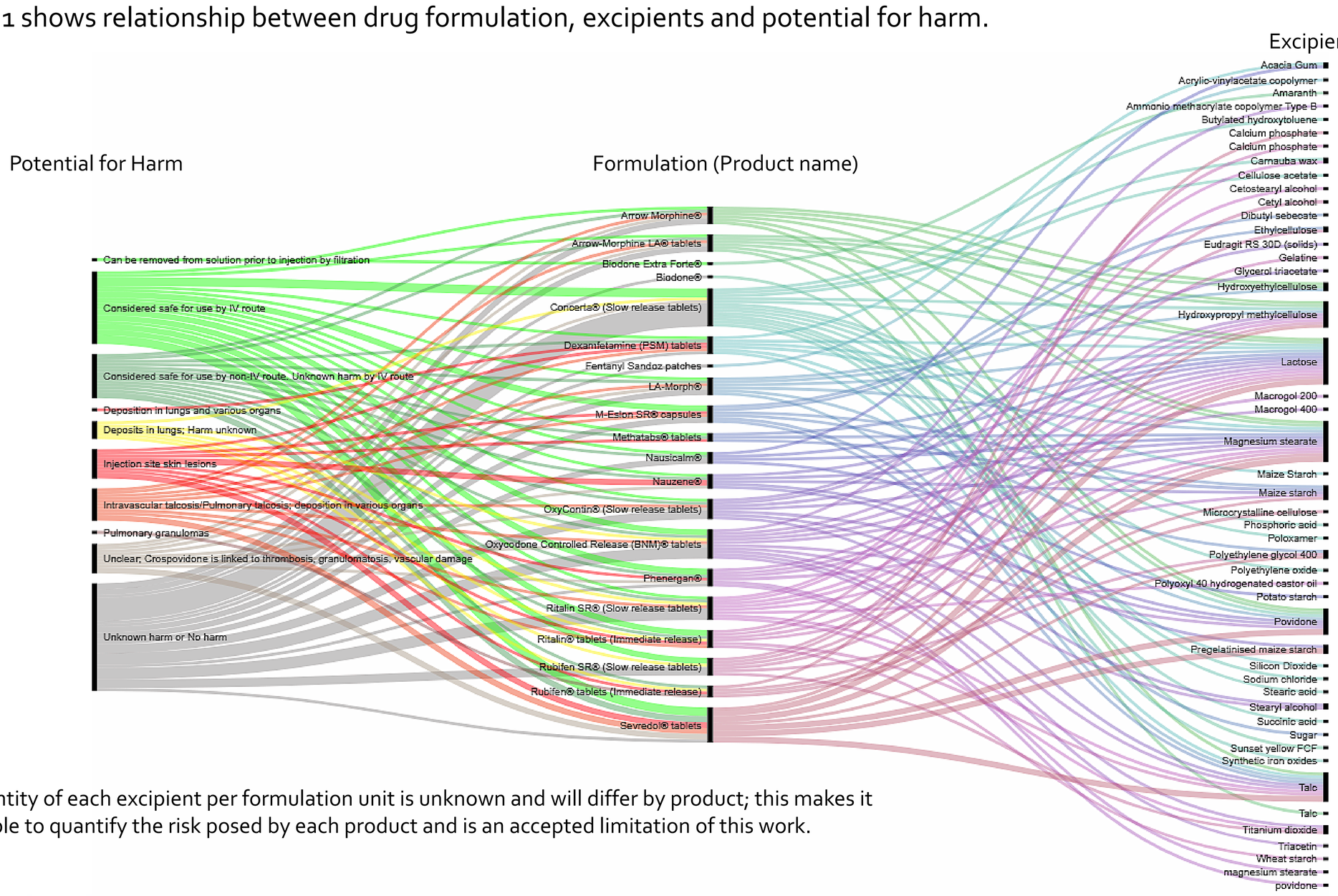
To characterise injection-related harms of injecting pharmaceutical products and to identify the excipients that cause these harms.

Design and Methods

1. Narrative literature review of harms from injecting pharmaceutical drugs to identify excipients responsible for harm
2. Pharmaceutical drugs available in New Zealand liable to be injected were identified
3. Formulations (by product name) of these drugs identified using the New Zealand Formulary
4. Excipients identified through the Medsafe datasheet for each product
5. Literature from review (including McLean et al. 2017) were used to identify potential harms of injecting; Niazi, 2009, was used to establish the safety of injecting excipients.

Results

Figure 1 shows relationship between drug formulation, excipients and potential for harm.



The quantity of each excipient per formulation unit is unknown and will differ by product; this makes it impossible to quantify the risk posed by each product and is an accepted limitation of this work.

Conclusions

- Whilst injectors prepare drugs using methods such as heating then cooling, or filtration to remove some of these excipients, inevitably some persist and are injected; these result in the documented harms.
- Attempts to make formulations 'tamper-proof' have been used to try and make it more difficult to inject some drugs in some countries. Experience has demonstrated that the use of these products may be a cause of further harm while not reducing misuse.
- Further work to quantify the presence of these materials in prepared injections in order to predict the risks they pose is recommended.

References:
Harris M. (2013) The 'do-it-yourself' New Zealand injecting scene: implications for harm reduction. Int J Drug Policy. Jul;24(4):281-3.
Niazi, Sarfaraz K. (2009) Handbook of Pharmaceutical Manufacturing Formulations Sterile Products. Informa Healthcare USA, Inc. New York.
McLean S et al (2016) Injection of Pharmaceuticals Designed for Oral Use: Harms Experienced and Effective Harm Reduction Through Filtration. In: Nielsen S., Bruno R., Schenk S. (eds) Non-medical and illicit use of psychoactive drugs. Current Topics in Behavioral Neurosciences, vol 34. Springer, Cham

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