Reviewer's report

Title: Risk of Contamination of Nasal Sprays in Otolaryngology Practice

Version: 1 Date: 23 August 2006

Reviewer: Tim R Wolfe

Reviewer's report:

General:
The question posed by these authors - i.e. is there a risk of patient cross contamination from reusable topical anesthetic/vasoconstrictor applicators is an important question that has been discussed by past authors, but continues to be controversial due to underpowered studies or debatable conclusions in past studies. In addition, this is the first study I have seen prospectively addressing the question of cross-contamination risk from positive displacement (pump) mechanism atomizers (in contrast to compressed air Venturi atomizers). For this reason, this study is important as it adds additional information to the literature on the subject. It is well designed and easy to reproduce by others, and the discussion and conclusions are supported by the data.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Materials:
Please clarify these sentences - "The tip of the pump was streaked, and 0.01 mL of the fluid in the pump was inoculated on the agar surfaces. The inside of the pump was rinsed with 1 ml sterile distilled water..." Was the pump or the bottle cultured in this last sentence? From the study design it sounds like the bottle was cultured, but from this sentence and the prior it sounds like the inside of the pump was cultured twice.

Results:
3rd sentence - reads "from 66 sprays" should read "from 66 spray devices"

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Materials:
Please clarify these sentences - "The tip of the pump was streaked, and 0.01 mL of the fluid in the pump was inoculated on the agar surfaces. The inside of the pump was rinsed with 1 ml sterile distilled water..." Was the pump or the bottle cultured in this last sentence? From the study design it sounds like the bottle was cultured, but from this sentence and the prior it sounds like the inside of the pump was cultured twice.

Results:
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Discretionary Revisions (which the author can choose to ignore)

Abstract:
I think the Abstract could be slightly more specific and include a conclusion so the readers have a better understanding of the study and the conclusions of the authors. I would make the following changes to clarify the data:
Sentence 1: Reusable nasal spray devices are frequently used in otolaryngology examination, and there is increasing concern about the cross contamination risk of these devices.
Sentence 2: Rather than use "the safety of these devices" I would state "the safety of a positive displacement, or pump, type atomizer"
Sentence 3: Rather than "Nasal sprays were used..." I would say "Resuable nasal spray bottle, pump and tips were used.."
I would add a conclusion to the abstract similar to the conclusion of the document discussion. Something like "Given these findings we conclude that additional precautions (such as autoclave between uses, disposable tips, or disposable devices) are warranted to avoid patient cross contamination from a re-usable nasal spray devices.

Discussion:
When discussing the Venturi effect and how it can create a "suck back" it might be appropriate to add a sentence at the end of the paragraph describing how the fluid column sucked up by the Venturi effect collapses back into the bottle once the airflow ceases, resulting in a transient suction at the tip - that may aspirate material into the device.

When discussing the Visosky article, you should consider contrasting their underpowered design (12 atomizers used on 40 patients in a two week time period with no positive cultures hardly provides stastical
proof of lack of contamination risk). You might also consider adding discussion of the Dubin article - one with similar size and design to yours, but using a Venturi atomizer - and contrasting their conclusions to yours. You found a far smaller rate of contamination (2%) but conclude it is a problem, yet they found a 66% contamination rate in lidocaine bottles, but concluded that this was of questionable clinical significance. I think this contrast is the point of the debate and the controversy and exposes the whole point of your article. You clearly point out that it is a matter of discussion whether statistics or "numbers to treat" is the issue and are one of the few to conclude that it is unacceptable for even one MRSA (or other non-cultured organism) to be transmitted. This opinion and discussion could be expanded somewhat.

You found only contamination of your bottle tip, but conclude the entire device needs to be disposed. What not conclude that either the entire bottle or simply the tip needs to be disposed?

**What next?:** Accept after minor essential revisions

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No

**Declaration of competing interests:**

I am a founder and hold stocks and shares and act as medical director for a company that manufactures reusable topical anesthetic atomizers (Wolfe Tory Medical, Inc). None of my devices are discussed in this manuscript.