

# Does this pass the sniff test?



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## It may sound strange but could inhaling isopropyl alcohol ease queasiness?

### CLINICAL SCENARIO

IN a discussion of GP tips and tricks on an online GP discussion board, several members enthusiastically supported the use of nasal inhalation of 'alco-wipes' (sterile isopropyl alcohol pads) for the relief of acute nausea. If effective, this seems a novel and practical intervention in general practice. So what is the evidence – especially for conditions presenting with acute nausea and vomiting commonly seen in general practice, for example acute gastroenteritis?

### CLINICAL QUESTION

What is the effectiveness of nasal inhalation of isopropyl alcohol as a treatment for acute nausea in otherwise well, ambulatory adults?

### WHAT DOES THE RESEARCH EVIDENCE SAY?

#### Step 1: the Cochrane Library

There is a Cochrane systematic review on aromatherapy for the treatment of post-operative nausea and vomiting, which includes studies of isopropyl alcohol that found it does not seem effective in this context.<sup>1</sup> However, it could be argued that therapies for postoperative nausea and vomiting can't be generalised to community GP settings.

#### Step 2: TripDatabase

I conducted a search using the TripDatabase PICO search tool: Participant: nausea, Intervention: isopropyl alcohol, Comparator: placebo, Outcomes: blank. Along with a rather useful evidence synopsis from the Alberta College of Family Physicians, there were two



Stat Facts

### MEASURE OF CENTRAL TENDENCY: MEANS AND MEDIANS

The arithmetic 'mean' or average is the measure of central tendency that is most commonly used. However, the mean is a poor or invalid description of central tendency when the variable is not smoothly continuous, e.g. the 0-10 nausea numerical rating scale or the distribution of values is skewed. The 'median' requires only that the variable can be ordered in ranks so requires fewer assumptions to be valid.

important clinical trials undertaken in the ED setting. April et al (2018) compared isopropyl alcohol with ondansetron, and Beadle et al (2016) compared isopropyl alcohol with placebo.<sup>2,3</sup> I'll examine Beadle et al, which was published in the *Annals of Emergency Medicine*, in detail and discuss some of the findings in April et al in context.

### CRITICAL APPRAISAL

I will use the randomised controlled trial appraisal sheet from the Centre for Evidence Based Medicine.<sup>4</sup>

#### Participants: who was studied?

In total, 84 adults, aged 18-65, presenting to the ED of the San Antonio Military Medical Center (a US urban tertiary hospital serving active-duty military personnel, retirees, and beneficiaries) were included in the study. All presented with the chief complaint of nausea or vomiting, rated at a level of at least 3 out of 10 on a verbal scale.

Their mean age was 34, 70% were

female, the median nausea was 6 out of 10, with about one-third of participants also complaining of abdominal pain, another third also having vomiting, and one-sixth had diarrhoea too.

Important exclusions were use of an antiemetic in the past 24 hours, including while in ED triage.

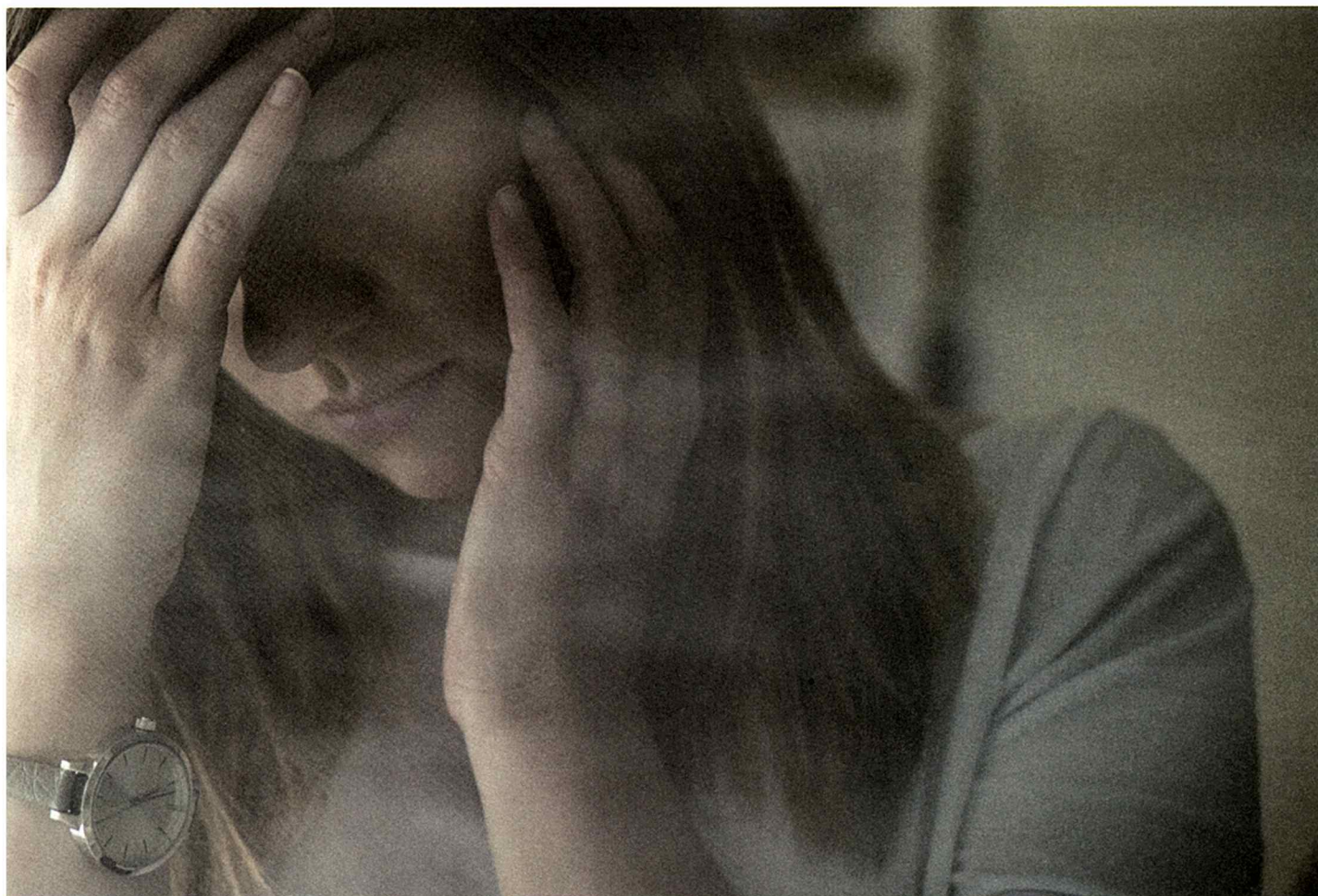
#### Intervention: what was the exposure?

The intervention group was given isopropyl alcohol medical preparation pads that were held 2.5cm from the nose. Patients were asked to deeply inhale nasally for no more than 60 seconds, at 0 minutes, 2 minutes and 4 minutes.

If nausea was completely relieved, the participants took no further inhalations. Rescue drugs could be used after 10 minutes from the start of the intervention.

#### Comparator: what was the control?

The placebo group was issued with sterile saline wipes, which were used in the same manner as the intervention.



### Outcomes: what was measured?

The primary outcome was self-rated nausea 10 minutes post-intervention using a verbal rating scale from 0 (labelled 'no nausea') to 10 (labelled 'worst nausea imaginable'). Secondary outcomes included self-rated pain and satisfaction at 10 minutes, and the subsequent use of rescue antiemetics.

### THE RESULTS

Primary outcomes – median self-reported nausea scores out of 10 at 10 minutes:

- Isopropyl alcohol (3/10) vs placebo (6/10).
- Effect size: -3, 95% confidence interval -4 to -2.
- Interpretation: substantial improvement in the isopropyl alcohol group compared with the placebo group.

Secondary outcomes – receipt of antiemetic dose:

- Isopropyl alcohol (89.2%) vs placebo (72.1%).
- Effect size: 17.1%, 95% CI -0.5% to 34.8%.

- Interpretation: the isopropyl group received more rescue anti-emetics than the placebo group, although this was in the context that most participants received rescue medication.

### DISCUSSION AND CONCLUSION

Participants who used nasal inhalation of isopropyl alcohol seemed to have a large and rapid improvement in nausea.

However, this study does have significant limitations. The final measure is only 10 minutes after the intervention. And as almost nine out of 10 participants took rescue antiemetics during the ED stay, the effectiveness of the intervention is unclear.

Furthermore, it is doubtful that patients were blinded to the intervention and this can bias subjective outcomes.

April et al, which was carried out by the same researchers, provides some illumination.<sup>2</sup> The team compared isopropyl alcohol with oral ondansetron 4mg in the ED, with

nausea measures up to 60 minutes. They found no indication that nausea returned in the isopropyl alcohol group. Rescue antiemetic use was also much lower.

My interpretation is that two reasonable randomised trials – albeit from the same researchers – show that nasal inhalation of isopropyl alcohol provides clinically important relief from acute nausea, of at least a short duration, in community ambulatory patients.

Considering the supportive evidence of the intervention in postoperative nausea and vomiting, it seems plausible, if not probable, there is a real effect.<sup>1</sup>

In the Australian GP setting, isopropyl alcohol pads are plentiful and inexpensive. And although nausea typically requires no specific treatment, where immediate antiemetics are indicated, inhalation of isopropyl alcohol appears to be an appropriate initial intervention.

References on request.