Microbiological contamination of spirometers

Dear Editor

I would like to thank Hancock et al[1] for their recent article about microbiological contamination of spirometers (*AFP* January/February 2012). I commend this research into 'real life' primary care. The article provides some useful recommendations around implementing a cleaning protocol for office spirometers. In the study, two of the contaminated spirometers had a pneumotach sensor and two had a turbine sensor. I wondered whether spirometers with an ultrasound sensor and a spirette mouthpiece might actually avoid this contamination effect by design. Also, while a one-way valve clearly doesn't prevent contamination, perhaps avoiding inhaling into the spirometer or using a disposable barrier might protect against possible infection? We always use a disposable barrier filter in our lung function laboratory. What types of written cleaning protocols were used by the practices in the study?

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Reference

1. Hancock KL, Schermer TR, Holton C, Crockett AJ. Microbiological contamination of spirometers: an exploratory study in general practice. Aust Fam Physician 2012;41:63–5.

Reply

Dear Editor

Thank you to Dr Burgos for his kind correspondence about our recently published research into microbiological contamination of spirometers.

Ours is a small study and definite conclusions cannot be drawn about which type of spirometer is most likely to be contaminated. However, it makes sense that an ultrasound spirometer that uses a new spirette mouthpiece for each patient would be less likely to become microbiologically contaminated. None of the practices in our study used bacterial filters; seven of the 16 practices used disposable one-way valved cardboard mouth pieces and six used disposable cardboard mouth pieces (presumably not one-way) and three practices used disposable plastic spirettes. Of the three contaminated spirometers, two practices indicated that they were using disposable one-way cardboard mouth pieces and one practice disposable cardboard mouth pieces. All three indicated that their patients do not inhale through the spirometer's sensor. However, we believe it is not possible to be absolutely sure that a patient will not inhale through the spirometer. Therefore using single patient use spirettes or bacterial filters might offer more protection.

All three practices indicated that they had a written protocol for cleaning the spirometer. In the questionnaire they indicated the frequency and type of cleaning they did – one cleaned the turbine just once per week (user manual instructs to disinfect prior to each use) – they indicated that they were doing about five tests per week; another indicated that they cleaned the turbine daily – with the spirometer being used about 7–14 times per week; and the practice with the pneumotach type of spirometer (OneFlow Clement Clark) indicated a cleaning frequency of variable frequency depending on use – with on average about one test per week.

Dr Kerry Hancock
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Vitamin D supplementation

Dear Editor

Vitamin D3 supplementation for elderly people, either through 3000–5000 IU daily for 6–12 weeks or a regular daily supplementation by 1000–2000 IU,[1] might not be all that appropriate. An annual rather than a daily vitamin D3 supplementation regimen[1] would be advantageous in most such people.

Elderly people are known to be at an increased risk of medication prescribing and administration errors. Incidence of administration errors is high in long term home based care. Even a barcode medication administration system has been planned to detect such errors in nursing and residential homes for the elderly.[2] Barcode administration would not be suited for elderly men and women living outside residential homes.

Trials among five men and 45 women at St George's Hospital Sydney with 600 000 IU injection of vitamin D3 were illuminating. A once yearly intramuscular cholecalciferol injection containing 600 000 IU appeared to be a more effective therapy for vitamin D deficiency. It was safe and remarkably cost effective and its simple dosing would allow convenient outpatient management.[3]

Daily supplementation of 1000 IU of vitamin D3 alone may fail to bring the levels to a minimum of 75 nmol/L in 20–30% of cases.[4] Rapid, point-of-care assay formats to measure vitamin D3 (25(OH)D), levels in healthcare centres, if available, will be useful to diagnose 25(OH)D deficiency and the postsupplementation response.

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References

1. Winzenberg T, van der Mei I, Mason RS, Nowson C, Jones G. Vitamin D and the musculoskeletal health of older adults. Aust Fam Physician 2012;41:92–9.
2. Szczepura A, Wild D, Nelson S. Medication administration errors for older people in long-term residential care. BMC Geriatrics 2011;11:82.
3. Diamond TH, Ho KW, Rohl PG, Meerkin M. Annual intramuscular injection of a megadose of cholocalciferol for treatment of vitamin D deficiency: efficacy and safety data. Med J Aust 2005;183:10–2.
4. Schwalfenberg GK. A step in the right direction. CMAJ 2010;182:1763.

Reply

Dear Editor

We thank Dr Arya for his interest in our paper. However, we strongly disagree with the statement that megadoses of intramuscular or oral vitamin D are safe or effective. In a double blind randomised control trial (RCT) of 300 000 IU vitamin D2 given intramuscularly every autumn for 3 years in over 9440 male and female general practice patients in the United Kingdom aged ≥75 years, hip and femur fracture rates were more frequent in the vitamin D than the placebo group (HR 1.49, 95% CI: 1.02–2.18).[1] In addition, there was no evidence of reduced fracture rates in the vitamin

D supplemented group at any site. Furthermore, as described in our paper,[2] Sanders et al similarly reported RCT evidence that megadose intermittent oral vitamin D3 (500 000 IU once per year in autumn) was associated with a higher risk of both falls (incidence RR 1.15, 1.02–1.30, p=0.03) and fractures (incidence RR 1.26, 95% CI: 1.00–1.59, p=0.047).[3] Therefore, megadose annual therapy with vitamin D in the elderly cannot be recommended for routine replacement.

We agree with Dr Arya that not every patient will achieve adequate serum 25(OH)D levels with daily supplementation of 1000 IU of vitamin D3. It has been estimated that 1000 IU will on average result in a rise of about 17 nmol/L in serum 25(OH) D over about 8 weeks.[4] This may be insufficient to correct moderate to severe deficiency, so the use of a higher initial dose of 3000–5000 IU (75–125 µg) per day for at least 6–12 weeks is advisable in this situation. This should be followed by a check of serum 25(OH)D levels to ensure deficiency has been corrected. As there is no reliable point-of-care test yet available, testing should be performed by a laboratory using recognised methods with appropriate quality assurance processes in place. If such dosing does not correct deficiency, then the presence of an underlying condition causing a lack of response should considered, for example, gastrointestinal disorders such as coeliac disease.[4]

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References

1. Smith H, Anderson F, Raphael H, Maslin P, Crozier S, Cooper C. Effect of annual intramuscular vitamin D on fracture risk in elderly men and women - a population-based, randomized, double-blind, placebo-controlled trial. Rheumatology (Oxford) 2007;46:1852–7.
2. Winzenberg T, van der Mei I, Mason RS, Nowson C, Jones G. Vitamin D and the musculoskeletal health of older adults. Aust Fam Physician 2012;41:92–9.
3. Sanders KM, Stuart AL, Williamson EJ, et al. Annual high-dose oral vitamin D and falls and fractures in older women: a randomized controlled trial. JAMA 2010;303:1815–22.
4. Nowson CA, McGrath J, Ebeling PR, et al, Working Group of the Australian and New Zealand Bone and Mineral Society, Endocrine Society of Australia and Osteoporosis Australia. Vitamin D and health in adults in Australia and New Zealand: a position statement. Med J Aust 2012; in press.

Meeting RACGP QI&CPD requirements for CPR

Dear Editor

The Royal Australian College of General Practitioners (RACGP) states completion of a basic CPR course is a mandatory prerequisite for meeting its Quality Improvement and Continuing Professional Development Program (QI&CPD) requirements for the 2011–2013 triennium.[1]

Many GPs accredited for emergency practice, working in either tertiary hospital emergency departments (EDs) or rural/regional EDs, have up-to-date advanced life support certificates such as:

- advanced life support (ALS)
- paediatric advanced life support (PALS)
- advanced trauma life support (ATLS/EMST).

I am a GP whose practice includes academia, community general practice and hospital practice. For my hospital appointments I am accredited for emergency practice, working in both a tertiary hospital ED and rural/regional EDs on a regular basis. Because of my ED commitments I have all three up-to-date above-mentioned certificates, and also a neonatal advanced life support (NALS) certificate.

All of these certificates, with the exception of NALS, require a prerequisite knowledge of basic life support and basic CPR.[2–5]

It is difficult to comprehend why the College mandates that a GP, like me, complete basic CPR to meet QI&CPD requirements when one has completed and is holding up-to-date certificates in advanced life support. In short, it is perplexing trying to understand the rationale behind being asked to complete life support training at a more basic level than what one has already done at a more advanced level.

Perhaps instead of mandating all GPs complete basic CPR, the College should consider, for the purposes of meeting QI&CPD requirements, that completion of either basic CPR and/or one of the advanced life support courses such as ALS, PALS and/or ATLS/EMST is sufficient.

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References

1. The Royal Australian College of General Practitioners, 2012. Quality Improvement & Continuing Professional Development Program: program requirements. Available at http://qicpd.racgp.org.au/program/overview/requirements.
2. Nolana JP, Soarb J, Zidemanc DA, et al, on behalf of the ERC Guidelines Writing Group 1, 2010. European Resuscitation Council Guidelines for Resuscitation 2010. Resuscitation;81:1219–76.
3. Australian Resuscitation Council Inc. ARC Advanced Life Support Level 1: Immediate Life Support Course Regulations 2011. Available at www.resus.org.au.
4. Australian Resuscitation Council Inc. ARC ALS2/ Advanced Life Support Provider Course Regulations 2011. Available at www.resus.org.au.
5. American College of Surgeons Committee on Trauma. Advanced Trauma Life Support for doctors: ATLS course manual, 8th edn, 2008.

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