The benefit of taking a control sample when performing bronchoalveolar lavage

Contamination of bronchoscopes is well described.1–3 However, while cleaning and disinfecting bronchoscopes are clearly described in standardisation documents,4–5 the performance of a control sample prior to bronchoscopy is not suggested.4 5 Here, we offer an argument for such a procedure, supported by our experience with a 2-year-old boy with cystic fibrosis who underwent flexible bronchoscopy and bronchoalveolar lavage (BAL).

The bronchoscope in question had been used on a previous case on the same list, then supposedly cleaned and decontaminated, prior to reuse. We performed a ‘control lavage’, by suctioning sterile 0.9% NaCl through the instrument channel, before the boy’s procedure. However, it was only afterwards that the bronchoscopist noted the cloudy appearance of the control sample, suggestive of contamination. Subsequent investigation determined that the scope had not been adequately cleaned, due to human error, despite availability of appropriate equipment and standards.

BAL samples from the first case on the list, the control sample, and the index case were positive for *Haemophilus influenzae*. Molecular typing demonstrated that the *H influenzae* from the first case, and the control sample, were identical, but distinct from that found in the index case. The patient was pyrexial and coughing within 24 h of the procedure. The symptoms gradually resolved over 6 weeks, while on broad-spectrum antibiotic cover.

Our case suggests potential benefits of performing a simple ‘control lavage’. First, a contaminated bronchoscope will result in ‘false-positive’ BAL results. The control BAL sample is the only way to detect this error and avoid inappropriate treatment. Second, the BAL culture results may be ‘true-positives’, with the pathogen flushed into the patient’s airways during lavage. This is an iatrogenic infection and a gross medical error. Left undetected the error can be repeated in multiple patients, on multiple lists. Obtaining a control BAL provides an opportunity to limit ‘outbreaks’ of bronchoscope contamination to one list. Finally, where gross contamination is discovered, it will be possible to halt the procedure, thus avoiding the nosocomial infection. These recommendations may not be relevant to adult patients undergoing diagnostic bronchoscopy for assessment of lung cancer.

**Barry Linnane,1,2,3,4 Donna Clarke,2 Paula Murray,2 Niamh O’Sullivan,6 Colum Dunne,5 Paul McNally2,4,7**

1Cystic Fibrosis Unit, University Hospital, Limerick, Ireland
2National Children’s Hospital, Crumlin, Dublin 12
3Hospital of Sick Children, Great Ormond Street, London, UK
4National Children’s Research Centre, Dublin, Ireland
5Graduate Entry Medical School and Centre for Interventions in Infection, Inflammation & Immunity (4i), University of Limerick, Limerick, Ireland
6Study of Host Immunity and Early Lung Disease in CF (SHIELD CF), Dublin, Ireland
7Department of Surgery and Anaesthetics, Our Lady’s Children’s Hospital, Dublin, Ireland
8Department of Paediatric Respiratory Medicine, Our Lady’s Children’s Hospital, Dublin, Ireland

**Correspondence to** Dr Barry Linnane, Cystic Fibrosis Unit, University Hospital, Limerick, Ireland; barry.linnane@hse.ie

**Acknowledgements** The authors wish to acknowledge funding received from the National Children’s Research Centre, Crumlin, Dublin 12.

**Contributors** BL and PM conceived the study, conducted the data collection and drafted the manuscript. BL takes responsibility for the overall content as guarantor. DC and PM conducted data collection and contributed to critical revision of the manuscript. CD contributed to critical revision of the manuscript. NO conducted data collection.

**Competing interests** None declared.

**Patient consent** Obtained.

**Provenance and peer review** Not commissioned; internally peer reviewed.

**To cite** Linnane B, Clarke D, Murray P, et al. Thorax Published Online First: [please include Day Month Year] doi:10.1136/thoraxjnl-2015-207319

Received 18 May 2015
Accepted 21 May 2015

Thorax 2015;0:0. doi:10.1136/thoraxjnl-2015-207319

**REFERENCES**

The benefit of taking a control sample when performing bronchoalveolar lavage

Barry Linnane, Donna Clarke, Paula Murray, Niamh O'Sullivan, Colum Dunne and Paul McNally

*Thorax* published online June 16, 2015

Updated information and services can be found at:
[http://thorax.bmj.com/content/early/2015/06/16/thoraxjnl-2015-207319](http://thorax.bmj.com/content/early/2015/06/16/thoraxjnl-2015-207319)

These include:

**References**

This article cites 5 articles, 2 of which you can access for free at:
[http://thorax.bmj.com/content/early/2015/06/16/thoraxjnl-2015-207319#BIBL](http://thorax.bmj.com/content/early/2015/06/16/thoraxjnl-2015-207319#BIBL)

**Email alerting service**

Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
[http://group.bmj.com/group/rights-licensing/permissions](http://group.bmj.com/group/rights-licensing/permissions)

To order reprints go to:
[http://journals.bmj.com/cgi/reprintform](http://journals.bmj.com/cgi/reprintform)

To subscribe to BMJ go to:
[http://group.bmj.com/subscribe/](http://group.bmj.com/subscribe/)