



## RESPIRATORY VIRUSES, MYCOPLASMA PNEUMONIAE AND PERTUSSIS

UPDATED JULY 2010



# insight

- Improvements in swab technology enable the diagnosis of respiratory viruses and pertussis to be performed on a single nasopharyngeal swab

- Melbourne Pathology was the first Australian laboratory to implement this improved swab technology

- Respiratory viruses and pertussis swabs can be collected at all Melbourne Pathology collection centres

The best method to diagnose upper respiratory tract viral, *Bordetella pertussis* and *Mycoplasma pneumoniae* infections is by direct detection of these agents in an upper respiratory tract sample. Although this was traditionally done by culture, immunofluorescence and serology, polymerase chain reaction tests have revolutionized this area by their high sensitivity, specificity and fast turnaround time relative to the traditional methods.

Traditionally, a nasopharyngeal aspirate (NPA) has been used to diagnose respiratory virus, pertussis and *Mycoplasma pneumoniae* infections in the acute phase, in both inpatients and outpatients. An NPA is uncomfortable for the patient and is limited to locations where additional equipment is available (such as oxygen and suction). Melbourne Pathology uses an improved method for collecting respiratory virus, pertussis and *Mycoplasma pneumoniae* specimens, which have been widely endorsed by a number of professional bodies, and are supported by peer reviewed studies.

Significant improvements in swab technology, in particular the development of "flocked swabs", now enable the diagnosis of respiratory viruses (influenza, parainfluenza, RSV, adenovirus, coronavirus, bocavirus), pertussis and *Mycoplasma pneumoniae* to be performed on a single nasopharyngeal swab, which is taken and put into a universal transport media.

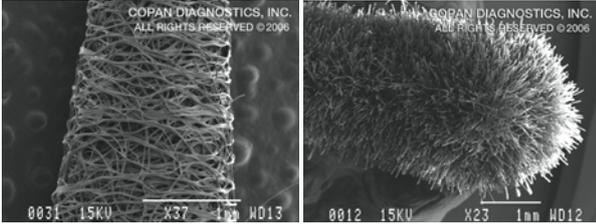
This new swab is made of fine, flexible plastic, which is much more comfortable for the patient. It does not

require any additional equipment to be available, allowing respiratory virus, pertussis and *Mycoplasma pneumoniae* respiratory swabs to now be collected at all Melbourne Pathology collection centres, as well as doctors' rooms, outpatient departments, Emergency Departments and the Intensive Care Unit setting.

Melbourne Pathology was the first Australian laboratory to implement this improved swab technology, which has widely replaced nasopharyngeal aspirates (NPA). Other nasopharyngeal swabs are available in Australia, but the unique design of this new swab, combined with the transport media leads to diagnostic accuracy equivalent to a traditional NPA, without the patient inconvenience.



# RESPIRATORY VIRUSES, MYCOPLASMA PNEUMONIAE AND PERTUSSIS cont...



^ Conventional Fibre Swab

^ Flocked Swab

## Swab Improvements

The improvement in swab technology is shown by these electron micrographs of the two different swabs. A conventional fibre swab only releases 5% of the material collected, compared to the flocked swab (the micrograph shows the swab resembling a brush), which releases up to 95% of the swabbed material. Independent studies have shown a flocked swab specimen is as diagnostically useful as an NPA, but better tolerated by the patient, less likely to induce gagging, and easier for the operator to perform.

These swabs are available at all Melbourne Pathology collection centres. Self-collecting doctors should contact our Stores Department on 9287 7824 for supplies of these swabs and the universal transport media, which will be supplied in a convenient kit.

At this stage, bacterial swabs (staph etc) are NOT to be collected using this method.



**Dr Lyn Waring**  
BSc, MBBS, FRCPA  
Director of Microbiology

Dr Waring graduated from the University of Western Australia in 1985. After her internship she trained in Medical Microbiology before being admitted to an Infectious Diseases Fellowship at Stanford

University Medical School in the United States. Dr Waring returned to Melbourne and was appointed Medical Microbiologist at Dorevitch Pathology. In 2008 she was appointed Medical Microbiologist at the Princess Margaret Hospital for Children and the King Edward Memorial Hospital for Women in Perth. Dr Waring returned to Melbourne in early 2010 and joined Melbourne Pathology in February 2010.

## Nasopharyngeal Swab Collection - For Doctors



### NASOPHARYNGEAL SWAB COLLECTION - FOR DOCTORS

Adult Nasopharyngeal swabs are performed at all Melbourne Pathology collection centres.

Infant Nasopharyngeal swabs may require a parent or guardian to hold the child while the procedure is being performed (if there is only one pathology collector available).

Instructions for collection by doctor  
Suitable for influenza, RSV, parainfluenza, pertussis and any other respiratory virus, ie. rhinovirus, coronavirus, bocavirus etc.

**DO NOT USE THIS PROCEDURE FOR MRSA OR OTHER BACTERIAL COLLECTIONS.**

Immobilise the patient's head at (approximately) a 20 degree angle by holding the chin in an adult, (carer/parent holds the head for a child). Wear gloves and a mask and have the special thin, flocked swab and transport media at the ready.



### NASOPHARYNGEAL SWAB COLLECTION - FOR DOCTORS

**Note: The distance the swab is inserted is equal to the length of the patient's index finger. Mark this distance on the swab prior to insertion.**

1. Label the swab with the patient's full name, date of birth and date and time of collection.
2. Gently insert the thin plastic flocked swab into a nostril until the posterior nares is reached.
3. Insert the swab directly back, not upwards (as per diagram).
4. Leave the swab in place for up to ten seconds. (This procedure may induce coughing and tearing).
5. If resistance is encountered during insertion of the swab, remove it and attempt insertion on the opposite nostril.

6. Remove the swab slowly.
7. Place the swab into the transport media provided.



^ Instruction cards are available through Stores on 9287 7824

## References

- Daley P, Castriciano S, Chernesky M, Smieja M.  
"Comparison of flocked and rayon swabs for collection of respiratory epithelial cells from uninfected volunteers and symptomatic patients".  
J Clin Microbiol. 2006 Jun;44(6):2265-7.
- Walsh P et al, "Respiratory Infectious Disease Analysis: UTM-RT versus Flocked Swab Nasal Collections" 23rd Annual Clinical Virology Symposium - Clearwater Beach, Florida USA, April 29-May 2nd, 2007