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R.C.A. DE GROOT ET AL.

# *Mycoplasma pneumoniae* carriage evades induction of protective mucosal antibodies

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Shareable abstract (@ERSpublications)
**Antibodies against *M. pneumoniae*, the most common bacterial cause of pneumonia in children, are able to prevent adhesion of *M. pneumoniae* to epithelial cells, but are only induced during infection and not during asymptomatic carriage** https://bit.ly/3CNdAhM

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## Abstract

***Background*** *Mycoplasma pneumoniae* is the most common bacterial cause of pneumonia in children hospitalised for community-acquired pneumonia (CAP). Prevention of infection by vaccines may be an important strategy in the presence of emerging macrolide-resistant *M. pneumoniae*. However, knowledge of immune responses to *M. pneumoniae* is limited, complicating vaccine design.

***Methods*** We studied the antibody response during *M. pneumoniae* respiratory tract infection and asymptomatic carriage in two different cohorts.

***Results*** In a nested case–control study (n=80) of *M. pneumoniae* carriers and matched controls we observed that carriage by *M. pneumoniae* does not lead to a rise in either mucosal or systemic *M. pneumoniae*-specific antibodies, even after months of persistent carriage. We replicated this finding in a second cohort (n=69) and also found that during *M. pneumoniae* CAP, mucosal levels of *M. pneumoniae*-specific IgA and IgG did increase significantly. *In vitro* adhesion assays revealed that high levels of *M. pneumoniae*-specific antibodies in nasal secretions of paediatric patients prevented the adhesion of *M. pneumoniae* to respiratory epithelial cells.

***Conclusions*** Our study demonstrates that *M. pneumoniae*-specific mucosal antibodies protect against bacterial adhesion to respiratory epithelial cells, and are induced only during *M. pneumoniae* infection and not during asymptomatic carriage. This is strikingly different from carriage with bacteria such as *Streptococcus pneumoniae* where mucosal antibodies are induced by bacterial carriage.