Airborne Spread of *Pneumocystis jirovecii*

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(See the article by Choukri et al, on pages 259–265.)

In this issue of the journal, Choukri et al [1] state that their study provides the first quantitative data on the spread of *Pneumocystis jirovecii* in exhaled air from infected patients. There are additional data in prior studies using air samples collected in rooms of patients diagnosed as having *P. jirovecii* showing that not only could the organisms be detected but also their types correlated with types demonstrated in patient samples [2]. The air samples were compared with samples from areas close to the rooms studied and other control areas. We believe that airborne transmission was demonstrated with the samples and methods used. Because airborne transmission for animals has been well established, the next step was to show that transmission occurred in humans as well. It is important that these additional studies likewise demonstrate detection of *P. jirovecii* in air collected near infected patients. Concerns about isolation of infected patients have been discussed for a long time and may be re-evaluated with these data.

We had a strong belief that transmission of infection was by the airborne route. When we first started working with *P. jirovecii*, then called *Pneumocystis carinii*, the only way to obtain organisms for study was to keep a large colony of Sprague-Dawley rats and house new ones with the most infected ones, as Frenkel et al [3] carefully described in their landmark article. When we developed the first inoculated animal models (first rat and then mouse) to have a single strain and reproducible infection, we found that we needed strict isolation procedures to prevent airborne transmission. We housed our animals in microisolator cages and handled them in a laminar flow hood but still had occasional cross-infections. This led us to believe that there had to be airborne transmission in humans too. We reported our initial findings at the International Workshops on Opportunistic Protists.

We were convinced of airborne transmission because the first reports of large numbers of infections were in infants and children who were living in crowded conditions in orphanages or nurseries in European countries after World War II and were immunosuppressed because of malnutrition. One of our main concerns was whether patients diagnosed as having *Pneumocystis* pneumonia should be isolated from other immunosuppressed individuals. The additional data provided by Choukri et al [1] suggest that this question should be revisited.

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**References**