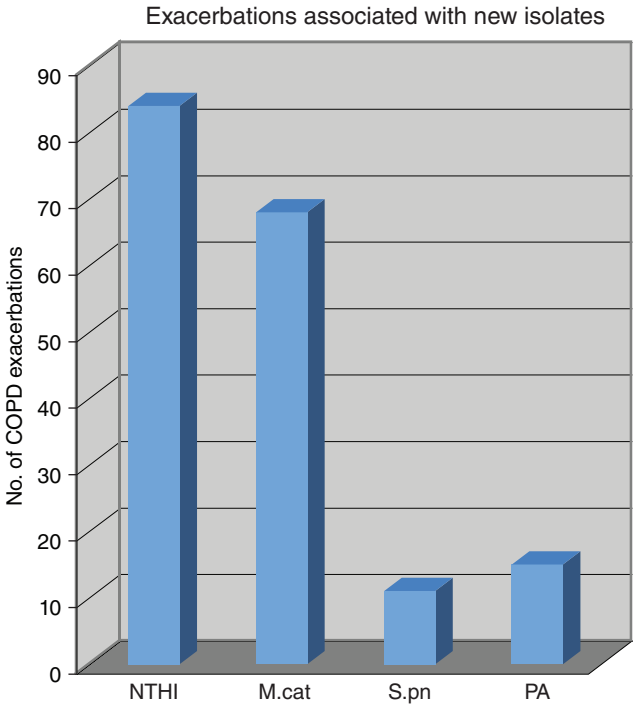

FIGURE 182-3 Cumulative results of a prospective study (1994–2004) of bacterial infection in chronic obstructive pulmonary disease (COPD) showing etiology of exacerbations. The numbers of exacerbations shown indicate the acquisition of a new strain simultaneous with clinical symptoms of an exacerbation. NTHI, nontypable *H. influenzae*; M.cat, *M. catarrhalis*; S.pn, *Streptococcus pneumoniae*; PA, *Pseudomonas aeruginosa*. *(Adapted from TF Murphy, GI Parameswaran: Clin Infect Dis 49:124, 2009, with permission. © 2009 Infectious Diseases Society of America.)*

Upon culture, colonies of *M. catarrhalis* resemble commensal neisseriae that are part of the normal upper airway flora. As mentioned above, the difficulty in distinguishing colonies of *M. catarrhalis* from neisserial colonies in cultures of respiratory secretions explains in part why *M. catarrhalis* has been overlooked as a pathogen. In contrast to these *Neisseria* species, *M. catarrhalis* colonies can be slid across the agar surface without disruption (the "hockey puck sign"). In addition, after 48 h of growth, *M. catarrhalis* colonies take on a pink color and tend to be larger than neisserial colonies. A variety of biochemical tests can distinguish *M. catarrhalis* from neisseriae. Kits that rely on these biochemical reactions are commercially available.

TREATMENT *MORAXELLA CATARRHALIS*

M. catarrhalis rapidly acquired Δ-lactamases during the 1970s and 1980s; antimicrobial susceptibility patterns have remained relatively stable since that time, with >90% of strains now producing Δ-lactamase and thus resistant to amoxicillin. Otitis media in children and exacerbations of COPD in adults are generally managed empirically with antimicrobial agents that are active against *S. pneumoniae*, *H. influenzae*, and *M. catarrhalis*. Most strains of *M. catarrhalis* are susceptible to amoxicillin/clavulanic acid, extended-spectrum cephalosporins, newer macrolides (azithromycin, clarithromycin), trimethoprim-sulfamethoxazole, and fluoroquinolones.