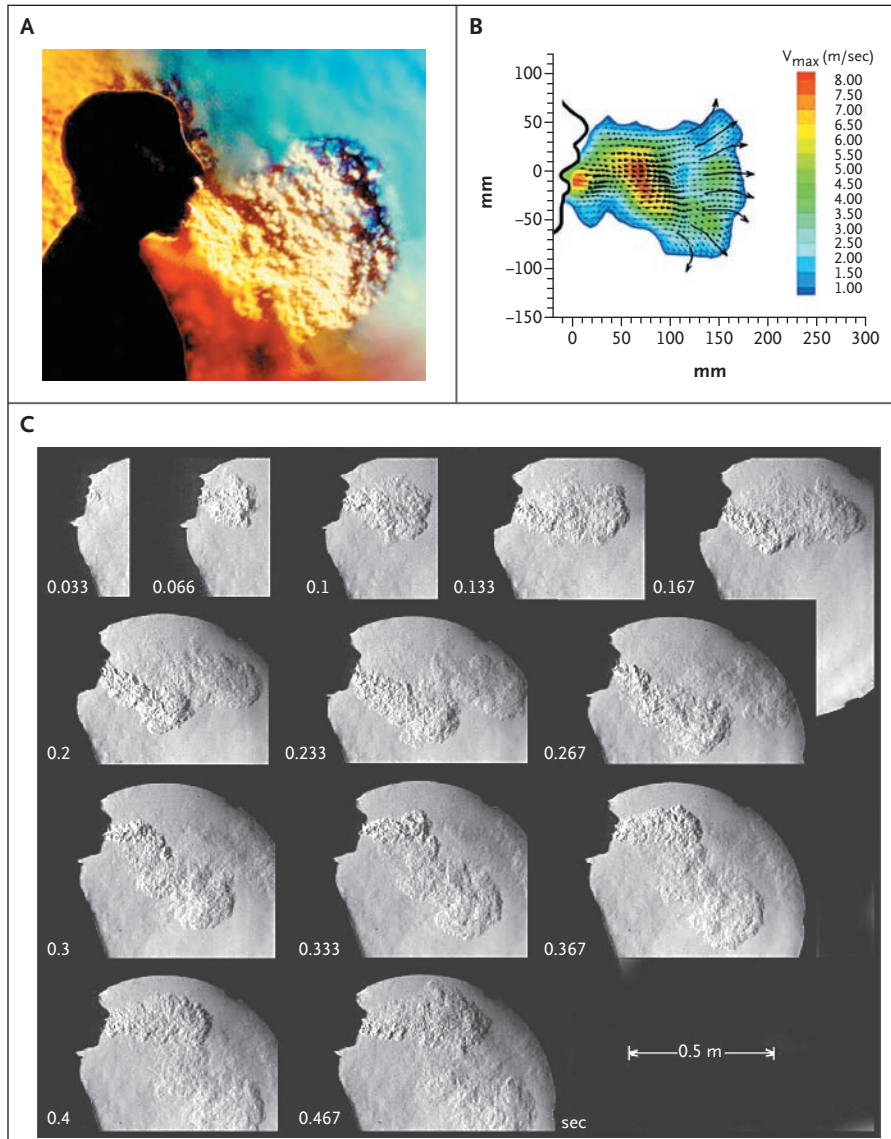


## IMAGES IN CLINICAL MEDICINE

## Coughing and Aerosols



**W**HEN A HEALTHY VOLUNTEER COUGHS, HE EXPELS A TURBULENT JET of air with density changes that distort a projected schlieren light beam (Panel A). A velocity map early in the cough (Panel B) was obtained from image analysis. Sequential schlieren images during the cough (Panel C and video) were recorded at 3000 frames per second. A maximum airspeed of 8 m per second (18 mph) was observed, averaged during the half-second cough. Several phases of cough airflow are revealed in the figure. The cough plume may project infectious aerosols into the surrounding air. There is an increasing interest in visualizing such expelled airflows without the use of intrusive methods because of concern regarding the transmission of various airborne pathogens, such as viruses that cause influenza and the severe acute respiratory syndrome (SARS).

Copyright © 2008 Massachusetts Medical Society.

Julian W. Tang, F.R.C.Path.  
Gary S. Settles, Ph.D.

Pennsylvania State University  
University Park, PA 16802