

For a **WEB EXTRA** with an audio Q&A with David Goodman about the physician workforce, see dartmed.dartmouth.edu/summer08/html/disc_vox_we.php.

Air time for preemie respiration

Preterm infants have many medical problems, with respiratory distress syndrome (RDS) one of the most common. Nowadays, RDS can be treated with surfactant, a lipoprotein complex that helps air sacs in the lungs stay open, as well as with oxygen therapy. Dartmouth researchers recently studied the effectiveness of one of the newer methods of delivering oxygen-enriched air—heated, humidified high-flow nasal cannula (HHHFNC) therapy.

Flow: Since 1971, continuous positive airway pressure (CPAP) therapy, which delivers a heated, humidified, and pressurized oxygen-air mixture via small nasal tubes, has been used to help the tiniest babies breathe. Now, intensive care nurseries often use HHHFNC for preemies who've graduated from CPAP therapy but still need oxygen. The high-flow therapy is thought to provide many of CPAP's benefits, including CPAP-like pressures. But since the high-flow system is considered easier to use, some places are using it *instead* of CPAP, even though it's unclear if the high-flow therapy is as effective.

Conflicting evidence about HHHFNC's efficacy led DMS pediatrician and physiologist Robert Darnall, M.D.; former pediatric fellow Zuzanna Kubicka, M.D.; and respiratory therapist Joseph Limauro to conduct an observational study of 27 infants at DHMC from January 2005 to April 2006. The researchers inserted small probes in the infants' mouths to estimate how much pressure HHHFNC generated in the lungs of infants of various weights and sizes. Flow rates ranged from one to five liters a minute. They found that HHHFNC produced clinically significant levels of pressure in only the smallest infants—those who weighed less than 1,500 grams (just over three pounds). In some cases—such as if the baby's mouth remained closed and the nasal cannulas fit too tightly, so air couldn't escape—the pressure buildup was greater than expected. In other cases, there wasn't enough pressure delivered to the lungs.

Babies: In their paper, published in *Pediatrics*, the researchers cautioned that, while unlikely, it's possible that HHHFNC might create an unsafe level of pressure. Kubicka said they were surprised that some nurseries using the high-flow therapy “didn't really pay attention even to the size” of the nasal cannulas. She worries that the combination of higher flow rates and bigger nasal cannulas “may be dangerous” in the smallest babies.

Clinical trials are needed to further evaluate HHHFNC, says Kubicka, who has finished her Dartmouth fellowship and is now at Children's Hospital of Boston. She suspects that the high-flow therapy may not be an appropriate substitute for traditional CPAP.

Still, says Darnall, when the flow rate is kept closer to one liter per minute, HHHFNC may be better than the therapy that used to be the next step after CPAP—a system that delivered unheated and only partially humidified oxygen.

It's unclear if the high-flow therapy is as effective as CPAP.

VANESSA HURLEY

Physician Supply: Association with Quality and Satisfaction

	Low-Supply Regions	Moderate-Supply Regions	High-Supply Regions
Physicians per 100,00 people (adjusted for age and sex)	169.4	204.8	271.8
Medicare composite quality scores (higher number equals better outcomes)			
Acute myocardial infarction	91.0	91.7	93.1
Congestive heart failure	84.1	85.9	88.6
Pneumonia	79.5	78.8	79.2
Satisfaction with quality of medical care			
% of patients satisfied	96.7	96.3	97.0

This data from Dartmouth research shows that having 60% more physicians per capita in high-supply regions results in outcomes and satisfaction rates that vary from those of moderate- and low-supply regions by only a few percentage points.

“Vox clamantis” about more M.D.'s

Plenty of things are wrong with the U.S. health-care system, but a lack of doctors is not one of them. So says DMS workforce researcher David Goodman, M.D., a vocal opponent of a plan by the Association of American Medical Colleges (AAMC) to expand U.S. medical school enrollment by 30%. The AAMC argues more doctors are needed to keep pace with the nation's aging population.

Odds: This position couldn't be more at odds with research by Goodman and his colleagues at the Dartmouth Institute for Health Policy and Clinical Practice. In study after study, they've found that places with more physicians—even twice as many as other places—have no better outcomes or patient satisfaction scores.

“The most serious problems facing our health-care system—accelerating costs, poor quality of care, and the rising ranks of the uninsured—cannot be solved by more doctors,” Goodman wrote in a 2006 *New York Times* op-ed essay. True, some places—rural, poor towns and urban, minority communities—do need more physicians. But young M.D.'s don't settle in those places. “Between 1979 and 1999, . . . for every physician who settled in a low-supply region, four physicians settled in regions with already high supply,” Goodman wrote in the May 2008 *Journal of the American Medical Association* (JAMA).

Goodman is also concerned about the costs of building more medical schools (12 new ones are seeking accreditation) and creating more residency positions—the latter largely funded by federal programs like Medicare. The price tag totals \$5 billion to \$10 billion a year, “depending on the subspecialists trained,” Goodman reported in the May 2008 *New England Journal of Medicine* (NEJM).

Analysis: “The proclamation of an impending shortage occurred . . . rapidly,” says Goodman, by a few individuals who “were very loud about it.” Now Goodman is the one being loud—not only in the *Times*, *JAMA*, and *NEJM*, but also the *British Medical Journal* and *Health Affairs*. He believes his comprehensive analysis is changing the debate “in very substantial ways,” he says.

JENNIFER DURGIN