What topics can we cut from our RC programs?

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Predictors of graduate performance on selected respiratory care outcome measures: the results of a pilot study

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Cartoon by Jim Allen

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Notes from the Editor:
Teaching Is Easy . . .
by David W. Chang, EdD, RRT

“Education is the field of study that deals mainly with methods of teaching and learning in schools.” This definition by Webster is rather simple and easy to understand. But the word “methods” always intrigues me. What are these methods and how do educators use and apply them in their everyday teaching? And how do these methods affect our students in the classroom and clinical settings?

Methods are ways to do things. Mechanics use different methods to fix different mechanical problems. Bankers use different methods to solve different financial problems. Likewise, educators use different methods to fulfill different teaching objectives. A typical education curriculum usually includes “method” courses such as curriculum development, evaluation, instructional media, and educational research. These courses are vital in preparing teachers. In turn, teachers may apply the knowledge gained from these courses to enhance their teaching skills.

There should be no argument that the foremost prerequisite of a good teacher is mastery of the subject matter. But being a knowledgeable respiratory therapist does not assure that the therapist will become a good teacher. The ability to transfer this knowledge to students is the sign of a good teacher. When used properly, the teaching methods described below facilitate the transfer of knowledge.

A good teacher knows the desired outcome of learning (curriculum development and learning objectives). A good teacher selects the appropriate teaching methods for different learning objectives (instructional design). A good teacher evaluates the students’ ability to recall facts, apply knowledge, analyze information, and solve problems (test construction). Agood teacher sets an accurate standard to distinguish different levels of achievement (evaluation). A good teacher conducts appropriate and meaningful studies to identify and solve problems (research).

Teaching is more than turning the pages of a book with the students. It is more than explaining a few important concepts to the students. Teaching is an educational process in which appropriate methods are used to enhance student learning. It is a process that goes beyond the classroom and takes place where there are no students around. Teaching is easy . . . good teaching is not.

1998 Summer Forum Poster and Research Abstracts

Dispositions as educational goals in a respiratory care program
by Faye Bacon, BA, RRT

An action research project was designed to identify and define desirable dispositions of respiratory care practitioners and determine ways in which dispositions can be strengthened during the course of a two year respiratory care program. Dispositions are defined as enduring habits of mind and action.

A qualitative analysis consisted of two distinct components: a literature review and structured student projects.

“Forum Poster” continued on page 2
What topics can we cut from our RC programs?

by Bob Langenderfer MEd, RRT, respiratory care program director, Northern Kentucky University, Highland Heights, KY

With growth in respiratory care and new approaches to treating pulmonary problems, programs are continually adding content. What can we cut?

Exam matrix revision by the NBRC will provide some help, but little guidance regarding how thoroughly to cover a topic. CPGs, assess-and-treat protocols, geriatrics, and new treatment techniques compete for inclusion in our courses. Either we lengthen our programs or reduce coverage of some content areas, or do both. A sample of RC program directors was surveyed by e-mail to evaluate whether suggested topics should be 1-eliminated, 2-reduced, 3-continued, or 4-increased. Below is the calculated average score for each topic:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Score</th>
</tr>
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<tr>
<td>Gas piping systems</td>
<td>2.32</td>
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<td>Cylinder construction, markings</td>
<td>2.50</td>
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<tr>
<td>Reducing valve internal operation</td>
<td>2.39</td>
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<tr>
<td>Fractional distillation to extract O2</td>
<td>2.22</td>
</tr>
<tr>
<td>Paramag. + thermal O2 analyzers</td>
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</tr>
<tr>
<td>CO2—O2 mixture therapy</td>
<td>2.39</td>
</tr>
<tr>
<td>Use of nasal catheter</td>
<td>1.68</td>
</tr>
<tr>
<td>Use of 02 mist tent (croupette)</td>
<td>2.33</td>
</tr>
<tr>
<td>Blood gas electrodes</td>
<td>2.56</td>
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<tr>
<td>Use of transcataeous electrodes</td>
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<tr>
<td>Capillary blood gas sampling</td>
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<td>Max expiratory pressure in PFTs</td>
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<tr>
<td>Use of closing volumes in PFTs</td>
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<tr>
<td>First generation vents (MA-1, Bear 1)</td>
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<tr>
<td>2nd generation vents (MA-2, Bear 2)</td>
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<tr>
<td>Fluidic theory</td>
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<tr>
<td>Use of IPPB machines as vents</td>
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<tr>
<td>Ultrasonic bland aerosol</td>
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<tr>
<td>Babington hydrosphere</td>
<td>2.65</td>
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<tr>
<td>Bland aerosol for mucus</td>
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<tr>
<td>Spinning disk “humidifiers”</td>
<td>1.60</td>
</tr>
<tr>
<td>Main/ side class. of nebs</td>
<td>2.22</td>
</tr>
<tr>
<td>Entrainment ratios, calc.</td>
<td>3.06</td>
</tr>
<tr>
<td>Rel. humidity calculations</td>
<td>2.50</td>
</tr>
<tr>
<td>P&amp;PD—segmental drainage</td>
<td>2.89</td>
</tr>
<tr>
<td>IPPB Procedure</td>
<td>2.61</td>
</tr>
<tr>
<td>Troubleshooting IPPB equip.</td>
<td>2.39</td>
</tr>
<tr>
<td>Esophag. obturator airs</td>
<td>2.00</td>
</tr>
<tr>
<td>EGTA airs</td>
<td>1.62</td>
</tr>
<tr>
<td>Cricothyroidotomy</td>
<td>1.83</td>
</tr>
<tr>
<td>Isuprel</td>
<td>2.06</td>
</tr>
<tr>
<td>Bronkosol</td>
<td>2.22</td>
</tr>
<tr>
<td>Bland aerosol as mucolytic</td>
<td>2.11</td>
</tr>
</tbody>
</table>

Suggestions were made to eliminate coverage of the history of respiratory therapy and the internal workings of ventilators, blenders, and blood gas electrodes.

A comparison of faculty ratings of allied health students’ critical thinking and problem solving ability to the Watson-Glaser critical thinking appraisal

by Robert Wayne Lawson, MS, RRT; David C. Shelledy, PhD, RRT; Amy Fitzpatrick, BS, Kimatha L. Oxford, MOT, OTR, CHT; Kimberly A. Vogel, EdD, OTR, and Kristen Schwendner, PhD, University of Texas Health Science Center at San Antonio, TX.

PURPOSE: Allied health education programs seek to develop critical thinking and problem solving abilities. Identifying these skills early in the student’s course of study may be useful.

We compared allied health program faculty evaluations of second semester students’ critical thinking and problem solving abilities and categorized into related groups of professional behaviors. A disposition that would enhance the acquisition and manifestation of professional behaviors was defined for each group. Kolb’s experiential approach to transformative learning was used as a teaching method to promote growth and development of identified dispositions in structured student projects. Results will be used for instructional design of activities and social relations that support the development of desired dispositions of students in a respiratory care program.
solving ability (CTPS) using a previously developed instrument to students in-program GPA and student scores on the Watson-Glaser critical thinking appraisal (WGCT). The WGCT is designed to assess the ability to make inferences, recognize assumptions, perform deduction, and interpret and evaluate arguments. The CTPS allows faculty to systematically evaluate students’ critical thinking ability. The CTPS has evidence of validity and reliability and has been shown to correlate with the WGCT in previous studies.

**METHOD:** All currently enrolled first-year physical therapy (PT), occupational therapy (OT), and respiratory care (RC) students in the School of Allied Health Sciences at a university health science center were invited to participate. Following informed consent, the students completed the WGCT. One faculty member from each program, blinded to the WGCT results, completed the CTPS instrument for each of their respective students. Students from the three programs were compared for differences in GPA, WGCT, and CTPS using ANOVA. A significant difference (p<.05) was followed by a post-hoc test to determine specific differences between programs. Pearson product moment correlation coefficients were calculated to compare CTPS, WGCT, and GPA.

**RESULTS:** Means, standard deviations, ANOVA results, and post-hoc comparisons for CTPS, WGCT, and GPA for the three programs are reported in Table 1. Table 2 reports the correlation coefficients for WGCT, CTPS, and GPA. PT students had significantly greater WGCT scores than OT and RC students. There were no significant differences by program for CTPS or GPA. There were significant correlations between WGCT scores and GPA for all students. There were also significant correlations between CTPS scores and GPA for all students. There were also significant correlations between CTPS scores and GPA for all students. There were also significant correlations between CTPS scores and GPA for all students.

**CONCLUSION:** Faculty assessments of allied health program students’ critical thinking ability early in the student’s course of study may be more closely related to academic performance than actual critical thinking ability.

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**Predictors of graduate performance on selected respiratory care outcome measures: the results of a pilot study**

by Terry LeGrand, PhD, RRT and David Shelledy, PhD, RRT

**PURPOSE:** Respiratory care (RC) programs seek to prepare competent practitioners. Success in achieving this goal is often assessed by outcome measures, including NBRC examinations, employers’ evaluations of graduates, and graduates’ evaluations of the program. We sought to determine the ability of students’ entering GPA (EGPA), program prerequisite GPA (PGPA), pre-admission interview score (I), general critical thinking ability (CT) as assessed by the Watson-Glaser, end-of-first-year competency exam (FYEX), in-program GPA (RCGPA), and performance on an NBRC written registry self-assessment exam (WRRTSAE) to predict graduate outcomes.

**METHOD:** Existing records of all graduates (n=20) of a new baccalaureate RC program were reviewed to obtain the scores for specific predictor variables. Outcome measures obtained were NBRC CRRT scores, end-of-program GPA.
competency assessment results utilizing a restricted version of the NBRC written registry exam (WRTT), and information gathering (IG) and decision making (DM) scores on a clinical simulation exam given near program completion. Graduates and employers were surveyed to assess achievement of cognitive (CS), psychomotor (PS), and affective (AS) program standards. Pearson product-moment correlations and forward step-wise regression analyses were performed to determine the ability of the independent variables to predict specific outcomes.

RESULTS: Tables 1 and 2 contain the results of the correlational and regression analyses. CRTTextam scores were significantly correlated with EGPA, PGPA, CT, and FYEX. WRR T scores were significantly correlated with EGPA, PGPA, and WRRTSAE. DM was significantly correlated with I, FYEX, and RCGPA. Graduate evaluations for CS, PS, and AS were significantly correlated with FYEX. The coefficient of multiple correlation, R2, indicated that in combination, the independent variables accounted for 77% of the variance observed in CR T T scores, 61% of the variance in the WRR T, and 78% of the variance in DM. For graduates' evaluations, 38% of the variance in CS, 29% of the variance in PS, and 50% of the variance in AS was explained. For employers' evaluations of graduates, 60% of the variance in AS was explained. The strongest predictors of outcome variables, based on regression analysis, were I, EGPA, PGPA, FYEX, and WRRTSAE. There was no relationship between predictor variables and IG scores or employer evaluations for CS and PS.

CONCLUSION: Applicant interview scores, EGPA, PGPA, CT, FYEX, and WRRTSAE may be useful in predicting graduate performance on selected program outcome measures.

Table 2. Forward Step-Wise Multiple Regression Analysis Utilizing the Independent Variables to Predict Program Outcomes.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>R</th>
<th>R²</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRTT</td>
<td>.60**</td>
<td>.37</td>
<td>12.70</td>
<td>.0011</td>
</tr>
<tr>
<td>WRTT</td>
<td>.70**</td>
<td>.49</td>
<td>5.88</td>
<td>.0025</td>
</tr>
<tr>
<td>IG</td>
<td>.59</td>
<td>.35</td>
<td>1.96</td>
<td>.15</td>
</tr>
<tr>
<td>DM</td>
<td>.52**</td>
<td>.27</td>
<td>13.27</td>
<td>.0008</td>
</tr>
<tr>
<td>Graduate CS</td>
<td>.61**</td>
<td>.37</td>
<td>10.89</td>
<td>.004</td>
</tr>
<tr>
<td>Graduate PS</td>
<td>.54</td>
<td>.29</td>
<td>7.48</td>
<td>.014</td>
</tr>
<tr>
<td>Graduate AS</td>
<td>.71**</td>
<td>.50</td>
<td>5.33</td>
<td>.0097</td>
</tr>
<tr>
<td>Employer CS</td>
<td>.37</td>
<td>.14</td>
<td>1.97</td>
<td>.26</td>
</tr>
<tr>
<td>Employer PS</td>
<td>.35</td>
<td>.23</td>
<td>2.41</td>
<td>.14</td>
</tr>
<tr>
<td>Employer AS</td>
<td>.77</td>
<td>.60</td>
<td>9.88</td>
<td>.0033</td>
</tr>
</tbody>
</table>

WRRTSAE - written registry self-assessment examination given during the senior year of the program
CRTT - actual NBRC certification examination scores
IG - information gathering scores on an NBRC written registry self-assessment examination given post graduation
DM - decision making scores on an NBRC written registry self-assessment examination given post graduation
CS - cognitive standards
PS - psychomotor standards
AS - affective standards (professional character/values)

*p < .05
**p < .01

1. Independent variables entered into the regression analysis included ACT, SAT, high school GPA, ACT composite GPA, interview scores, critical thinking ability, results of the end-of-year competency examination, in-program RCGPA, and WRRTSAE results.

Ventilator-Associated Pneumonia: a Problem That Won't Go Away

by Miriam Pogulis

The purpose of a mechanical ventilator is to aid the patient in breathing. However, this machine often puts the patient at an increased risk for developing pneumonia. It has been estimated that the frequency of ventilator-associated pneumonia (VAP) in intensive care units (ICUs) is between 10% and 65%, with fatality rates ranging from 13% to 55%.1,2 This incidence rate is very high compared to a rate of only 0.6-1.0 cases of nosocomial pneumonia per 100 hospitalizations (ICU and non-ICU patients) among non-ventilated patients.2 VAP is very expensive for both the hospital and the patient. The typical patient with VAP requires mechanical ventilation for longer periods and stays in the ICU approximately three times as long as those without VAP.2,3 Researchers continue to explore various aspects of VAP. Much has been learned about which organisms commonly cause VAP and how they colonize the lower respiratory tract. Some of this information can aid in preventing VAP. However, once a patient is suspected of having VAP, precise diagnosis and treatment remain a challenge, and as a result, mortality rates from VAP are not declining.

Etiology

VAP can be caused by a variety of bacteria, but it has been estimated that 50-70% of all cases are caused by one of several aerobic gram-negative bacilli or Staphylococcus aureus.2,3 Among the gram negative bacteria associated with VAP, Pseudomonas aeruginosa and Acinetobacter species are the most common.4,5 P. aeruginosa is the deadliest organism,
associated with a mortality rate of 40-50%. High risk pathogens such as P. aeruginosa, appear more frequently in patients who received prior antibiotic therapy. Furthermore, antibiotic therapy prior to mechanical ventilation correlates with increased frequency of infection with the appearance of drug-resistant P. aeruginosa or Acinetobacter species. To further complicate matters, VAP involves multiple microbes approximately 39% of the time. This makes diagnosis and appropriate treatment a significant challenge. VAP can also be caused by viruses. Cytomegalovirus (CMV) infection, which has traditionally been connected with immunosuppressed patients, has also been shown to cause VAP in immunocompetent patients. One study suggests that some CMV pneumonia cases may be misdiagnosed as bacterial pneumonia, or missed entirely when bacterial cultures are negative.

No matter what organism is responsible for initiating a case of VAP, it often originates from the patient’s own microbial flora. Under normal conditions, there are many defense mechanisms that keep microorganisms out of the respiratory tract. However, when an endotracheal tube is inserted, microbes have an easier entrance into the upper trachea. Aspiration, which occurs in many normal individuals during sleep, is enhanced by an endotracheal tube. Aspirated material (including microorganisms) can pass by the epiglottis and accumulate in the trachea just above the cuff of the tube. Furthermore, many conditions associated with ICU patients, such as altered consciousness or abnormal GI function, also enhance aspiration.

Aspirated microbes frequently originate from the GI tract, with the stomach often acting as a reservoir of microorganisms. These microbes can then colonize the oropharynx and eventually be aspirated into the upper trachea. The stomach is normally sterile due to hydrochloric acid secretion, which creates a bactericidal environment. However, the sterility of the stomach is compromised in many ICU patients. Advanced age, impaired GI function, malnourishment, and/or enteral feeding can all put them at increased risk for gastric colonization. In addition, antacid therapy, which raises gastric pH, has been linked to increased levels of gastric colonization.

The mechanical ventilator itself may also play a role in VAP, although this issue is controversial. It is possible that the mechanical ventilator could serve to enhance the growth or spread of microorganisms originating from the patient.

Colonization of ventilator circuits by microbes from the patient’s respiratory tract flora becomes high within hours. Some studies report a link between more frequent circuit changes and increased incidence of VAP, possibly because circuit changes involve movement and handling of the endotracheal tube, the ventilator circuit, and the patient. However, more recent studies suggest that frequency of circuit changes has no effect on the incidence of VAP. Furthermore, significant reduction of circuit colonization by the use of a heat and moisture exchanger (HME) was also found to have no effect on VAP incidence. Thus, the link between circuit colonization and VAP remains uncertain, but it is still important to be aware of the ventilator circuit’s potential to act as a bacterial incubator.

**Diagnosis**

Clinical symptoms such as fever, pulmonary infiltrate, leukocytosis, leukopenia, and purulent secretions all suggest pneumonia. More detailed diagnosis has traditionally been done by bronchoalveolar lavage (BAL) or protective speci men brush (PSB). Both of these procedures are done using fiberoptic bronchoscopy. PSB involves retrieval of peripheral airway samples by brushing against the bronchial lining. A protective sheath allows sampling without oropharyngeal contamination. BAL involves infusing a sterile saline solution through the bronchoscope into the bronchioles, and then retrieving that sample. Since some degree of tracheobronchial colonization is common in critically ill patients, it is important that these tests give quantitative results. An actual lung infection typically results in 105 to 106 colony forming units (cfu)/mL in pulmonary secretions. Yields of > 103 cfu from PSB or > 104 cfu from BAL are thought to reflect this level of infection.

The biggest difference between BAL and PSB is that BAL samples from a broader area of the lung than PSB. PSB focuses on specific areas where the brush is used. As a result, PSB isn’t able to retrieve as many organisms as BAL. Due to BAL’s larger sample size, more organisms can be accurately identified. In addition, BAL fluid can be microscopically analyzed immediately to obtain preliminary results, while PSB results take 24 to 48 hours. Rapid results can help the physician start the patient on appropriate antimicrobial therapy more quickly. A common drawback of both techniques is their cost.
approach could prove very useful when monitoring patients who require prolonged mechanical ventilation.

**Prevention/Treatment**

The usual treatment for VAP is antibiotic therapy, but due to the difficulties in diagnosis just discussed, choosing which antibiotic to use or whether to use one at all, is complex. Excessive use of antibiotics, particularly broad-spectrum antibiotics, can lead to more serious infections by drug-resistant microbes. Prior antibiotic treatment can increase the likelihood of VAP due to drug-resistant bacterial strains by changing the patient’s own microflora. While prior use of antibiotics does not actually increase the likelihood of getting VAP, it can dramatically affect disease severity and mortality rates. Thus, it could be argued that antimicrobial therapy for mechanically-ventilated patients should be avoided unless a bacterial infection is accurately identified.

An advantage to using a mini-BAL culture is that it is inexpensive compared to a bronchoscope BAL. This procedure can prevent unnecessary administration of antibiotics if no infection exists. If an infection is identified and specific microbes are determined to be present, a narrow spectrum antibiotic can be used.

Given the challenges and mortality associated with treating VAP, it is desirable to avoid its occurrence when possible. One way to accomplish this is to try to control gastric and oropharyngeal colonization. For example, when a patient suffering from stress ulcers (common among ICU patients) is given antacids, the pH of the stomach becomes elevated and its sterility is compromised. If the patient is also being mechanically ventilated, this puts the patient at a higher risk of contracting VAP due to gastric colonization. In one study, VAP occurred in 18% of mechanically ventilated patients receiving antacids, versus only 8% of the time when patients did not receive antacids at all.

Treating stress ulcers with sucralfate, which does not raise gastric pH, is associated with lower VAP rates. Regardless of the original cause, gastric colonization leads to oropharyngeal colonization, followed by colonization of the upper trachea. As discussed earlier, this substantially increases the likelihood that the patient will developed VAP. One way to try and prevent this is by careful suctioning of potentially contaminated subglottic secretions, reducing the number of microbes around the endotracheal tube’s cuff. In one study, this procedure reduced VAP by 43.4%. Another way to reduce colonization is by keeping the patient in a semirecumbent position. If the patient is placed in a supine position, oropharyngeal colonization is more likely to cause lung infection.

While gastric colonization represents an “infection from within,” all hospital patients are at some risk of infection from their environment. For instance, there is a higher risk of nosocomial infection, including VAP, if hospital staff aren’t rigorous about cleanliness and good aseptic practice. Although hand washing before and after contact with every patient is an effective means of reducing nosocomial infection, it has been reported that a significant number of hospital workers at all levels fail to do this. Effective use of gowns and gloves can also reduce infection rates. It is also important to ensure that the mechanical ventilation equipment is not a source of infection. As discussed previously, no strong correlation between ventilator circuit colonization and VAP has been observed. Several studies published from 1989 to 1996 consistently concluded that circuits do not need to be changed on a daily basis. Some researchers conclude that changing the circuits every 48 hours is acceptable, while others suggest once a week or even no changes at all. All of these studies found no increase in nosocomial pneumonia. While most of these studies also report no decrease in pneumonia, an obvious benefit to fewer circuit changes or no changes at all is cost reduction. Costs are reduced both in terms of less equipment devices used, as well as the respiratory therapists’ time.

Nebulizing equipment that is attached to the mechanical ventilator is yet another potential source of infection. One way to minimize this risk is by disinfecting the nebulizing equipment. Another way is to use a filter on the exhalation valve of the device to reduce contaminated condensate.

**Summary**

While much research has been done to resolve the dilemma presented by VAP, it continues to be a dangerous health hazard for the critically ill patient. Allied health personnel can help reduce the incidence of VAP in several ways. Using proper hand washing techniques and wearing gloves (when appropriate) are important for reducing all nosocomial infection. In addition, care must be taken to avoid excessive manipulation of the patient’s ventilator tubing. Maintaining ventilated patients in a semirecumbent position (when possible) also reduces the risk of VAP. For these things to happen routinely, all nursing and allied health staff must be educated about VAP and the risk factors that contribute to its incidence.

Finally, patients on mechanical ventilators must be carefully monitored for changes that signal developing VAP. Timing observation of clinical signs and symptoms that suggest VAP could allow early intervention. With this in mind, diagnostic techniques can be used to determine the type of microbe(s), which in turn allows the patient to be put on a narrow spectrum antibiotic sooner. This gives the patient a stronger chance for survival.

**References**

9. Dreyfuss D, Djedaini K, Gros I, Mier N, Fontanals D, Blanch L, et al. Mechanical ventilation with heated humidifiers or heat and moisture exchangers: effects on patient colo-

“Ventilator” continued on page 7
Humidification techniques during mechanical ventilation: patient selection, cost, and infection considerations. Respir Care 1996;41(9):809-816.


Helpful Web Links for the RCP

by Bruce Feistner, MS, RRT, director of the Dakota State University respiratory care program, Madison, SD.

In case you hadn’t noticed yet, there’s a lot of medical information on the web. I know that comes as a shock, but it’s true! Here are some selected sites for you to browse that have lots of other links to related topics. Listing these links does not necessarily mean that I endorse the products and/or information on them, or imply that these pages are better than others. It merely serves as a starting point for the practitioner. Have fun exploring!

Healthy Living:

http://www.wdn.com/mirkin/
Breakthroughs in Health and Fitness — Recipes, restaurants, medical reports, fitness

http://www.ns.sympatico.ca/healthyway/LISTS/B3-C05_all1.html
Healthy Living — Lots of links to health issues

http://www.bronsonhealth.com/rn.html
Recipes for Health Living — Nutritional and delicious recipes

http://openseason.com/annex/library/default.html
The Library Reading Room — A wide variety of medical topics

http://www.healthgate.com/HealthGate/home.html
HealthGate — Health, wellness and biomedical information

Respiratory Care:

http://www.xmission.com/~gastown/herpmed/respi.htm
Respiratory Links Page — Societies, books, medical info, education

http://www.thoracic.org/
The American Thoracic Society — The medical section of the American Lung Association

http://www.sourcepages.com
RC sourcePAGES — Online resources for Respiratory Care professionals

http://www.hsc.missouri.edu/shp/rtwweb/docs/rtllinks.html
Respiratory Care Related Links — A large, useful source for links to the profession

http://www.rtcorner.com
A web site for RT educators and students

Lung Diseases:

http://www.edgechaos.com/DEST/medicine.html
Medicine — Big link to medical topics

http://www.hlpub.com/journals/aci/asmanet.html
Asmanet — An asthma service on the information highway

http://www.coloradohealthnet.org
Colorado health net — Chronic illnesses, special services, holistic therapies

http://cancer.med.upenn.edu
OncoLink — Cancer types, support, trials, conferences

http://cf-web.mit.edu
Cystic Fibrosis — Online archive of CF information

Associations and organizations:

http://www.aarc.org
The AARC (I hope you are already using this one daily)

http://www.alphal1.org
Alpha 1 National Association — Support for individuals and families with Alpha 1-antitrypsin deficiency

http://www.lungusa.org
American Lung Association — Lung diseases, tobacco control, and environmental health

http://www.amhrt.org
American Heart Association — Heart and stroke guide, AHA diet, weight control, patient info

http://www.cancer.org
American Cancer Society — Cancer information, programs and events, publications, resources

Discussion lists:

http://cf-web.mit.edu/cystic-l
Cystic Fibrosis — Discussion list/support group for people impacted by CF

http://www.nesofsoft.com/internet/paml/groups/Rc_world.html
RC_WORLD — Respiratory Care Professionals World Forum

Diabetic — Ideas, comments, fears, info about diabetes

http://www.gen.emory.edu/MEDWEB/keyword/neurology/headache.html
Headache — Discussion list for headaches and their cures

http://www.gen.emory.edu/MEDWEB/keyword/neurology/discussion_groups.html
Neurology — Problem cases and questions in neurology
Editor’s Note: Reading scientific writings requires a high level of interpretive skills. To help our readers develop and refine these reading skills, the “Guide to Effective Scientific Communication” (source unknown) is printed below. It contains some rather “tongue in cheek” translations for some of the more common phases that appear in scientific papers and abstracts.

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>It has long been known</td>
<td>I haven’t bothered to look up the reference</td>
</tr>
<tr>
<td>It is believed</td>
<td>I think</td>
</tr>
<tr>
<td>It is generally believed</td>
<td>A couple of other guys think so too</td>
</tr>
<tr>
<td>It is not unreasonable to assume</td>
<td>If you believe this, you’ll believe anything</td>
</tr>
<tr>
<td>Of great theoretical importance</td>
<td>I find it kind of interesting</td>
</tr>
<tr>
<td>Of great practical importance</td>
<td>I can get some mileage out of it</td>
</tr>
<tr>
<td>Typical results are shown</td>
<td>The best results are shown</td>
</tr>
<tr>
<td>Three samples were chosen for</td>
<td>The others didn’t make sense, so we ignored them</td>
</tr>
<tr>
<td>further study</td>
<td></td>
</tr>
<tr>
<td>The floor sample was not studied</td>
<td>I dropped it on the floor</td>
</tr>
<tr>
<td>The floor determination may not be significant</td>
<td>I dropped it on the floor, but scooped most of it up</td>
</tr>
<tr>
<td>The significance of these results is unclear</td>
<td>Look at the pretty artifact</td>
</tr>
<tr>
<td>The results are statistically significant</td>
<td>The results are of no clinical application</td>
</tr>
<tr>
<td>It has not been possible to provide definitive answers</td>
<td>The experiment was negative, but at least I can publish the data somewhere</td>
</tr>
<tr>
<td>Correct within an order of magnitude</td>
<td>Wrong</td>
</tr>
<tr>
<td>It might be argued that</td>
<td>I have such a good answer for this objection that I shall now raise it</td>
</tr>
<tr>
<td>Much additional work will be required</td>
<td>This paper is not very good, but neither are all the others in this miserable field</td>
</tr>
<tr>
<td>These investigations proved highly rewarding</td>
<td>My grant is going to be renewed, or My paper is going to be published</td>
</tr>
<tr>
<td>I thank X for assistance with the experiments and Y for discussions on the interpretation of the data</td>
<td>X did the experiment and Y explained it to me useful</td>
</tr>
</tbody>
</table>

**1998/99 Calendar Deadlines**

November 14, 1998 CRTT Exam  
September 1  
December 5 RPFT Exam  
September 1  
March 13, 1999 PPS Exam  
November 1  
International Respiratory Congress (Atlanta)  
November 7-10  
Respiratory Care Education Annual Paper  
December 1  
March 13, 1999 CRTT Exam  
January 1, 1999  
June 5, 1999 RRT Exam  
February 1, 1999  
June 5, 1999 CPFT Exam  
April 1, 1999