ing Trials\textsuperscript{2}, meta-analyses of randomized controlled trials (Quality of Reporting of Meta-analyses\textsuperscript{3}), and diagnostic research studies (Standards for Reporting of Diagnostic Accuracy\textsuperscript{4}). These guidelines were based on empirical evidence on factors affecting the reader’s understanding, validity, reliability, and generalizability of the findings. Even though predictive research studies are common in the literature, published guidelines are not sufficiently supported by such empirical evidence.\textsuperscript{5,6}

Adequate reporting of predictive research should be based on elements that reflect how valid and precise the analyses were done. In predictive studies, overfitting is the key problem, which is related to several aspects of the modeling process. We suggest to report the number of candidate variables in addition to the variables in the final logistic model. The risk of overfitting after extensive modeling using many variables is high, especially in small data sets,\textsuperscript{7,8} and this unfortunately cannot be remedied by standard stepwise selection techniques.\textsuperscript{6} Also, a description of the model variables.\textsuperscript{7} Moreover, we would not stress the report of the odds ratios and their 95\% confidence intervals of the final important, since the relevant information can be obtained from ties. The report of coefficients, SEs, and p values are not extensive modeling using many variables is high, especially in small data sets,\textsuperscript{7,8} and this unfortunately cannot be remedied by standard stepwise selection techniques.\textsuperscript{6} Also, a description of the choices underlying coding of variables and, in particular, selection of variables are of paramount importance.\textsuperscript{8} The number of outcome events must also be reported additionally to the number of total observations, because further overfitting is likely if the number of events per candidate variable is low, eg, <10.\textsuperscript{5,8} Attempts of internal validation (eg, cross-validation or bootstrapping) can also reduce overfitting, using statistical “shrinkage” of coefficients.\textsuperscript{2,8} Further, predictive performance (calibration and discrimination) and internal/external validation should be described.\textsuperscript{2}

We further suggest to avoid the reporting of some technicalities. The report of coefficients, SEs, and p values are not important, since the relevant information can be obtained from the odds ratios and their 95\% confidence intervals of the final model variables.\textsuperscript{7} Moreover, we would not stress the report of collinearity in a predictive model, because we are primarily interested in the predictive performance of the whole model, but not in the regression coefficients of individual variables.\textsuperscript{7,8} If two variables are strongly correlated, no additional predictive information comes available once one is included in a predictive model.\textsuperscript{8} Even though we agree that collinearity is important in descriptive modeling, its report does not improve the judgement of the reader.

Predictive modeling using logistic regression analyses is becoming more important in the medical literature. Although Moss et al\textsuperscript{1} made an important contribution by noting where some deficiencies in reporting are, evidence-based recommendations for a proper reporting are still lacking and are urgently needed.

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References


To the Editor:

Dr. Hernandez and colleagues recommend additional considerations when reporting multivariable logistic regression analyses for predictive models. In our review of the pulmonary and critical care literature, only 6\% of articles used multivariable logistic regression modeling in a predictive manner.\textsuperscript{1} Therefore, we focused our suggested requirements for the proper reporting of descriptive models that identify the effect of an individual variable on a specific outcome while adjusting for differences in other factors. In regard to predictive modeling techniques, we agree that reporting collinearity is less important. Like Hernandez and colleagues, we would encourage those interested in a more complete understanding of methodological standards for predictive modeling strategies to read the articles by Laupacis and colleagues\textsuperscript{2} in JAMA, and Wasson and colleagues\textsuperscript{3} in the New England Journal of Medicine.

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COPD and Hepatitis C

To the Editor:

Kanazawa et al (February 2003)\textsuperscript{1} reported an accelerated decline of lung function in COPD patients with concomitant hepatitis C infection. They have suggested that the airway disease may be related to the underlying chronic inflammatory disorder.
The concept that chronic inflammation of foregut structures can be associated with airway inflammation and damage struck a cord with us since we have noted a striking excess of cases of treated hypothyroidism among a population of patients with idiopathic chronic cough and in nonsmoking patients with fixed airflow obstruction. Hypothyroidism is usually due to autoimmune destruction of the thyroid gland and is associated with intra- thyroid lymphocytic infiltration. We have shown that idiopathic chronic cough is associated with a BAL lymphocytosis and have suggested that this is due to homing of activated lymphocytes from the primary site of autoimmune inflammation to embryologically related structures such as the airways. The mechanism of airway inflammation and damage in autoimmune thyroid disease, and perhaps in chronic hepatitis C infection, may be analogous to that thought to be responsible for airway complications of inflammatory bowel disease. The concepts that inflammatory bowel disease and autoimmune thyroid disease are associated with airway disease, and that the pathogenesis is similar and not related to thyroid hormone status, are supported by a recent study showing a twofold to threefold excess of cough, sputum production, and breathlessness, and a remarkably similar profile of respiratory symptoms, among a cohort of patients with inflammatory bowel disease and among another cohort with treated autoimmune thyroid disease.

One important difference between the primary sites of inflammation in chronic hepatitis C infection and autoimmune thyroid disease is that the former condition is treatable. The findings of Kanazawa et al with interferon therapy raise the interesting possibility that treatment may modify the airway consequences of chronic inflammation of the foregut. The search is on for other treatable causes of chronic foregut inflammation that might be relevant to airway diseases. COPD is associated with peptic ulcer disease, so one possibility worth investigating is that chronic inflammation of the foregut structure and airway inflammation according to their concepts.

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REFERENCES


A Reappraisal of Nasal Saline Solution Use in Chronic Sinusitis

To the Editor:

We read with interest the article by Tsao et al in the March 2003 issue of CHEST. Although we agree with the idea that the chronic sinusitis that ensues concomitantly in children with mild asthma and allergic rhinitis should definitely be treated, we have some objections to the aggressive treatment methods they have recommended.

First of all, saline solution nasal washing certainly facilitates nasal drainage and clears the airway from any postnasal dis...

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REFERENCES