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Lung Cancer Screening Does Not Favorably Affect Outcome

To the Editor:

The efforts of Strauss et al (March 1997)\(^1\) to discount the results of four large, randomized, controlled trials of screening for lung cancer,\(^2,5\) each of which independently arrived at identical conclusions, is based principally on the questionable premise that the overdiagnosis of lung cancer is implausible. In support of this view, the authors cite the known aggressive biological behavior of lung cancer and the infrequency with which clinically occult incidental lung cancer is found at autopsy.

The biological behavior of lung cancers is highly variable; those that present as solitary pulmonary nodules exhibit, in general, a slow growth pattern. In the Mayo Clinic study, 45 of 50 peripheral lung carcinomas (90%) were visible in retrospect: 18 for >1 year, 4 for >2 years, and 1 for 53 months.\(^6\) In a summarization of the three National Cancer Institute-sponsored studies,\(^3,4\) Fontana and colleagues\(^5\) pointed out that all of the excess cancers diagnosed within the three screened populations were in stages 0, I, and II (240 vs 212 in the unscreened group), and that the number of cases of advanced cancer identified (stages III and IV) were equal in both groups (303 in the screened vs 304 in the unscreened). The authors added that had the screening been effective, one would have expected a trade-off—the increased number of patients diagnosed with low stages would be offset by the decrease in the number with advanced stage. Such was not the case, and they concluded that this finding implied that "detection of early stage potentially resectable lung cancer confers absolutely no mortality advantage."\(^6\)

The authors cite an autopsy series undertaken at Yale-New Haven Hospital (YNHH) as evidence that overdiagnosis is an implausible explanation for the outcome in the three controlled trials, suggesting that population heterogeneity (a higher incidence of lung cancer) in the screened cohorts accounts for the failure to demonstrate a favorable outcome compared with the controls. Overdiagnosis can occur in two ways: patients may have lung cancers with limited biological potential, or they may have biologically aggressive lung cancers but die of comorbid illnesses. In the decade 1972 to 1981, there were 8,585 deaths at YNHH; autopsies were performed on 2,996 persons age 20 and above. Lung cancer was found in 49 people. In 23, a diagnosis of cancer had been made during life, but the primary site incorrectly assigned. In the remaining 26 (0.9%), clinically unsuspected lung cancer was ascertained at autopsy ("surprise cancer"); 5 were stage 0, and 6 were stage 1.\(^8\)

In none of the 26 was death attributable to lung cancer. Of the lethal comorbidities, myocardial infarction, congestive heart failure, pneumonia, and sepsis were the most common.\(^6\) In the Mayo Clinic study,\(^4\) there were 46 more cases identified in the screening than in the control group (206 vs 160). The incidence of lung cancer in the former group was 5.5/1,000 years of surveillance. The incidence of "overdiagnosed" lung cancer was 46/206×0.5/1,000=0.1%, one ninth the autopsy incidence of surprise lung cancer. Had the YNHH autopsy cohort been limited to male heavy smokers over age 45, as required by the Mayo Clinic protocol, the percentage of surprise lung cancers undoubtedly would have been higher. In comparing the standardized incidence of autopsy-detected surprise lung cancers to the standardized occurrence rates of lung cancer reported to the Connecticut State Tumor Registry, the authors of the YNHH study found that the former were 4 and 15 times the latter for men and women, respectively. They concluded that "the results suggest that a large 'reserve' of undetected lung cancer exists in the population."\(^8\)

The untoward consequences of lung cancer screening for chronic heavy smokers, many of whom have coronary artery disease and COPD, have not received sufficient emphasis. Whatever benefit might accrue to a few patients by earlier diagnosis and curative resection may be offset by patients who die sooner than they would have otherwise, as a consequence of loss of pulmonary reserve following resection of overdiaognosed neoplasms. There is, in addition, a burden on those patients with benign abnormalities identified by screening; in the Mayo Clinic prevalence screen, lung cancer was the cause of the radiographic abnormality in 91 persons (0.83%); 28 persons (0.26%) underwent thoracotomy for benign disease—predominantly hamartomas and granulomas—because malignancy could not be excluded as the cause of the radiographic findings by other means. In the Memorial-Sloan Kettering study,\(^2\) 16 persons with benign disease out of 10,000 screened (0.16%) underwent thoracotomy for the same indication; one died postoperatively.

In conclusion, lung cancer screening does not favorably affect outcomes: one can make a credible argument that it is not merely nonbeneficial, but harmful.

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References

More Information on Infection and Infarction

To the Editor:

Blasi and colleagues (August 1997) have made a solid contribution to the increasing evidence that Chlamydia and other organisms are part of the pathogenesis of coronary disease. I was particularly taken by their data confirming a high prevalence of upper respiratory tract infection (about 20% of patients with acute infarction) in the 3 weeks prior to admission. Though they missed our report, this is supportive of our finding in a prospective age- and sex-matched controlled investigation of a prevalence of 28% for upper respiratory tract infections in the 2 weeks prior to admission for acute myocardial infarction, vs 14% in the control population. This again raises the question of "infection and infarction" raised in the late 1980s with implications for myocarditic mimicry of infarcts and the precipitation by infectious processes of true infarction.

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REFERENCES

2 Spodick DH, Flessas A, Johnson MM. Association of acute respiratory symptoms with the onset of acute myocardial infarction: prospective investigation of 150 consecutive patients and matched control patients. Am J Cardiol 1984; 53:481-82

The Ethics SOAP Note

To the Editor:

Ethically based medical decision making is a vital component of medical practice and an important focus of contemporary medical education. Despite its recognized importance, however, many medical school graduates who enter residency training without a firm grounding in, or a facility with, its practice. These resident physicians are generally well trained in a modern biopsychosocial approach to patients, are comfortable with the standard subjective, objective, assessment, and plan (SOAP) note format, and are usually very facile in its use as a tool for organizing their thoughts around a medical case. I, therefore, propose that the SOAP approach be used as an organizing instrument to aid physicians-in-training in sorting out the many ethical dilemmas that arise in routine residency medical practice.

Ethically based medical decision making requires that physicians-in-training be familiar with a few basic concepts of contemporary biomedical ethics: specifically, patient autonomy (a patient's right to decide) and physician beneficence (the obligation to do good), nonmaleficence (the obligation not to do harm), and justice (the obligation to be just and fair). Ethical or value-based medical decision making also requires knowledge of a patient's personal values. As importantly, it also necessitates that physicians become aware of their own values and the role these values play in decision making. Finally, ethically based medical decision making requires reinforcement through practice.

Thus equipped, a physician-in-training is better able to approach ethical uncertainties and difficulties with an organizational framework for achieving clarity in difficult or ambiguous circumstances. My recommended use of the SOAP note is as follows:

1. The subjective component of the SOAP approach to ethically based medical decision making is focused on the resident. Specifically, residents are asked to state the problem in their own words, from their own perspective. This can take the form of "I am uncomfortable with . . . ." Initially, when residents state the problem, there is no emphasis on being more or less specific. The clarity comes later, after a more thorough exploration of the problem.

2. The physician-in-training is then asked to present the objective facts of the problem or case, including any relevant medical and social factors. Making a list can be helpful.

3. An assessment of this objective information in the context of the stated problem is then undertaken. At this time, it is appropriate to revisit the subjective component and restate the problem in more specific terms. The assessment must take into account any relevant concepts in medical ethics, as well as any human values information that may have an impact on decision making.

4. Finally, a plan is then developed to address the subjective problem. A number of alternative solutions may be outlined and explored. There is no emphasis on closure at this point but rather on the implementation of a plan that will lead to closure. The plans can be specifically related to the stated subjective problem; alternately, at times it is appropriate for the plan to lead to consultation with an ethicist or hospital ethics committee.

This use of the SOAP format as a teaching tool for value-based medical decision making in the medical ICU has proven helpful in my work with medical students and medical residents. I, therefore, recommend it as a useful teaching tool.

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