At this time, two positions about lung cancer screening are defensible based on current evidence. First, it is quite reasonable to defend the position that there is insufficient evidence to recommend population-based screening for lung cancer with spiral computed tomography (CT) for individuals at increased risk for lung cancer.[1] Despite very favorable results from observational studies,[2-4] broad consensus about policy depends, at a minimum, on results from a prospective randomized trial comparing lung cancer mortality in an experimental group with a control group. Ideally, this comparison is between a group invited to screening and a group receiving usual care, and such trials have begun in France, the Netherlands, and Italy, but decisions also may be made for alternative comparisons if circumstances warrant a different randomization scheme. The National Lung Screening Trial has just completed recruiting 50,000 individuals at elevated risk to a prospective randomized trial comparing chest radiography to spiral CT.[5] Eventually, the results of trials in the United States and Europe will provide the evidence for whether or not screening can be supported, but it is fair to say that (1) very promising early results from Japan, the United States, and Europe provide a sound basis for optimism, and (2) most nations are reluctant to commit national resources to a long-term prospective trial unless there is reasonable promise that the intervention is effective. Thus, the second position is that it is also quite reasonable (although not certain) to anticipate that screening for lung cancer with spiral CT will meet conventional criteria for an evidence-based recommendation that some designated "at risk" group undergo regular testing. Two Questions

The article by Warner and Mulshine in this issue addresses two pressing issues for this time.[6] What might we do while trials are under way? Does "anticipating lung cancer screening" violate the principle of equipoise that forms the basis for investing in a prospective trial? Warner and Mulshine lay out basic criteria (see their Table 1[6]) for population-based screening described by Wilson and Jungner for the World Health Organization in 1968.[7] Testing an asymptomatic population for cancer must meet these criteria for a number of reasons, not the least of which is that failing to meet one or more could mean extraordinary human and resource costs with little tangible benefit. However, it also is the case that screening for a chronic condition can measure up to each of these criteria in an experimental setting and still fail to fulfill that potential when screening is implemented at the community level. Further, screening must be thought of as its own discrete chain of events within a larger chain of events, the entirety of which is vulnerable-for both individuals and populations-to any weakness in the links. Parallel Strategy

Warner and Mulshine are proposing a vision for population-based lung cancer screening that offers the greatest potential for the population at risk, and the most effective use of health resources. They propose that we not wait until the conclusion of the trials to address a broad range of current concerns (overdiagnosis, cost-effectiveness, harms, etc) and operational aspects of screening-specifically, risk-stratification, eligibility, test performance, diagnostic algorithms, and therapeutic strategies that are attentive to conservation of pulmonary reserve, especially considering that years of life gained are not years free of risk of secondary malignancies. Such a
parallel strategy, ie, conducting ongoing operational research and development concurrently with the trials, is possible in the United States because there is active promotion and uptake of testing for early lung cancer detection in the at-risk population outside of experimental settings. To the degree that these clinical programs can follow common algorithms and capture data for evaluation, such as the consortium of clinical centers organized by the Early Lung Cancer Action Project at the Weill Medical College of Cornell University,[8] much can be learned about best practices related to testing and integrated management of screen-detected lesions that the prospective randomized trials, with their greater emphasis on mortality end points, will not provide. Further, technology doesn't come to a standstill while trials are under way, and it is thus wiser to explore the potential and cost-effectiveness of evolving screening algorithms, new technologies, and diagnostic strategies, as they are likely to be the ones in use at the conclusion of prospective studies. It is hard to defend the position that addressing the issue of how best to implement screening should await publication of trial end results. **Organized vs Opportunistic Screening**

Warner and Mulshine also propose that screening be as organized as possible to insure state-of-the-art quality across the continuum of care. However, if one considers the current approach to screening for other cancers, their vision, no matter how sensible, is not readily achievable in the United States. However, the lack of a framework for implementing such a strategy in this country doesn't mean it's not worth pursuing. The delivery of cancer screening may be either organized or opportunistic. In the world, the main distinction between organized vs opportunistic models of screening is the manner in which invitations to screening are issued to the population—organized screening, invitations to screening are issued from centralized population registers, whereas in an opportunistic model of service delivery, screening depends on individual decisions or encounters with health-care providers, where there may be an opportunity to stimulate preventive care, as distinguished from ordering tests for complaints and symptoms. However, there are other distinctions between organized and opportunistic models. When screening is organized, the centralized program also has responsibility and oversight of other key elements of screening, including eligibility requirements, quality assurance, follow-up, and ongoing evaluation and feedback. In an opportunistic setting, these elements may be more or less present, but practice patterns may be highly variable and there is little in the way of oversight of quality, ongoing evaluation, or feedback. It is fair to say that the potential for screening to reduce morbidity and mortality is far greater when screening is organized, compared with an opportunistic model. **Quality Assurance Issues**

Warner and Mulshine,[6] and others,[9] have raised legitimate concerns about lung cancer screening delivered in nonexpert settings with uneven quality. Screening for any cancer requires attention to detail, and quality assurance failures not only can lead to harms and even deaths from missed cancers, but also from interventions ultimately determined to be false-positives. Screening for lung cancer could rival the most effective screening tests in terms of lives saved, but it also could be the screening test that generates the highest iatrogenic costs. For this reason it is urgent that we rapidly explore strategies to ensure that individuals at high risk for lung cancer undergo testing and evaluation in centers of excellence, and that screening is as organized as is possible in the United States. Reports from experienced centers provide confidence that, if lung cancer screening is shown to be efficacious, it can be offered with confidence that harms can be minimized.[2,4] During this period while trials are under way, clinical and public health institutions should confront these challenges, and begin planning for possible implementation of lung cancer screening tomorrow.

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