The Cochrane Collaboration

Lessons for Public Health Practice and Evaluation?

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Archie Cochrane undoubtedly wanted to reach providers of health care with his ideas, but he probably never thought that he would father a revolution in the evaluation of medical practices.

In his book of only 92 pages, "Effectiveness and Efficiency: Random Reflections on Health Services," published by the Nuffield Provincial Hospitals Trust in 1972, he cast a critical eye on health care delivery, on many well-respected and broadly applied interventions, and on whole fields of medicine and their underlying belief systems *(1)*. His judgments were founded on his training in science at Cambridge University, his experiences as a physician, as a director of a Medical Research Council Epidemiology Unit in Wales, and on his observations of medical care, made while serving as a medical officer in German prisoner of war camps during World War II *(2)*.

Cochrane's book clearly expressed his commitment to equity in the provision of health care, his support for the National Health Service and his humanism. In this brief volume, he expressed concern not only with poor quality of government and practitioner reasoning about health care strategies but with the lack of evidence supporting a great many medical practices.

Above all, he wanted health services to be helpful to those served. He found maternity care, hypertension, "exuberant surgery," the treatment of tuberculosis, and heart disease often lacking in logic, delivered in the wrong place or at the wrong time. He was not afraid to challenge the diagnostic acumen of his ancestors or peers. He believed that clinical questions often were answered on the basis of tests, rather than on common sense.

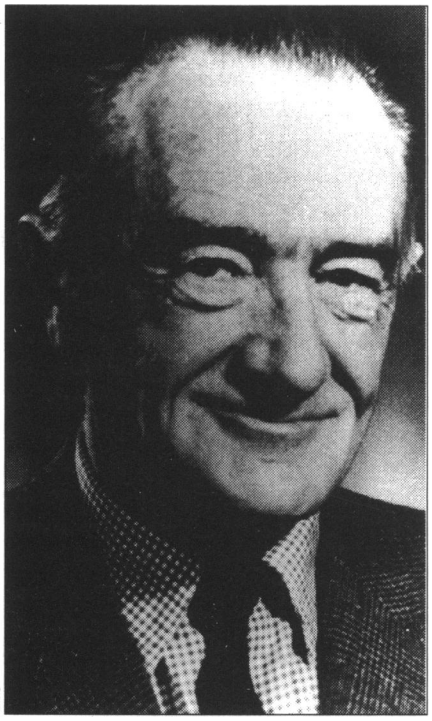
Obstetrics offered Cochrane an example of the practices of the day. Like many other fields of medicine, obstetrics adhered to treatments that perhaps were of traditional or emotional value but which had little basis in science. The therapeutic use of iron and vitamins, the basis for extended lengths of stay in hospitals following childbirth, and the basis for deciding how many maternity beds were needed in Britain were all questioned by Cochrane, who believed that these matters could and should be investigated in trials.

Although Cochrane was by no means the first clinician-epidemiologist to suggest that randomized controlled trials were an appropriate means of deciding questions regarding the efficiency and benefit of treatment, I can think of no voice that was as strong or as filled with common sense as his.

I first encountered him in 1970 when I was invited by Professor Walter Holland to spend a post-doctoral year at St. Thomas' Hospital Medical School in London. As a guest faculty member, I was included in the annual trek of the (then) Department of Social Medicine and Clinical Epidemiology to the Social Medicine meetings.

In Aberdeen, Scotland, listening to a presentation—a report of a health care survey whose content I no longer remember—I heard a question from the rear of the meeting room, "Well, what about a randomized controlled trial?" The voice was loud, clear and intrusive. I asked a colleague for the name of the person who felt so free to interrupt the speaker. "Oh, that's Archie Cochrane, from Cardiff; he says that at most of these meetings."

Along with many others, I thought randomized controlled trials (RCTs) were appropriate for laboratory studies and probably some animal and behaviorist psychological experiments. I had taught research methods for many years and was fully armed with reasons as to why RCTs would not work in studies of direct patient care or of community interventions.



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A. L. Cochrane

I began to think differently about the uses of RCTs in England, and later, in Denver, I became an RCT practitioner, advocating its use in situations in which RCTs are needed. I remember that the first and probably the most influential suggestion came from Archie Cochrane. I was not his only student.

By the mid-70s, his small book had been published in seven languages. That pleased him greatly, but he remained convinced for many years that although he attracted many admirers, few were followers. In 1978, during a visit with him at Rhoose Farm, in South Wales, he expressed disappointment that his views of experiments were not more widely

held. He believed not only in the experimental method but also that the aggregation of the results of experiments, followed by critical summaries, would be useful to health professionals in their medical decision-making.

Today he has a great many followers. In November 1992, the opening of the first Cochrane Centre in Oxford, England, was attended by medical scholars, friends from many countries, Cochrane's students, government representatives, and a large number of well wishers. The day's program stated the centre's philosophy and agenda, honoring Cochrane's main thesis: "that limited resources should be used to provide forms of health care that have been shown to be effective by properly controlled research."

It is fitting that the Director of the first Cochrane Centre is Dr. Iain Chalmers, a student who became Cochrane's lifelong friend. Chalmers had heard and accepted Cochrane's "challenge to obstetrics." As the first director of the National Perinatal Epidemiology Unit in Oxford in 1978, Iain Chalmers gathered a capable multidisciplinary professional staff, who developed and provided technical support for the conduct of RCTs in perinatal health care *(3)*. This unit created the Oxford Database of Perinatal Trials that today serves as a prototype for the development of comparable data bases in other fields of medicine.

This data base, along with electronically published reviews, articles in peer reviewed journals, an extraordinary two-volume review of perinatal practices, and a similar review of neonatal care has systematically provided answers to a wide range of perinatal questions.

The notion of a data base of trials, along with summaries of their findings has spread into a dozen fields of medicine. A worldwide collaborative effort is under way to prepare, maintain, and disseminate systematic reviews of the effects of health care. The Cochrane Collaboration extends to Auckland, Milan, Oxford, Leeds, Ottawa, Copenhagen, Amsterdam, and beyond to Mexico and Chile. There are now Cochrane Centers in the United States as well, in Baltimore, San Antonio, and San Francisco.

The centers coordinate the conduct of "systematic reviews" of the published and unpublished literature in medical care. This term "systematic review" has taken on a more precise meaning than in the past, referring to formally and consistently applied criteria with which research reports are assessed. An article by Cynthia Mulrow *(4)*, evaluating the quality of medical review articles, has been of benefit in standardizing the criteria used in reviews. Both published and unpublished RCTs provide the raw data for systematic reviews.

Collaborative Review Groups (CRGs) produce the systematic reviews, assisted by disciplinary specialists, called "the Fields," who assure that particular areas, for example, musculoskeletal and soft tissue diseases, stroke, pregnancy complications, mental illness, and a great many other problems are appropriately and well covered. Public health professionals (not only those who are health service researchers) have a great deal to learn from this particular "medical model."

There are few randomized controlled trials in the fields of environmental or occupational health, fewer still evaluating the benefits of school health or health promotion programs. In Denver, a new, centralized and costly emissions inspection program replaced a dispersed inexpensive system. We do not know that the old system did not work. We do not know that the new system will work. We do not know clearly what we mean by "work." What were and will be the expected benefits to health?

Although vaccines have been subjected to trials, methods of delivery have not. The high cost of an RCT of the delivery of a public health program is often given as the reason for not doing one. However, a trial is far less expensive than the delivery of a program of unsubstantiated value or one that may in fact be unnecessary or harmful.

We also often hear that it is not ethical to withhold a "treatment" or a program from the deserving public. Iain Chalmers has addressed this argument, pointing out that what is being withheld has often itself not been shown to be effective. Advocates for programs often cannot demonstrate the effectiveness or the efficiency of the favored strategy any more than they can demonstrate that the one being replaced did not work. We need the trials; we also need summaries and systematic reviews so that we are as well-informed as is possible before we introduce large scale public health programs.

At least that is what I think Archie Cochrane would say.

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