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(Book review)

The Role of Medicine: Dream, Mirage or Nemesis?

Title: The Role of Medicine: Dream, Mirage or Nemesis? (1979)

Author: Thomas McKeown

Publisher: Basil Blackwell, Oxford

In a book that is often grouped with [Effectiveness and Efficiency](#) (Cochrane) and [Limits to Medicine](#) (Illich), Dr McKeown attempts to calculate the role of medicine in the improvement in health seen over the preceding centuries. He also points out the current problems with medicine (in the 1970s, anyway) and makes suggestions for the future of medical practice, education and research. Fortunately, many of his suggestions have been realised, but unfortunately, the contribution of medicine to the continuing improvement in health remains overestimated.

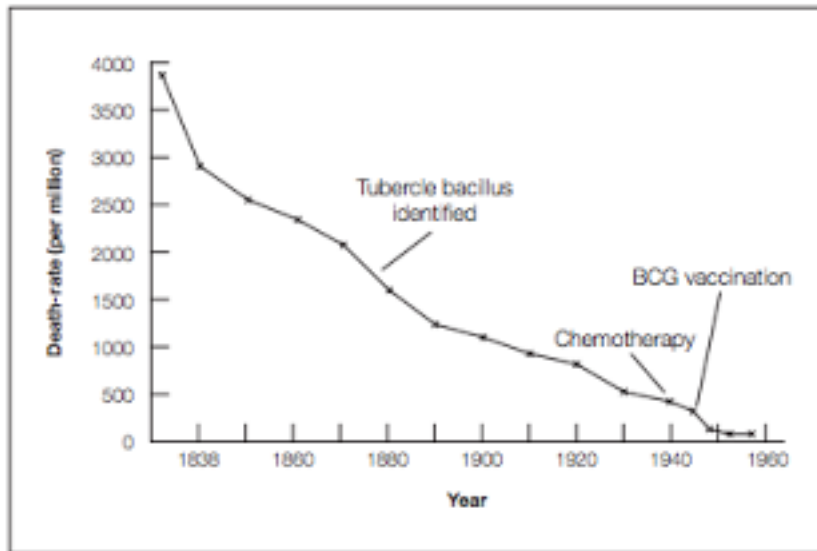
The main part of the book concerns the role of medicine in improving health, concentrating on the change in life expectancy. His argument is that the increase in life expectancy seen over decades and centuries has been largely due to increased access to food, and decreased exposure to harmful bacteria. The latter through public health measures such as clean water sources, treating and disposing of sewerage, changing living conditions, and the improved handling, packaging and transport of food (e.g. pasteurisation, bottling, fast transport).

One obvious point about the increase in life expectancy is that it has arisen largely from changes in mortality in children. He notes that early records (as far as they exist) indicate that for a long time most humans did not survive to adult life. Although infection was the big killer, the interesting point about infant mortality was the discussion of infanticide. It appears that infanticide (for many reasons, mainly poverty) was common practice in Western Europe until the eighteenth and nineteenth centuries.

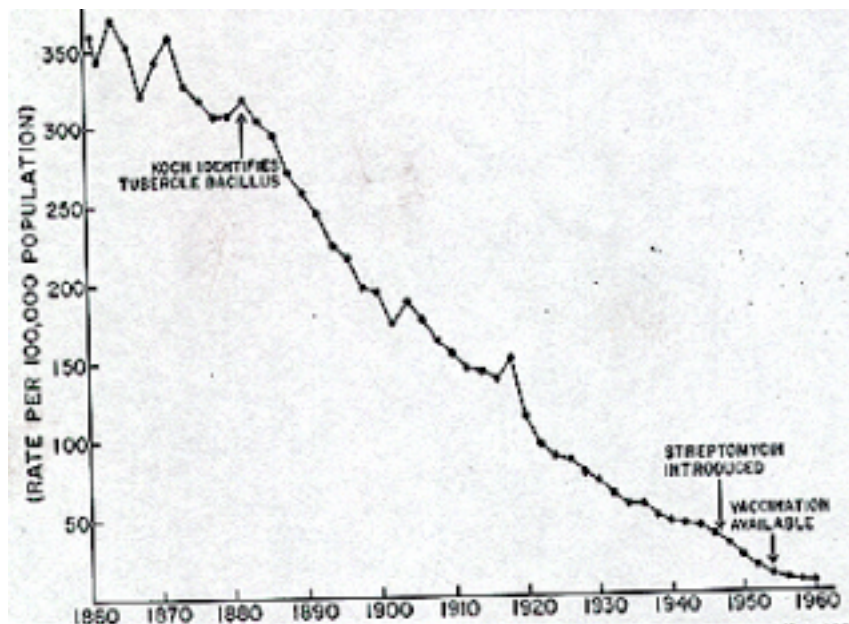
McKeown attributes most of the reduction in the death rate (and increase in longevity) from the beginning of the 18th century to the 1970s to the decline in infections. The decline in death from tuberculosis alone (the biggest killer in the mid 1800s) was associated with nearly half of the decline in the overall death rate during the second half of the nineteenth century. The death rate from tuberculosis continued to decline in the early 20th century and was at very low levels by the time the first effective medical treatment (streptomycin) arrived (see image below, and I have placed comparative US data below it). He uses such

data to conclude that modern medicine was not the big player in the decline of tuberculosis. Looking at the graphs it seems obvious, but if you ask any first year medical student (or final year, or doctor?) they will tell you that the invention of antibiotics was responsible for the control of tuberculosis.

FIGURE 1: Respiratory tuberculosis—mean annual death rates (standardised to 1901 population, England and Wales)



Source: McKeown 1979:92



Death rate for Tuberculosis, 1860-1960, United States, Source: US Bureau of the

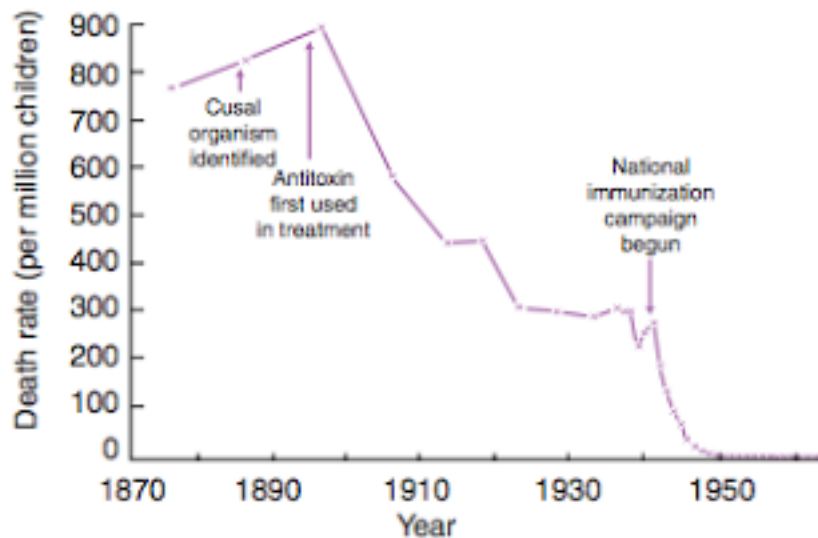
Census, Historical Statistics of the United States; Colonial Times to 1970 (Washington, D.C: Government Printing Office, 1975), Part 1 pp58,63. Note: Data between 1860 and 1900 for Massachusetts only.

Similarly, death from typhus fell dramatically leading up to the 20th century, without any effective medical treatment available. Same goes for influenza, pneumonia, whooping cough, scarlet fever and measles. The reasons are speculated (nutrition, herd immunity, and public health measures), but the declines seen are clearly not due to doctors. The images below are from his previous book, *The Modern Rise of Population*.

The decline in mortality from non-infective conditions (starvation, infanticide, premature birth, etc.) are also discussed. And he deals with environmental and behavioural issues at length (discussing smoking and modern diets, for example).

McKeown also argues that the high rates of death from infections seen in the preceding centuries are not the 'normal' case, and that infection was not a common cause of death in the nomadic period due to the vast difference in population density. He argues that progress in agriculture and engineering that allowed us to live together in cities has had its down side. He notes that animals in their native state do not usually die from infections (I have always wondered why my pets have all lived to ripe old ages without any help from veterinary science).

The author grants that immunisation for smallpox has been effective, but notes that this was not a major cause of death prior to immunisation (which, interestingly, began in the early 1800s). He also acknowledges some contribution from medicine prior to WW II (the modern antibiotic era), including diphtheria antitoxin, intravenous therapy for diarrhoea and improved obstetric care for puerperal fever. Many of the success stories we think about, however, like polio, were not big killers prior to immunisation. (Diphtheria graph below).



Diphtheria: death rates of children under 15, England and Wales.

Like Cochrane, he also calls for medical treatments to be investigated and critically examined, as would be the case in any field of endeavour, preferably before they become common practice and too 'resistant' to testing.

The assumptions used in this book, like the problems with using data collected over different centuries, makes any calculation of the effect of medicine unreliable. For example, he attributes exactly 3.2% of the decline in tuberculosis mortality from 1848 to 1971 to medical treatment (antibiotics). That criticism, however, should not negate the main message that: generally a human being that survives birth will live to be old without medical intervention, as long as there is clean water, enough food and a safe environment (homicide, smoking, traffic etc.).

There are several other parts to this book, and I will only briefly touch on the sections dealing with current (1970's) medical practice and education and suggestions for the future. Dr McKeown laments the emphasis on mechanisms and diagnosis, and recommends a broader view of medicine to cover more important determinants of health, such as nutrition and environmental factors. What he is asking for is an appreciation of the importance of the factors that lie outside the traditional doctor's clinic, and to include them in education, research and practice. My opinion is that this wish has at least partly been realised.

His problem with medical practice is reinforced with examples. He notes that when he was a young doctor, medicine was facing an epidemic of lung cancer. The emphasis (at least in clinical medicine) at the time was on treatment and early detection, with little discussion of the cause (smoking).

The bottom line

McKeown repeatedly points out that the effectiveness of medical therapies are overestimated and the harms underestimated, which is my mantra. But the main message of the book can be summed up by this quote:

“The appraisal of influences on health in the past three centuries suggested that we owe the improvement, not to what happens when we are ill, but to the fact that we do not so often become ill.”

If you include public health measures like water, sewerage and food hygiene under medicine, that's fine, but to claim that all the public health measures of the last few centuries fall under the banner of medicine is hard, when it wasn't the doctors that did it. Most people see medicine as what happens in the doctor's office, and they consider that to be responsible for our increasing longevity.

PS: McKeown has come in for his fair share of criticism (see [here](#)), but the criticisms were mainly aimed at his view that the population rise was due to falling death rate, rather than rising birth rates, and that he underplayed the role of public health measures such as water and sewerage. I don't think the latter accusation is true, but either way, the critics can't say that specific, modern medical interventions (like antibiotics) were responsible for any increase in life expectancy prior to WW II because there weren't any, apart from the examples he provides (like smallpox vaccine and diphtheria antitoxin).