IDENTIFYING DISEASE IN THE PAST: CUTTING THE GORDIAN KNOT

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I: DISEASE IDENTITY

How should we historians approach the issue of the identity of disease in the past? Can we legitimately identify past diseases? Can we legitimately identify past diseases with present diseases? Can we legitimately identify particular epidemics in the past? Can we legitimately talk of the evolution of diseases or pathogens? Can we legitimately reach past people's experience of disease by identifying what they were suffering from? Are our attempts at retrospective diagnosis legitimate? Is retrospective diagnosis either possible or desirable?

These questions —surprisingly— virtually never crop up in the work of historians of medicine, who for the most part assume that the identification of past diseases is simply not a problem, since they assume the continuous identity of past diseases with modern diseases. They just get on with identifying past diseases in modern terms – whether it is logically, philosophically or historiographically possible or not. Hence my use of the term 'legitimately' in my questions. Certainly we *can* make such identifications, and we do. But do they mean anything? Do they mean what we want them to mean? Are they logical, sensible, and coherent things for us to do? Most important of all, do they tell us anything at all about *the past*, or are they simply projections backwards of present-day issues and concerns?

Before we can explore these issues we have to ask a fundamental question: what is disease? There has been a lot of confusion on this issue, based on misplaced and un-inspected assumptions. What we can say is that, at its most fundamental, disease is (1) an *experience* – an experience of debilitation, pain, suffering, together with (2) the spontaneous *appearance of non-customary phenomena* with respect to the body, such as spots, vomiting, sweating, aches, and (3) with *outcomes* of recovery, death or disability. In this, disease is something that humans and animals have in common. But there is one big difference. For unlike other animals, humans seem to insist on seeking reasons or *causes* for disease: for its incidence, its origin, its course, its outcome. Some of the reasons given in the past and in other present-day societies seem

to us to be either unreasonable or irrational – something which prejudices them in our eyes and could exclude them from our considerations. So I prefer to speak in terms of *causes*, since this is a more inclusive term than *reasons* or rationales. It is this 'cause' dimension in human disease which means that *disease is always experienced socially*, that it is not just a biological phenomenon but just as much a social phenomenon. It is not just that we have to use language, itself essentially social, as our only means to think and express ourselves about disease. It is rather that we seem to be unable to talk about or even conceptualise disease without invoking *cause* in one sense or another. Different societies, separated culturally by space or time, will have different views as to what states constitute disease and what its causes are. But at all times and places, in all societies, disease identity, and especially the cause dimension of it, is going to be an expression of how people in that society think the world functions. Cause, with respect to disease, is thus expressed in many ways and thought to be many different kinds of thing, from djins and the evil eye, to humoral imbalance, to germs and vitamin deficiency, to poor DNA and social disadvantage. For we can only think about our experience of disease —as of anything else— in the terms and categories of whichever particular society we are in.

For almost 150 years the dominant model of disease we have had in Western developed societies has been that many diseases are caused by some *encounter* of the human body with some dangerous element (or a *failed* encounter with some necessary element) 'out there' in Nature. This model applies primarily to our categories of infectious disease and deficiency disease, but it is pertinent also to a large extent also to degenerative diseases, which occupy a large part of our present-day disease landscape. As we also believe —since this is part of our modern scientific world-view— that Nature is pretty consistent in its behaviour, and the elements in it (whether good or bad with respect to humans) are pretty constant in their behaviour, so it feels obvious to us that these encounters with Nature or the environment are —and always have been— constant too. Thus when talking about disease identity we tend to make a little logical leap at this point, and assume that disease identity has been pretty constant over time, and that diseases are themselves a-cultural and a-social, that they have an identity quite separate from the social circumstances in which they are experienced. It seems obvious to us, looking through our scientific medicine spectacles, that of course social *interpretations* of disease (and what 'counts as' a disease) do and have varied from society to society, but it seems to us that these just express greater or less success in coping with the underlying constant disease reality 'out there' in Nature. As we assume that our own success in coping with disease has been the greatest, we naturally take *our* models of disease identity as the final, and thereby the only legitimate, models. In particular, for those diseases where we believe some minute material living entity to be the cause, we believe we in effect encapsulate the whole disease *experience* by talking about the *encounter* between microbe and human organism. So when we come to doing the history, when we come to trying to

identify past outbreaks of plague for instance, we assume that what we need is the best *modern* thinking about the disease and its manifestations. Armed with this supreme form of knowledge we are able, we believe, to *correctly* identify outbreaks of plague in the past, even down to pronouncing on the presence or absence of the bacillus, and we correct the people of the past in their identifications of plague, telling them when they were right and when they were wrong, since our form of knowledge is clearly superior to theirs.

Yet in fact this is just our society's way of thinking: true for us and our world, but not necessarily true for other societies and other times.

Some of the large issues about the problems in making retrospective diagnosis have been raised very ably in a recent extended critique of other historians' approaches[1]. Using Ludwig Fleck's analysis of the history of the concept of syphilis, it is there made clear that, through all their many changes, disease concepts are *always* social products. But, even more strikingly, it is shown that the maintenance of the *stability* of disease concepts is *also* a social phenomenon, achieved by social reinforcement. As a necessary consequence of this social reinforcement, 'the historicity of [disease] concepts is necessarily eliminated'. This elimination of the historicity of disease concepts is 'a necessary by-product, within «popular science» of the modern concept itself'. This is how diseases are attributed eternal reality by us: 'the modern concept is extended backwards in time: the disease as presently conceived is seen as a permanent entity, and it is assumed that it can be diagnosed retrospectively'. In the light of this account of the social construction of disease identity *and* of the permanent being of diseases, it can now be quite easily understood why the assumption that retrospective diagnosis is both possible and desirable, has so dominated the history of medicine. Medical historians have turned to modern medical knowledge to help their investigations of the past, and modern doctors have felt themselves specially well-placed to make retrospective diagnosis themselves. But the assumption of the persistence of disease identity is simply that: an assumption – and one which is not open to proof or disproof, because of the incommensurability of old disease concepts with new disease concepts.

Once we understand the sources of our unjustified assumption about the validity of retrospective diagnosis, we can stop trying to do it. But where should we go from there? The author of this particular critique recommends that instead of concentrating on *diseases* (as real entities), we should instead concentrate on disease *concepts* (as thought entities), and write the history of these[2]. However, this alternate approach —that we should be studying the history of disease concepts— is also subject to fatal criticism, primarily that concepts, as things thought, don't actually have histories. Concepts are

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[1] WILSON, A. (2000), «On the History of Disease Concepts: The Case of Pleurisy», *History of Science* 38, 271-319; the quotations are from page 275.

[2] Ibid., especially the conclusions, pp. 303-6.

the product or outcome or perhaps the elements of thinking; they do not have their own histories separate from the thinking act. This thinking act, by contrast, certainly does have a history because it is a human activity[3].

The main thrust of the present paper is to follow this line and to offer an alternative approach by cutting through the Gordian knot of disease history. It will involve turning our attention away both from *diseases* (the old way) and also away from disease *concepts* (the proposed new way), and turning it instead towards *how diagnosis happens*. In other words, to *people thinking and acting* in particular cultures, situations and times. It will be noted that looking at *people thinking* is not the same as looking at their *mental concepts*, although of course mental concepts are involved. Looking at *people thinking and acting* will, I believe, give us a properly historical view of disease history, placing past disease firmly in the past, and interpreting that past experience of disease in such a way that people of the present may empathise with that past experience, but not turning it into some early version of modern disease and hence of modern experience. By making *how diagnosis happens* central to our historical investigations, we are using the only sure thing we have, the only thing which we can rely on. For it is by the act of diagnosis that disease identity is given or established. The operations that humans perform in making diagnosis are not just the key to disease identity, but the source of disease identity. The only identity disease has is this *operational* identity. I see this as the equivalent of Alexander the Great's solution to the complexities of the Gordian knot. He simply sliced through it, rather than seeking to disentangle it. If we concentrate on *how diagnosis happens*, we need no longer worry about disentangling disease entities, disease concepts, linguistic and conceptual incommensurability, germ evolution or anything else.

Diagnosis always proceeds operatively or operationally, by people asking and answering one or more specific questions about the patient and his or her affliction. But these sequences of operations differ from one medical system to another. And while these operative sequences are what actually *give* the disease identity at all times and in all cultures, we all tend to think that they are merely procedures enabling us to *recognise* the disease, with its (supposed) pre-existing identity.

Here I shall make two points about the identity of disease as it affects the practice of the historian, and which are built on this principle that *how diagnosis happens* is the source and key to disease identity at any time and in any society.

The first of these two points is extremely simple. It is that *the identity of any disease is made up of a compound of elements, of which the biological or medical is only one,*

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[3] This criticism of the pursuit of a history of *concepts* of disease, I hope to justify at length in the larger work of which the present essay is a preliminary part. A second problem with trying to write a history of disease concepts is that when we ask 'What is a disease concept a concept of?' the answer still has to be *disease*. So disease —the very category which is problematic here— remains the focus in this approach, and its ontological status still goes unexplored, or appears to be begged.

and sometimes the least important one. This is to reiterate the point that disease is always experienced socially.

The second point is as simple as the first one. It is that *you die of what your doctor says you die of*. Your cause-of-death certificate is not negotiable. While this might seem a reasonable thing to say about people dying today, I want to argue that it also applies to everyone in the past. *They* died from what *their* doctors said they died of. *Their* cause-of-death certificates (as it were, for of course such certificates are very modern and very western) are equally not negotiable, neither by the modern medic, whether clinician, pathologist, epidemiologist or psychiatrist, nor by the modern historian.

Of course, in the matter of specifying cause of death, the doctor or other practitioner (even a witchdoctor) is simply a bystander who has been given or conceded special authority by the other bystanders to speak, and whose pronouncements are thus accepted as locally definitive. So for situations and societies where there are no acknowledged doctors or other practitioners with equivalent special authority, it is the bystanders, whoever they may be —those whom John Graunt in 1672 called 'the generality of the World'— who define cause of death and thus determine the array of available diseases in any particular time and culture. The more general form of my point that *you die of what your doctor says you die of* can therefore be reformulated as *People die of what their bystanders say they die of*, with it being understood that there is often a special class of bystander (the doctor) who makes claims to, or is ascribed, special authority based on specialised knowledge. But in general the specification of cause of death requires no medical expertise: if there is no medical practitioner present, then anyone can do it, and does, and what they say goes. No matter how ignorant we may regard such bystanders as being, nevertheless the cause of death they ascribe is not negotiable afterwards.

Only if a doctor is involved does specification of the cause of death require *medical* expertise. But in all cases, including those where a doctor is involved, what the specification of the cause of death really requires is *social* expertise. That is to say, it requires full immersion in and acquaintance with the mores and beliefs of the pertinent society. This is what everyone brought up in a given society possesses as second nature, and it is precisely what the outsider to that society, whether anthropologist, missionary, visitor from Mars or even historian, does *not* possess. What the outsider does, spontaneously, is *translate* what he or she sees or hears from the bystanders into his or her own language and culture. And as we all know, *traduttore traditore*.

To illustrate these points I need a modern moment of death, a volunteer from the audience as it were. The particular volunteer I have chosen is my own father, partly I suppose as a personal *memento mori*. My father died at about midnight on the longest day of the year in 1987, at home in Swansea in Wales. He had been ill for some months, and had spent a period in hospital where he had undergone abdominal surgery. He was 76 years old, but did not die of old age because, although it was once a

regular cause of death, it is a very difficult thing to die of these days. The illness from which he died is what might be called 'the disease which dare not speak its name' (if I may paraphrase Oscar Wilde). In my father's case this was quite literally so. For my mother reports that just before he died, and fully aware that these were his last moments, my father in his very weakened voice told her he loved her, spoke of the last matters that needed to be attended to when he'd gone, and then said, 'Is it —(pause)— cancer?' My mother said, yes, it was. Then he died.

So my father had experienced a long illness which had made him progressively weaker and which over a number of months had caused him to waste away in front of his own eyes; he had been into hospital for what was probably only the second time in his life, and he had received major invasive surgery for this illness; he had discussed his condition with his doctors, his wife, his family and visitors over a period of months; and yet no-one had felt able to tell him what he was suffering from, and nor had he asked. He was not a shy man about such matters. If he had wanted to know, he would certainly have asked. But he didn't want to know. He really didn't. He waited until the very moment of his death to have his worst fears confirmed – and they were. Because it *was* cancer. In fact it was cancer of the bowel.

How do we know this? Why can we trust this? Well, we take the doctors' word for it (at least I did). But how did the doctors themselves know what my father died of? They did so by following their training as modern doctors. How else? Thus, my father complained of certain problems, which happened to be rectal bleeding, severe abdominal pains and weight loss. This, together with my father's age, raised bowel cancer as a possible clinical diagnosis in their minds, something they had learned at medical school. They then went and tested the provisional diagnosis, by using the modern methods of diagnosis they had been taught. To distinguish with certainty between a benign and a malignant (cancerous) tumour or growth, a biopsy was performed. These tests were at the cellular level, because this is the primary level of medical understanding today, that organic diseases are cellular phenomena. Thus carcinomas are nowadays defined as products of abnormal cell activity, or as someone has said, cancer is 'the misguided cell'[4]. With this evidence from the laboratory, the doctors could be certain of the identity of the disease in biological terms: they now knew what my father was suffering from. As far as treatment was concerned, the doctors again naturally turned to what they had been taught when they were trained. Thus, as the tumour seemed to them to be so far confined only to a portion of the bowel, so their next move was to submit my father to surgery to remove the affected

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[4] PRESCOTT, D. M. and FLEXER, A. S. (1986), *Cancer: the Misguided Cell*, Sunderland, Massachusetts, Sinauer Associates Inc. Another author calls cancer 'the wayward cell'; see Richards, V. (1978), *The Wayward Cell: Cancer, its Origins, Nature, and Treatment*, Berkeley, Los Angeles, University of California Press. GRAHAM, R. M. (1963), *The Cytologic Diagnosis of Cancer*, Philadelphia, W. B. Saunders Company, notes that methods for securely distinguishing cancerous from non-cancerous cells have been developed only since the 1940s (see Preface).

section. In this way the doctors hoped to stop the cancer spreading, either by direct extension from the primary site, or by the cells entering the vascular system by invading the lymphatics or blood vessels. So a large length of bowel was removed, and the healthy ends of the intestine were joined up. My father did not respond as hoped. So the doctors concluded that the cancerous cells had spread and that there was nothing practical more that they could do for him, especially given his age. So my father went home, where he grew weaker and gradually faded away, all his actions and responses slowing down until even watching him eat, dress or speak required great patience on everyone's part[5]. Eventually he took to his bed and never got up again.

So in the present example, my father died of cancer of the bowel because this is what his doctors said he died of. And that's that. His cause-of-death certificate is not negotiable, either today or in the future. The diagnosis was offered, tested and confirmed, through all the procedures that modern Western hospital-based medicine requires. The cells had been found guilty. On the basis of the diagnosis the treatment was given. The sequence of diagnostic steps tells you that this is the answer, that this *has to be* the answer. There is no alternative diagnosis possible in this case, nor any other possible cause of death available.

With respect to *how diagnosis happens* today, and that *you die of what your doctor says you die of*, this must suffice for now. But what of the other point, that *the identity of any disease is made up of a compound of elements, of which the biological or medical is only one, and sometimes the least important one*? Of all modern disease categories, cancer is perhaps the one most straightforward for making this point about how far the social element makes up the disease's identity. It is clear from my father's own reaction —and this is something widely shared in our modern society— that cancer has a very special place in the modern disease spectrum. It is the most feared of modern diseases, in most of its forms. The social meaning with which we load cancer, and lead each other to load it with – seems to be the reason why cancer has this special position of being unmentionable in our social experience of disease in today's society. Susan Sontag, the celebrated modern commentator on the social dimensions of cancer, has remarked that no-one is embarrassed to say that they have had a heart attack if they've had one. Similarly, no-one will hide the fact of their heart surgery if they have had heart surgery. But few people want other people to know that they have cancer. In many cases, my father's included, they themselves do not want to know that they have cancer. There is something about our attitude to this disease which makes it different. It comes with overtones of dirt and shame, and of blame and punishment, which few other diseases have. Lester and Devra Breslow

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[5] All this was rationalised by my father in a way which made cancer irrelevant as a possible cause. As he knew sections of his bowel had been removed (though did not ask why) it was obvious to him that there was not enough intestine left to detain and absorb the food long enough to nourish him. As he noticed that his food just 'fell straight through' him, he was not at all surprised he was fading away. He explained all this to me. Very slowly.

have written that 'Cancer was and is still perceived largely as a disease that attacks individuals one at a time, each uniquely, rather than as a public burden requiring large-scale public efforts'[6]. This focus on the individual as responsible for his or her cancer has, according to the Breslows, been inadvertently maintained, at least in the U.S.A., by the action of interested parties such as the private medical business, the private industrial business and the biomedical research establishment. So strong is this social element in the identity of cancer in our society today, that it over-rides and renders nugatory the medical view that it is just a few cells misbehaving, and that five-year survival rates from cancer treatment are improving all the time. My father did not die from a disease whose identity is purely biological. His experience (demonstrated precisely by his refusal to voice his concerns), together with the experience of the doctors around him, the experience of his family, and the experience of all the other bystanders, was that he was dying from a shameful disease, the disease which dare not speak its name. All this human experience was part of the identity of the disease.

The social component of the identity of cancer may be the most easy to point out, thanks to the work of sociologists and other commentators over the last few decades. But every disease has its social component, and the social component (like the medical component) of a disease can and often does change over time. This applies equally to all conditions labelled as diseases in all societies. I hope to make that case at length elsewhere sometime.

I have here only given one case history tracing the steps of diagnosis and treatment appropriate to the late 20th century. I chose it because of its familiarity: we all know how the suspected cancer patient is treated today. Now imagine tracing the steps of diagnosis and treatment of any episode of disease of the past. Here we will be on unfamiliar territory. The conditions will be different, the content of diagnosis and treatment will be different, the thought patterns guiding diagnosis and treatment will be different. And yet, the same conclusion will have to be reached by us: that the patient died of what his doctor said he died of. Because there is nothing else in the encounter. There is no 'real' disease, with an identity separate from its sufferers at any given time, which can be separated out as a timeless entity for us to give our modern labels to, years —centuries— after the events.

II: THE ARRAY OF AVAILABLE DISEASES

The present conference paper is part of a longer argument about disease identity in the past that I am currently engaged on, and there can be room here only to discuss one particular phase of the longer argument. So to support my major claims about the

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[6] BRESLOW, L. and D. M. BRESLOW (1982), «Historical Perspectives [on cancer epidemiology and prevention]», *Cancer Epidemiology and Prevention,* Schottenfeld, D. and J. F. Fraumeni, eds., Philadelphia, W. B. Saunders Co. 1039-1048, 1040.

identity of disease, and in particular the claim that *you die of what your doctor says you die of*, I shall look here only at what I shall call *the array of available diseases* in any given historic or modern society, that is to say at what set of diseases is thought to exist at a given time in a particular society. Other questions that arise naturally from this, such as how diseases are added to or subtracted from these arrays, or how individual cases of disease are mapped onto these arrays in any particular historic or present society, as also with most questions about the operative steps involved in diagnosis, I will have to leave for another occasion. For convenience I shall use here only examples of diseases that are or were believed to kill people, but the analysis could in principle be deployed also for all non-fatal diseases too.

Different societies and different periods in any one society have different sets or arrays of 'available diseases'. Such arrays are different both in what they include and also —and this is even more important— in the theoretical underpinnings of what constitutes the identity of a particular disease. Hence what you can die of at any particular time differs. To illustrate what I mean by this I shall compare three cause-of-death analyses drawn up at intervals of about 160 years from each other. They are

(1) the London Bills of Mortality, kept from the 1590s to 1849, as analysed by John Graunt in 1672;
(2) the first comprehensive report on causes of death in England, viz. the statistics drawn up by the Registrar-General in 1839, as commented on by the Compiler of Abstracts, William Farr; and
(3) what is at the time of writing the most recent edition of *Health Statistics Quarterly* for England and Wales, the issue covering the year 1999.

At first glance the three documents and the information they contain seem reasonably comparable, given that they cover much the same area and society (England, London), are in the same language (English), were drawn up for much the same reasons (to track contemporary causes of death), were drawn up by people with a strong interest in 'political arithmetic' or statistics as a means of assessing the state of the State, and were drawn up within a period of less than four hundred years. That is, they seem like successive attempts to solve the same problem, and indeed this is how they have been generally treated.[7] But they are not comparable at all because, given the changes in disease conceptualisation that had occurred between the first and the second and between the second and the third of them, they were, in effect, drawn up in different societies and cultures. In a word, they are incommensurable. Thus causes of death ascribed in the first two are not amenable to subsequent diagnosis by the modern medic or historian. And the causes of death ascribed in the most recent one, in its turn, may well not be amenable to later re-diagnosis by future medics or historians.

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[7] See for instance GREENWOOD, M. (1948), *Medical Statistics from Graunt to Farr*, Cambridge, Cambridge University Press.

1. The London Bills of Mortality

The Bills of Mortality were kept in London sporadically from the 1592 plague, and regularly from the 1603 plague. They are believed to have been started in order to inform the royal court and the rich residents of London when plague or other epidemics had reached such a state that flight from town was necessary. Outside plague times, however, they were consulted by Londoners 'so as they might take the same as a *Text* to talk upon, in the next Company', that is as dinner-table conversation[8]. They were drawn up by parish clerks, as part of their duties, and the records were kept in their guild headquarters, Parish-Clerks Hall. They were printed every week on Thursdays, and a general account of each year was printed on the Thursday before Christmas Day. They covered the 97 parishes within the walls of the city of London, plus the 16 parishes in the liberties but outside the walls (together with their pest-house), plus the nine adjoining parishes. A few other parishes were added in later years. Because of the way they were conducted, they recorded only the births and deaths of members of the Church of England, omitting Catholics and Dissenters[9].

How were the causes of death gathered? This is what John Graunt says about the procedure:

> When anyone dies, then, either by tolling, or ringing of a Bell, or by bespeaking of a Grave of the Sexton, the same is known to the Searchers, corresponding with the said Sexton. The Searchers hereupon (who are ancient Matrons, sworn to their Office) repair to the place, where the dead Corps lies, and by view of the same, and by other enquiries, they examine by what Disease, or Casualty the Corps died. Hereupon they make their Report to the Parish-Clerk, and he, every Tuesday night, carries in an Account of all the Burials, and Christenings, happening that Week, to the Clerk of the [Parish-Clerks'] Hall[10].

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[8] GRAUNT, J. (1672), *Natural and Political Observations Mentioned in a following Index, and made upon the Bills of Mortality. By John Graunt, Citizen of London. With Reference to the Government, Religion, Trade, Growth, Ayre, Diseases, and the several Changes of the said City*, London, John Martin, James Allestry and Tho. Dicas, 1.

[9] For an extensive series of them, and information about their history, see [Heberden, W., Ed.] (1759), *A Collection of the Yearly Bills of Mortality from 1657 to 1758 inclusive. Together with several other Bills of an earlier Date. To which are subjoined 1. Natural and Political Observations on the bills of mortality: by Capt. John Graunt, F. R.S. reprinted from the sixth edition, in 1676. II. Another essay in political arithmetic, concerning the growth of London; with measures, periods, causes, and consequences thereof. By Sir William Petty, Kt. F.R.S. reprinted from the edition printed at London in 1683. III. Observations on the past growth and present state of the city of London; reprinted from the edition printed at London in 1751; with a continuation of the tables to the end of the year 1757. By Corbyn Morris Esq; F.R.S. IV. A comparative view of the diseases and ages, and a table of the probabilities of life, for the last thirty years. By J. P. esq; F.R.S.*, London, A. Millar.

[10] GRAUNT (1672), (note 8 above), 11. Here and in all other quotations from 17th century sources I have silently modernised spellings.

For Graunt's purposes in making his natural and political observations, it mattered little 'whether the Disease were exactly the same, as Physicians define it in their Books' (p. 14). As Graunt points out, what was sometimes reported was the predominant symptom, rather than what a doctor would count as the disease proper. Sometimes the two old women 'after the mist of a Cup of Ale, and the bribe of a two-groat fee' could perhaps be persuaded to report all deaths from emaciation as consumption, and not specify whether it was a phthisis, a hectic fever or an atrophy. But even so, in general, Graunt concluded, these diagnoses of cause of death could be pretty well trusted:

> To conclude, In many of these cases the Searchers are able to report the Opinion of the Physician, who was with the Patient, as they receive the same from the Friends of the Defunct, and in very many cases, such as Drowning, Scalding, Bleeding, Vomiting, making-away themselves, Lunatics, Sores, Small-Pox, &c. their own senses are sufficient, and the generality of the World, are able pretty well to distinguish the Gout, Stone, Dropsy, Falling-Sickness, Palsy, Agues, Plurisy, Rickets, &c. one from another. (pp. 14-15)

Graunt reported that the Bills of Mortality revealed that some new diseases had appeared in the early 17th century in London. Rickets first appeared in 1634, and Graunt believed it was a new disease, not just a hitherto unreported one. The 'stopping of the stomach' first appeared in 1636.

What is particularly striking about the Bills of Mortality is that the establishing of causes of death was barely at all a medical affair. The whole business was a concern of church administration (the parish clerk system), since it was something which had simply been added on to the arrangements for funerals and burials in the parish. It was not the concern of any medical institution. Neither the College of Physicians, nor the Barber-Surgeons Company of London, nor the Society of Apothecaries were involved. Nor were even individual doctors directly involved. The opinions of the bystanders at the bedside of the dead person, and those of the two old women themselves, about cause of death were at least as significant as the opinions of any doctors.

The Table (TABLE 1**)** shows what diseases were effectively available to die from in London in a randomly chosen sample year, 1632: that is to say, they are the diseases which constituted the only official current form of listing of causes of death. The diseases are listed alphabetically, and no-one now seems to know who first chose this set of available diseases, nor how the list came in time to include one or two new diseases such as stopping of the stomach and rickets. Presumably the listing was systematised by the parish clerks, so that in practice the Searchers were effectively limited to choosing a candidate disease from those already on the list.

Quite a number of these available diseases have no modern equivalent whatever as possible causes of death, even in name. Fright, ague, bloody flux, canker (a spreading sore, not to be confused with cancer), consumption, fever, grief, fallen jaw, the King's Evil, lethargy, livergrown, piles, planet, purples, quinsy, rising of the lights, suddenness, surfeit and worms, are none of them recognised possible causes of death in

(9)

The Diſeaſes, and Caſualties this year being 1632.

Abortive, and Stilborn	445	Jaundies	43
Affrighted	1	Jawfaln	8
Aged	628	Impoſtume	74
Ague	43	Kil'd by ſeveral accidents	46
Apoplex, and Meagrom	17	King's Evil	38
Bit with a mad dog	1	Lethargie	2
Bleeding	3	Livergrown	87
Bloody flux, ſcowring, and flux	348	Lunatique	5
Bruſed, Iſſues, ſores, and ulcers,	28	Made away themſelves	15
Burnt, and Scalded	5	Meaſles	80
Burſt, and Rupture	9	Murthered	7
Cancer, and Wolf	10	Over-laid, and ſtarved at nurſe	7
Canker	1	Pallie	25
Childbed	171	Piles	1
Chriſomes, and Infants	2268	Plague	8
Cold, and Cough	55	Planet	13
Colick, Stone, and Strangury	56	Pleuriſie, and Spleen	36
Conſumption	1797	Purples, and ſpotted Feaver	38
Convulſion	241	Quinſie	7
Cut of the Stone	5	Riſing of the Lights	98
Dead in the ſtreet, and ſtarved	6	Sciatica	1
Dropſie, and Swelling	267	Scurvey, and Itch	9
Drowned	34	Suddenly	62
Executed, and preſt to death	18	Surfet	86
Falling Sickneſs	7	Swine Pox	6
Fever	1108	Teeth	470
Fiſtula	13	Thruſh, and Sore mouth	40
Flocks, and ſmall Pox	531	Tympany	13
French Pox	12	Tiſſick	54
Gangrene	5	Vomiting	1
Gout	4	Worms	27
Grief	11		

Chriſtened	Males 4994	Buried	Males 4932	Whereof,
	Females 4590		Females 4603	of the
	In all 9584		In all 9535	Plague 8

Increaſed in the Burials in the 122 Pariſhes, and at the Peſthouſe this year 593
Decreaſed of the Plague in the 122 Pariſhes, and at the Peſthouſe this year, 266

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the early twenty-first century in the West[11]. Yet it seems that, according to the Searchers, in London in 1632 no less than 3,783 people —over a third of all the deaths that year— died of one or other of these diseases. Of the four major kinds of disease which the majority of people die from today in England and Wales —the degenerative diseases: cancer, heart disease, respiratory disease and cerebrovascular disease— the name of only one of them (cancer) is even present in this list. The big causes of death in 1632 London, by contrast, were 1. 'chrisomes and infants', that is children dying within the first month of life or shortly after, the chrism being the baptismal robe in which the dead infant would also be buried (2,268 cases); 2. 'consumption' (1,797 cases); 3. 'fever' (1,108 cases). The next biggest causes of death were 4. 'old age' (628 cases); 5. 'flocks and small pox' (531 cases); and 6. 'teeth' (470 cases).

This system of drawing up the weekly Bills of Mortality continued into the early 19th century, without substantial change[12]. In time it came to be replaced by our next kind of report.

2. 19th century Registrar-General reports

We now move on one hundred and sixty-seven years, to the first governmental listing of causes of death throughout England[13]. The office of Registrar-General of Births, Deaths and Marriages in England, was set up by the Registration Act of 1836 and its first annual report appeared in 1839[14]. The Benthamite sanitary reformer, Edwin Chadwick, claimed that it was at his suggestion that the Registrars had to collect causes of death, and he had even hoped that the Registrars themselves would be medical men[15]. The point of collecting causes of death, according to the Registrar-General, was that 'if the cause of death be correctly inserted [in the registers], there

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[11] I appreciate that some of these are conventionally taken to have been renamed later, and thus are conventionally taken to correspond to modern diseases (for instance, both consumption and the King's Evil were supposedly later reclassified as tuberculosis). I shall deal in the larger version of this paper with what happens in such reclassifications, and show that as a consequence of how reclassification takes place, the earlier disease does not in fact correspond with the modern one.

[12] For as complete a series of Bills as could be assembled in 1749, see [Heberden, W., Ed.] (1759), (note 9 above).

[13] For some of the interests in counting people and their causes of death in Britain in the interval between Graunt and the Registrar-General, see Greenwood (1948), (note 7 above), and Glass, D. V. (1973, repr. 1978), *Numbering the People. The Eighteenth-Century Population Controversy and the Development of Census and Vital Statistics in Britain*, London, Gordon and Cremonesi.

[14] (1839), *First Annual Report of the Registrar-General of Births, Deaths, and Marriages in England.*, London, Longman, Orme, Brown, Green, and Longmans. For a comparable attempt to register and tabulate causes of death in Ireland, see (1843), *Report of the Commissioners appointed to take the Census of Ireland for the Year 1841. Presented to Both Houses of Parliament by Command of Her Majesty*, Dublin, Her Majesty's Stationery Office.

[15] GLASS (1973), (note 13 above), 149.

will exist thenceforward public documents, from whence may be derived a more accurate knowledge, not only of the comparative prevalence of various mortal diseases, as regards the whole of England and Wales, but also of the *localities* in which they respectively prevail, and the *sex*, *age*, and *condition of life* which each principally affects'. The Act itself had specified only that 'some person present at the death, or in attendance during the last illness' should give this information to the Registrar. But to avoid reliance on 'persons ignorant of medicine, and of the names and natures of diseases', the Registrar-General 'earnestly recommended that every practising member of any branch of the medical profession who may have been present at the death, or in attendance during the last illness of any person, shall, immediately after such death' place in the hands of the person who would report to the Registrar 'written statements of the cause of death'. For London, the Presidents of the Royal College of Physicians and of the Royal College of Surgeons, together with the Master of the Worshipful Society of Apothecaries, were prevailed upon to pledge themselves 'to give, in every instance which may fall under our care, an authentic name of the fatal disease', and, they said, they entreated 'all authorized practitioners throughout the country to follow our example, and adopt the same practice'. The popular or common name of the disease was to be preferred to the technical name known only to medical men[16].

Thus the causes of death collected by the Registrars were intended to furnish new knowledge about the incidence of mortal diseases, and the co-operation of medical men of all kinds meant that the causes given should be highly reliable for statistical analysis.

After the information on causes of death had been collected each year, William Farr, who held the post of Compiler of Abstracts from 1838 to 1880, wrote a long letter to the Registrar-General analysing the material, and this letter was printed in the Registrar-General's annual report, and came to form the largest section of it throughout Farr's forty-two years in the job. Farr himself was a Paris- and London-trained medical man, and by the time of his appointment at the age of 32 he was also a fairly accomplished statistician. As a liberal reformer who was also a medical man, his concerns were with promoting the sciences in medicine, especially hygiene, and with investigating 'all the laws of vitality capable of being observed in masses of men, expressed in numbers'[17].

So Farr had to construct a nosology suitable for statistical purposes, and based on some medical principles of the day. (TABLE 2) A nosology is any classification of diseases, usually presented in tabulated form. That is to say, it is a list of 'available diseases' of a particular period and place, drawn up by an individual or organisation, established on the basis of some medical principles or other, with the diseases ar-

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16 (1839), *First Annual Report,* (note 14 above), 77-9.

17 EYLER, J. M. (1979), *Victorian Social Medicine. The Ideas and Methods of William Farr,* Baltimore, Johns Hopkins University Press, 8, quoting Farr's own aims for his journal *British Annals of Medicine.*

TABLE A.—ENGLAND AND WALES.

ABSTRACT of the CAUSES of DEATH registered in England and Wales, from 1st July to 31st December, 1837, both inclusive.

Area in Square Miles.	Population according to Census of 1831.	Families in 1831.			
		Employed chiefly in Agriculture.	Chiefly in Trade, Manufactures, and Handicraft.	Other Families.	Total.
57,805	13,897,187	834,543	1,227,614	849,717	2,911,874

		Diseases.	M.	F.	Tot.
Sporadic Diseases.	Epidemic, Endemic, and Contagious Diseases.	Cholera	246	214	460
		Influenza	220	264	484
		Small-pox	3050	2761	5811
		Measles	2340	2392	4732
		Scarlatina	1238	1282	2520
		Hooping Cough	1277	1767	3044
		Croup	879	776	1655
		Thrush (1)	381	326	707
		Diarrhœa	1451	1304	2755
		Dysentery	350	325	675
		Ague	39	37	76
		Typhus (2)	4439	4608	9047
		Erysipelas (3)	237	245	482
		Syphilis	30	43	73
		Hydrophobia	13	3	16
		Total	6190	16347	32537
	Of the Nervous System.	Cephalitis (4)	567	454	1021
		Hodrocephalus	1933	1637	3570
		Apoplexy (5)	1447	1264	2711
		Paralysis	987	1052	2039
		Convulsions (6)	5798	4931	10729
		Tetanus	45	11	56
		Chorea (7)	3	9	12
		Epilepsy (8)	278	292	570
		Insanity (9)	147	138	285
		Delirium Tremens	86	9	95
		Disease (10)	438	326	764
		Total	11729	10123	21852
	Of the Respiratory Organs.	Laryngitis	11	13	24
		Quinsey	141	148	289
		Bronchitis	248	212	460
		Pleurisy	140	96	236
		Pneumonia	3187	2637	5824
		Hydrothorax	557	438	995
		Asthma	1020	744	1764
		Consumption (11)	9494	10753	20247
		Decline	3474	4033	7507
		Disease (12)	653	523	1176
		Total	18925	19597	38522
	Of the Organs of Circulation.	Pericarditis	31	31	62
		Aneurism	37	15	52
		Disease (13)	834	648	1482
		Total	902	694	1596
	Of the Digestive Organs.	Teething	998	905	1903
		Gastro-Enteritis	1710	1686	3396
		Peritonitis	35	47	82
		Tabes Mesenterica	228	209	437
	Intestinal Canal.	Ascites	28	23	51
		Ulceration (14)	96	74	170
		Hernia	150	102	252
		Colic	39	19	58
		Constipation (15)	253	208	461
		Worms	119	145	264
		Disease (16)	437	416	853
	Pancreas	Disease	..	2	2
	Liver	Hepatitis	91	92	183
		Jaundice (15*)	211	194	405
		Disease (16*)	716	605	1321
	Spleen	Disease	4	8	12
		Total	5115	4733	9848
Sporadic Diseases.	Of the Urinary Organs.	Nephritis	37	23	60
		Ischuria	49	4	53
		Diabetes (17)	68	27	95
		Granular Diseases	2	1	3
		Cystitis	61	9	70
		Stone (18)	161	19	180
		Stricture	43	3	46
		Disease	262	47	309
		Total	683	134	816
	Of the Organs of Generation.	Childbed (19)	..	1265	1265
		Paramenia	..	49	49
		Ovarian Dropsy	..	21	21
		Disease (20)	13	150	163
		Total	13	1485	1498
	Of the Organs of Locomotion	Arthritis	7	8	15
		Rheumatism (21)	221	216	437
		Disease (22)	277	200	477
		Total	505	424	929
	Of the integumentary System.	Carbuncle	14	5	19
		Phlegmon (23)	29	17	46
		Ulcer	37	45	82
		Fistula	39	12	51
		Disease (24)	39	27	66
		Total	158	106	264
	Of Uncertain Seat.	Inflammation	1201	1136	2337
		Hæmorrhage (25)	369	213	582
		Dropsy	2445	3139	5584
		Abscess	247	217	464
		Mortification (26)	305	276	581
		Scrofula (27)	286	255	541
		Carcinoma (28)	355	873	1228
		Tumor	48	81	129
		Gout	67	12	79
		Intemperance (29)	70	15	85
		Atrophy	478	481	959
		Debility	1328	1078	2406
		Starvation	34	29	63
		Malformations (30)	75	41	116
		Sudden Deaths	634	419	1053
		Total	7942	8265	16207
	Old Age		5674	7017	12691
	Violent Deaths (31)		3605	1240	4845
	Causes not specified		3718	3376	7094
		Total	75159	73542	148701

ranged usually according to some theory about cause, and where that is not possible or desirable, by some other supposedly meaningful classification, such as anatomical location in the body. The term 'nosology' was popularised in 1763 by Boissier de Sauvages for his tables of diseases[18], and the term was rapidly adopted by other medical teachers in the century, and it is still in use, though the expression 'classification of disease' is more common today. Nosologies are not usually very stable. If someone came along who had a different view of the range of possible diseases, of the relative importance of different diseases, of the natural relations of diseases, or of the causal relationships of different diseases, then he could simply draw up his own nosology if he felt strongly enough about it. By 1838 there were many possible existing nosologies that Farr could choose from if he wished – he himself mentioned those of Pinel, Richerand, Bichat, Parr, Young and Mason Good[19]. However, Farr had his own medical principles and a strong view about the doctor's role. In this respect he was particularly concerned with the diseases which he believed were most amenable to prevention. So of course he had to draw up his own, new, nosology[20]. This is what is employed in the present table.

The disease taking pride of place —the most sudden and spectacular killing disease of the time— is cholera, which had scourged Europe in 1832. It headed the 'first division' of diseases in Farr's table, which consisted of the epidemic, endemic, and contagious diseases. In Farr's view these all constituted a natural group, because he believed that they all had similar causation – what he was soon to call *zymotic*, a poisonous effluvium given off by decay and dirt[21]. This primary division is therefore a classification by *cause*: all these diseases, for Farr, had similar causes, and hence were amenable to similar management. Their 'exciting causes', were, for Farr, the insalubrity of the local conditions. Action could be taken to reduce their incidence, by undertaking engineering measures to introduce clean air, clean water, remove wastes, and so on. This belief on Farr's part in 'filth diseases' and their causation preceded his classificatory activity, and was as much a political belief —that is, about how society ought to be structured and run— as it was a medical one. In 1866 Farr himself stated that 'No variation in the health of the states of Europe is the result of chance; it is the direct result of the physical and political conditions in which nations live'[22]. Indeed, the Registry was for Farr in effect an instrument to advance this politico-medical agenda. He did not draw up the array of available diseases in an innocent manner and

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18 This was a development of his *Nouvelles Classes des Maladies*, first published in 1731. See Martin, J. (1990), «Sauvages's Nosology: Medical Enlightenment in Montpellier», *The Medical Enlightenment of the Eighteenth Century*, Cunningham, A. and R. French, eds., Cambridge, Cambridge University Press, 111-37.

19 (1839). *First Annual Report* (note 14 above), 92.

20 EYLER, (1979), (note 20 above), 53-60.

21 (1842), *Fourth Annual Report of the Registrar-General of Births, Deaths, and Marriages in England*, London, Longman, Brown, Green, and Longmans, 199-205.

22 Eyler (1979), (note 19 above), 199.

then make supposedly Baconian inferences from it. No: the necessary structure of the table and the array of diseases was given to him by his pre-existing beliefs about disease causation. And because Farr for forty-two years personally drew up the tables and statistics from the material he was sent, he continued to be the gate-keeper of 'what counted' as a disease, and the arbiter of which diseases were more important than others, even though his positions on these matters were actually controversial.

So what could one die from in William Farr's England in 1838-9? By far the single greatest cause of death was consumption (20, 247), followed at a great distance by convulsions (10, 729) and typhus (9,047) – the first in killing-power of the 'first division' diseases. Indeed, as a group, Farr's 'epidemic, endemic and contagious diseases', comprised just under a quarter of all deaths that year, with smallpox, measles, whooping-cough and diarrhoea following typhus in their mortality. But it needs to be noted that, in grouping this 'first division' together, Farr's statistics show that over 32,000 out of almost 150,000 deaths were actually caused by the zymotic products of 'filth'. Cancer, a disease classified as 'of uncertain seat', killed only 1,228 people. Meanwhile, debility killed more than cancer did, and atrophy, and intemperance (a morally defined disease) too claimed their victims as causes of death.

3. The 1999 statistics

This most recent table of causes of death reflects how internationalised medicine has become in recent decades. In Western countries it is no longer optional which nosology you use for cause of death if you are a medic. What you use is the *International Classification of Diseases* (hereafter ICD). First drawn up in the 1890s by the Chef des Travaux statistiques de la ville de Paris, Jacques Bertillon, at the initiative of the International Statistical Institute (a statisticians' pressure group), it was soon adopted by the registrars of the United States, Canada and Mexico. It has been regularly revised since, approximately once every ten years until recently, and the 1979 revision, the ninth (hereafter ICD9), though technically out of date, is the one currently in use[23]. Since 1946 the World Health Organisation has been entrusted with revising the classification and getting governments to adopt it. As the use of the code numbers reveals, it is the classification used in the U.K. statistics in TABLE 3[24].

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[23] On the history of the International Classification, see (1977), *International Classification of Diseases. Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death. Based on the Recommendations of the Ninth Revision Conference, 1975, and Adopted by the Twenty-ninth World Health Assembly*, Geneva, World Health Organization, Introduction.

[24] «Report: Death Registrations 1999: cause England and Wales», *Health Statistics Quarterly* (2000), n. p. The table is five pages long, and only pages one to three are reproduced here.

Table 2 **Deaths by age, sex and underlying cause, 1999 registrations** *England and Wales*

ICD9 code	Causes of death *		All ages	Age group: Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
	All causes, all ages	**M**	**263,166**	**2,080**	**408**	**510**	**2,170**	**3,978**	**5,918**	**13,633**	**28,532**	**64,017**	**89,963**	**51,957**
		F	**290,366**	**1,555**	**308**	**387**	**883**	**1,707**	**3,773**	**8,999**	**17,949**	**44,958**	**93,360**	**116,487**
	All causes, ages under 28 days	**M**	**1,393**	**1,393**	-	-	-	-	-	-	-	-	-	-
		F	**1,046**	**1,046**	-	-	-	-	-	-	-	-	-	-
	All causes, age 28 days and over	**M**	**261,773**	**687**	**408**	**510**	**2,170**	**3,978**	**5,918**	**13,633**	**28,532**	**64,017**	**89,963**	**51,957**
		F	**289,320**	**509**	**308**	**387**	**883**	**1,707**	**3,773**	**8,999**	**17,949**	**44,958**	**93,360**	**116,487**
001-139	**Infectious and parasitic diseases**	**M**	**1,848**	**72**	**38**	**21**	**53**	**82**	**160**	**180**	**192**	**344**	**445**	**261**
		F	**1,763**	**68**	**25**	**18**	**45**	**39**	**58**	**86**	**142**	**277**	**483**	**522**
001-009	Intestinal infectious diseases	M	166	17	-	3	2	-	2	5	12	21	49	55
		F	312	22	-	2	-	-	-	5	11	34	88	150
010-018	Tuberculosis	M	248	1	-	-	2	6	14	15	29	66	84	31
		F	139	-	-	-	3	4	6	7	10	34	42	33
010-012	Pulmonary and other respiratory tuberculosis	M	208	1	-	-	2	6	13	10	26	56	65	29
		F	95	-	-	-	1	3	4	4	6	26	32	19
033	Whooping cough	M	1	1	-	-	-	-	-	-	-	-	-	-
		F	2	2	-	-	-	-	-	-	-	-	-	-
034-035	Streptococcal sore throat, scarlatina and erysipelas	M	2	-	-	-	-	1	-	-	1	-	-	-
		F	-	-	-	-	-	-	-	-	-	-	-	-
036	Meningococcal infection	M	105	14	23	7	26	12	5	7	7	3	-	1
		F	111	17	16	9	23	7	4	9	6	7	10	3
038	Septicaemia	M	661	15	7	6	7	10	26	42	59	142	210	137
		F	730	13	5	2	6	5	18	23	53	118	239	248
042-044	HIV infection	M	128	-	1	-	2	21	54	28	15	6	1	-
		F	26	-	-	-	3	8	10	2	1	1	1	-
055	Measles	M	2	-	-	1	-	-	-	1	-	-	-	-
		F	-	-	-	-	-	-	-	-	-	-	-	-
084	Malaria	M	9	-	-	-	1	1	-	4	1	2	-	-
		F	2	-	-	-	-	-	-	1	-	1	-	-
137	Late effects of tuberculosis	M	32	-	-	-	-	-	-	-	-	13	15	4
		F	23	-	-	-	-	-	-	-	2	5	12	4
140-239	**Neoplasms**	**M**	**70,259**	**9**	**63**	**122**	**188**	**395**	**1,051**	**4,370**	**10,806**	**21,797**	**23,094**	**8,364**
		F	**65,532**	**13**	**38**	**102**	**119**	**472**	**1,654**	**4,824**	**9,040**	**16,592**	**20,506**	**12,172**
140-208	**Malignant neoplasms**	**M**	**69,334**	**5**	**56**	**112**	**176**	**377**	**1,024**	**4,308**	**10,688**	**21,570**	**22,776**	**8,242**
		F	**64,415**	**8**	**33**	**89**	**109**	**453**	**1,627**	**4,753**	**8,947**	**16,365**	**20,103**	**11,928**
140-149	Malignant neoplasm of lip, oral cavity and pharynx	M	1,079	-	-	1	3	11	43	199	264	277	198	83
		F	593	-	1	-	2	9	21	56	102	120	148	134
150-159	Malignant neoplasm of digestive organs and peritoneum	M	20,162	-	1	1	10	64	269	1,346	3,334	6,495	6,414	2,228
		F	17,064	1	-	2	9	46	196	759	1,810	4,114	6,000	4,127
150	Malignant neoplasm of oesophagus	M	3,722	-	-	-	-	11	56	336	708	1,181	1,110	320
		F	2,309	-	-	-	1	3	11	103	215	560	843	573
151	Malignant neoplasm of stomach	M	3,820	-	-	-	2	14	46	179	534	1,249	1,296	500
		F	2,313	-	-	-	1	11	22	78	213	519	855	614
153	Malignant neoplasm of colon	M	4,795	-	-	-	4	20	48	264	720	1,529	1,576	634
		F	5,085	-	-	-	1	13	62	206	530	1,216	1,742	1,315
154	Malignant neoplasm of rectum, rectosigmoid junction and anus	M	2,672	-	-	-	-	5	29	163	456	860	854	305
		F	2,012	-	-	-	3	6	34	116	207	450	667	529
157	Malignant neoplasm of pancreas	M	2,802	-	-	-	1	3	48	219	539	911	845	236
		F	3,124	-	-	-	-	3	33	150	376	819	1,119	624

* The figures for individual cause categories exclude deaths at ages under 28 days.

Table 2 continued **Deaths by age, sex and underlying cause, 1999 registrations** *England and Wales*

				Age group										
ICD9 code	Causes of death *		All ages	Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
161	Malignant neoplasm of larynx	M	580	-	-	-	-	2	8	47	138	179	153	53
		F	157	-	-	-	-	-	1	10	30	50	51	15
162	Malignant neoplasm of trachea, bronchus and lung	M	18,297	-	-	-	1	9	146	952	3,019	6,577	6,067	1,526
		F	11,109	-	-	-	1	9	126	672	1,663	3,742	3,758	1,138
172	Malignant melanoma of skin	M	761	-	-	-	6	31	60	127	151	179	159	48
		F	713	-	-	-	4	22	49	83	117	144	179	115
173	Other malignant neoplasm of skin	M	213	-	-	-	-	3	3	8	17	49	84	49
		F	157	-	-	-	-	-	-	8	7	12	51	79
174	Malignant neoplasm of female breast	F	11,548	-	-	-	1	123	603	1,534	1,998	2,466	2,745	2,078
179-189	Malignant neoplasm of genitourinary organs	M	13,200	-	1	1	4	24	72	349	1,244	3,472	5,266	2,767
		F	9,192	-	-	1	13	81	281	756	1,466	2,342	2,722	1,530
179	Malignant neoplasm of uterus, part unspecified	F	433	-	-	-	-	-	5	22	71	98	139	98
180	Malignant neoplasm of cervix uteri	F	1,106	-	-	-	6	51	144	178	153	199	269	106
182	Malignant neoplasm of body of uterus	F	800	-	-	-	-	1	7	30	125	227	248	162
183	Malignant neoplasm of ovary and other uterine adnexa	F	3,946	-	-	-	4	19	87	423	838	1,134	1,038	403
185	Malignant neoplasm of prostate	M	8,502	-	-	-	-	-	3	76	560	2,063	3,724	2,076
186	Malignant neoplasm of testis	M	71	-	-	1	3	14	22	14	6	6	5	-
188	Malignant neoplasm of bladder	M	2,849	-	-	-	1	1	11	64	299	828	1,093	552
		F	1,460	-	-	-	-	3	8	29	103	326	540	451
189	Malignant neoplasm of kidney and other and unspecified urinary organs	M	1,687	-	1	-	-	8	33	186	362	562	411	124
		F	1,030	-	-	1	3	4	24	61	142	289	342	164
191	Malignant neoplasm of brain	M	1,625	1	17	37	26	52	114	313	393	431	212	29
		F	1,171	2	9	26	16	37	77	157	244	333	218	52
200-208	Malignant neoplasm of lymphatic and haematopoietic tissue	M	5,294	2	17	47	83	114	174	422	829	1,524	1,539	543
		F	4,818	3	19	38	42	80	141	293	628	1,173	1,495	906
204-208	Leukaemia	M	1,946	2	17	41	51	58	64	129	247	546	556	235
		F	1,728	3	18	34	29	43	69	110	196	377	456	393
210-239	**Benign, in situ, other and unspecified neoplasms**	**M**	**925**	**4**	**7**	**10**	**12**	**18**	**27**	**62**	**118**	**227**	**318**	**122**
		F	**1,117**	**5**	**5**	**13**	**10**	**19**	**27**	**71**	**93**	**227**	**403**	**244**
240-279	**Endocrine, nutritional and metabolic diseases and immunity disorders**	**M**	**3,471**	**19**	**18**	**13**	**41**	**85**	**95**	**190**	**429**	**913**	**1,083**	**585**
		F	**4,066**	**12**	**19**	**18**	**40**	**46**	**65**	**125**	**307**	**731**	**1,312**	**1,391**
250	Diabetes mellitus	M	2,814	-	-	1	7	39	52	128	344	774	961	508
		F	3,135	-	-	2	8	13	34	71	230	584	1,080	1,113
260-269	Nutritional deficiencies	M	28	-	-	-	-	1	2	2	5	6	6	6
		F	32	-	-	-	-	-	1	1	2	6	6	16
280-289	**Diseases of blood and blood-forming organs**	**M**	**853**	**4**	**7**	**5**	**5**	**19**	**13**	**27**	**62**	**180**	**317**	**214**
		F	**1,002**	**1**	**7**	**6**	**4**	**14**	**16**	**16**	**32**	**134**	**336**	**436**
280-285	Anaemias	M	185	-	1	2	4	11	1	7	9	27	65	58
		F	400	-	2	2	3	5	5	6	10	43	119	205
290-319	Mental disorders	M	3,860	-	-	1	196	338	225	147	129	345	1,176	1,303
		F	7,285	-	-	3	45	53	64	60	91	321	2,112	4,536
290	Senile and presenile organic psychotic conditions	M	2,089	-	-	-	-	-	-	2	31	199	842	1,015
		F	5,516	-	-	-	-	-	1	4	28	210	1,596	3,677

* The figures for individual cause categories exclude deaths at ages under 28 days.

Table 2 continued **Deaths by age, sex and underlying cause, 1999 registrations** *England and Wales*

ICD9 code	Causes of death *		All ages	Age group: Under 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
320-389	**Diseases of the nervous system and sense organs**	**M**	**4,848**	**53**	**42**	**74**	**133**	**167**	**223**	**334**	**448**	**965**	**1,622**	**787**
		F	**5,316**	**38**	**41**	**53**	**56**	**105**	**144**	**284**	**379**	**797**	**1,712**	**1,707**
320-322	Meningitis	M	98	10	8	8	5	4	10	13	8	15	14	3
		F	86	6	1	3	4	8	9	3	15	20	13	4
332	Parkinson's disease	M	1,554	-	-	-	-	-	-	3	28	302	804	417
		F	1,220	-	-	-	-	-	-	1	15	122	579	503
340	Multiple sclerosis	M	279	-	-	-	2	9	25	70	84	62	24	3
		F	482	-	-	-	3	11	39	121	107	103	81	17
345	Epilepsy	M	505	2	6	11	31	99	109	95	49	46	45	12
		F	361	2	9	7	19	53	55	65	38	30	39	44
390-459	**Diseases of the circulatory system**	**M**	**104,650**	**29**	**34**	**26**	**81**	**330**	**1,355**	**4,616**	**11,211**	**27,134**	**39,201**	**20,633**
		F	**113,412**	**24**	**14**	**22**	**74**	**191**	**562**	**1,683**	**4,490**	**16,085**	**41,287**	**48,980**
390-392†	Acute rheumatic fever	M	4	-	-	-	-	-	1	-	-	2	-	1
		F	4	-	-	-	-	-	-	1	1	2	-	-
393-398†	Chronic rheumatic heart disease	M	439	1	-	1	1	4	12	24	57	134	145	60
		F	1,187	1	-	-	3	-	8	27	103	265	465	315
401-405	Hypertensive disease	M	1,464	-	-	-	1	5	39	99	177	395	527	221
		F	1,825	-	-	-	1	2	13	27	92	275	714	701
410-414	Ischaemic heart disease	M	62,996	-	-	2	6	106	813	3,196	7,980	17,790	22,817	10,286
		F	51,471	-	-	2	4	26	172	672	2,347	8,650	19,871	19,727
410	Acute myocardial infarction	M	30,865	-	-	1	3	54	415	1,629	4,114	9,111	11,050	4,488
		F	24,502	-	-	1	4	15	89	359	1,249	4,652	9,846	8,287
415-429	Diseases of pulmonary circulation and other forms of heart disease	M	10,295	14	29	18	48	121	218	479	864	2,019	3,648	2,837
		F	16,055	16	12	12	38	74	121	305	537	1,850	5,071	8,019
430-438	Cerebrovascular disease	M	20,653	11	3	5	23	71	208	600	1,433	4,316	8,387	5,596
		F	35,214	7	2	6	23	69	212	520	1,116	3,839	12,225	17,195
433-434	Cerebral infarction	M	1,838	2	-	-	1	4	17	69	192	439	691	423
		F	2,780	-	-	-	2	9	13	43	86	336	1,013	1,278
440	Atherosclerosis	M	462	-	-	-	-	-	-	6	16	51	190	199
		F	884	-	-	-	-	-	-	1	10	52	240	581
451-453	Phlebitis, thrombophlebitis, venous embolism and thrombosis	M	621	1	-	-	-	2	21	51	88	161	202	95
		F	1,076	-	-	-	2	9	14	58	87	211	391	304
460-519	**Diseases of the respiratory system**	**M**	**43,165**	**89**	**45**	**39**	**68**	**123**	**268**	**806**	**2,469**	**8,436**	**16,991**	**13,831**
		F	**53,288**	**44**	**37**	**25**	**53**	**92**	**222**	**565**	**1,769**	**6,431**	**16,828**	**27,222**
480-486	Pneumonia	M	23,033	28	21	19	33	82	174	411	1,005	3,209	8,664	9,387
		F	35,416	25	15	10	22	48	126	236	681	2,530	10,303	21,420
487	Influenza	M	198	3	1	1	-	2	2	6	10	31	76	66
		F	363	-	1	1	-	1	2	4	12	27	101	214
490-496	Chronic obstructive pulmonary disease and allied conditions	M	15,532	4	5	13	26	19	46	291	1,174	4,310	6,618	3,026
		F	12,400	1	3	7	21	23	60	249	914	3,340	4,894	2,888
490-491	Bronchitis, chronic and unspecified	M	1,031	2	1	1	-	-	3	35	82	267	433	207
		F	640	-	2	1	-	3	6	13	41	130	228	216
493	Asthma	M	498	1	3	12	25	16	25	55	78	114	108	61
		F	858	-	1	5	21	18	38	64	97	179	232	203
496	Chronic airways obstruction, not elsewhere classified	M	12,514	1	1	-	1	-	10	150	839	3,483	5,486	2,543
		F	9,917	-	-	1	-	-	12	130	660	2,756	4,050	2,308

* The figures for individual cause categories exclude deaths at ages under 28 days.

† Figures inconsistent with those published for 1998 in the corresponding Report in HSQ02, and with those published for 1993 to 1997 in Annual Reference Volumes. For more details see section 2.6 in volume DH2 no. 25 (1998).

According to the authors of the official U.S.A. clinical version of the ICD, it 'represents the best in contemporary thinking of clinicians, nosologists, epidemiologists, and statisticians from both the pubic and private sectors'[25]. All nosologies, of course, are intended to reflect the best in contemporary thinking, and this one therefore, like its predecessors, reflects perfectly the dominant medical thinking of its age. In particular it expresses the interests of the epidemiologists and statisticians in the management of public health, because the categories it uses are designed to be ones most useful for general statistical use. In fact they descend from Farr's distinction between general diseases on the one hand, and those localized to a particular organ or anatomical site on the other. This is probably because Farr was on the first committee![26] Most strikingly the great scare disease of the 1830s —cholera— still takes pride of place among the general diseases, being number 001. However, in other respects, how the diseases are distributed between these categories differs greatly from Farr's arrangement, especially with respect to the transfer, to the 'infectious' grouping, of several diseases which Farr had distributed according to anatomical seat.

What could one die of in 1999 in England and Wales? Of all the many differences between Farr's (first) version of 1839 and the tables of the year 1999 based on ICD9, the greatest is the enormous presence in the latter of 'neoplasms' which, like 'carcinomas', is a medical euphemism for cancers. The tables reveal that cancer now is the cause of death of 25% of the population of England and Wales. In 1632 in London, just ten deaths out of over nine thousand were attributed to 'cancer or the wolf'. In Farr's 1839 statistics 'carcinoma' was a disease 'of uncertain seat' and killed only 1228 out of a total of almost a hundred and fifty thousand deaths, which was less than 1%. Today cancer kills one person in four.

We could extend this analysis of the array of available diseases to other periods, other cultures: we could even take the practice of a witch-doctor. But for the moment I will limit the analysis to England over this four hundred year period.

We find people in these three periods able to die only of a limited, specifiable and specified, array of diseases. These arrays are different. In the second two, it is the doctors and epidemiologists who specify what diseases are possible, whereas in 1632 it was two old women in each parish and then the parish clerk. In 1632 and 1999 death from zymotic diseases was impossible, while in 1839 almost a quarter of the people who died were killed by filth diseases. Other comparisons will occur to each reader. While some historians may choose to read these three different tables and their disease categories in a direct and naive way, making the 1632 cancer and plague the same as the 1839 and 1999 cancer and plague, to most medical historians it will be self-evident that these three moments are separated not just in time but also in

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[25] (1980), *ICD.9.CM The International Classification of Diseases 9th Revision Clinical Modification,* Washington, U.S. Department of Health and Human Sciences, vol. 1, Preface.

[26] EYLER (1979), (note 20 above). 58.

ways of thinking. For a host of innovations in medical thinking and transformations in social attitudes separate each of these different cause-of-death tables. The early 19th century views of pathology and disease causation were radically different from those obtaining in the mid-17th century. Similarly, the nosology of William Farr, though it seems to correspond more to the modern ICD classification, had to give ground to a new way of thinking about causation —the germ theory— in the latter decades of the 19th century. What counted as a disease and, more particularly, precisely how a disease was diagnosed, had changed beyond recognition[27]. That is to say, the disease identities changed. More properly, the disease identities *were changed*, for this is something which happens entirely through human action. Hence it remained and remains true, that in all these periods the people died of what their doctor (or their bystander) said they died of. And that's that.

[27] CUNNINGHAM, A. (1992), «Transforming Plague: The Laboratory and the Identity of Infectious Disease», *The Laboratory Revolution in Medicine,* Cunningham, A. and P. Williams, eds., Cambridge, Cambridge University Press, pp. 209-44.