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January 16, 2003

HIGH BLOOD PRESSURE: IT'S A SYMPTOM, NOT A DISEASE, STUPID!

Why Almost Everything Written About Treating Blood Pressure Is Wrong

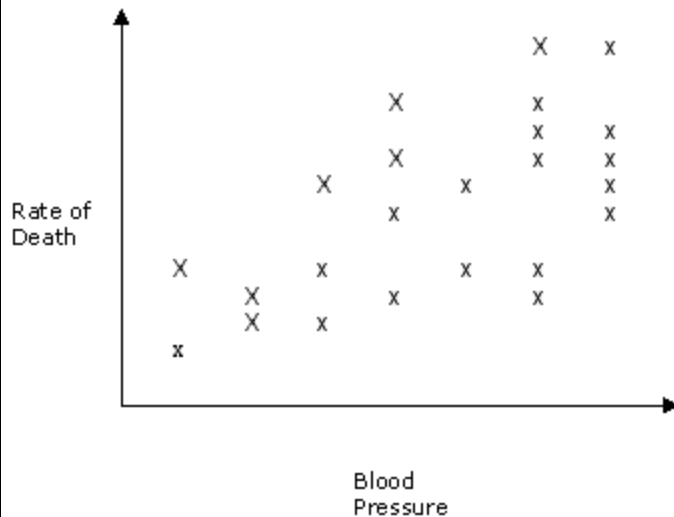
(Part Two) - (begin the series [here](#))

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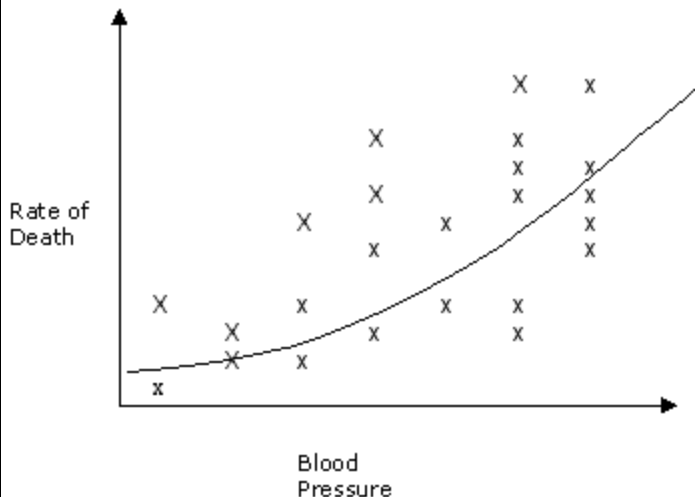
Some of you may have seen research reported in the New Scientist magazine which established quite clearly that most scientific researchers don't bother to read the full papers that they use for references. In fact, most of them just copy and paste the list of references used in other papers.

This may seem a somewhat arcane issue, removed at two steps from real life. I can sense a collective 'so what?' resonating round the world on this issue. But please pay attention, because this fact is VITALLY IMPORTANT! And it explains much about the treatment paradigm for high blood pressure.

In medical science, many measurements are imprecise. A blood pressure taken at ten in the morning may have changed five minutes later. The doctor may have put the blood pressure cuff on in a slightly different way, whatever. So, when you start drawing a graph of blood pressure measurements taken over time vs. the rate of death, in different groups of people, it does not have precise cut-off points. It may look more like someone has fired blunderbuss at a piece of graph paper.



However, if you are really clever and understand mathematics and calculus, and suchlike, you can draw a perfect line through that mass of dots. This can be called a 'linear logistic model.' (My line is just a random guess by the way)



However, to quote the European Heart Journal: 'Before one can have confidence that the linearity correctly reflects the behaviour of the data, and is not just an artefact of the model, it is necessary to carefully examine the data in relation to the proposed model.' In plain English, stop guessing. Although guessing does look a lot more impressive when you use terms such as Cox model and double-tailed chi-squared, etc. which no one understands.

So, what does this all have to do with the price of beans?

I have two strands to my discussion so far. Strand one: most researchers never bother to read the papers they quote; at most they manage to read the abstract. Strand two: statistical models used to look at blood pressure vs. mortality are all based on the supposition that 'the relation of blood pressure to risk of death is continuous graded and strong, and there is no evidence of a threshold.'

Now, where did this supposition first come from? Our old friend Framingham, the world's longest and most detailed study of the relationship between various 'risk factors' and death from heart disease. Researchers looking at the Framingham data started the 'linear and continuous' ball

rolling, and, ever since, everyone has decided to use the same methodology. A statistical methodology which implies that the lower the blood pressure the better, and there is no lower limit.

No one questions this methodology; in fact it has been quoted in so many papers over the years that it would appear to have been proven beyond the shadow of a doubt. But of course, the reason why it is now quoted so often is that paper after paper has quoted from other papers that have all shown this linear regressive model to be true. A process of error reinforcing error.

To give a more concrete example of how this happens. I write a paper which states that 'the relation of blood pressure to risk of death is continuous graded and strong.' Someone else comes along and quotes that paper, without bothering to look at the methodology or results. So now I have two papers making the same statement.

Then, along comes researcher B, who is looking for papers on blood pressure and mortality. He sees two papers with the same self-reinforcing statement on it, and quotes them. Now I have three papers making the same statement. How long before there are one hundred, two hundred, a thousand papers?

You think this number may be an exaggeration, but Simkin and Roychowdhury (who looked at the issue of misreporting) found that mis-citations can occur many thousands of times. To quote the New Scientist article again:

'To find out how common this (misreporting) is, Simkin and Roychowdhury looked at citation data for a famous 1973 paper on the structure of two-dimensional crystals. They found it had been cited in other papers 4300 times.'

And the errors this leads to are not specific to two-dimensional crystals:

'The problem is not specific to this paper, the researchers say. Similar patterns of errors cropped up in a dozen other high-profile papers they studied. The trouble is that researchers trust other scientists to repeat the key message of a paper correctly. This means that when misconceptions take root, they spread like weeds.'

It should be clear by now, where I am heading.

Someone, somewhere, decided that there is a continuous linear relationship between death and blood pressure. They used a statistical method to establish this, and ever since everyone has used the same model. So there are now thousands and thousands of papers out there 'proving' this paradigm to be true. In fact, if you wrote a paper on the treatment of high blood pressure using another model it would almost certainly be rejected on the basis that the linear relationship model was the established, and correct, model, so yours must be wrong.

There is just one teensy, weensy, little problem here. When you actually decide to look at the data - it disproves the model.

'Shockingly we have found that the Framingham data in no way supported the current

paradigm to which they gave birth. In fact, these data actually statistically reject the linear model. This fact has major consequences. Statistical theory now tells us that the paradigm MUST be false..' EHG 2000 21, 1635 - 1638

I didn't add the italics or capital letters. The Authors put them in - the paradigm MUST be false. Normally, in clinical papers, people state things very calmly, e.g. 'the data suggests an association between.' So to see a statement such as the paradigm MUST be false is very strong stuff.

So what is really being stated here that is so important?

I will use an analogy to try to make the point. If you chose to live in the Himalayas you may find yourself twelve thousand feet above sea level. Most people can cope with this height, and it has very little impact on your health or life expectancy. Go up a few thousand feet and everyone dies. The exact 'death zone' height varies from person to person.

The fact that you die at sixteen thousand feet, however, does not mean that any altitude above sea level is harmful. What it means is that, at a certain level, your body cannot cope any more and the systems start to break down.

Yet, with blood pressure, any rise represents a risk - according to the linear model. There is no 'death zone' no cut-off point. According to this logic, even if you have a 'normal' blood pressure, it would be better if you could get it lower. And believe me, papers have been written stating this.

But, anyone with half a brain can see that a model with a 'cut point' is much more likely to be correct. Is it really likely that a 5-15mmHg rise in blood pressure will cause problems? According to the linear model, the answer is yes. But, as we have seen, the data doesn't actually support a linear model, and logic would also dictate that at a certain point - which has, in reality, never been defined - a raised blood pressure creates problems. Below that point it may be a bit high, but frankly it's nothing to worry about.

What is that point.... I don't know. But I would guess it is something like a systolic of 160 - 180. However, the medical profession, with its ever present desire to squeeze all patients into a little box called 'normal' is inexorably bringing down the level at which treatment is needed. I have seen calls to get everyone to a level of 120/70 (the level considered 'normal'). The WHO has set the limit at 130/85. Already in diabetes the recommended level is 120/85.

Why are they trying to achieve this? On the basis of a model made up years ago which, due to sloppy research, has become accepted fact. On the basis of a model which, if you examine it properly, MUST be wrong. Try explaining this to your local, friendly doctor, you will get the same reaction that I always do. 'Don't talk rubbish, it has been proved that you should lower the blood pressure as much as possible.'

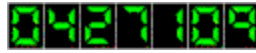
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