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Safety in numbers

I've been wondering what to do with the pots of cash that the newspapers assure me are on their way to me. Should I buy a new car, a second home abroad, invest it sensibly or just put it safe in a sock under the bed? How about being more adventurous and putting most of it on a bet on this month's Derby, or visiting a casino and taking my chances on the roulette wheel?

I doubt that I would get a printable reply if I suggested this to my wife as a sensible way of managing our money, but what about the way we manage health? Increasingly it involves applying risk assessments and cost-benefit analyses to populations. QOF is more about broad-based quality measures applied to our disease registers than individual focused care.

As the focus moves from 'caring always and harming never' to counting always and harming only if the numbers needed to treat are acceptable, we depend more and more on statistics and probability. Although statistics is a respectable, academically-rigorous discipline altruistically applied for the general good, it has a much murkier past. Probability theory developed when dissolute 18th century French gamblers commissioned the mathematical brains of their time to help them get an upper hand over the gambling houses. Just as these gamblers looked to manipulating numbers to try and give some order and predictability to their world of chance and uncertainty, we strive to do the same thing in the complex world of medicine.

In the Casino of Health we play with relative and absolute risks. The odds are numbers needed to treat, the chips are side effects or harm of long-term treatments, and we look to statistical evidence to help us to provide what we hope is the best overall treatment. This works for a population but not always for individual patients. How many individual patients realise that their preventative treatment may not make any difference? It is only the population that wins. The odds are stacked in favour of the Casino winning and the fate of the individual punter is far more uncertain.

There is no doubt that the use of statistics can be a sophisticated and powerful tool in analysing the complexity that surrounds us, but like all powerful tools there is danger in not recognising the limitations. We may be able to perform complex analyses on population data to come up with risks of developing ischaemic heart disease or stroke so that patients can make 'informed choices' about drugs such as statins for primary prevention, but you don't get 23% of a myocardial infarction — you either get one or not — and we never know if the drugs actually make a difference in a particular patient.

One of the early pioneers of probability described a scenario cautioning against depending too much on probability calculations. Imagine having two packs of cards: pile A with 49 red and one black card, and pile B with 49 black and one red card. You have to choose one card to determine your eternal fate. Red guarantees eternal happiness. Black, on the other hand, condemns you to eternal damnation. You know which pile is which but you can't see the individual cards. You would have to be crazy to choose from pile B, but would it be any consolation that you'd done the sensible thing if you picked the one black card from pile A? When Ariel Sharon had his massive stroke was it any consolation that the anticoagulant treatment that caused it should statistically have prevented it?

'Never make forecasts, especially about the future.' was Samuel Goldwyn's helpful advice. We can make more educated guesses about overall outcomes but for the individual the future remains shrouded. George Bernard Shaw said that a medical degree is no substitute for clairvoyance, unfortunately neither is statistical theory and probability. Neither should it be a substitute for a medical degree, and we need to be wary not to lose our perspective on the individual benefits and harms of treatment when we visit the Casino of Health.