

The end of biomilitary realism? Rethinking biomedicine and international security

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Abstract

Medicine and politics have a common aim, the welfare of people, and the ideas and language of one influence the other. There are parallels between medicine, particularly its more cutting-edge aspects, and international affairs; and the more aggressive forms of medicine, like the more aggressive forms of international relationships, seem to be about short-term gain, based on little evidence, with longer-term negative consequences as the full impact of the action becomes clear. Modern medicine has been very effective in curative methods, but the fundamentals of public health, which receive less kudos, have perhaps had more beneficial effects. The world of international affairs can learn much from a holistic and public health approach.

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Medicine has made great strides over the last centuries. In most western countries, life expectancy has increased by a year every five years [1]. Numerous spectacular developments in technology dot the medical scene today: organ transplants, characterising the genome, neonatology, miracle antibiotics. However, notwithstanding the investment of billions of dollars, medicine seems to be meeting its limits. Much of the gain in life expectancy has been through basic public health measures such as better sanitation, adequate diet and housing rather than technology. Longer life in itself does not necessarily lead to a better quality of life. In international affairs there also appears a limit to what money can buy. With unprecedented wealth and military technological power, an economy that produces 40 per cent of the world's Gross Domestic Product [2], a \$400 billion defence budget representing at least 40 per cent of the world's military spending [3] and protecting just four per cent of the world's population, Americans should be enjoying the fruits of peace, prosperity and happiness and should be the most secure country on earth. Yet Americans feel secure neither in physical terms nor in terms of health parameters.

Despite having appropriated the language of medicine – operations, surgical strikes, extermination, side effects or Collateral Damage, and pre-emption/prevention – security and international affairs experts have failed to adopt lessons of ideal public health practice. Conventional solutions to threats remain: more troops, better weapons, more money. These solutions are analogous to the medical world’s response to killer bugs: more researchers, better antibiotics and more research funding. Both mistakenly assume the challenge lies in an environment that needs to be tamed rather than in meeting basic needs, education and prevention. Unfortunately, hard power politics is exercising an influence on medicine by giving its own principles instead of adopting those of health promotion. So medicine seeks bigger gun antibiotics and getting more bang for the buck, with talk of wars on cancer and wars on drugs.

It may be that failures in the geopolitical and the medical worlds are due to analogous faults and that recognition and analysis of these might help reduce such errors in the future. This paper examines some of these issues, drawing some parallels between medicine, security and world affairs, the faulty premises underlying each, and how we might conceive of an alternative approach.

Technological fixes

Society often assumes that medical science is, or will be, omnipotent; given proper resources in time, ‘they’ can develop a new drug to cure any disease; from cancer to heart disease to AIDS. As such, each death seems to imply a failure on the part of doctors. Ultimately, eliminating these failures will allow us to live forever. Such belief in a technological fix denies our limited understanding of complex systems, paralleling the hubris of the citizens of Babel.

Policy makers in the United States look at building a viable missile defence as a solution to the threat it feels from rogue states with nuclear weapons. They are so convinced by this technological fix that their answer to the unintended side effect of other nations feeling unwell and insecure is also technical. They have told Russia that, rather than reducing its nuclear stockpiles, it might feel more secure by maintaining these indefinitely. Such is the dependence on nuclear weapon technology that even during the Year 2000 computer crisis, whilst ‘failsafe control devices’ on nuclear weapons and having an exchange of personnel were implemented, de-targeting, taking weapons off ‘hair-trigger’ alert status, de-mating, and abandoning launch on warning, were not options [4].

Hard power: bigger is better?

Drug companies attempt to design new drugs that kill more bugs, seemingly confident that the problem of infectious disease can be

eradicated. But each super-antibiotic in turn breeds new resistance, from methicillin-resistant *Staphylococcus aureus* (MRSA) to vancomycin-resistant *Enterococcus* (VRE).

The reliance of world governments on beefed-up militaries might seem analogous to the medical world's trust in a wonder drug or super antibiotic as a quick bio-technological fix. Yet bigger is not always better and might is not always right. Militarily weaker but motivated and persistent peoples often can humiliate overwhelmingly stronger sides. The overwhelming military superiority of the US failed in Vietnam both because of the mobilisation of the Vietnamese population and because much of the US population felt that it had no moral authority to wage such a battle.

Domestically, governments attempt to use hard power, with stiffer sentences and better equipped police forces. The stiffest sentence, capital punishment, not only kills murderers, eliminating the cause, but should serve as a deterrent to others. Yet states in the US with capital punishment have murder rates one and a half to two times those without it, and US execution rates are at least three times more than in Canada, where capital punishment was outlawed and the last execution was more than 40 years ago [5].

The magic bullet

The medical 'magic bullet', the subject of daily newspaper headlines, is often much less impressive than initially touted, with undesirable side effects appearing years after its introduction. For example, the prokinetic agent cisapride, once considered an ideal drug because it worked on all parts of the gut and was used to treat gastro-oesophageal reflux (heartburn) and motility disorders such as impaired gastric emptying, was withdrawn from the market because it caused heart arrhythmias, increasing the risk of sudden death.

Similarly, in warfare, the carefully named and often cited 'Surgical Strikes' have had significant 'collateral damage'. The 'smart bombs' of Norman Schwarzkopf in the first Gulf War were found to kill far more civilians than the military admitted, or than the videogame pictures suggested [6].

Make the last move

Each attempt to develop a cure for AIDS, to build a targeted antibiotic, to make a clean pesticide, to eliminate infectious disease or to develop an emergency plan to manage crises irrespective of context, seems to be met with a surprising and undesirable reaction: nature bites back. Viruses mutate, natural predators are destroyed or the organism we have attempted to destroy develops resistance. In international affairs we also do not always get to make the last move. *New York Times* columnist Thomas Friedman

cites the 'New Math' dominating Middle Eastern affairs for the first five years of this century [7]. By the calculations of Israelis, if you had ten terrorists and you killed seven of them, you reduced your threat by 70 per cent. For extremists on the other side, the deaths of seven young people (and the inevitable collateral damage) created seven martyrs and perhaps twice as many recruits, with aggrieved families, friends and community.

In trying to make the last move by building a National Missile Defence system the US repudiates the rationale of Mutually Assured Destruction (MAD), which has been the philosophical plank of protection for the last 40 years. The rationale is that no side should build a defence system, as others fearful of a pre-emptive first strike would feel it necessary to build more sophisticated weapons systems to be able to overwhelm the system, thereby fuelling an arms race. Even in the era of rogue states, such logic still holds true as states from China to Russia to Korea and Iran are trying to respond to this system, which they see targeted at them.

'Design the perfect defence'

Medical science continues to attempt to design and build the perfect defence against death and disease, the ideal flu vaccine or prophylactic. If we only try harder and put money into research we will be able to ward off or treat cancer, obesity, baldness and aging. Thus far the illusive Fountain of Youth remains undiscovered; modifying lifestyles with diet and exercise remains the only sustainable way to manage obesity with a greater, but less profitable, effect on health than many pharmaceutical approaches.

Many communities in the US are gated, have metal detectors in schools and build higher walls. In the aftermath of the Columbine school shooting, rightwing commentators talked of making America safer by arming teachers. Yet guns are not protective; we are much more likely to be harmed by those intimately connected with us, than those further away. Households in the US with firearms are three times more likely to have suicides [8] and five times more likely to have homicides than those without them [9].

Similarly, even excluding the faulty logic and risk of response of other nations, National Missile Defence cannot provide true security: it would have to be close to 100 per cent effective 100 per cent of the time. Currently, under ideal, even faked test conditions, the best that has been possible is about 50 per cent. A system that was 50 per cent effective could easily be combated by twice the number of missiles, and the expected response of other states such as China and Russia is to construct just that. Even a perfectly operational shield would not protect a society against the threats from so-called rogue states or terrorism. Measures such as suitcase bombs, decoys and off-shore launches from harbours cannot be dealt with by missile defence.

Safer drugs

It is believed that technology will design safer drugs such as new blood pressure medications, cholesterol lowering agents or painkillers. New anti-inflammatory painkillers, the COX II inhibitors were touted as causing fewer gastric and duodenal ulcers than traditional anti-inflammatories such as ibuprofen and aspirin, but also caused more heart attacks and soon most were removed from market and are now the subject of lawsuits.

In international affairs we continue to design safer technology – a better landmine, a ‘smarter gun’, a nuclear plant with ten or twelve control devices to shut down in an emergency. We may be lulled into a false sense of security while unforeseen design flaws and human factors (the people making decisions being affected by lack of sleep, boredom, and emotional stress) are not addressed. The underlying notion, that a world or any human process without risk can be created, has always proved fallacious.

Causation versus association

In medicine we must recognise the difference between causation and association: this difference is captured by the concept of ‘confounders’. For example, people who drink heavily also have higher rates of squamous cell carcinoma of the head and neck. But this is not because of the direct effect of alcohol, but rather because of the increased rate of tobacco use in many such drinkers. In this case alcohol was not causal but was associated, and smoking confounded the effect because it was associated both with the ‘risk factor’, alcohol, and the outcome, head and neck cancer. Such reasoning is analogous to supposing that, because most people die in hospital beds, if hospital beds are reduced then fewer people would die.

Similar faulty reasoning permeates international affairs. The claim that there has been no world war since 1945 due to the presence of nuclear weapons presupposes that world wars were due to happen every 20 to 25 years because of the timing between the first two, and that nuclear weapons were the only deterrent to inevitable war. In this case the association cannot be extrapolated simply to causation or to the even more absurd corollary that the world is safer because of nuclear weapons.

End points and indicators

In the last 20 years many different drugs have been developed to treat hypertension. Diuretics, which reduced stroke rate and had been available for many years, were supplanted by other (more expensive) drugs which reduced blood pressure, lowered cholesterol, helped kidney function and glucose tolerance, lasted longer and improved other parameters. Most studies were not direct comparisons with placebo or the old diuretics

(this was considered unethical) and the one end point not studied was the effect on life expectancy. When this was finally chosen as an outcome it was demonstrated that the earlier and cheaper antihypertensives saved at least as many lives as any other agent.

Cardiac arrhythmias are a major source of mortality after a heart attack. Two decades ago, anti-arrhythmics such as encainide and flecainide were routinely administered to stop these arrhythmias, which they did, but other properties of these agents meant they actually killed more people than they saved. Such thinking ignores the point that interventions do not have only one set of properties and consequences.

Likewise, the ultimate long-term goals of peace are replaced by improvements in weapons effectiveness, with a focus on such concepts as missile kill rates and other proxy endpoints or measures. Even democracy or getting rid of a brutal dictator or eliminating terrorism cannot be endpoints in themselves. The focus of the current war on terror is an example. Instead of examining the root causes of terrorism and developing a long-term strategy to reduce its likelihood, wars have been launched in Afghanistan and Iraq to pacify and democratise these nations. Even if, in a best-case scenario, these endpoints are ultimately reached, these actions will have caused enormous harm and many deaths of innocents, and increased the risk of terrorism from those recruited from outside these countries.

Reliance on surrogate indicators

Lowering blood cholesterol levels has become a key indicator associated with reducing the risk of arterial disease, strokes and heart attacks. An early cholesterol lowering agent, clofibrate, lowered cholesterol well but seemed to increase all cause-mortality. The statins have good cholesterol lowering properties, but the most recent, cerivastatin, was withdrawn because of a rare but serious side-effect, rhabdomyolysis (muscle destruction). Surrogate indicators such as cholesterol levels are useful only if most of the effect of morbidity or mortality benefit is directed through the surrogate. Guidelines in the US have labelled more people as sick and requiring drug therapy because of raised cholesterol levels, from 13 million in the 1990s who might have required statin treatment, to 36 million in 2001 and 40 million in 2004 as target levels for lipids and total cholesterol were lowered [10].

Decisions are made in world affairs in a similar manner, with economic issues being a major focus. Development targets for income or gross national product may be used as indicators for well being but can mask major health deficits in particular population groups. In addition, the short-term drive for wealth is at the expense of the environment; the demand for oil leads to global competition and instability; health and well being may be compromised in the longer term.

‘Don’t just do something, stand there’

Sometimes we are better off with this instruction rather than following the urge to intervene. It is often true that, as Voltaire said, ‘The art of medicine consists in amusing the patient while nature cures the disease’.

In the US and UK, acute otitis media is the most common reason for children to receive antibiotics; nearly \$5 billion is spent each year in the US in managing it. In the Netherlands in children it is treated symptomatically, with antibiotics reserved for those whose symptoms persist beyond three days. Compared with seven other countries where antimicrobial therapy is virtually universal, Dutch patients had similar outcomes at two months.

We are constantly reminded that the only language a brutal dictator understands is force. But most dictators – including Latin American, Southeast Asian, African and even European ones, and such unseemly characters as Ferdinand Marcos in the Philippines, Slobodan Milosevic in former Yugoslavia, and Suharto in Indonesia – were overthrown, not by outside military intervention or even internal coups, but by popular and largely peaceful civilian opposition.

Prevention or pre-emption?

In medicine, prevention at a primary level, where possible, is desirable and usually cheaper than reacting to full-blown disease. This means taking actions to prevent a disease from starting, such as lung cancer caused by smoking, cirrhosis of the liver by alcohol and melanoma by sun exposure. Personal and social action such as seat belts, reducing speed limits, increasing exercise, decreasing meat and increasing fibre in diet are all useful preventive measures to improve health.

Pre-emption is early detection with early intervention, and the impact on health is as good or as predictable as prevention. Time itself often heals. Diseases may declare themselves, and in family medicine it is often necessary to be patient and observe the path rather than plunge in; boils must be ripe to be lanced. Early over-use of antibiotics is a cause of longer-term health problems.

Studies of early de-briefing after major trauma to mitigate the effects of post-traumatic stress disorder show that such a course of action may make things worse. Breast screening measures are controversial and may result in unnecessary surgery and cause psychological distress [11,12].

In international affairs the notions of prevention and pre-emption are often confused: to prevent something seems very noble, whilst to attack pre-emptively may be seen as aggressive. The attack on Saddam Hussein was said to be preventative, to stop him acquiring weapons of mass destruction, but was in reality pre-emptive against the alleged threat that he posed. To have prevented the situation from arising at all would have been of much greater benefit to humanity and would have entailed very different strategies. The fact that Saddam was encouraged and armed during

the 1980s is brushed aside. The hasty pre-emptive strike on Iraq without careful reflection on its consequences may well cause long-term negative effects for Iraqis, the region and the rest of the world.

We are also told that we cannot just wait for the next terrorist attack. The US national security strategy of forward defence seems on the surface to be logical, but prevention of terrorism would be a much healthier approach and require very different strategies. Not every bad actor is a Hitler who has to be stopped before he launches World War III and the next Holocaust, and those who suggest alternatives to armed violence are not all naïve appeasers. Many historians argue that Nazism was promoted by the harsh punitive provision under the Treaty of Versailles for reparations which undermined the Weimar Republic; to have dealt with the underlying causes would be more aptly seen as prevention.

‘Add it to the water supply’

When a drug is found that seems highly effective for a particular situation, the tendency is to consider it for wider application. Expensive anti-viral drugs, meant for immune-compromised individuals, were marketed for flu-like illnesses and used against the common cold in some countries, and are now being considered to combat ‘bird flu’. In generalising findings of studies, we must remember that for most trials only about ten per cent of screened patients meet entrance selection criteria. Patients are often excluded for good reasons, and we can conclude little about effects on populations not studied.

Similarly, military solutions, which in specific instances may have done more good than harm, become generally applicable to everything from delivering aid to post-conflict rebuilding. The NATO action in Kosovo and Serbia brought in high-level bombing, smart weapons and actions without United Nations Security Council authorisation. This pattern was repeated in Iraq. The Balkans also saw the military taking on tasks in the humanitarian field, another role that has expanded with ill-effect in Iraq. Using the military for tasks for which it was not designed may not be the most efficient use of resources and may do more harm than good.

‘Scientism’

Whilst empirical scientific understanding of the pathology of disease is essential to effective treatment, we can be led down the wrong path when we do not understand complex systems or realise our own limitations in interpreting scientific findings correctly.

For example, hormone replacement for post-menopausal women was initially designed for symptom relief, but was found to reduce osteoporosis and to have properties that reduced risk factors for heart disease. At medical meetings throughout the 1990s, physicians were told that it was unethical

and fraught with medico-legal consequences not to recommend hormone replacement for all. However, the oestrogen/progesterone replacement was found to be associated with an increased risk of breast cancer and to have a negative effect on heart disease. Later the oestrogen-only replacement was associated with a possible increased risk of strokes.

Over the last decade we have reversed our thinking on many other medical issues, and through all of these contortions we have had absolute faith in the 'science' of our reasoning.

War is also being conducted by scientists and 'realists', such as those who develop smart bombs or neutron bombs that kill people but leave buildings standing. On nuclear weapons we have moved from benefits of unilateral possession of nuclear weapons to bilateral possession (Mutually Assured Destruction) and now to the benefits of our friends and allies having them while outlawing them for others. When our leaders reverse themselves without batting an eye as to whether 'Uncle' Joe (Stalin), Manuel Noriega of Panama or Saddam Hussein are forces for stability and 'better than the alternative', or the 'epitome of Evil' as we seek to overthrow them, populations are expected to follow like sheep.

Conclusion

Many of these thoughts and actions are believed to be scientific or realistic. A study examining why physicians use ineffective or harmful treatments [13] identified the justifications as including: clinical experience; over-reliance on surrogate outcomes; failure to understand the natural history of the illness; a misplaced adherence to the patho-physiological model; ritual and mystique; a need to do something; no one asking the right questions; and patients' expectations, real or assumed. Cognitive distortion helps to understand how judgements can be made using flawed reasoning, giving excess weight to a piece of evidence despite contrary evidence.

The same processes are seen in decision-making on world affairs and global politics, though some may argue that forces such as self interest, profit and power come into play more strongly. As we seek more successful ways of dealing with the medical and global security environment, it is essential that we examine and understand the ways that human beings think about life and death situations and share ideas between disciplines. The positive approaches that medicine might bring to international affairs will be explored in a later paper.

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Note: A fuller list of references on adverse effects of medications and other medical interventions is available from the author.

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