How campaigners and the media push bad science

PERSONAL VIEW Andy Alaszewski

Brian Deer’s three articles in the BMJ series provide a compelling account of bad science and bad scientists.11 He documents how Andrew Wakefield and his scientific colleagues “discovered” a new disease or syndrome (autistic enterocolitis) “caused” by the measles, mumps, and rubella (MMR) vaccine and tried to convince others of the existence of this disease. Wakefield and colleagues’ Lancet article, published in February 1998,1 was based on weak evidence and the selective presentation of data from a limited number of preselected cases. Despite this the article was sympathetically received by reviewers and editors of the Lancet, journalists hostile to public health, many parents of autistic children, and some parents who were considering the MMR vaccine.

Deer’s story of the Lancet article can be seen as a modern tragedy, about the hubris of a group of scientists that results in a medical disaster. The scientists suffered some of the consequences; for example, Wakefield lost his job, reputation, and medical licence in the United Kingdom. There were other victims. The children involved in the study underwent unnecessary and painful investigations, and because of the public health scare many young children did not receive the MMR vaccine and were consequently exposed to an increased risk of infection by potentially life threatening diseases.

Science involves the application of specific methods to generate and test hypotheses and increasingly involves team work to solve specific problems. “Wakefield’s people” were challenging the established scientific orthodoxy that the MMR vaccine was a safe public health intervention. With hindsight it is clear that they were mistaken, but at the time, and in the context of public concerns about the general safety of medical practice and the specific safety of vaccines, the hypothesis that the MMR vaccine was potentially harmful was reasonable and worth exploring. In other areas of public health, established hypotheses about safety had been shown to be based on flawed logic. In the case of bovine spongiform encephalopathy (BSE), until clear evidence emerged that humans had been infected by eating contaminated beef the scientific orthodoxy was based on analogies, especially with scrapie, and arguments based in ignorance that there was no evidence that humans were at risk. As in the case of the MMR vaccine this orthodoxy was challenged by only a few scientific “mavericks.”

Many areas of science are characterised by uncertainty and a lack of definitive evidence, and in such contexts social relations and interactions play a key role in sustaining competing hypotheses.4 So in the case of BSE and Creutzfeldt-Jacob disease a network of government scientific advisory groups played a key role in developing and maintaining the view that it was improbable that the infective agent that caused BSE would affect humans.5 However, in developing his critique of the MMR vaccine Wakefield went beyond scientific team building, becoming associated with an antivaccine campaign group, called Jabs, and with the lawsuit on behalf of 1500 claimants who were seeking compensation for vaccine damage to their children.

The work of Deer and others undermining the evidence linking the MMR vaccine to autism had disastrous consequences for Wakefield and for those parents claiming legal compensation for vaccine damage. However, the antivaccine campaign is alive and active, with the Jabs website alleging an “unrelenting barrage of anti-Wakefield propaganda in the British media”7 and advertising the book Silenced Witness, parents’ accounts of vaccine damage.8 The CryShame website continues to endorse “the concern initially expressed by Dr Andrew Wakefield . . . that some children may be at increased risk of adverse response to MMR vaccine.”9 Such resilience should come as no surprise. Festinger and his colleagues have shown that, when the predictions of social movements fail, their proponents defend the hypotheses on which such predictions are based and reinterpret reality to fit with the hypothesis.10

The mass media played a major role in this affair as the forum in which campaigning groups make claims.11 The media have effectively become the arbiter of truth. The ways in which Wakefield publicised his “findings” were unusually high profile and dishonest, because underlying links to the antivaccine campaign were concealed. The initial presentation of the findings was sympathetically received by those journalists who linked public health to the nanny state. Hauke and Spiegelhalter have shown in a study of two scientific press releases how the media used and reframed stories on the link between obesity and cancer, for example, as evidence of the nanny state.11 A distinctive feature of Deer’s journalism was that he did not reframe the story but treated it at face value, scrutinising the underpinning science, and found it wanting.

Deer’s articles provide a fascinating whodunit. However, underpinning this story are some important questions about the nature of scientific research and its relation with society. Campaign groups will make use of scientific research to make claims. The mass media are a key forum for such claims, and journalists will interpret and evaluate claims and the evidence on which they are based. The relations of scientist to campaign groups and the media need to be more fully explored and understood so that clear ethical guidelines can be established.

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References are on bmj.com

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See EDITORIAL, p 179, FEATURE, p 200, OBSERVATIONS, p 206
Why do pharmacists sell homoeopathic remedies?

PERSONAL VIEW Fred Kavalier

I am a great believer in the ability of the human body to heal itself, and I think it is sensible to stay away from doctors and take as little medicine as possible. This is why I support the homoeopathic practice of not giving any medicine to patients who don’t have much wrong with them. But I like to think that I am more honest than most homoeopaths, so I tell patients that their vague feeling of malaise is likely to sort itself out if they are prepared to wait. Rather than going through the charade of prescribing a few sugar pills to be taken on a clean tongue, it seems simpler to prescribe nothing at all.

But a problem arises when a patient has an illness that won’t get better without treatment. Modern scientific medicine, for all its failings, has a few treatments that really do make a difference.

This came home to me a few years ago when I had a patient who was planning to travel to the Sahara desert to make a documentary film. As his general practitioner I saw him before he set off and gave him some straightforward advice about malaria prevention: insect repellent, bednets, tuck your trousers into your socks, and take the antimalaria pills. And if you develop a fever after you return to the United Kingdom, even months later, remember to tell the doctor that you might have malaria.

A friend suggested that he take a homoeopathic alternative to my antimalarials (no nasty side effects, no toxic chemicals). He followed his friend’s advice (and ignored mine), thinking that the homoeopathic prophylaxis was likely to be just as effective. When he arrived back in London he phoned me to say that you might have malaria.

For 10 years I wrote a weekly medical advice column in the Independent. Only once did I make the mistake of mentioning homoeopathy. Over the next few weeks I was subjected to a torrent of abuse from both sides. The homoeopaths didn’t like the tone of my article—too flippant and dismissive. The scientists were appalled that a doctor should even mention the word homoeopathy in a column that prided itself on promoting evidence based medicine. I humbly apologised to the scientists in a subsequent column, and I vowed never even to mention the H word in print again.

Last week I visited a large central London pharmacy to have a look at its homoeopathic range. To give the staff their credit they didn’t have anything that claimed to prevent malaria. But I was given a copy of Nelsons Homeopathy Factfile, which told me that Rhus Tox 6c “relieves chronic rheumatic and arthritic pain, stiff joints and tendons” and that Gelsemium 30c “relieves flu-like symptoms including shivering, headaches, runny nose, muscle pain, and sneezing.”

I don’t really understand why chemists and the companies that make homoeopathic remedies are allowed to make false claims for the efficacy of their sugar pills. I’m sending a copy of Nelson’s Homeopathy Factfile to the General Pharmaceutical Council and the Advertising Standards Authority. I don’t expect that the spineless council will do much. We’ll see if the ASA thinks that these claims are “legal, decent, honest, and truthful.”

I think pharmacists who sell homoeopathic products need to do a little soul searching. I know we all have to earn our crust, but it shocks me that a little box of “sucrose/lactose pillules” can be passed off as a “medicinal product.”

Perhaps it’s not much worse than flogging ineffective cough medicines. I love overhearing the sales assistants in pharmacies asking customers if it’s a “tickly cough” or a “dry cough.” During my visit to the pharmacy I checked on the active ingredients of tickly and dry cough medicines. One contains glycerin and the other contains glyceral. According to my pharmaceutical textbook, glycerin and glyceral are the same. Perhaps they would work even better if they were diluted a few trillion times.

(For an excellent tutorial on homoeopathy I recommend Mitchell and Webb’s Homeopathic A&E: www.youtube.com/watch?v=HMGibOGu89Q.)

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See NEWS, p 192
Poverty, plague, and prison

Little is known of the life of the playwright Thomas Dekker (1572-1632) except that it was dominated by poverty, plague, and prison. He spent at least seven years in prison for debt, which illustrates our moral progress: if imprisonment for debt were still the practice, half the population would be permanently incarcerated.

Dekker wrote pamphlets as well as plays, one of the best known being The Wonderfull Yeare. The year in question was 1603, that of Queen Elizabeth I’s death and James I’s accession to the throne. Of the first event Dekker wrote, “The report of her death like a thunderclap was able to kill thousands, it took away hearts from millions.”

The proclamation of the new king, though, restored spirits: “Now does fresh blood leap into the cheeks of the courtier; the scholar sings hymns in honour of the muses . . . tobacconists filled up whole taverns.”

But it was a fool’s paradise (Dekker’s term for it): 1603 was soon to prove a plague year in London, in which there were to be “the ghosts of more (by many) than forty thousand, that with the virulent poison of infection have been driven out of earthly dwellings.

“A stiff and freezing horror sucks up the rivers of my blood; my hair stands on end with the panting of my brains; mine eye balls are ready to start out, being beaten with the billows of my tears. Out of my weeping pen does the ink mournfully, and more bitterly than gall, drop on the pale-faced paper.”

Not surprisingly, the pamphlet has many eloquent passages describing an epidemic that killed a fifth of the population.

“Never let any man ask me what became of our physicians in this massacre; they hid their synodical heads as well as the proudest.”

Dekker: wrote eloquently about plague

And what of us, the doctors? “Never let any man ask me what became of our physicians in this massacre; they hid their synodical heads as well as the proudest [the rich had fled the city]. And I cannot blame them, for their phlebotomies, lozenges, and electuaries, with their diacatholicons [ laxatives], diacions [opiates], amulets, and antidotes, had not so much strength to hold life and soul together, as a pot of Pinder’s ale and a nutmeg. Their drugs turned to dirt . . . the rabble of doctors and watermen stood gaping, and every one of them, as at a breakfast, hath swallowed down ten or eleven lifeless carcasses. Before dinner, in the same gulfe are twice so many more devoured; and before the sun takes his rest, those numbers are doubled.”

Bet this man is the doctors? “Never let any man ask me what became of our physicians in this massacre; they hid their synodical heads as well as the proudest.”

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MEDICAL CLASSICS

Red Beard

Directed by Akira Kurosawa

A film in Japanese (Akahige), released 1965

Set in 19th century Japan Red Beard is an account of the transformation of a haughty young doctor, Noboru Yasumoto, into a caring healer while working for the poor under the tutelage of Dr Kyojo Niide, the eponymous Red Beard.

This teacher-student relationship is a running theme in the film. Brilliant and selfless, stubborn and proud, Niide runs a clinic for the poorest members of society in an age before sophisticated medical investigation and treatment. The education that Niide imparts is not the familiar seminar and textbook based affair but rather consists in teaching by example. Only by witnessing Niide’s actions can Yasumoto ask himself what it truly means to be a doctor.

For Niide this is to transcend your own egoistic desires and career aspirations, to see yourself as a servant of the people. To do this is to be aware of your own limitations: “There are no cures; medical science doesn’t know anything really. We recognise symptoms, developments; we try to help, but that’s about all. We can only fight poverty and ignorance and mask our own ignorance.”

Were it not “for poverty half of these patients wouldn’t be ill.”

The social message of the film reflects the public health reforms of the era and reminds us of the problems that still affect many of the world’s inhabitants.

A cornerstone of medical education?

A film in Japanese (Akahige), released 1965

Set in a preindustrial environment, the film alerts us to the effect that modernity has had on traditional holistic modes of caring. Current working patterns in medicine, with their managerial influences, demanding lists, and dependency on technology, can lead us to focus on diseases rather than on patients, with their own rich and often difficult personalities.

Red Beard’s director, Akira Kurosawa, urges us to resist this tendency, a message elegantly evoked when Niide notes that “behind every patient is a great misfortune.” Niide’s holistic vision allows him to see into their hearts as well as their bodies and delve into their stories. And what stories. Portrayed with understated beauty, each patient’s journey is a reminder that at the crux of sophisticated modern medicine is the relationship between doctor and patient.

Red Beard should stand as a cornerstone of medical education, because it helps us to realise that, although technological advancement is undoubtedly a great boon, this knowledge can help us become complete doctors only if we wield it while exemplifying the great human virtues that have been valorised throughout the ages.

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“BETWEEN THE LINES Theodore Dalrymple

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“A stiff and freezing horror sucks up the rivers of my blood; my hair stands on end with the panting of my brains; mine eye balls are ready to start out, being beaten with the billows of my tears. Out of my weeping pen does the ink mournfully, and more bitterly than gall, drop on the pale-faced paper.”

Not surprisingly, the pamphlet has many eloquent passages describing an epidemic that killed a fifth of the population: “Let us look forth and try what consolation rises with the sun. Not any, not any; for before the jewel of the morning be fully set in silver, a hundred hungry graves stand gaping, and every one of them, as at a breakfast, hath swallowed down ten or eleven lifeless carcasses. Before dinner, in the same gulf are twice so many more devoured; and before the sun takes his rest, those numbers are doubled.”

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FROM THE FRONTLINE
Des Spence

Overweening on weaning

When I was 10 my mum had twin boys. I spent much of my childhood smelling of baby sick, feeding, winding, and changing my brothers' nappies. I have no idea when they were weaned—Mum used her judgment. We scooped mashed-up food into the yelling mouths; they like buttered potatoes and gravy best. We were skint, so there were no processed baby foods. My brothers have spent the rest of their lives borrowing money and drinking my beer.

I was used to having babies and children around. So I was bemused when my pregnant wife returned with a collection of baby books, with silly empowering titles, to help us “learn” parenting. I promised to read the books but found that they made me gag. What had happened to maternal instinct, I thought. I binned them all.

But medical advice is pervasive. So in 1997 we strictly followed the advice on weaning at three months and introduced foods one at a time. I returned home to find my wife and daughter both wailing. “She won’t eat it.” I tasted the baby rice and water and spat it out. I went to the kitchen and used my mother’s secret seasoning, and my daughter happily gobbled this down. Later I found ice trays full of vegetable mush. So when my wife was out I threw them into the bin—they tasted disgusting. After this we mashed up the same food as we ate—my daughter liked buttered mashed potatoes and gravy best. We relied on the taste test: if you like it, so will they.

However, with our other children the weaning advice changed to six months’ exclusive breast feeding; this seemed counterintuitive and we ignored it. It meant lying to the health visitors to avoid an inquisition. Now medical “advice” has become “law.” And when I consult with psychopathically sleep deprived parents with hungry, miserable babies I verbally stick to the six month command but roll my eyes in disapproval.

So I feel a warm sense of vindication from the article by Mary Fewtrell and colleagues in this week’s BMJ, questioning the science of the six months’ weaning law. Our obsession with weaning, however, has had a wider effect: I meet kids who eat only ketchup, won’t eat “jumps,” and won’t even touch fresh foods. We are producing a generation of pale, food-phobic kids. Food has become a prescription, overtaken by irrational idiotic fads. Parental intuition suggests that children should be weaned at around three months and largely on demand. Babies should eat food that is similar to their parents’ and, importantly, be given no choice. Lastly the texture-less, tasteless, nutritionally balanced toxic slop that is in baby food jars should be banned. I am allergic to the current weaning policy, for it is nuts.

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See ANALYSIS, p 209

THE BEST MEDICINE
Liam Farrell

I’ll do anything

“My immediate reaction, apart from being secretly flattered (we celebrities are deeply insecure and thus easily manipulated), was of outrage; to collude with this circus would be a slur on our ancient profession. These celebrities hadn’t even sat the premedical aptitude test (for a mere £70), which shows how doctors are different from mere lay people.

Then I had a magical thought. “Could I have Stephen Fry?” I asked, indulging in a brief reverie, the great man and I engaged in scholarly banter by the fireside, perhaps writing a revue together, a droll spoof aimed more at the heart than the head; in revolutionary France we might have opened a salon.

“Good one,” they sniggered, “But, seriously, we are talking Z list here, weather girls, washed-up musicians, an actress who tried to lose weight by cutting her own head off, all shamelessly eager to be humiliated in any way as long as they get their picture in the tabloids. They need to be validated; we should stick nipples on the camera lens.”

“A persuasive argument,” I admitted. “After all, it’s our vocation to care for everybody, even the deluded.”

“Yes,” they brightened up, a loophole that obviously hadn’t occurred to them before. “That’s right. These poor people need your help. It’s absolutely your duty as a doctor.

“You’ll tutor them for a few weeks, on the job training, and so on, then, bam! They do a surgery on their own. And we film everything, all the funny incidents, the emotional stuff. We’re thinking The Hoff. Will he be OK?”

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