

standards and Western approaches and contains articles about rights and responsibilities of patients with mental problems and of physicians. Now Armenia is in a process of implementing of these new approaches into its public health system.

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## Treating hypertension with guidelines in general practice

*Patients decide how low they go, not targets*

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Following the issue of two new hypertension guidelines in the United Kingdom this year, we need to consider how they have been received by their main audience—primary care.<sup>1 2</sup> Not too brightly, it seems.<sup>3</sup> Differences in recommendations cause some irritation, but the main source of disaffection is, once again, targets. The rule of halves—part of which states that only half of patients with high blood pressure reached target blood pressure—was first described more than 30 years ago and now seems redolent of a distant golden age of success.<sup>4</sup> With newer, more stringent targets, hypertension is controlled in only a third of our patients who receive treatment for it.<sup>5</sup> Viewed from general practice, it seems that most articles on hypertension—including this one—begin by reminding us of our failures. But is this justified?

While plenty of strong evidence shows the benefits of lowering blood pressure, targets—and their ceaseless revision—are less evidence based. Compelling evidence has existed since at least 1990 that increasing blood pressure is associated with an increasing risk of cardiovascular events, with no threshold to the relation.<sup>6</sup> More recent studies confirm, but do not alter, this observation.<sup>7</sup> So targets and thresholds are, and always have been, arbitrary. Reductions therefore seem to be based more on reinterpretation of existing evidence and less on new knowledge.

For individual patients, the odds of benefit from small differences in target blood pressure or lipid concentrations are low. In the hypertension optimal treatment trial, where nearly 19 000 patients were assigned randomly to three different blood pressure targets, no notable differences were seen in total mortality or cardiovascular outcome rates between groups.<sup>7</sup> This may have been because the achieved blood pressure measurements varied by less than 5 mm Hg between groups, but the clinical implications remain—small differences in targets make little difference to outcome. To reach current targets (systolic pressures of 140 mm Hg or 130 mm Hg), most patients will require up to four drugs to treat their high blood pressure, with many also taking aspirin and a statin (five or six drugs in total), but in terms of lowering cardiovascular risk, which is the purpose of treatment, the first drug provides most benefit.<sup>8</sup> Additional drugs have diminishing benefit but an equal or greater chance of side effects and interac-

tions. Benefits from adding fifth and sixth drugs are scant.<sup>8</sup>

Current targets are low enough to be unachievable for most patients. Even in clinical trials, with protocol driven prescribing and willing participants, most fail to achieve systolic blood pressures below 140 mm Hg.<sup>9</sup> People older than 60—the bulk of patients with hypertension in general practice—and people with diabetes are even less likely to reach this.<sup>10</sup> Even if they do, the target for people with diabetes in the United Kingdom is now even lower, at 130 mm Hg.<sup>2</sup>

In most guidelines, the full versions make clear that evidence on targets is limited and their recommendations are unattainable in many patients. Most general practitioners, however, just do not have time to read the full guidelines—a problem that is compounded by the fact that guidelines are becoming ever longer. During the past decade, the length of commonly cited guidelines has increased sequentially (see figure on [bmj.com](http://bmj.com)). For those that do read them in detail,<sup>3</sup> new levels of unwarranted complexity are to be found such as recent recommendations by the British Hypertension Society to “lower total cholesterol by 25% or LDL cholesterol by 30% or to reach less than 4 mmol/l or 2 mmol/l respectively, whichever is greater.”<sup>2</sup> Instead we rely on “user friendly” summaries and protocols emphasising (and failing to question) thresholds and targets without due reflection on the balance between what is desirable and what is achievable.

In practice, for most patients, blood pressure can be lowered until side effects are unacceptable or until people prefer to stop adding or experimenting with additional drugs. Guidelines are based on average findings from selected populations and the opinions of experts on acceptable levels of risk. Individual patients vary widely in their perception of acceptable risk and side effects.<sup>11</sup> Some will judge blood pressure lowering as vital and will tolerate inconvenience and discomfort to achieve a lowered cardiovascular risk. Others will not and we should accept this. Surprisingly, the patient's role in deciding his or her own blood pressure target receives scant attention in guidelines for hypertension. If targets have a role, it is as something to



be aimed for, not something that must be achieved at all costs.

Individual patients must be involved in decisions about their care, and this requires effective communication on the subject of risks, benefits, and side effects. This is difficult, but it can be facilitated by aids and charts expressing risk in absolute terms.<sup>11</sup> By involving patients in their own care, control of a disease can be improved.<sup>12</sup> Appropriate management of blood pressure should therefore be guided by an informed dialogue between patients and doctors and not by blind pursuit of blood pressure targets.

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## Bioterrorism and compulsory vaccination

*Better vaccines are needed if vaccination is to be made compulsory*

Taken at face value the use of vaccines to prevent the effects of serious infections caused by a terrorist attack appears a sensible policy. In 1997 the United States Department of Defense initiated the compulsory anthrax vaccine immunisation programme to immunise 2.4m military personnel.<sup>1</sup> In December 2002 a similar programme, also involving civilians, was started against smallpox. In the first five and half months the Department of Defense administered 450 293 doses of smallpox vaccine.<sup>2</sup> United States military personnel engaged in military operations in Iraq are immunised against smallpox and anthrax. As in any vaccination campaign, the incidence of the target disease and the characteristics of available vaccines are two key elements in decision making.

Naturally occurring anthrax is a rare disease. It occurs mostly in cutaneous form among those exposed to animal products (such as hides) and causes a rare and rapidly fatal—if untreated—respiratory illness (inhalation anthrax). Inhalation anthrax is the most likely form of the disease in the event of a terror attack as the use of anthrax spores for terror or warfare would probably follow dissemination at high concentration by aerial route. As smallpox was eradicated three decades ago, mass use of both vaccines in an antiterrorist role has an epidemiological justification only in the presence of a credible threat—the capability to produce and deliver large quantities of active agents to susceptible populations and the will to carry out such an action. Many suspected (and now know) that these conditions did not exist in the Iraq deployment and in the mountains of Afghanistan. The only recent

recorded use of an infectious agent in a terrorist role (the anthrax mailing campaign in the United States) used bacteria that had been sourced from a US military establishment.<sup>3</sup>

Both anthrax and smallpox vaccines have been in use for a long time, but there are few other similarities between them. The UK and US anthrax vaccines consist of alum precipitated cell-free filtrate of bacilli. The US vaccine (BioThrax), manufactured by the BioPort Corporation (Lansing, Michigan), is adsorbed onto aluminium hydroxide (so called adsorbed anthrax vaccine, or AVA). At present, in the USA VaxGen and Battelle are developing and testing a recombinant *Bacillus anthracis* vaccine candidate known as rPA102.<sup>4</sup>

Evidence of the effectiveness of the predecessor vaccine to AVA relies on a 1950s study carried out by Brachman et al on 1249 adult workers in four tanneries in the north east of the United States.<sup>5</sup> The study showed that the killed vaccine was 92.5% effective in preventing cases of cutaneous anthrax. Separate effectiveness estimates for cutaneous and inhalation forms were not reported, but the small numbers of inhalation anthrax found in the study left the authors unable to infer a protective benefit. This conclusion was based on the observation that during a concurrent epidemic no worker in the immunised arm of the study contracted the inhalation form of the disease, whereas four out of five infected workers in the placebo arm died. As the quality of reporting of the study is in keeping with its age, it is unclear whether random allocation to either arm did take place.<sup>6</sup> Despite the authors' conclusion, the website of the anthrax vaccine immunisation

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