cal resolution of major enigmas, such as the largely unexplained differences in morbidity and mortality across socioeconomic groups.[11]

As I wrote in a letter to *Science* in response to Gary Taubes's article:[7] "It could be said for epidemiology, with respect to disease etiology and prevention, what is frequently said about democracy as a system of government: they both have many problems and weaknesses, but they still represent the best available approach for the achievement of their respective objectives."[12]

DIMITRIOS TRICHOPOULOS
Professor

Department of Epidemiology,
Harvard School of Public Health,
Boston, MA 02115,
USA

1 Stampfer MJ, Malinow MR. Can lowering homocysteine levels reduce cardiovascular risk? [editorial]. *N Engl J Med* 1995;332:328-9.
2 Vanderbroucke JP, Koster T, Biet E, Reitsma PH, Bertina RM, Rosendaal FR. Increased risk of venous thrombosis in oral-contraceptive users who are carriers of factor V Leiden mutation. *Lancet* 1994;344:1453-7.
3 Overall evaluations of carcinogenicity: an updating of IARC monographs from volumes 1-42. *IARC Monogr Eval Carcinog Risks Hum Suppl* 1987;7.
4 Hepatitis viruses. *IARC Monogr Eval Carcinog Risks Hum* 1994;59.
5 Human papillomaviruses. *IARC Monogr Eval Carcinog Risks Hum* 1995;64.
6 Willett WC, Trichopoulos D. Summary of the evidence: nutrition and cancer. *Cancer Causes Control* 1996;7:178-80.
7 Taubes G. Epidemiology faces its limits. *Science* 1995;269:164-9.
8 Trichopoulos D. Accomplishments and prospects of epidemiology. *Prev Med* 1996;25:4-6.
9 MacMahon B. Strengths and limitations of epidemiology. In: *The National Research Council in 1979. Current issues and studies.* Washington, DC: National Academy of Sciences, 1979:91-104.
10 MacMahon B, Trichopoulos D. *Epidemiology: principles and methods.* Boston: Little, Brown, 1996.
11 Marmot MG, Shipley MJ, Tose G. Inequalities in health—specific explanations of a general pattern? *Lancet* 1984;i:1003-6.
12 Trichopoulos D. The discipline of epidemiology [letter]. *Science* 1995;269:1326.

Treating hypertension: the evidence from clinical trials

Aim for treated diastolic pressure levels of 80-90 mm Hg

Survey data show that most elderly people have hypertension.[1] Guidelines for treating hypertension in elderly people have evolved as data from observational studies and clinical trials have become available. As recently as 10 years ago it was unclear whether the benefits of drug treatment in elderly people outweighed the risks. Doctors were cautioned about the side effects of antihypertensive drugs and were advised to treat only those elderly patients with the highest blood pressures. Some expert panels recommended drug treatment for healthy 65-74 year old patients only when blood pressure levels reached 200/100 mm Hg or greater, and for healthy patients over 75 years only when diastolic blood pressure levels reached 120 mm Hg or greater.[2] The decision to treat elderly patients with smaller rises in blood pressure was left to the discretion of the individual doctor.[2]

Meta-analyses of the clinical trials of antihypertensive drug treatment in elderly people have been published recently,[3-5] and some of the uncertainties that faced expert panels 10 years ago have been resolved. By pooling the results of 13 clinical trials that together enrolled over 16 000 elderly participants from Europe, Australia, the United States, and Japan, these meta-analyses found that treating hypertension in elderly people significantly decreased morbidity and mortality due to cardiovascular disease as well as all cause mortality. Over about five years of follow up, antihypertensive drug treatment was found to lower the risk of stroke by 35% and the risk of coronary events by 20%. Drug treatment of hypertension in elderly people also resulted in about a 15% reduction in all cause mortality. For patients over 80 years old, the benefits of lowering blood pressure were less clear. On the basis of the results of these studies, elderly patients with hypertension should be treated above a threshold of 160/90 mm Hg.

The evidence from clinical trials regarding the benefits of treating hypertension among middle aged patients (blood pressure levels of 140/90 mm Hg or greater) also seems clear: drug treatment lowers the risk of cardiovascular morbidity and mortality.[4] Because observational studies indicate that young adults with hypertension are at considerably increased risk of coronary heart disease when followed over several decades, some expert panels recommend that screening for hypertension should begin at age 21.[6] However, there are few clinical trial data regarding the long term effectiveness of antihypertensive drug treatment in young adults (under 30 years of age). In young adults with mildly raised blood pressure and in whom secondary causes of hypertension have been excluded, non-pharmacological treatment is preferred. For young adults with diastolic blood pressure levels greater than 100 mm Hg or with other risk factors that increase overall cardiovascular risk, drug treatment should be considered to prevent target organ damage.

Clinical trial data support the recommendation that patients with hypertension be advised to make lifestyle changes to lower their blood pressure, including weight reduction, increased exercise, dietary salt restriction (to less than 5-6 g/day), and alcohol restriction (to less than two or three drinks a day).[7] However, for many patients who do not respond adequately or who are unable to comply with such lifestyle modifications, drug treatment will be necessary. For most hypertensive patients, treatment may begin with either a β adrenergic blocker (in younger patients) or a low dose thiazide diuretic (in older patients).[8] These drugs have been used for several decades, have been shown to be safe and effective, and are the only drugs proved to reduce cardiovascular morbidity and mortality.

How far to lower raised blood pressure to achieve maximum benefit is unclear. In this week's issue of the *BMJ*, Merlo *et al* report the results from a population based cohort study in 484 men (p 457).[9] They found that the incidence of ischaemic cardiac events was increased in those taking antihypertensive medication and that it was increased fourfold in those with diastolic blood pressure levels below 90 mm Hg, even after adjustment for confounding. Results from other observational studies and clinical trials in middle aged and elderly patients have indicated that diastolic blood pressure levels lower than 85 mm Hg are associated with an increased risk for coronary heart disease.[10 11] However, one meta-analysis of clinical trial data was unable to detect such an association.[12] Until it is clear whether low diastolic pressures levels are a cause or a consequence of coronary heart disease, it seems prudent to aim for treated diastolic pressure between 80 and 90 mm Hg.

Although substantial progress has been made in detecting and treating patients with hypertension, recent survey data from the United States indicate that there is considerable room for improvement: about 35% of people with hypertension go undetected, 50% of those detected are not taking medication, and 80% of those taking antihypertensive medication still have blood pressures over140/90 mm Hg.[1] On the basis of the clinical trial evidence, the effective control of hypertension in middle aged and elderly patients (and possibly in young adults) can be expected to result in an accelerated decline in the incidence of stroke, myocardial infarction, and the rate of cardiovascular death.

JOEL A SIMON
Assistant professor

Departments of Medicine, Epidemiology, and Biostatistics,
University of California,
San Francisco, CA 94105, USA

1 Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC V). *Arch Intern Med* 1993;153:154-83.
2 Larochelle P, Bass MJ, Birkett NJ, De Champlain J, Myers MG. Recommendations from the Consensus Conference on Hypertension in the Elderly. *Can Med Assoc J* 1986;135:741-5.
3 Insua JT, Sacks HS, Lau T-S, Lau J, Reitman D, Pagano D, *et al.* Drug treatment of hypertension in the elderly: a meta-analysis. *Ann Intern Med* 1994;121:355-62.
4 Mulrow CD, Cornell JA, Herrera CR, Kadri A, Farnett L, Aguilar C. Hypertension in the elderly: implications and generalizability of randomized trials. *JAMA* 1994;272:1932-8.
5 Pearce KA, Furberg CD, Rushing J. Does antihypertensive treatment of the elderly prevent cardiovascular events or prolong life? A meta-analysis of hypertension treatment trials. *Arch Fam Med* 1995;4:943-50.
6 US Preventive Services Task Force. *Guide to clinical preventive services.* 2nd ed. Baltimore: Williams and Wilkins, 1996.
7 Working Group Report on Primary Prevention of Hypertension. *National high blood pressure education program.* Bethesda, Maryland:US Dept of Health and Human Services, Public Health Service, 1993. (NIH publication No 93-2669.)
8 Massie BM. Demographic considerations in the selection of antihypertensive therapy. *Am J Cardiol* 1987;60:121-6 I. Suppl.
9 Merlo J, Ranstam J, Liedholm H, Hedblad B, Lindberg G, Lindblad U, *et al.* Increased incidence of myocardial infarction in elderly men on antihypertensive medication. *BMJ* 1996;313:457-61.
10 Farnett L, Mulrow CD, Linn WD, Lucey CR, Tuley MR. The J-curve phenomenon and the treatment of hypertension: is there a point beyond which pressure reduction is dangerous? *JAMA* 1991;265:489-95.
11 Fletcher AE, Bulpitt CJ. How far should blood pressure be lowered? *N Engl J Med* 1992;326:251-4.
12 Collins R, Peto R, MacMahon S, Hebert P, Fiebach NH, Eberlein K, *et al.* Blood pressure, stroke, and coronary heart disease. 2. Short-term reductions in blood pressure: overview of randomised drug trials in their epidemiological context. *Lancet* 1990;335:824-38.

Information in practice

Make it work for patients

Information drives the practice of medicine. Doctors must use it every time they see a patient, perform a procedure, or consult a colleague; hospitals spend 15% of their budget managing it; and doctors and nurses spend a quarter of their time finding, sorting, and using it.[1] There is, of course, no shortage of information out there. The real challenge is improving the supply lines that take it in a usable form to the bedside, the surgery, the purchaser, or the teaching session. Doctors are often unaware of important developments that will benefit their patients,[2] and most consultations give rise to questions that can be answered but usually are not.[3] The rapid developments in computing mean that the world is now entering a new information age. That technology could—if used correctly—transform medicine.

Despite its obvious importance, the industry that has grown up around information in medicine has had a bad press. Investment has been heavily biased towards the development of new technology. Disillusioned doctors have seen millions of pounds wasted on useless hardware and resources diverted from patient care into administrative information systems developed by information technologists for managers.[4,5] Doctors are urged to evaluate everything they do, but the impact of expensive systems, or lack of it, goes uninvestigated.[6] All this has traditionally alienated doctors from the disciplines of clinical information management and medical informatics. Doctors also find that these experts on communication too often use incomprehensible jargon. Progress is being made by various professional bodies including the BMA, the General Medical Council, and the royal colleges,[4] but there remains a cultural gap to be bridged before doctors can be truly in control of the way information is collected and used in their workplaces.

To signal the *BMJ*'s commitment to bridging this gap, we are launching a new section devoted to helping doctors recapture the lead and to steer information management firmly towards patient care. The new section, to begin in October, will be called "Information in practice." Our aims (box) are broad and perhaps a little ambitious, but we hope above all to stimulate and educate. The section will include some submitted articles selected after editorial assessment and peer review, but we will also be commissioning articles for publication.

We are happy to consider reports of original research, educational articles, debate pieces, and rigorous review articles looking at managing clinical information in its widest sense. Technology will have its place but so will, for example, new ways of using trial results at the bedside,[7] the impact on decision making of presenting research results in different ways,[8] and how to design data collection forms for randomised controlled trials. We will work hard to keep the content straightforward and clinically useful. Readers are welcome to submit ideas for commissioned articles, preferably with suggested authors. We have recruited a small but international panel of information experts and working doctors to help us decide what to publish and how to make it as accessible and attractive as possible. We hope the process will be an education for us too.

Aims and objectives of information in practice

- To help doctors understand that better management of clinical information will improve their treatment of patients and the management of their practices
- To encourage rigorous evaluation of information management systems, particularly with respect to patient care
- To empower doctors to shape the development of information management projects so that clinical needs are put before financial and administrative needs
- To generate enthusiasm among doctors by demystifying clinical information management
- To help doctors understand the information demands that will be made of them
- To consider how information management can enhance doctors' relationships with patients and the public

At first the section will be published once a month and the full text of all articles will be posted on our web site (http://www.bmj.com/bmj/). There will also be scope for highly technical material to be published electronically on the Internet site with a brief translation of the main messages in the paper journal.

The science of information in medicine is still in its infancy: we don't fully understand, for example, what kind of information doctors need.[3] However, for those who can harness clinical information and exploit it for the benefit of their patients the rewards will be great.

ALISON TONKS
Assistant editor

RICHARD SMITH
Editor

BMJ,
London WC1H 9JR

1 Audit Commission. *For your information: a study of information management and systems in the acute hospital.* London: HMSO, 1995.
2 Williamson JW, German PS, Weiss R, Skinner EA, Bowes F. Health science information management and continuing education of physicians. A survey of US primary care practitioners and their opinion leaders. *Ann Intern Med* 1989;110:151-60.
3 Gorman PN. Information needs of physicians. *Journal of the American Society for Information Science* 1995;46:729-36.
4 Wyatt J C. Hospital information management: the need for clinical leadership. *BMJ* 1995;311:175-80.
5 Warden J. The Wessex fiasco. *BMJ* 1993;306:1292.
6 Lock C. What value do computers provide to NHS hospitals? *BMJ* 1996;312:1407-10.
7 Chatellier G, Zapletal E, Lemaitre D, Menard J, Degoulet P. The number needed to treat: a clinically useful nomogram in its proper context. *BMJ* 1996;312:426-9.
8 Fahey T, Griffiths S, Peters TJ. Evidence based purchasing: understanding results of clinical trials and systematic reviews. *BMJ* 1995;311:1056-60.