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complications only by treating many who will not benefit and may actually be harmed by the treatment. The evidence indicates that reserved prescribing of antibiotics for upper respiratory tract infections and acute infective conjunctivitis is justified.

Delayed prescription of antibiotics is a good alternative for patients with a progressive course of disease or for those patients with a strong preference for antibiotics; it is a safe strategy to reduce the number of prescriptions in patients with upper respiratory tract infections and acute infective conjunctivitis.⁶⁻¹⁰

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Health care productivity

Is politically contentious, but can it be measured accurately?

The next British general election will probably be fought over the productivity of public services. Opposition parties have already claimed that the unprecedented extra investment in the NHS has been misspent, with medical staff receiving large increases in pay for doing the same, or even less, work. Although an election may be four years away, the government is seeking evidence to show that, contrary to such claims, the extra resources together with organisational reform have increased productivity in the NHS.

This quest is also being driven by an international requirement for governments to measure output from the public sector and by the Department of Health's need to justify its demands to the Treasury for further increases in resources.¹ In the political battle that has already started, both government and opposition parties will make claims and counterclaims as to how the productivity of the NHS in the United Kingdom has changed in recent years. So what impact have the extra funds had on productivity?

Until recently, attempts to measure productivity were limited to relating the level of activity in the NHS (such as numbers of consultations and hospital admissions) to the resources used (for example, money and the numbers of staff). This equation suggested that there had been either no improvement or a 1% annual deterioration since the mid-1990s.² Such an assessment takes no account of any change in patient outcomes and satisfaction, however, a limitation that was recognised in the Atkinson review of 2005, which advised all government departments on how to measure productivity in the public sector.³

The impact of applying the review's recommendations in the health sector was detailed by the Office of National Statistics earlier this year in a report on the NHS.⁴ The report confirmed that, using traditional

measures of activity, productivity seemed to have fallen from 1995 to 2004 (at an estimated rate of -0.6% to -1.3% each year). However, when improvements in the outcomes of care were included, productivity seemed to have been maintained (in the estimated range of -0.5% to 0.2% each year). The record looked even better when the calculations took into account the public's tendency over time to increase the value attached to being healthy. This resulted in the suggestion that NHS productivity had increased between 0.9% and 1.6% each year.

The variability of such estimates reflects the limitations in the methods used to calculate productivity, a problem the Department of Health acknowledges.⁵ Firstly, we lack adequate information on the outcomes of care. For most health care, outcome data are not collected routinely and, where they are, data collection is limited to mortality. Secondly, we have no accurate data on patients' valuations of the improvements in health they gain from treatment. Given these two limitations, estimates of productivity have to rely on assumptions about the benefits that result from different types of treatment (for example, that elective surgery increases health status by 25%). Such assumptions can have a dramatic influence on the resulting estimates. In addition, assumptions have to be made about the contribution that health care (as opposed to other interventions such as changes in diet, the environment, and income) makes to improvements in health.

While achieving a meaningful measure of the productivity of the NHS might be a forlorn hope and not worth pursuing, the contemporary political environment makes it a necessity. So, how could current attempts be improved? Most importantly, the notion of a single global measure for the entire NHS is fanciful and should be abandoned.⁴ More accurate information on productivity could be gained by selecting a range of

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specific medical conditions or services and using them as markers. Changes in productivity may vary between conditions, a finding that could help inform future decisions on where to allocate resources.

Furthermore, better data on the process and outcome of care should be collected routinely from patients. Some high quality clinical databases already include such data, and these are not being fully exploited.⁶ Data collection systems are currently being tested in other clinical areas, such as elective surgery.³ Sophisticated computer models based on rigorous research evidence could be used more widely to provide more accurate estimates of the relative contributions that prevention, cure, rehabilitation, and even interventions outside health care make to improvements in health. This has already been shown for coronary heart disease.⁷ Lastly, the NHS needs better data on public valuations of health derived from regular large scale surveys. This information could replace the current arbitrary estimates, thus ensuring that changes to the estimates are not influenced by political necessity.

Yet how meaningful will the results be, even with the adoption of this more focused approach? We will still have to rely on some assumptions (such as the contribution of health services to improvements in people's health). In addition, interpretation of the estimates is a value judgement—what constitutes a satisfactory improvement in productivity? The Department of Health currently suggests an improvement of 1.5% a year, but this figure is simply based on the level adopted by the education sector. And what if improvements in productivity based on clinical outcomes are accompanied by a worsening in the humanity of care, such that patients become increasingly critical of their experiences of health care?

Another concern for the government is the extent to which improvements in productivity are possible. Health care has reached or even gone beyond the “flat of the curve,” such that each successive extra investment inevitably results in less health gain. Improvements in productivity will depend largely, therefore, on delivering established services more efficiently, rather than on increasing the effectiveness of treatments.

The Department of Health recognises such theoretical and practical concerns but, despite this, current political necessity may over-ride considered judgment. Arguments about the productivity of the NHS will almost certainly feature strongly over the next few years and will be a central battleground before the next general election, as each party claims to be the better manager of healthcare expenditure.

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Postoperative nausea and vomiting

Metoclopramide with dexamethasone works and has few side effects

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Fifteen years ago Kapur described postoperative nausea and vomiting as the “big, little problem,”¹ a description that still applies despite the best efforts of doctors and drug companies. In this issue of the *BMJ*, Wallenborn and colleagues revisit the use of metoclopramide to prevent postoperative nausea and vomiting.² In the United Kingdom, metoclopramide is no longer a popular choice for prophylaxis or treatment. This is because the standard 10 mg dose is not very effective³; metoclopramide has unpleasant side effects such as extrapyramidal symptoms, especially with repeated doses; and it has been supplanted by newer agents that are more expensive but have fewer complications.

The likelihood of postoperative nausea and vomiting is increased by several factors including the type of surgery (for example, laparoscopic, gynaecological, and ophthalmic surgery), certain anaesthetic drugs including volatiles and opioids, patient factors including female sex, a history of postoperative nausea and vomiting, and non-smoking status.⁴ The most effective

treatment is usually a combination of agents that target different pathways or receptors.⁵ These include antihistamines, anticholinergics, antidopaminergics, 5-hydroxytryptamine receptor (5-HT₃) antagonists, and drugs with poorly understood modes of action such as dexamethasone.⁶ A popular combination in the UK at present is a 5-HT₃ antagonist such as ondansetron or tropisetron combined with dexamethasone, with the addition of agents from another class such as promethazine or cyclizine for rescue or for resistant cases.⁷

Wallenborn and colleagues have taken the innovative step of revisiting the effects of metoclopramide in a randomised trial using the standard 10 mg dose and also doses of 25 mg and 50 mg (doses that will be unfamiliar to most doctors in the UK). Metoclopramide was added to dexamethasone in more than 3000 patients having elective surgery. Both the 25 mg and 50 mg combinations were strikingly effective in reducing early postoperative nausea and vomiting, and 50 mg also prevented late nausea and vomiting. Side effects,