strontium causes a 10% overestimation of bone mineral density.¹¹ In the SOTI trial, bone biopsy was performed in a subset of patients and the data for bone mineral density corrected on the basis of the correlation between the bone strontium content measured in the biopsy samples and concentrations of strontium in the blood. After the adjustment for bone strontium, the measured effect of treatment on bone mineral density in the spine of 14.4% was corrected to 8.1%.⁷

The important issue for treatment for osteoporosis is prevention of fractures and not changes in bone mineral density. This lesson was learnt with fluoride therapy, which led to dramatic increases in bone mineral density of the spine but in higher dosage caused an increased incidence of hip fracture.¹² Caution is therefore needed in predicting efficacy against fractures simply on the basis of a change in bone mineral density.

Although measurements of bone mineral density are of value in diagnosing osteoporosis and in assessing the risk of fracture,^{w2 w3} many believe that they are of limited use in monitoring treatment. An increase of 5% in spine bone mineral density is required to confirm a

notable response to treatment.^{w4} Often the changes are smaller than this, and as a result measurements of bone mineral density to monitor treatment are carried out only after two years.^{w5} With strontium ranelate, large increases in bone mineral density are often seen, and if this is the case one can be confident that the patient is complying with treatment. Though changes in bone mineral density measured during treatment with strontium are somewhat artefactual, they might still prove clinically useful. The issue of patients' long term use and compliance with treatment is important for all types of treatment for osteoporosis. For strontium ranelate, the large increase in bone density expected by 12 months may prove useful in this regard and could provide reassurance for the patient and the clinician.

Ignac Fogelman *professor*

Department of Nuclear Medicine, Guy's Hospital, London SE1 9RT
(ignac.fogelman@kcl.ac.uk)

Glen M Blake *senior lecturer*

Guy's, King's, and St Thomas' School of Medicine, London SE1 9RT

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Reducing variation in surgical care

Requires innovative methods for getting evidence into surgical practice

Papers p 1420

Variations in surgical care have been recognised since the early 1980s and are generally interpreted as evidence of uncertainty among practitioners regarding optimal care. The prescription for remedying variations in surgical practice has generally included development of better medical evidence to identify best practices, dissemination of medical evidence to surgeons, and use of practice guidelines and care pathways to streamline care. More than 20 years later, there is still abundant evidence that surgical care varies substantially. Why do variations in surgical care persist? And what can be done about them?

In this issue of *BMJ*, Lassen et al (p 1420) report the results of a survey of lead surgeons in five north European countries regarding processes of care for colorectal surgery.¹ These processes included use of preoperative bowel preparation, routine postoperative

nasogastric decompression, and use of epidural analgesia in the postoperative surgical ward. The survey identified substantial international variation in the use of such perioperative interventions. In many cases, this variation occurred in spite of abundant, high quality medical evidence.

Surgery and evidence based medicine have had turbulent relations of late. There is broad recognition that much of current surgical practice is not informed by solid medical evidence² and that the application of methods such as randomised controlled trials to surgical questions is often difficult or impractical.³ However, there is growing uniformity of opinion in the surgical community that the quality of evidence supporting surgical care must be improved and that we need innovative methods for disseminating evidence into practice.⁴

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Surgery is disadvantaged when it comes to health research. Unlike trials of new drug treatments, research on surgical procedures has no natural sponsor. The lack of strict regulatory mechanisms for the approval of surgical procedures and devices in most countries leads to a situation where large randomised trials are not necessary for surgical interventions to be adopted. How surgical procedures and perioperative care are provided by different surgeons or hospitals varies enormously, leading to an "expertise bias" that may make a valid randomised controlled trial impossible in many circumstances⁵ and in others may limit the generalisability of results to other care settings.

Problems with evidence based surgery notwithstanding, we would argue that the immediate challenge to improving the quality of surgical care is not discovering new knowledge, but rather how to integrate what we already know into practice. Lassen et al¹ and others remind us that much may be achieved simply by raising the quality of surgical care according to existing evidence. In many ways, this is a far more difficult task than simply doing more research. Translating best evidence into surgical practice will require the engagement of large numbers of individual practitioners, in a multitude of healthcare contexts, and using a variety of techniques.

Evidence from before and after studies in several countries shows that surgeons' behaviour can indeed be changed and the quality of surgical care can be improved. In Norway, surgeons concerned with poor outcomes of surgery for rectal cancer initiated a multi-faceted intervention in 1994 to improve the quality of care according to best practices. This initiative led to a voluntary registry of treatment for rectal cancer with feedback to hospitals as well as postgraduate courses for surgeons and pathologists on optimal surgical techniques and on interpreting pathological tests, reorganisation at specific regional hospitals and specialist gastrointestinal surgeons of surgery for rectal cancer, and access to an opinion leader for surgeons both locally and regionally.⁶ After the intervention, the rate of local recurrence of rectal cancer fell from 28% to 8%, and five year survival increased from 55% to 71%.⁷

In the United States, the Northern New England Cardiovascular Disease Study Group initiated a regional intervention in 1990 to improve the outcomes

of coronary artery bypass graft surgery. This intervention comprised anonymous feedback to surgeons of risk adjusted outcome data, training in continuous quality improvement, and a series of site visits by surgeons to observe processes of care in other settings. After the intervention, mortality from coronary artery bypass graft surgery decreased by 24%.⁸

A key factor underlying successful programmes for quality improvement in surgery seems to be the engagement of individual surgeons both locally and regionally, through developing communities of practice.⁹ We now know more about what it takes to translate evidence into knowledge for practising surgeons. Innovative interventions that bring surgeons together may require substantial investment, but they will be worth while if they deliver evidence based surgery.

David R Urbach *assistant professor of surgery and health policy, management and evaluation*

University of Toronto and Cancer Care Ontario, 200 Elizabeth Street, 10 NU-214, Toronto, ON, Canada M5G 2C4

Nancy N Baxter *assistant professor of surgery*

Division of Surgical Colon and Rectal Surgery, Comprehensive Cancer Center, University of Minnesota, Minneapolis, MN 55455, USA
(baxte025@umn.edu)

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Buruli ulcer

A neglected but treatable disease that unnecessarily scars African children for life

Buruli ulcer, caused by infection with *Mycobacterium ulcerans*, is unfamiliar because it is common only among children in rural tropical areas, mainly in west Africa. Ghana, Côte d'Ivoire, and Benin are among the worst affected.¹ It is named Buruli after a county in Uganda. It is an easily treatable disease as common as tuberculosis in areas where it is endemic.^{w1} In endemic areas in Ghana point prevalence has been estimated at 150-180/100 000 population, and in southern Benin, a detection rate of 20/100 000 per year has been reported.^{w2 w3} Lack of

treatment leaves children with large disfiguring scars and occasionally with joint deformities, loss of sight, loss of breast or scrotal tissue, and even amputations.

Ulcers (figure) can reach a dramatic size, particularly in the oedematous form, which spreads rapidly over large parts of the limbs, trunk, or head. How infection is transmitted remains a mystery; it may be through infection of simple grazes on the skin by water

Additional references w1-w6 are on bmj.com

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