is also recognised as an increasing problem in children with various malignant haematological diseases treated by total-body irradiation as part of their conditioning regimen before allogeneic bone-marrow transplantation.[8]

In 1995, Ron et al[9] first noticed that the risk of thyroid cancer associated with exposure to external X-ray or γ irradiation increased linearly with increasing doses to the thyroid at low-to-moderate radiation doses. They also reported that the dose-response relation appeared to flatten with the higher doses (>10 Gy) associated with cancer therapy. These investigators did a pooled analysis of seven studies detailing organ doses to individual subjects, including studies of atomic bomb survivors, children treated with radiation for tinea capitis, irradiated for enlarged tonsils, or treated with therapeutic radiation for cancer.

In their large nested case-control study, Sigurdson and colleagues clearly show that the risk of thyroid cancer increased linearly with increasing therapeutic radiation doses in the low dose range up to 20 Gy, but demonstrate a downturn in the dose-response curve with a declining risk at doses greater than 30 Gy. The risk of thyroid cancer appeared to peak at 20–29 Gy with an odds ratio of 9·8. The risk then fell to a low level at doses above 30 Gy, consistent with the cell-killing hypothesis of radiation at high doses proposed by Louis Gray in 1965.[10] The ascending and descending slopes of the dose-response curves are much steeper for those children diagnosed with their first malignancy at under 10 years of age compared with those over 10, showing that the thyroid gland in younger children is more susceptible to the oncogenic effects of radiation than in older children.

Sigurdson and colleagues point out that the widely held belief that lower doses of radiation reduce the late carcinogenic effects does not necessarily apply to the development of thyroid cancer. This point should make us give more thought to our therapeutic strategies that use ionising radiation in future clinical studies.

In view of the long latent interval and the fact that the risk of radiation-associated thyroid cancer remains elevated for up to 30 years, Sigurdson and colleagues' paper also reinforces the need for long-term surveillance, ideally by annual thyroid ultrasonography, of all childhood cancer survivors who have had therapeutic radiation to the neck. Fortunately, patients with secondary thyroid cancer respond well to therapy and have a similar good prognosis to children with primary thyroid cancer, with an overall survival rate approaching 100%.[7]

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I declare that I have no conflict of interest.

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Treating low back pain

Low back pain is one of the most common symptoms prompting adults to seek health care.[1] The costs of low back pain, both in terms of health care and lost productivity, are enormous.[2] Despite a great deal of effort in the past decade, most of the treatments for low back pain have been ineffective or at best marginally effective.[3] Most cases resolve regardless of the course of therapy, and some do not get better no matter what is done. Therein lies the problem for practitioners, patients, and policymakers.

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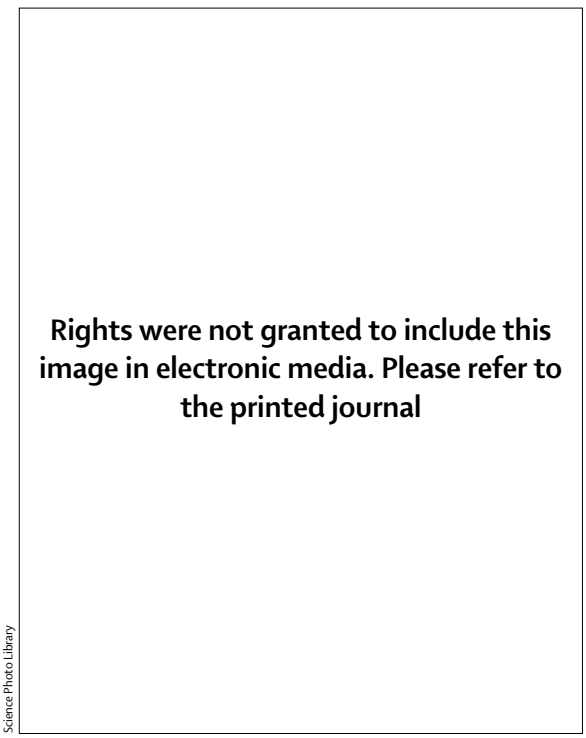
In today's *Lancet*, Elaine Hay and colleagues compare the outcomes of patients with low back pain of less than



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12 weeks' duration randomly assigned to receive either manual physiotherapy or a brief programme of pain management. The patients were followed up at 3 months and 12 months with the Roland disability questionnaire and various secondary measures. The authors reported no difference in any of the outcomes at any of the time points and concluded that: "Brief pain management techniques delivered by appropriately trained clinicians offer an alternative to physiotherapy incorporating manual therapy, and could provide a more efficient first-line approach for management of non-specific subacute low back pain in primary care".

Hay and colleagues' trial is extraordinarily well conducted and of high internal validity. Their study probably has very good external validity for the UK National Health Service, and pretty fair external validity for health care in other countries. However, there are important limitations.

The first limitation is that outcomes were measured only at 3 and 12 months, which might have missed a difference between groups in the short term. Indeed the main benefit of manual therapy compared with no therapy has been the short-term improvement in pain and functional outcomes, measured anywhere from immediately after treatment up to about 4 weeks.[4] We believe most patients greatly value treatments that result in short-term improvements in pain, even if long-term outcomes are no different. For this reason alone, we think it premature to reach broad conclusions about equivalent efficacy of these two interventions.

The second limitation is that most patients enrolled in Hays and colleagues' study were probably destined to have very good functional recoveries regardless of any treatment, and therefore the study had limited power to detect differences in these treatments (or differences compared with no treatment, for that matter). There is a glimmer of hope in other publications that it might be possible to prospectively identify patients with back pain who respond preferentially to specific treatments. Childs et al[5] showed that a simple rule anticipated a positive response to treatment with manipulation. Furthermore, the clinical prediction rule identified only about 35% of their patients as suitable candidates for manipulation, meaning that manipulation would not have significantly changed outcomes for most patients. The positive outcome in this subgroup persisted at the 6-month follow-up, underscoring the potential efficiency of targeting such interventions more precisely.

Prediction rules have yet to be published for the interventions listed as brief pain-management programmes, but there is evidence that some tools are useful in detecting psychosocial aspects of low back pain and are predictive of poor outcomes.[6] In addition, we have limited evidence that using behavioural approaches as an adjunct to ongoing therapy is more effective in people who have high fear-avoidance—ie, avoidance of certain physical activities for fear that such activities will cause back pain—than if the approach is totally physical.[7] Applying a one-size-fits-all approach, and applying the brief pain-management programme or the manual therapy treatment to everyone regardless of presentation, might have obscured the potential effectiveness of treatment targeted more specifically to patients for whom it is more likely to be of benefit. We hope that in the not-too-distant future, practitioners will have good evidence to use screening tools (eg, fear-avoidance questionnaires) and clinical prediction rules (eg, for manual therapy) to help identify the subgroups of patients with low back pain most likely to benefit from particular therapies—ie, meaning we can move beyond trivial effects in therapy.

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Thomas Addison: one of the three "Giants" of Guy's Hospital

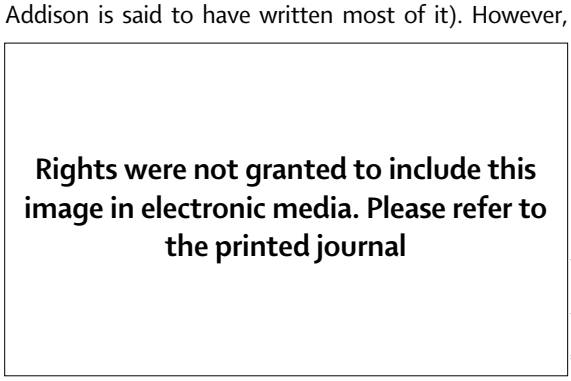
See **Eponym** page 2058

Doctors have an enduring fascination for the history of their profession, which is reflected in their continuing use of eponymous names for some diseases. Sadly, the habit is slowly dying, and the eponyms that we use are mostly rather old. One of the oldest is that of Addison's disease—formally described by Thomas Addison in a series of cases published 150 years ago this year: *On the constitutional and local effects of disease of the supra-renal capsules*.[1] Although this work received only limited recognition at the time, it was another eponym bearer, Armand Trousseau, who was to suggest that the condition be called Addison's disease.[2] Both the disease and the man are reviewed in this issue by Løvås and Husebye, in one of our occasional Eponym articles.

Whilst the science of medicine has evolved enormously in the past century and a half, its application is still much dependent on the knowledge, skill, dedication, and personality of the doctor in charge. It is for this reason that it is relatively easy for modern physicians to identify with the men (mainly) who lived and worked so many years ago, and who established the methods and ethic by which most of us (women and men) still strive to practise. Addison had a powerful personality and a precise mind, but shyness combined with recurrent depression could make him appear aloof to the point of being rude. His depression eventually forced his retirement and he later committed suicide, by diving head first into the area between the house where he was being cared for and the pavement. He had been born the son of a grocer in Cumberland (now part of Cumbria), in northern England, and he was buried in the grounds of the beautiful Lanercost Priory in the same county.

Addison (1795–1860) was one of a triumvirate of eminent physicians who were near exact contemporaries and worked together at Guy's Hospital in London in the first half of the 19th century, and who together became known as the "Giants of Guy's". The others were Richard Bright (1789–1858) and Thomas Hodgkin (1798–1866) and, by coincidence, both of these doctors were also to suffer untimely, if less tragic, deaths. As both also had a disease named after them, they would make suitable subjects for future Eponym articles—as, indeed, would Armand Trousseau (1801–1867)—if any reader felt sufficiently moved to put finger to keyboard.

All three Giants of Guy's studied in Edinburgh, and were of outstanding intelligence, ability, and drive. But they came from different backgrounds and their careers were successful in varying ways. Bright had a privileged upbringing and enjoyed an extended training in major centres throughout Europe before settling, without any particular financial pressures, in London in the early 1820s. His success was meteoric and he was appointed physician to the young Queen Victoria after her coronation in 1837. He was co-author with Addison of the *Elements of the Practice of Medicine*[3] (although Addison is said to have written most of it). However,



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Guy's Hospital, from a 1739 etching