In this study, the FOUR score was validated in 120 intensive-care patients with various underlying causes of coma—not exclusively coma due to neurotrauma. The results were compared with GCS score. Inter-rater reliability was good to excellent and was similar between the FOUR score and GCS, despite the fact that the raters had only minimal experience with the FOUR score. Patients with low GCS scores could be distinguished further using the FOUR score, and the probability of in-patient mortality was higher for the lowest FOUR scores compared with the lowest GCS scores.

Overall, the authors conclude that the FOUR score provides greater neurological detail than the GCS and is superior to the GCS because it includes brainstem reflexes and breathing patterns and is able to recognize different stages of herniation. The new scale remains simple and easy to use.

Carol Lovegrove

Original article Wijdicks EFM *et al.* (2005) Validation of a new coma scale: the FOUR score. *Ann Neurol* **58:** 585–593

Calcitonin gene-related peptide and migraine

A key discovery in the field of headache research has been the association between migraine attacks and raised concentrations of calcitonin gene-related peptide (CGRP) in external jugular venous blood. Recent work from a Danish group, however, has cast serious doubt on this finding, by showing that CGRP levels within an individual patient do not differ during and outside an attack.

The team obtained external jugular and cubital venous blood samples from 17 patients recruited through an outpatient headache clinic. A further four patients provided cubital venous blood samples only. Using a pager system, whereby the patient alerted the researchers at the onset of symptoms, it was possible to take samples during migraine attack without aura while the patient was at rest at home. Control samples from each patient were taken at least 7 days later, in the absence of migraine or other headache.

Next, two different assays were used to measure the concentration of CGRP in each blood sample. Both tests showed that the mean concentration of the peptide in external jugular venous blood was similar during and outside an attack. The same was true for the cubital venous blood samples. In addition, there was no significant difference in the mean CGRP concentration between the external jugular and peripheral blood samples.

Tvedskov and colleagues conclude that CGRP is not, in fact, increased in external jugular or peripheral blood during a migraine attack without aura, and they caution against using the peptide as a biomarker.

Ruth Kirby

Original article Tvedskov JF *et al.* (2005) No increase of calcitonin gene-related peptide in jugular blood during migraine. *Ann Neurol* **58:** 561–568

Motor cortex stimulation in the treatment of neuropathic pain

There is some evidence that stimulation of the primary motor cortex can bring relief to patients with medically refractive neuropathic pain. Nuti and colleagues have carried out a prospective study to examine the long-term efficacy of this technique.

A total of 31 consecutive patients with neuropathic pain were recruited. Pain was a consequence of hemorrhagic or ischemic stroke in most cases, and all patients had failed to respond to conventional therapies. Each patient had a motor cortex stimulation device implanted under general anesthesia, with one or two electrodes positioned over the motor region corresponding to the pain.

During a mean postoperative follow-up period of 4 years, 3 patients (10%) experienced 'excellent' pain relief, whereas 13 (42%) reported that the results were 'good'. Pain relief was 'poor' or 'negligible' in the remaining 15 cases (48%). Approximately half of the patients decreased their use of analgesics after the surgery, and these drugs were stopped altogether in 11 cases (35%). Long-term pain relief was predicted by the degree of pain relief recorded in the first month after surgery.

These findings indicate that motor cortex stimulation can offer long-lasting relief of neuropathic pain in some patients. The authors state that further work in this area should include larger numbers of patients and should focus on improving patient selection.

Ruth Kirby

Original article Nuti C *et al.* (2005) Motor cortex stimulation for refractory neuropathic pain: four year outcome and predictors of efficacy. *Pain* **118:** 43–52