Between June 1995 and June 2000 teleradiology was performed in 1024 neurosurgical cases (945 patients). An analogue image transfer system was used for presentation of computed tomography (CT) and magnetic resonance imaging (MRI) scans from seven referring hospitals in southern Germany. The system used a 19,200 baud modem connection via the ordinary telephone network. The diagnoses on presentation were intracerebral haematoma (50%), trauma (27%), subarachnoid haemorrhage (4%), stroke (5%) and others (14%). Retrospective analysis showed that in 67% of cases admission and therefore ground-based transportation of the patients to our neurosurgical centre was not necessary for different reasons (moribund status, no surgical intervention required or no neurosurgical problem at all). If each patient had been transferred, then the potential savings for ground transportation were euro339.93 per case (with accompanying physician of the affiliated hospital) or euro373.96 per case (with accompanying experienced ICU physician), respectively (euro1 is US$1.4). The total cost of the image transfer system for all eight hospitals was euro96,000; this was amortised after 282 teleconsultations, which occurred after 15 months of usage. A simple teleradiology system in neurosurgery enables rapid and reliable telephone consultations, mainly on patients with trauma, stroke and intracerebral haematoma at low cost.