lights of their projects. These lectures illustrated the potentials of multidisciplinary research activities that involve cooperations between European industry, basic science research institutes and university hospitals. A talk was also given on behalf of the Stroke Alliance for Europe, which is a network of patient organizations from 15 European countries. It was in this context that the discussion of stroke research priorities in the European Union took place between experts in clinical stroke management, basic science, stroke research and industry. Several scientific officers from the European Commission also attended the meeting. Special emphasis was given to topics spanning different disciplines that require a concerted effort to make progress, thus illustrating European added value by combining resources from different countries. The idea of the Commission was to exchange views on the topic of stroke and to identify research activities that could potentially result in major advances in the areas of stroke prevention, treatment and recovery. This strategy has proven to be a successful instrument of the European Commission for elucidating top research priorities in a diversity of medical disciplines and is tuned to the European Union's commitment to support added-value translational activities. Both the goals and approach differ from those taken by the National Institute of Neurological Disorders and Stroke (NINDS). Here, a Stroke Progress Review Group was appointed to provide a detailed report of priorities for stroke research. Numerous meetings were organized over a period of more than a year to compose a document comprising over 130 pages. It may be argued that this approach is more comprehensive. However, whether all issues that were identified in 2002 have actually been addressed and whether research efforts have resulted in significant advancements in stroke care will become evident in a current NINDS initiative to update these stroke research priorities.

The aim of the Stroke Workshop afternoon discussion in Brussels was not to address all research topics in the field of stroke. The invited experts identified the top research priorities that address pressing basic, clinical and industrial needs in the stroke field. Although ischemic stroke was identified as the most promising in this respect, intracerebral hemorrhage was also discussed and the important advances that have been made in the field of hemostasis of intracerebral hemorrhage were duly recognized (see section on 'Optimizing the Delivery of Stroke Care' in the paper). The participants of the Workshop hope that answers to the questions posed by these research priorities will significantly help in reducing the stroke burden to the European Union.

References

- 1 Stapf C, Van der Worp HB, Steiner T, Rinkel GJE, Nedeltchev K, Mast H, Dichgans M, Cordonnier C, Arnold M, Al-Shahi R: Stroke research priorities for the next decade – a supplement statement on intracranial haemorrhage. *Cerebrovasc Dis* 2007;23:318–319.
- 2 Meairs S, Wahlgren N, Dirnagl U, et al: Stroke research priorities for the next decade – a representative view of the European scientific community. *Cerebrovasc Dis* 2006;22:75–82.

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Improved Survival after Stroke

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We commend Carter et al. [1] on their report outlining a drop in stroke case fatality over the last 20 years in Auckland, New Zealand, and its association with increased rates of hospital admission and brain imaging. These findings, which are mirrored in routine stroke mortality data in the UK, raise many questions about which aspects of hospital care bring about this improvement. We had the opportunity to study changes in case fatality during a relatively short period of stroke service development.

We ran a hospital-based stroke register in which we sought to identify all potential stroke patients from several districts in the East End of Glasgow. We used the standard WHO definition of stroke but excluded subarachnoid haemorrhage. Stroke patients were identified on admission to hospital (including early deaths and hospital transfers) and on referral to a well-established stroke outpatient clinic or geriatric medical service (including day hospital). The great majority of referrals were assessed by a stroke physician and underwent brain imaging. The observation period spanned major changes in the stroke service; from a mobile stroke team (August 2000 to July 2001) to a comprehensive stroke unit (August 2001 to July 2002) when improved survival might have been expected [2]. During the 24-month period we assessed 1,030 patients; 827 had features suggestive of stroke and 787 (392 in 2000/01 and 395 in 2001/02) were classified as definitive stroke. The patient characteristics were very similar between the first and second years of observation (table 1), but there was a statistically significant drop in case fatality in the second year. We carried out a multinomial logistic regression exploring the change in case fatality between the first and second years of study but including the following covariates: age, gender, pre-stroke dependency, initial stroke severity and season of study. The opening of the stroke unit was associated with a significant reduction in case fatality (odds ratio = 0.40; 95% confidence interval = 0.21–0.79; $p = 0.008$) and the other significant predictors were age ($p = 0.004$) and stroke severity ($p < 0.0001$).

Hospital admission appears to be an important factor in improving stroke outcomes. Our observations indicate that improvement in the way we deliver hospital care is important and can be associated with improved case fatality even over a relatively short time period.

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Table 1. Patient characteristics

	Mobile team (August 2000 to July 2001)	Stroke unit (August 2001 to July 2002)	Signifi- cance
Age, years			0.509
Mean	70	69	
Interquartile range	62–78	60–78	
Males (%)	192 (49)	196 (50)	0.857
Prior dependency (Rankin 3–5)	69 (18)	71 (20)	0.412
Previous stroke or TIA	133 (35)	141 (38)	0.363
Stroke pathology			0.403
Ischaemic	365 (93)	357 (92)	
Primary haemorrhage	27 (7)	31 (8)	
Stroke classification			0.215
TACS	79 (20)	83 (21)	
PACS	142 (36)	117 (30)	
LACS	135 (34)	147 (37)	
POCS	36 (9)	47 (12)	
Stroke severity (initial BI)			0.183
Very mild (BI 18–20)	64 (16)	59 (16)	
Mild (BI 10–17)	109 (28)	95 (26)	
Moderate (BI 3–9)	151 (39)	169 (46)	
Severe (BI 0–2)	66 (17)	47 (13)	
No hospital admission	64 (16)	59 (15)	0.591
Length of stay, days			0.890
Mean	14	12	
Interquartile range	7–30	7–30	
Discharge home	276 (71)	277 (73)	0.512
Case fatality (day 30)	50 (13)	28 (7)	0.015

Figures in parentheses are percentages. TACS = Total anterior circulation syndrome; PACS = partial anterior circulation syndrome; LACS = lacunar syndrome; POCS = posterior circulation syndrome; BI = Barthel index.

References

- 1 Carter KN, Anderson CS, Hackett ML, Barber PA, Bonita R; the Auckland Regional Community Stroke Study Group: Improved survival after stroke: is admission to hospital the major explanation? Trend analysis of the Auckland Regional Community Stroke Studies. *Cerebrovasc Dis* 2007;23:162–168.
- 2 Stroke Unit Trialists' Collaboration: Organised inpatient (stroke unit) care for stroke. *Cochrane Database Syst Rev* 2001;3:CD000197. DOI:10.1002/14651858.CD000197.

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