of patients with lung cancer both for adenocarcinoma and non-adenocarcinoma.[2] The percentage of patients who had the GSTM1 gene did not differ significantly with type or grade of tumour. Most of the patients with bladder cancer (67%) were smokers or former smokers, but there was no significant difference in GSTM1 genotype frequency between these subjects and the non-smokers in the group.

### Comment

Previously reported risk factors for developing bladder cancer include high activity of the polymorphic cytochrome P450 enzyme CYP2D6 and lack of *N*-acetyltransferase activity.[5] The availability of genotyping assays for these polymorphisms as well as for GSTM1 may in future allow detection of people at high risk of bladder cancer because of occupation or smoking.

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# Predicting driving performance after stroke

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Stroke causes physical and cognitive impairments that may influence driving ability. Predicting whether a patient will be a safe driver may be particularly difficult for patients who are also elderly.[1] The stroke drivers screening assessment was developed as a short screening measure of driving ability that can be administered by nurses or therapists. In the development stroke patients who wished to return to driving were given a detailed cognitive assessment and tested on the road by a professional driving instructor.[2,3] Discriminant function analysis was used to identify the cognitive tests which best predicted ability on the road. The present study aimed to compare the predictive value of the cognitive test battery with existing assessment procedures.

### Method and results

Subjects were referred from three stroke units (Mansfield, Lincoln, and Nottingham) for advice on their fitness to drive. Those who had been driving in the three months before the stroke, a minimum of 10 weeks previously, and had a full driving licence were considered. Those who had any condition—for example, epilepsy—which legally precluded driving were excluded.

After a road test in a dual controlled, automatic vehicle on a set route around public roads subjects were graded by the instructor into pass or fail groups. Subjects were then randomly allocated into two groups, one of which (n=27) was tested on the stroke drivers screening assessment and scores from the three tasks were used to predict the likelihood of passing a road test. The subject's general practitioner was given the results of the cognitive tests with a recommendation about fitness to drive. The control group (n=25) was instructed to request the advice of their general practitioners regarding their fitness to drive. They did not undergo cognitive testing because it might have influenced their request to the general practitioner.

After six months subjects were contacted to ascertain the decisions on fitness to drive. The two types of assessment, cognitive and standard procedure, were compared to determine which assessment method agreed most closely with the performance on the road test.

There were no significant differences between the groups in age (mean 58·8 years in the assessment group *v* 60·2 years in the control group), sex (23 men *v* 23 men) or side of hemiplegia (13 right *v* 7 right) ($p > 0.05$). However, those in the cognitive assessment group were seen significantly later after their stroke (mean 44·4 weeks) than controls (mean 23·0 weeks).

For each group the decision method was compared with the grading of "on the road" performance (table). The stroke drivers screening assessment correctly predicted the road performance of 81% of patients, whereas the performance of only 56% was correctly predicted in the control group. The 95% confidence intervals indicate that the assessment predicted road performance significantly better than chance. The decision in the control group was made by either the general practitioner or the Driver and Vehicle Licensing Agency, but this was no better than chance. By six months 29 patients had resumed driving, 28 of whom had been advised they were fit to drive.

*Road test performance compared with driving ability predicted by stroke drivers screening assessment (SDSA) or general practitioner. Values are numbers (percentages) unless otherwise specified*

| | | Group given SDSA (n=27) | | | | Control group (n=25) | |
|---|---|---|---|---|---|---|---|
| | | Road test performance | | | | Road test performance | |
| | | Pass | Fail | | | Pass | Fail |
| Predicted by SDSA | Pass | 6 | 3 | Predicted by GP | Pass | 10 | 10 |
| | Fail | 2 | 16 | | Fail | 1 | 4 |
| Actual pass rate | | 8 | (30) | | | 11 | (44) |
| Predicted pass rate | | 9 | (33) | | | 20 | (80) |
| Accuracy | | 22 | (81) | | | 14 | (56) |
| Positive predictive value of predicting a pass | | 6/9 | (67) | | | 10/20 | (50) |
| Positive predictive value of predicting a fail | | 16/18 | (89) | | | 4/5 | (80) |
| Sensitivity for detecting passes | | 6/8 | (75) | | | 10/11 | (91) |
| Specificity | | 16/18 | (89) | | | 4/14 | (29) |
| Likelihood ratio (95% confidence interval) | | 6·0 (1·5 to 24·0) | | | | 2·0 (0·3 to 12·0) | |
| No who resumed driving at 6 months | | 9 | | | | 20 | |

### Comment

The road test by a driving instructor was used as the criterion of driving performance. Although not ideal, it is the closest approximation to daily driving.[4] The accuracy of either general practitioners or the cognitive assessment in predicting road test performance was not perfect, but both methods correctly identified most of those who failed the road test. Therefore a person judged by a general practitioner to be unfit should not be allowed to drive. If the patient is judged fit by a general practitioner then the stroke drivers screening assessment could be used as a further screening before patients are given a road test. Since the stroke drivers

screening assessment is not entirely accurate, road testing patients is recommended.

The present system allows a substantial proportion of unsafe drivers to resume driving. This could be reduced by requiring a short, simple cognitive assessment.


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# Remission of seizures in untreated epilepsy


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Little is known about the prognosis of untreated epilepsy because medical treatment for seizures has been available for more than a century. Gowers concluded that spontaneous remission in epilepsy would be very rare,[1] but Zielinski found that 30% of people with untreated epilepsy became seizure free.

The present study is part of an epidemiological survey in eastern Finland.[3] We retrospectively analysed seizure outcome in epileptic patients who had never used any antiepileptic drug treatment.

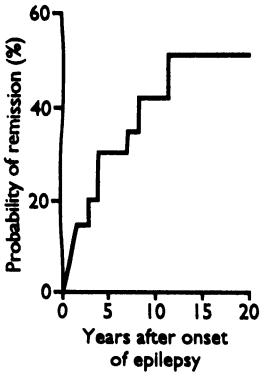
## Patients, methods, and results

All patients with at least two unprovoked non-febrile seizures born before 1 January 1964 and residing in the Kuopio University Hospital district were identified. We reviewed hospital and outpatient records and had access to the files of the Social Insurance Institution as well as contacts with community health centres. A total of 1375 epileptics were identified. Of these, 1220 patients were examined by TK.

The study included people with epilepsy who had never been treated with antiepileptic drugs, had an onset of epilepsy between 1960 and 1977, and had at least two years' follow up at the date of analysis (31 December 1979). Terminal remission was defined as a seizure free period of at least two years extending until the date of analysis. The probability of remission was evaluated by the life table method.

Of the patients examined, 50 (4·1%) had never used any antiepileptic drugs. Of these, 33 fulfilled the criteria applied in the present study. The remaining 17 patients were excluded from the analysis because the data available on seizure prognosis were inappropriate. Twenty five of the patients (76%) were men. The aetiology of epilepsy was unknown in 25 cases (76%) and an organic cause was diagnosed in eight cases (24%). Tonic-clonic seizures were diagnosed in 13 patients (39%). Eight patients (24%) had complex partial seizures, seven patients (21%) has partial secondarily generalised seizures, and one patient (3%) had simple partial seizures. In four patients (12%), seizures remained unclassifiable.

The figure shows the probability of terminal remission of seizures in the 33 untreated epileptic patients. The probability of remission was 42% at 10 years and 52% at 20 years after the onset of epilepsy.




*Probability of remission in 33 people with untreated epilepsy*

## Comment

Our results suggest that untreated epilepsy may run a benign course in some patients. The likelihood of subsequent seizures in our untreated epileptic patients was low, in agreement with the findings of Zielinski.[2] We cannot conclude that our figures represent the spontaneous course of untreated epilepsy because it is obvious that patients with mild epilepsy are more inclined to reject antiepileptic drug treatment than those with frequent seizures. The low likelihood of subsequent seizures in our patients may be partly explained by the relatively high proportion of patients with tonic-clonic seizures and cryptogenic epilepsy, factors which usually predict a good prognosis.

The proportion of untreated epileptic patients (4%) in our study was smaller than previously reported from Poland (36%)[2] and United States (14%).[4] Our case ascertainment methods were probably less sensitive in identifying patients not seeking medical treatment for their seizures than were the household survey methods applied in previous studies.[2,4] Even so, all people with epilepsy identified in an Australian household study had been prescribed antiepileptic drugs.[5] Thus, there may be true variation in the prevalence of untreated epilepsy in different countries.

The predominance of men among the untreated patients was more pronounced than in the total epileptic population.[3] The finding may reflect different patterns of seeking medical help in men and women.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