



## INTERPHONE: Mobile phone brain cancer study in Germany

*Adding to a growing list of completed national INTERPHONE projects, medical researchers in Germany have published their epidemiological study on the association of mobile and cordless phone use with two types of brain cancer, glioma\* and meningioma<sup>†</sup>. The researchers were mostly medical statisticians and epidemiologists from various research bodies in Germany and were led by Dr Joachim Schüz. The study was funded by contributions from the EU Fifth Framework Program, German Federal and state government bodies and, via the International Union Against Cancer, from the GSM Association and the Mobile Manufacturers Forum. The study was published in the American Journal of Epidemiology in January 2006.*

### Study Design

The study used a population based case-control design. The cases consisted of patients aged 30-69 years diagnosed with a glioma (366) or a meningioma (381) during 2000-2003. They were drawn from the hospital records of four large neurosurgical clinics covering three defined regions in Germany. The mobile and cordless phone usage patterns of the cases were compared to 1494 controls randomly selected from population registries in the defined regions. The controls were frequency matched to reflect the age, sex and regional distribution of the cases. Estimates of mobile phone usage patterns were obtained through personal interviews with the subjects or subject proxies (2.3%). The recorded phone usage data included sufficient information to estimate the time span of phone use, the number and duration of calls made and received, and the intensity of use (minutes/day). Usage estimates included an adjustment for lower exposures from hands-free devices. Tumour location in the brains of cases was also recorded.

### Study results

The authors found that overall use of a cellular phone was not associated with brain cancer risk. The respective odds ratios were 0.98 (95% confidence interval (CI): 0.74, 1.29) for glioma and 0.84 (95% CI: 0.62, 1.13) for meningioma. Among persons who had used cellular phones for 10 or more years, increased risk was found for glioma (odds ratio = 2.20, 95% CI: 0.94, 5.11) but not for meningioma (odds ratio = 1.09, 95% CI: 0.35, 3.37). No significant excess of glioma or meningioma in the temporal region (i.e., the part of the brain closest to the phone) was observed in cellular phone users



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as compared with nonusers. Cordless phone use was not related to either glioma risk or meningioma risk, in contrast to the findings of a Swedish study [2].

### Study conclusions

In their conclusions the authors state that "... we observed no overall increased risk of glioma or meningioma among regular cellular phone users." and "There is also no supportive evidence regarding the tendency towards a reduced risk of meningioma seen among moderate cellular phone users in this study."

Regarding their results for long term use they state "The elevated risk of glioma after 10 or more years of cellular phone use also needs to be confirmed by other studies, since the number of long-term cellular phone users in this study was low and effects of recall bias cannot be ruled out."

The authors also highlight that "We found no excess of temporal gliomas or meningiomas among cellular phone users, but the spatial distribution of tumors within the brain will be examined in more detail when data from the entire Interphone Study are compiled."

### References

- [1] J. Schuz, E. Bohler, G. Berg, B. Schlehofer, I. Hettinger, K. Schlaefer, J. Wahrendorf, K. Kunna-Grass, and M. Blettner, "Cellular Phones, Cordless Phones, and the Risks of Glioma and Meningioma (Interphone Study Group, Germany)," *Am J Epidemiol*, 2006.
- [2] L. Hardell, M. Carlberg, and K. Hansson Mild, "Case-control study on cellular and cordless telephones and the risk for acoustic neuroma or meningioma in patients diagnosed 2000-2003," *Neuroepidemiology*, vol. 25, pp. 120-8, 2005.

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\* Gliomas are the most common malignancy of the central nervous system in adults with an extremely poor prognosis. They originate in glial cells which surround and support nerve cells in the brain.

† Meningiomas are mostly benign tumours that originate from the membranes that cover and protect the brain.



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