use, OR = 5.30, 95% CI = 2.12–13.23, P < .001; and for use exclusively in urban areas, OR = 8.20, 95% CI = 1.37–49.07.24

In conclusion, the authors’ statement that the “evidence published since the IARC monograph in 2011 does not support an association between cellular phone use and the risk of glioma in adults” requires revision.

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References
18. Kundi M. Failure to detect a link between mobile phone use and brain tumours in a large Danish cohort study: but findings may be due to bias. Evid Based Med. 2012;17(5):165–166.

Received 13 December 2014; accepted 14 December 2014, Advance Access publication 20 January 2015

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Reply to Letter

Response to “The epidemiology of glioma in adults: a ‘state of the science’ review”

Mr. Morgan’s letter gives us the opportunity to clarify a number of points from our review, but we also need to correct one error.
First, the letter incorrectly stated the funding source of the study by Deltour et al., which was entirely funded by the Danish Strategic Research Council, under grant 2064-04-0010.

Second, in the section entitled “Nonionizing Radiation: Cellular Phones,” we focus on articles written since the publication of the International Agency for Research on Cancer (IARC) monograph which reviewed studies published before 2011. In recent studies since 2011, effect sizes are null, very small or very big, highlighting the complexity of brain tumor research (especially with respect to rapidly changing cellular phone technology).

Third, the interpretation of malignant brain tumor incidence rates is straightforward as long as they remain stable over time. Explanations of changes, however, can only be tentative. We respectfully disagree that data completeness affects the results of the studies presented for assessing general incidence trends of malignant brain tumors. For example, the Nordic cancer registries are considered models of completeness, with 93%–98% complete population ascertainment for malignant tumors in people younger than 70. A recent analysis of cancer registry data covering ~98% of the US population from 2000–2010 showed decreased incidence of malignant brain tumors along with decreased incidence of some glioma subtypes. This data, together with the other incidence studies, suggests longer induction periods than currently investigated, lower risks than reported from some case-control studies, or the absence of any association. Decreases in incidence rates, as well as increases, may be a reflection of improved classification of tumors, evolution of medical practices, improved access to imaging or other technological changes, among numerous other factors, together with potential changes in other etiological factors. Some studies using cancer registry data showed an increase in glioma incidence from approximately 1975–1985, likely an artifact of increased detection from increased use of CT scans and MRIs over that period and improvements in cancer registration. All of these factors would have the greatest effect on reported incidence of nonmalignant tumors, while the majority of gliomas are malignant tumors.

Fourth, one of the major weaknesses of cellular phone studies has been the lack of accurate and complete measurement of use. Although many investigations have compared self-reported use to information from cellular phone records to assess the magnitude of the reporting errors, Hardell and colleagues have not provided information on the potential role of recall errors in their studies. Recall bias may cause cases to artificially report higher past usage than controls, which could result in a false association between cellular phone use and brain tumors. Many of these studies have also been plagued with low participation rates, time delay in recruiting controls versus cases, and other methodological issues which may affect results. Several studies currently underway—such as COSMOS, MOBI-Kids, and GERONIMO—may resolve some of the methodological issues that have complicated the interpretation of previous results, by recruiting a very large cohort with prospective recording of phone use via cell phone operators, by using sophisticated phone apps to record number and duration of calls, laterality, hands-free/speaker phone use, etc., or by looking at this exposure in combination with other environmental exposures and incorporating biological mechanisms. Regardless of these improvements, accurate and complete exposure assessment for cellular phone use will likely remain very challenging for several reasons. Types of phones available vary significantly by time and location. There is significant variability in how phones are used (holding phone to head, side phone is used on, using speaker phone, or ear buds) between and within users, and these use patterns may vary over time. In summary, exposure assessment for cellular phone use is extremely complex, due to difficulty identifying dose (total, duration, or other measures) and the rapid changes in cellular phone technology.

The recent evidence, with all of the weaknesses noted above, does not strengthen the evidence for an association between cellular phone use and occurrence of brain tumors.

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References


