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RE: Cellular Telephone Use and the Risk of Brain Tumors: Update of the UK Million Women Study

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The Million Women Study has yielded a number of life-saving findings linking menopausal hormone therapy with breast cancer. However, a recent analysis of self-reported cell phone use of this original cohort by Shuz et al. (1) contains a number of serious errors and flaws of exposure measurement that undermine the validity of their widely publicized finding purporting that there is no risk of brain cancer from cell phone radiofrequency radiation (RFR).

Unsurprisingly for women now in their 70s and 80s, only 18% of cell phone users reported 30 minutes or more weekly use when asked in median years 2001 and 2011. Systematic reviews find increased tumor risk tied to cumulative call time of no less than 1000 hours (2). Yet, this study combined slight and regular mobile phone users.

Most are unaware that cell phones and cordless phones continuously emit RFR, which is absorbed into the brain and body. As more than 80% of UK households had landlines during the study period, it is likely many of the older women in this cohort used cordless phones, a significant source of RF unevaluated by this study.

Further, the National Toxicology Program (NTP) and Ramazzini Institute (RI) experimental animal studies are inaccurately criticized as based on small numbers, inconsistency across species, and excessively high exposures (3,4). The several thousand animals studied by the NTP and RI approximated in rodents a lifetime of human RFR exposures, and both found an increase in the same types of tumors, corroborating accumulated evidence of adverse effects at low levels.

Current outdated regulatory limits for phone RFR rest on the incorrect long-held assumption that nonthermal levels are safe. The NTP's highest RFR exposures were below thermal thresholds and below US FCC occupational guidelines of 8 W/kg specific absorption rate. In addition to "clear evidence" of carcinogenicity in male rats, the NTP found DNA damage in organs of rats and mice as well as induction of right ventricle cardiomyopathy in both male and female rats. The findings of these studies indicate that the long-held assumption that heating is the only harm from wireless RFR is no longer valid.

Shuz et al. (1) mischaracterized the RI study as using excessively high exposures. However, the RI study was designed to mimic low-level cell tower RFR exposures. In 2011, the International Agency for Research on Cancer classified RFR as a "possible human carcinogen" (5) based largely on increased tumors among long-term cell phone users. Concordance of tumor cell types with these experimental animal studies strengthens the association.

The majority of animal and cell studies have found nonionizing RFR can induce oxidative stress—a key characteristic of human carcinogens and a way that RFR can initiate or promote tumor development as well as play a role in the development of other diseases (6).

Recent experimental and epidemiological studies indicate that RFR also induces cancers of the thyroid and breast (7,8). DNA damage and cancer in these state-of-the-art studies signal the need for the public to reduce exposures to RFR now.

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