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Conflict of Interest Disclosures: The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

- 1. Stupp R, Taillibert S, Kanner A, et al. Effect of tumor-treating fields plus maintenance temozolomide vs maintenance temozolomide alone on survival in patients with glioblastoma. *JAMA*. 2017;318(23):2306-2316.
- 2. Zhu JJ, Demireva P, Kanner AA, et al. Health-related quality of life, cognitive screening, and functional status in a randomized phase III trial (EF-14) of tumor treating fields with temozolomide compared to temozolomide alone in newly diagnosed glioblastoma. *J Neurooncol.* 2017;135(3):545-552.
- **3**. Taphoorn MJ, Dirven L, Taillibert S, et al. Effect of tumor treating fields on health-related quality of life in newly diagnosed glioblastoma: results of the EF-14 randomized phase III trial. *Neuro-oncol.* 2017;19(6)(suppl 6):vi206.
- **4**. Herrlinger U, Tzaridis T, Mack F, et al. Phase III trial of CCNU/temozolomide combination therapy vs standard TMZ therapy for newly diagnosed MGMT-methylated glioblastoma patients: the CeTeg/NOA-09 trial. *Neuro-oncol.* 2017;19(6)(suppl 6):vi13-vi14.

In Reply Our randomized trial demonstrated a consistent improvement in both progression-free and overall survival when TTFields was included in first-line therapy for glioblastoma. The hazard ratio for death was 0.63, translating into an improvement in the 2-year survival rate from 31% to 43%. For comparison, the addition of temozolomide to radiotherapy compared with radiotherapy alone also resulted in a hazard ratio of 0.63, with a 2-year survival rate increasing from 10% to 27%. One may consider the improvements modest, yet these are the most effective proven treatments available.

Cancer treatments, be it surgery, irradiation, chemotherapy, or TTFields, all have their inherent toxicities and inconveniences. The results of the health-related quality-oflife analyses that Dr Kwan and colleagues requested have recently been published in detail.2 The main adverse effect of TTFields was skin reactions (mostly mild) at the site of electrode placement. We hypothesized that wearing the device could either decrease health-related quality of life through its burden on the patient, including physical impairment or a decreased social or role functioning due to the visibility of the device, or increase it through an improved feeling of wellbeing related to active participation of both the patient and the caregiver in the fight against the disease. Instead, no statistically significant differences in health-related quality of life between baseline and 12 months were observed between groups, except for itchy skin in the TTFields group. Healthrelated quality-of-life scores were maintained for a longer period in the TTFields group due to the longer time to tumor progression and survival. Missing longitudinal quality-of-life data are an inherent problem of many studies as is overrepresentation of patients with favorable prognostic factors. However, our mixed-model analyses, accounting for missing data, confirmed the results found in the mean change from baseline analyses.

Kwan and colleagues point out that there may be other treatments that could confer a benefit in outcome. We embrace any future advances made in the treatment of patients with malignant glioma. The TTFields treatment has no overlapping toxicities and thus could be combined with any other

promising therapy; TTFields treatment is an important step toward improvement in survival, but further research is needed to ultimately cure patients with glioblastoma.

Roger Stupp, MD Zvi Ram, MD, PhD

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Conflict of Interest Disclosures: Both authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Dr Stupp reported fees paid to his institution from and serving on advisory boards of Celgene, Novartis, AbbVie, and Merck KGaA (Darmstadt) and travel support from Novocure and that his spouse works full time for Novartis. Dr Ram reported that he has received grants, personal fees, stock, and nonfinancial support from Novocure.

- Stupp R, Mason WP, van den Bent MJ, et al. Radiotherapy plus concomitant and adjuvant temozolomide for glioblastoma. N Engl J Med. 2005;352(10):987-996.
- 2. Taphoorn MJB, Dirven L, Kanner AA, et al. Influence of treatment with tumor-treating fields on health-related quality of life of patients with newly diagnosed glioblastoma [published online February 1, 2018]. *JAMA Oncol*.

The National Resident Matching Program and Competition for Employment

To the Editor Dr Curtin and Ms Signer¹ advocated for the policies of the National Resident Matching Program (NRMP) to maintain "a fair, efficient, and reliable matching process." However, we believe this article minimizes the inherent inequity of the NRMP binding match commitment, which requires medical students to enter the Match contractually obligated to an employment agreement they have never seen. Matched applicants are then not allowed any negotiation of the employment agreement that they were bound to sign. Rigorous enforcement of these contracts are justified by Curtin and Signer to ensure the "integrity" of the process, which is the only means of securing residency positions in the United States.

The contractual obligation of resident physicians to the NRMP fundamentally violates antitrust laws by undermining competition in recruitment and hiring, thereby lessening employment choice and compensation. In the face of a court challenge to the NRMP, the process has been protected from legal scrutiny by Congress. This was accomplished through an exemption of the NRMP in an amendment to the unrelated Pension Fund Equity Act of 2004. The amendment, which had not undergone hearings before appropriate committees, retroactively and permanently exempted graduate medical education programs from antitrust law.

We agree that the NRMP is efficient and effective; in fact, the 2012 Nobel Prize in Economics was awarded for the algorithm on which the NRMP is based. However, the Congressional exemption of the NRMP from antitrust laws and the secretive means by which it was enacted were not proper. The amendment to the Pension Fund Equity Act of 2004 was not procompetitive, as it prevents fair negotiations at the heart of all employment agreements. 3

No other professional field of employment in the United States is subject to such employment constraints. Reform of the NRMP to allow resident physicians to consider multiple offers simultaneously would provide an opportunity for negotiation, which is the basis for all equitable contracts. At the very least, an open and transparent discussion of the legality of the NRMP is warranted.

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Conflict of Interest Disclosures: Both authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

- 1. Curtin LS, Signer MM. Ensuring the integrity of the National Resident Matching Program. *JAMA*. 2017;318(23):2289-2290.
- 2. Nobel Prize—The Match. National Resident Matching Program website. http://www.nrmp.org/nobel-prize/. 2017. Accessed December 31, 2017.
- 3. Pension Funding Equity Act of 2004, HR 3108, 108th Cong (2003-2004). https://www.congress.gov/bill/108th-congress/house-bill/3108. 2004. Accessed December 31. 2017.

In Reply Drs Kirsch and Drolet misapprehend the nature of the matching process and the procedures used by the NRMP. Match procedures allow applicants and program directors to assess each other through applications and interviews and to make training selection decisions based on their own preferences and the criteria important to each.

Kirsch and Drolet propose allowing applicants to receive multiple offers simultaneously-exactly the problem a matching program is designed to rectify. Prior to creation of the NRMP, an applicant could receive multiple concurrent offers and hold those offers indefinitely, to the detriment of other applicants who might have no offers at all. In other cases, an applicant could receive an offer with a short deadline for acceptance and feel compelled to act on it before knowing whether other, more desirable, offers would be extended. In contrast to such chaos, the NRMP allows applicants and program directors to consider all options simultaneously and to rank those options in order of preference. The Match yields a best result because no applicant or program could achieve a better outcome than the one produced by the matching algorithm. The binding nature of the NRMP match commitment is essential to ensuring the integrity of the process, because an applicant's failure to honor that commitment disadvantages not only the matched program that is left with a vacant position but also other applicants who might have matched to a less-preferred program or not matched at all.

Kirsch and Drolet assert that the NRMP's antitrust exemption, which applies to all graduate medical education

matching programs, is anticompetitive because "it prevents fair negotiations at the heart of all employment agreements." However, the NRMP has nothing to do with the employment agreement between applicants and residency programs other than requiring the program to share the agreement prior to the deadline for submitting rank order lists. In truth, the purpose of the Match is to create a level playing field for all participants by promoting fairness and transparency in the process by which applicants and program directors make training selection decisions.

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Additional Information: Ms Signer is the president and chief executive officer and Dr Curtin is the chief policy officer of the National Resident Matching Program.

CORRECTION

Incorrect Spelling of an Author's Name and Data Error: In the article entitled "Effect of Tumor-Treating Fields Plus Maintenance Temozolomide vs Maintenance Temozolomide Alone on Survival in Patients With Glioblastoma: A Randomized Clinical Trial" published in the December 19, 2017, issue of *JAMA*, an author's name was spelled incorrectly (Jordi Bruna, MD) in the author list and a data error occurred in Table 2, in the between-group difference and confidence intervals for the year-1 survival. This article was corrected online.

 Stupp R, Taillibert S, Kanner A, et al. Effect of tumor-treating fields plus maintenance temozolomide vs maintenance temozolomide alone on survival in patients with glioblastoma: a randomized clinical trial. *JAMA*. 2017;318(23): 2306-2316.

Incorrect Cervical Length Category Definitions: In the Original Investigation entitled "Effect of Cervical Pessary on Spontaneous Preterm Birth in Women With Singleton Pregnancies and Short Cervical Length: A Randomized Clinical Trial" published in the December 19, 2017, issue of JAMA, cervical length categories were incorrectly defined on page 2318, in the Randomization and Masking subsection of the Methods. The correct categories are <20 mm and \geq 20 mm. This article was corrected online.

1. Saccone G, Maruotti GM, Giudicepietro A, Martinelli P; Italian Preterm Birth Prevention (IPP) Working Group. Effect of cervical pessary on spontaneous preterm birth in women with singleton pregnancies and short cervical length: a randomized clinical trial. *JAMA*. 2017;318(23):2317-2324.

Incorrectly Described Data: In the Special Communication entitled "Health Care Spending in the United States and Other High-Income Countries" published in the March 13, 2018, issue of JAMA, ¹ national health care spending data were incorrectly reported as gross domestic product. The sentence should have read "The United States had high levels of administrative burden; this was notable in particular for administrative spending, for which the United States was an outlier (8% of national health care spending spent on administration and governance compared with a mean of 3% of national health care spending) (eTable 1 in Supplement 1)." Additionally, in Figure 8C, the x-axis should have been labeled "No. of Hospital Bed Days per Capita." This article was corrected online.

1. Papanicolas I, Woskie LR, Jha AK. Health care spending in the United States and other high-income countries. *JAMA*. 2018;319(10):1024-1039.

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