These findings underscore the need for more balanced news stories about medical therapies. If published, anecdotes should also provide counterbalance that conveys the expected outcomes for most patients. There is a need for both greater investment in organizations that assess news articles based on their scientific rigor and articles from trusted, nonpartisan organizations that underscore the strengths and limitations of technologies, including ECMO.

Finally, raising awareness of unrealistic popular perceptions of interventions, as Fernando and colleagues have done, may improve physician awareness of unrealistic media portrayals so they and their professional organizations can present scientifically accurate information at the bedside. Physicians without conflicts of interest should present nuanced evidence to the public through print-based opinion pieces, television news shows, peer-reviewed academic journals with patient-directed content (eg, JAMA and JAMA Internal Medicine Patient Pages), and social media. By partnering with the media to provide realistic insights into current evidence and expected outcomes, physicians can advocate for the best interest of patients. With medicine squared centrally in the public eye, now more than ever we must encourage the media to accurately portray medical therapies. Public trust depends on it.

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Supplemental content

Table 1. Analysis of studies about therapies for COVID-19 posted on the medRxiv preprint server, subsequent publications in medical journals of some of these studies, and journal articles that were not posted on either medRxiv or another preprint server.

Methods | We identified preprints and peer-reviewed publications of studies about clinical outcomes of proposed COVID-19 treatments, including chloroquine and hydroxychloroquine, lopinavir-ritonavir, angiotensin receptor blockers, angiotensin-converting enzyme inhibitors, convalescent plasma, and corticosteroids. The institutional review board at New York Medical College deemed the study as non–human participants research. We included articles in English posted at medrxiv.org or published between February 1 and May 10, 2020, as well as publications from these articles in medical journals between February 1 and July 10, 2020. We obtained data on attention and online engagement for each article as a preprint, and if published as a journal article, from February 1 to July 10, 2020. The data included the Altmetric attention score and the number of news outlets citing the article, individuals posting about the article on Twitter, page views, and scientific citations. Full details of the methods and search strategy are provided in the Supplement. To compare data between preprints and publications, we used bootstrapping to conduct nonparametric tests on the difference in medians. Statistical analyses were conducted using SPSS, version 26 (IBM), and statistical significance was set at P < .05.

Results | Between February 1 and May 10, 2020, we identified 45 publications in peer-reviewed journals that met the search criteria and had not been posted as preprints on medRxiv and 17 that had previously been posted; 1 preprint led to 2 publications. In addition, we identified 18 preprints on medRxiv that had not been published in a journal by the cutoff date of July 10, 2020. Table 1 shows the attention and online engagement metrics for the 34 preprints and the 62 publications. Although the publications had significantly more citations than the preprints (median [interquartile range] of 22 [4.3-52.5] vs 7. Diem SJ, Lantos JD, Tulsky JA. Cardiopulmonary resuscitation on television: miracles and misinformation. N Engl J Med. 1996;334(24):1578-1582. doi:10.1056/NEJM199606133342406

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Letters
attention and online engagement metrics are inex-
number of reports considered and the short duration of the
attention that those that did across multiple metrics.
were not published during the study period received less at-
seminar of reportsthathad not undergone traditional peer
Abbreviations: COVID-19, coronavirus disease 2019; IQR, interquartile range.
Table 2. Comparison of Attention and Online Engagement Metrics of
MedRxiv Preprints About COVID-19 Therapies That Were Published and Not Published During the Study Period

<table>
<thead>
<tr>
<th>Metric</th>
<th>Median (IQR) [range]</th>
<th>Publications (n = 62)</th>
<th>Published (n = 16)</th>
<th>Not published (n = 18)</th>
<th>P value for difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altmetric attention score</td>
<td>127.0 (18.3-1448.5)  [1.0-10396]</td>
<td>66.5 (14.3-601.8) [0-14 745]</td>
<td>.40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>News outlets citing</td>
<td>1.5 (0-24) [0-411]</td>
<td>1.0 (0-16) [0-327]</td>
<td>.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individuals using Twitter</td>
<td>113.0 (28.3-1992.8)  [4.0-15 131.0]</td>
<td>57.0 (11.5-477) [0-38 971]</td>
<td>.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citations</td>
<td>5.5 (1.3-20.3) [0.0-154.0]</td>
<td>22.0 (4.3-52.5) [0-883]</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page views</td>
<td>4915.5 (1379-21 326.5) [427-41 7105]</td>
<td>20973.5 (3002.5-138 891) [812-1 330 608]</td>
<td>.19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: COVID-19, coronavirus disease 2019; IQR, interquartile range.
* New outlets citations were taken from tracked numbers on the Altmetric data page. Page views for preprints were taken from metrics provided on the medRxiv website; page views for publications were taken from metrics provided by individual journals. Data for preprints reflect metric scores from the preprint server, regardless of whether the article was subsequently published during the time the article was posted. All of the 17 articles posted as preprints before journal publication remained posted on medRxiv through July 10, 2020. One preprint article led to 2 journal articles.

Table 2 shows the attention and online engagement metrics of the 34 medRxiv preprints that were published and not published during the study period. Compared with the 18 preprint articles that were not published, the median Altmetric attention scores, number of news outlets citing, and the number of page views were significantly higher for the 16 preprint articles that were published, and there were trends toward greater numbers of individuals posting on Twitter and citations.

Discussion | In a small study comparing articles about therapies for COVID-19 posted on the medRxiv preprint server, subsequent publications in medical journals of some of these articles, and journal articles that were not posted on either medRxiv or another preprint server, we found widespread dissemination of reports that had not undergone traditional peer review. We also found that articles posted as preprints but that were not published during the study period received less attention that those that did across multiple metrics.

This study has limitations in addition to the relatively small number of reports considered and the short duration of the analysis. Attention and online engagement metrics are inex-
act and shed little light on how the traffic is being generated. We did not compare the metrics for the published and preprint versions of the same study, as the available follow-up time for the studies and versions varied widely. We also did not study the associations of any of the articles with medical practice, regardless of whether they were first posted on medRxiv or published in a medical journal.

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Author Contributions: Dr Schlager had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Conflict of Interest Disclosures: None reported.

From 1996 to 2002, eligible physicians voted approximately 9 percentage points less than the general population. Since then, physician voter engagement has not been reported. We investigated physician voter participation, voter registration, and voter turnout from 2006 through 2018 in California, New York, and Texas, which are states with the largest number of physicians.

Methods | We merged the National Provider Identifier (NPI) registry with state voter files from L2, a nonpartisan political data corporation, and identified physicians registered to vote in general elections by using a matching process based on names, NPI enumeration dates, dates of birth, and occupational data from commercial reports. We identified the number of active physicians using state workforce profiles from the Association of American Medical Colleges. We obtained general population voting data and determined eligibility using the Voting and Registration Supplement to the Current Population Survey by the US Census Bureau and Bureau of Justice Statistics.

The primary outcome was voter participation (ie, the proportion of physicians who voted among those eligible to register) compared with the general population using χ² test analysis. The secondary outcomes were voter registration and voter turnout (ie, the proportion of registered physicians who voted). We modeled voter turnout using logistic regression, adjusting for age, sex, race/ethnicity, education, income, household size, and conducted sensitivity analyses. We used marginal effects to convert odds ratios into adjusted percentages. We estimated pooled and election year results.

This study was considered exempt by The University of Texas Southwestern Medical Center Institutional Review Board, and informed consent was not required owing to use of publicly available information. Voter file matching and analysis details are available in the Supplement.

Results | We identified 112,032 physicians registered to vote in 2018: 50,854 in California, 39,046 in New York, and 27,578 in

Figure 1. Differences in Voter Participation and Voter Registration Between Physicians and the General Population in California, New York, and Texas During General Election Years, 2006-2018

The analysis of state workforce profiles are based on information from the Association of American Medical Colleges, the Voting and Registration Supplement to the Current Population Survey by the US Census Bureau, and state voter files linked to physicians identified in the National Provider Identifier directory. All comparisons of general population to physicians in each year were statistically different at P < .001.