VIEWPOINT

Net Neutrality Repeal and the Potential Harm to Medical Education

Natasha Cuk, MD
Department of Medicine, David Geffen School of Medicine, University of California, Los Angeles.

Colin L. Robinson, MD, MPH
Department of Medicine, David Geffen School of Medicine, University of California, Los Angeles.

In the span of only 20 years, mobile computing and the internet have had a profound effect on both medical training and clinical practice.[1] Effective patient care now routinely requires accessing and synthesizing information from large, dynamic bodies of literature. Trainees, in particular, rely on online summary databases and decision support tools to help ensure accuracy in clinical decision making.[2] Some evidence suggests that these tools improve patient outcomes when compared with traditional educational resources.[3] The current ecosystem of online medical resources has evolved largely while net neutrality has been the de facto law of the land; however, changes to net neutrality policies recently approved by the Federal Communications Commission (FCC) threaten to substantially alter this landscape.

Net neutrality refers to the principle that internet service providers (ISPs), such as Verizon, Comcast, and AT&T, should treat all online data the same. In other words, internet traffic "should flow freely from source to source without delay or interruption from individual networks."[4] In the past, the FCC has supported this principle by preventing ISPs from influencing search queries, "throttling" internet traffic on the basis of content, or blocking applications owned by a competitor.[4,5] For example, in 2008, the FCC found Comcast's practice of blocking online file sharing over its network to be "discriminatory" and ordered Comcast to end the practice.[4] The FCC reviewed several such cases and, in 2015, moved to reclassify ISPs as "common carriers," a designation that provides the legal foundation to enforce net neutrality principles.[5,6] On December 14, 2017, however, the FCC voted to repeal these regulations, effectively reversing its stance on net neutrality. It is too early to tell how these changes will ultimately affect the delivery of online content. The final FCC order was only recently published and legal challenges are just beginning to emerge, including an upcoming vote in the Senate to overturn the FCC ruling. Although the initial public concern has been focused on consumer use, the pending change in policy may also have significant repercussions on medical education and patient care at training institutions.

> In a post–net neutrality world, these small-budget, high-yield resources may be relegated to the "slow lanes" of internet traffic…

The repeal of net neutrality regulations creates an opportunity for ISPs to intrude into medical decision making in a variety of ways. Just how pharmaceutical representatives vie for the attention of physicians in the office or clinic, these companies could direct their resources toward carving out online "screen time" with a much larger potential audience of clinicians. For example, ISPs could contract with pharmaceutical companies to reorder search queries to promote certain drugs, limit access to sites advertising competing manufacturers' medications, or hide open access research critical of a promoted therapy. Similarly, corporations selling nutritional supplements lacking in scientific evidence but replete with marketing and advertising funding could attempt to increase their profits by misleading clinicians into providing recommendations for their product. These examples illustrate the concept of prioritization, a controversial set of strategies in which ISPs can charge third parties to have their content delivered ahead of others'.[7] Speed and accessibility often affect which resources are utilized in a medical education setting, making trainees and their patients vulnerable to prioritization of content.[2]

The repeal of net neutrality also poses a particular concern for medical resources that are open access or nonprofit. Many of the online references and clinical decision support tools used by trainees (WikEM, MDCalc, Life in the Fast Lane, among others) are created by physicians with the assistance of donations and provide high-quality, well-referenced information at no cost to the medical community. In a post–net neutrality world, these small-budget, high-yield resources may be relegated to the "slow lanes" of internet traffic, potentially impeding access for trainees and other clinicians. In addition, the costs of ensuring "priority access" would become the responsibility of the individuals creating these tools and may ultimately either prove cost-prohibitive or divert important resources away from further development.

Prioritization strategies also have the potential to create significant "training gaps" between physicians at different institutions or across geographic regions. As some nonprofit resources facing prioritization fees fall into disuse, others may become subscription-based and pass costs down to the subscriber. Within this framework, even current subscription online databases and journals may be forced to raise prices to offset increased costs. Even though paying for unfettered access may place only an imperceptible financial strain on large health organizations, other smaller or less well-funded county, community, and rural training programs may not have the resources to pay for even the most basic content,

Corresponding Author: Natasha Cuk, MD, Department of Medicine, David Geffen School of Medicine at University of California, Los Angeles, 757 Westwood Plaza, Ste 7501, Los Angeles, CA 90095 (ncuk@mednet.ucla.edu).

increasing education disparities depending on where physicians train and practice.

How trainees use online material to enhance their education demonstrates the importance of the internet and net neutrality. Before, after, and even during patient encounters, trainees use online tools in an attempt to provide safe and evidence-based care while learning the skills necessary to become independent clinicians. Not long ago, residents made trips to and from the medical library to read printed text when they encountered uncommon medical conditions or needed to interpret unusual physical examination findings or laboratory results. Today, the complexities of modern medicine require access to a wide range of resources that have become increasingly concentrated in the online environment. If these resources become susceptible to bias, limited in scope, or simply no longer available, the effect could be far-reaching and difficult to predict. Medical trainees may encounter barriers to their continued education while seasoned clinicians may see increased costs or loss of access to online resources that they have been using for years.

Awareness of the potentially harmful effects of changes to net neutrality policy is imperative to inform a coordinated effort on behalf of the medical community to ensure a free and open internet. Failure to recognize these changes and advocate for the protection of net neutrality could lead to lasting harm to the medical education system and may undermine aspects of patient care for years to come.

ARTICLE INFORMATION

Published Online: April 11, 2018. doi:10.1001/jama.2018.1683

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

REFERENCES

1. Chong HT, Weightman MJ, Sirichai P, Jones A. How do junior medical officers use online information resources? *BMC Med Educ*. 2016;16:120.

2. Brennan N, Edwards S, Kelly N, Miller A, Harrower L, Mattick K. Qualified doctor and medical students' use of resources for accessing information. *Health Info Libr J*. 2014;31(3):204-214.

3. Isaac T, Zheng J, Jha A. Use of *UpToDate* and outcomes in US hospitals. *J Hosp Med*. 2012;7(2):85-90.

4. Brauer-Rieke AK. The FCC tackles net neutrality: agency jurisdiction and the Comcast order. *Berkeley Technol Law J*. 2009;24(1):593-615. doi:10.15779/Z38KT2T

5. Federal Communications Commission. Cellco Partnership d/b/a Verizon Wireless. https://apps.fcc.gov/edocs_public/attachmatch/DA-12-1228A1.pdf. Accessed December 31, 2017.

6. Federal Communications Commission. FCC adopts strong, sustainable rules to protect the open internet. https://apps.fcc.gov/edocs_public/attachmatch/DOC-332260A1.pdf. Accessed December 31, 2017.

7. Kang C. Repeals net neutrality rules. https://www.nytimes.com/2017/12/14/technology/net-neutrality-repeal-vote.html. Accessed December 31, 2017.