Response to Letter Regarding Article, “Smartphone Teleradiology Application Is Successfully Incorporated Into a Telestroke Network Environment”

To the Editor:
We thank Drs Chakrabarti and Perera for their letter dated October 8, 2012, which examined important issues regarding image quality and access.

Chakrabarti and Perera postulate that the decrease in agreement over identification of more subtle radiological features, such as early ischemic changes and hyperdense artery signs, between neurologists using ResolutionMD and radiologists and independent telestroke adjudicators using standard picture archiving and communications system (PACS) and desktop viewers may have been the result of the lower resolution and small screen area of the mobile technology used.

Instead, we assert that the more probable explanation was the impact of stress and limited viewing time on ResolutionMD computed tomography interpretation of subtleties by providers in a real-world emergency environment.1 In a more controlled comparison between neuroradiological interpretations of computed tomography with a medical diagnostic workstation and an internetwork operating system device, Mitchell et al reported the sensitivity, specificity, and accuracy of detecting early acute parenchymal ischemic change were 94% to 97%,100%, and 98% to 99%, respectively, with good intrarater agreement.

However, we agree that the continuing advancements in smartphone and tablet technology provide for many future opportunities to examine the effects of display quality improvement on accurate diagnosis of early ischemic changes. As an example of the quick pace of technology development in the field, the iPad (third generation) was available for only 7 months before Apple released a newer iPad (fourth generation) with equivalent display qualities and processor speed upgrades.

Chakrabarti and Perera discuss recent improvements to the contrast rating in the iPhone 5 and whether this will facilitate easier identification of subtle pathologies. However, we feel that the inability to perform a digital imaging and communications in medicine calibration of the display on the iPhone, iPad, and other mobile viewing platforms may have more of an influence on image quality than the contrast rating in high-ambient light scenarios.

We respectfully disagree with the letter writers’ suggestion that ResolutionMD’s PACS communication feature is a limitation. In fact, this feature allows autonomous access to a full range of imaging exams acquired at multiple time points. In their letter, Chakrabarti and Perera state “An emerging body of evidence has demonstrated the capacity for video recording and transfer of a sequence of CT images from a PACS system for the evaluation of referable neurosurgical pathology.” Likewise, we would not consider it a limitation that such a video recording and transfer system is connected to a PACS. However, video recording does have other limitations. In particular, recording implies that the sequence of frames to be transferred to the client is predetermined. This precludes interactive manipulation, exploration, and analysis of the patient data. ResolutionMD, on the contrary, provides this level of functionality now, at interactive frame rates. We have found that to be an important aid to diagnosis of acute stroke.

Lastly, ResolutionMD’s approach to securing patient data provides important assurances with respect to protected health information. ResolutionMD’s client server architecture ensures that no highly sensitive or confidential patient information is ever lost or stolen, a persistent threat for many traditional mobile device-rendered software solutions that require data to be sent to the device.

Disclosures
None.

Dwight C. Channer, MS
Bart M. Demaerschalk, MD, MSc, FRCPC
Department of Neurology
Mayo Clinic
Phoenix, AZ

Response to Letter Regarding Article, "Smartphone Teleradiology Application Is Successfully Incorporated Into a Telestroke Network Environment"
Dwight C. Channer and Bart M. Demaerschalk

*Stroke*. 2013;44:e12; originally published online January 8, 2013; doi: 10.1161/STROKEAHA.112.681296
*Stroke* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2013 American Heart Association, Inc. All rights reserved.
Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://stroke.ahajournals.org/content/44/2/e12

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in *Stroke* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to *Stroke* is online at:
http://stroke.ahajournals.org/subscriptions/