

### **Ethical Considerations in Using Patient Data for AI Development in Radiology**

Every interaction with technology is a data point that can be used to understand humans, both physically and psychologically. This has raised concern over consumer privacy, perhaps most recently highlighted by Apple's new policy allowing people to opt out of activity tracking while using iOS apps. This received wide media coverage as it led to a dip in Facebook's stock price as the company monetizes personal data.

Questions of privacy, big data and AI are hot topics in healthcare as well. Radiology is one field that has recognized how to integrate AI to expedite image interpretation and improve patient outcomes. A machine can be fed data, for instance, images marked as either pathologic or benign. Through "machine learning," it could then use the information gathered to make diagnostic suggestions when presented with new data. AI could work with the radiologists to improve accuracy and speed. For instance, a machine could "triage" brain scans on what needs to be read now and what could wait based on recognized red flag features.

The ethical question in all this is that patient information would be used to supply machines with the data to learn. Releasing patient information comes with the risk of violation of privacy. We also must address whether it is a given that we can take information learnt from one patient to help another. I approach these issues through the lens of the four ethical principles: autonomy, beneficence, non-maleficence and justice. I also propose guidelines for how patient data should be handled to minimize the potential for violation of any of these four principles.

I conclude that once a patient has directly benefited from the imaging study, the data is free to be used to improve delivery of care for others. Strict measures must be taken not to violate nonmaleficence, that is to preserve anonymity. Lastly, in accord with the principle of justice, resultant improvement in healthcare delivery should benefit all.