

Editorial

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Patient Quality Measures: The Necessary Paradigm Shifts in Medicine

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Improving patient quality measures is a complex task. It involves more than simply telling caregivers to adopt new practices. Rather, it uses current research and tools to bring about creating changes in workplace attitudes, building teamwork among healthcare providers, and converting evidence based data into actual practice. There are many tools that physicians can use to change practice and improve on quality measures. *Heart Research - Open Journal* is one such tool. This electronic journal is an open access scholarly journal, dedicated to making accessible medical information and research to a wide variety of healthcare individuals. We welcome everyone to our first journal and hope that is a valuable resource for the future. In this edition I am going to discuss changing role of physicians in medical practices as new research and therapy directs us towards better patient care. I will use one particular example that I am very familiar with, and this is the practice of transradial cardiac catheterization.

Change in any practice is difficult, but change for the better is something that we all strive for. In the field of interventional cardiology, for example, our data has suggested that the main advantage of transradial cardiac catheterization and Percutaneous Coronary Intervention (PCI) is reduced access-site complications;¹ the transfemoral approach to cardiac catheterization has been the primary route for cardiac catheterization in the United States. In 2007 transradial catheterization was only being used in 1-3% of all coronary interventions.¹ Since then, however, we have seen a shift and increase in transradial coronary interventions with data suggesting that approximately 16% of coronary interventions were performed *via* radial artery access.² Such a shift is an indication of the ability of physicians to adapt and change their practice in the face of an ever changing medical environment.

In 2012 my colleague, Dr. Morton Kern, and I wrote an editorial on the lack of adaption of the transradial technique in the United States.³ We discussed Kurt Lewin's "Unfreeze, Change and Re-freeze" theory. In the early twentieth century social psychologist Kurt Lewin identified three stages of change that are still the basis of many strategies for managing change. He suggested that change involves a move from one static state *via* a state of activity to another static status quo *via* a three-stage process: unfreezing, changing and re-freezing. This freeze change model recognized that people like the safety, comfort and the feeling of control within their environment. Therefore, any change that is threatening to the status quo (frozen state) causes discomfort; and significant effort may be required to 'unfreeze' them in order to get them to change.

In the field of medicine there is still a tendency for physicians to favor the status quo. More specifically, in interventional cardiology there is the status quo of the transfemoral (TF) approach to cardiac catheterization versus the new challenges of the transradial (TR) approach. The comfortable stasis of the TF procedure compared to the TR alternative, even though TR may offer significant benefit, will cause discomfort. Subsequently any proposed change to this thinking may require an approach from Lewin's three-step "unfreeze-change-refreeze" model.

With new data proposing the benefits of transradial cardiac catheterization we have seen a gradual shift in interventional cardiology practice. In the RIVAL trial,⁴ for example, major vascular complication rates were higher in the transfemoral arm (3.7% vs. 1.4%, $P < 0.0001$). In addition patients who were enrolled and exhibited ST Elevation Myocardial Infarction (STEMI), the transradial approach was significantly favorable compared

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$P = 0.026$). Approximately 90% of patients randomized to undergo the TR approach reported preference for the procedure when compared to 49% for the transfemoral arm if the procedure was repeated. Other studies have also shown improved numbers in patient quality and less medical costs when using the transradial approach.⁵⁻⁷ This change in patterns of behavior have not been to the level that Kuhn⁸ spoke about in his book “The Structure of Scientific Revolution,” but this is still an indication of physician adaptation and transformation. Kuhn wrote that “successive transition from one paradigm to another *via* revolution is the usual developmental pattern of mature science.” I think with TR catheterization we are seeing a slow shift towards transition towards equally perform either TR or TF procedures, depending on what is best for the individual patient.

We commend physicians in making such a significant and patient oriented change in practice. We made a similar change in our practice three-four years ago, and now approximately 80% of our procedures a performed *via* TR access. At our center the cardiology fellows learn this technique during their first month in the cath lab. Our vascular complication rate has attenuated compared when we were performing only TF procedures, and most of our patients now prefer this TR technique. We also perform our pulmonary artery catheterizations *via* venous access in the same arm. In the future as more individuals master this technique the American College of Cardiology (ACC) Core Cardiology Training Symposium (COCATS) guidelines may need to emphasize the importance of training our fellows to master the TR techniques for cardiac catheterization.

A key part of Lewin’s model is the idea that change, even at the psychological level, is a journey. This journey may not be that simple and the person may need to go through several steps before the reach their destination. In today’s practice of medicine we may be witnessing various shifts from one paradigm to another. If such shifts bring about better quality of patient care then maybe it is time for all physicians to embrace such changes. We hope that tools such as the *Heart Research - Open Journal* will help move such positive changes forward.

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