

## **“Check Engine”, will medical computing and machine advancements improve patient care?**

Recently Eric Topol, Editor, Medscape, interviewed Vinod Khosla, founder of Sun Microsystems and a pioneer in system's computer engineering. Lately, Khosla has turned his attention to medicine and opined on the “direction” the inevitable changes in medical information management will take, although the “form” remains hazy.

Khosla wisdom is based upon a simple premise that knowledge continues to expand exponentially and the only way to capture and present it all in a user friendly manner to patients and their physicians is by the use of computer technology and machines. Although accused of trying to replace physicians, he asserts he wants to enhance the patient “caring” role for physicians, avoiding the “form” failure of electronic health record (EHR) implementation that reduced the physician's time for patient care.

Interestingly, although his base is “high tech”, Khosla's application emphasis is more directed at prevention, wellness and primary care. He describes how medicine has greatly expanded from a few symptoms, signs and basic “tests” to the ability to monitor periodically or continually physical, chemical, biological, genetic, psychological and environmental factors in “healthy” people to detect the first signs of possible environmental stress, pathology and dysfunction to set off the “Check Engine” light and prompt behavioral change, consultation and intervention. He notes how the automobile industry incorporated much of the same technology available to medicine to accomplish a similar end.

Although the level of sophistication was lower, I have often written about when serving in the Indian Health Services in the 1970s we expected that by the late 1980's the whole country's EHR systems would be interoperable and electronically monitor all patients regarding certain wellness parameters, including preventive services due, risk factors, and abnormal laboratory or physical indicators to target behavioral change and early interventions.

It never happened as EHR priorities were redirected from improved patient care to billing, performance monitoring and “big data” research. There is some value in all these “forms” but the pernicious consequences of their application redirected physicians from patient care to data entry tasks, detracting from patient care, wasting valuable resources and helping lead to physician burnout.

Khosla describes the evolutionary “direction” of the cell phone that embraces numerous “forms” such as GPS, texting, archiving, library research, photography, banking and so on. Most are geared to improve the effectiveness and efficiency of obtaining and dispatching information to facilitate our vocational and avocational functions of daily living. Should patients and physicians have any less to maintain and improve health status?

Today, advocates profess how technological advancements such as blockchain, cognitive computing and artificial Intelligence (AI) will assist us to realize such potential. It certainly seems like they should but after the EHR experiences we need to be cautious. The process needs to start with patients and physicians defining the form and functionality of desired output rather than reacting to input and “form” offered by engineers and others.

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