

Primary Medical Care in Transition; Effects on the Lab Test Ordering Market

by

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It has been estimated that perhaps three-quarters of all medical decisions are based on laboratory test results. This number will grow inexorably as new and even more accurate tests are developed and come to market. A high percentage of these test orders originate in primary healthcare settings. For example, lab testing is a key component of routine physical exams and is also essential for primary care referrals to medical specialists. However, primary care in the U.S. is now undergoing significant change because of the entry of for-profit, mega-corporations into this practice area.

The goal of this article is to describe the consequences of this shift from primary care to mega-corporations and the drivers that are coming into play as primary care becomes a more competitive environment. Special attention will be paid to the growing use of technology referred to here as Home Health Monitoring Systems (HHMSs) and the potential role of pathology and clinical informaticians in generating an effective response in larger health systems to the anticipated, reduced volume of lab test orders that will occur as a result of this competition.

For-Profit Companies Entering Primary Care

Six very large, for-profit companies are rapidly expanding their presence in primary care. They are *CVS*, which is the second largest healthcare company in the world; *Walmart*, a global retailer that operates mega-stores; *UnitedHealthcare*, the largest health insurance company and the largest employer of physicians in the U.S.; *Amazon*, a multi-national technology company which is the largest e-retailer in the U.S. and also focuses on artificial intelligence (AI); *Apple*, which specializes in consumer electronics, software, and online services; and *Google*, a technology company that focuses on search engine technology, online advertising, e-commerce, and AI.

Why have these six, for-profit companies launched various initiatives in primary care? First, and most obvious, is that healthcare accounted for about 18 percent of the GDP in the U.S. in 2021, and is thus an obvious target for new initiatives and profit opportunities. Secondly, many of the new initiatives in primary care by these companies are synergistic with their ongoing businesses and interests. Thirdly, and for UnitedHealthcare in particular, the cost-containment advantages of their active participation in primary care decision-making are self-evident.

Primary Care Services Shrinking in Large Health Systems

Primary care is undergoing atrophy within large health systems due, first, to a shortage in the labor market of PCPs and APPs. Wait times for a live appointment are about a month nationally and often double or even triple that in many communities. This degradation of service is a reflection of patient demand exceeding capacity and also the fact that many health systems are under-investing capital in primary care. Adding to this is the fact that primary care in large health systems and multispecialty clinics is

continuing to be underfunded on a yearly basis because of revenue shortfalls and the emphasis on specialty practice in the pursuit of higher revenue.

Why would executives in health systems underinvest in primary care if it hampers internal referrals from these units in the organization? The economic value of referrals by PCPs is almost certainly understood and appreciated by the health system C-suite even if their salaries exceed the professional reimbursement they generate.

The truth in this matter is that health system executives have been buffeted by severe financial stresses including loss of business due to the pandemic and also the skyrocketing cost of contracted labor, particularly nursing. This has caused them to focus on the overall bottom line, seeking to avoid overwhelming red ink. This is in spite of the fact that underfunding primary care in their organizations may harm them in terms of referrals to their in-house specialty services.

The Emergence of Home Health Monitoring Systems

At this point, I want to define the concept of the Home Health Monitoring System (HHMS):

Home health monitoring systems (HHMSs) are comprised of a hardware device plus software designed to monitor the health of the consumer owners. The data generated by these systems will be uploaded to personal health accounts in the cloud and monitored by AI algorithms that generate periodic reports back to the consumer/owner about his or her ongoing health plus health alerts when warranted.

These personal health accounts can be organized to generate “referral packages” for specific diseases that can be submitted to medical specialists. These data “packages” will contain not only tentative, AI-generated diagnoses

but also the underlying rationale and evidence for the diagnoses supported by the test results.

The hardware embedded in these health monitoring systems currently consists of cell phones and sometimes other hardware devices linked to them. New and more sophisticated hardware devices will inevitably come to market to expand the value and utility of the data uploaded to the consumer health accounts.

I believe that HHMSs will gradually substitute for, and perhaps even replace, a significant percentage of the visits now delivered in primary care settings. This transition will be supported and driven by at least three of the six companies described above which are expanding their presence in primary care and also for whom IT is their core business. They are: Amazon, Apple, and Google. The remaining three companies, CVS, Walmart, and UnitedHealthcare are already delivering primary care services similar to that offered by the large health systems, physician practices, and multispecialty clinics.

These three companies may well ultimately dominate primary healthcare in the country and it will be because they offer similar but less expensive services compared to their competitors. However, the opportunity to view primary care through an IT and algorithm lens will result in a different type of care. I believe that this is the ultimate goal of Amazon, Apple, and Google which are highly skilled at providing consumer services.

The use of algorithms to monitor personal health accounts in the cloud will be offered to consumers for a monthly fee by the for-profit companies in this line of business as well as, potentially, large health systems. In order to develop these algorithms, the IT companies listed at the beginning of this article need ready access to real clinical “big data.” Hence their interest in acquiring clinical practices such as in the

purchase of One Medical by Amazon for \$3.9B or EHR data-sharing agreements initiated by Apple with various prestigious health systems. To restate the obvious, large health systems already have access to big data through their own EHRs so they themselves could *potentially* serve as the developers of HHMSs.

Referrals for Specialty Care within Healthcare Systems

It should be apparent that the providers of primary care exercise a large measure of control over the referrals for specialty care for their patients, including highly remunerative surgical procedures. These referrals, of course, will continue to occur internally within large health systems as happens today or, alternatively, as the result of the primary care offered by the for-profit companies discussed above. I am also proposing here, and under the HHMS model described above, the algorithms associated with the personal health data accounts will be capable of participating in this same referral process.

The control of these various types of specialty referrals will be extremely important in the future and have high value for both the referring and receiving organizations. There are at least three ways to compensate the “originators” of these referrals other than the in-house referrals in large health systems. The first is some sort of service fee. Probably of greater value will occur if and when these referral originators are provided broad access to the EHR databases of health systems. A third option for a for-profit health insurance company such as UnitedHealth as compensation for referrals would be the offer of a reduced cost for, say, a surgical procedure that would obviously be of benefit to health insurance companies.

Pathology Participation in HHMS Development and Deployment?

A major component of the role of pathology and clinical informaticians in the future will be to construct, offer, and support consumers in the installation and management of the HHMSs described above. Sophisticated surveillance algorithms will be a key element of these accounts. Some of these algorithms will undoubtedly be developed by new IT companies that will provide them to health systems for installation in the consumer-oriented dashboards that will be key features of these personal health accounts.

From this perspective, health systems may well have an edge over large IT companies that will be vying for this same business. Consumers may also trust their current providers more than national companies with such data, particularly when urgent care may be necessary from such providers. However, very few health systems will have the complete expertise and business expertise to totally develop these HHMSs.

One might interject here that the logical provider for these cloud-based personal health accounts would reasonably be the major EHR vendors. Moreover, it would also seem logical that the patient portals currently provided by these companies to health systems can and should be regarded as embryonic versions of such personal health accounts. However, I think that it is highly unlikely that health system executives would look favorably on providing even greater access for their EHR partners to their clinical databases than occurs now.

I will readily concede that even those academic health systems with the most sophisticated clinical and pathology informatics units would probably struggle to develop robust, personal consumer health accounts for the patients served by their hospitals.

Thus, help may well be needed for the development of consumer health accounts from the private sector, particularly from for-profit IT start-ups fueled by venture capital.

Such companies would provide the foundational software for the personal consumer health accounts that could then be managed day-to-day by large health systems personnel. Such new companies can and probably should also serve as providers or brokers for healthcare algorithms provided by other startups.

A Critical Inflection Point in Healthcare

To summarize, primary care in the U.S. is now being besieged by well-funded, national competitors and also financial headwinds. Moreover, a new care model is emerging that will enable the development of consumer-controlled, IT-enabled diagnostic and monitoring services. Incumbent EHR vendors and hospital central IT units will probably be unable to create solutions in response to demands for HHMSs because they already have their hands full simply by delivering their expected and ongoing services.

On the other hand, the entire thrust of the pathology and clinical informatics practitioners that are now thriving within large health systems are clearly capable of responding to this challenge of the development of consumer-oriented HHMSs. It is my fervent hope that informaticians working within these large health systems will continue to direct their attention to this fruitful area of R&D and successfully compete with the anticipated product offerings of mega-corporations.