Preparing Physicians for Interdisciplinary Teams in the U.S.

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Abstract:

Whether the goal is to contain budgets, improve outcomes or reduce medical errors, strong, effective teamwork is essential in almost every medical environment. Physicians must develop the skills necessary to both participate in and lead teams. This paper will define the essential hallmarks of high-performing teams; look at the role of physicians in this team-based environment; and discuss whether or not physicians should assume leadership roles. Finally, we will provide an overview of existing efforts to train practitioners in interdisciplinary teams and identify gaps in current training efforts.

Interdisciplinary Teams in U.S. Healthcare Delivery

Beset with complex reimbursement and regulatory structures, rapidly advancing technology and a population that is growing increasingly older, sicker, and more obese, the U.S. medical environment needs coordinated interdisciplinary teamwork now more than ever. It may seem odd to imply that interdisciplinary teamwork is not already a major force in health care. Glancing around any hospital, outpatient clinic or research facility in the U.S. reveals that physicians are already working shoulder-to-shoulder with professionals from a variety of other disciplines. However, literature from medicine, business, and organizational psychology agree: the presence of an interdisciplinary group does not necessarily equate the presence of a successful interdisciplinary team. (1)

Teams are comprised of members with a mix of complementary skills and a strong, shared commitment to the process of doing work. Teams thrive when they are given the appropriate amounts of autonomy, communication and trust levels are high, and a common vision is shared. (2) These ingredients for success are often at odds, however, with traditional medical environments and pre-conceived ideas and attitudes about roles, responsibilities and lines of authority between diverse health care disciplines.

Interdisciplinary medical teams in the U.S. already possess complementary skills and share a strong commitment to patient care. What is too often lacking in the U.S. medical culture is autonomy, communication and trust. First, our unique reimbursement and regulatory environment with its patchwork system of payers and provisions often pits

groups of medical professionals against each other by framing questions of health care delivery in terms of cost. The case for promoting greater clinical autonomy for nurse practitioners and physician assistants often lacks adequate discussion about quality of care and instead is centered around the idea that these caregivers are less expensive. The same dynamic plays out between specialists and generalists – resulting in an overall dialogue in which practitioners perceive threats not only to their own livelihood and professional esteem but to the level of care for their patients. Next, the U.S. medical education system trains nurses, physician assistants, doctors and other professionals within silos where they rarely have an opportunity to practice together as teams. Training programs also lack a common vocabulary for teamwork and sometimes fail to instill respect for other professionals – resulting in an inability to communicate effectively in future teams. Given these conditions, it is obvious why consistent models of interdisciplinary teamwork have a difficult time taking root.

The U.S. medical environment is not self-defined. It has evolved over its history through the preferences of the American public -- consumers, businesses, voters and policymakers. (3) It could be argued that the U.S. pays more per capita for health care than other countries because of the premium it places on choice and innovation. The American public often recoils at one-size-fits-all solutions. And, in some cases, it is right to do so. Teamwork in an urban clinic with a strong link to an academic medical center will vary considerably from an isolated rural primary care practice. Specialty surgical environments are significantly different from emergency rooms, and the health care requirements of a geriatric patient with chronic disease are not the same as the young adult who lacks health insurance.

To that end, this paper will define best practices in teamwork and leadership; recommend improved training opportunities; and offer up existing examples of teamwork. We will not, however, argue that any one vision will work for every situation. We do argue that teamwork is essential in the U.S. for three important reasons:

- First, medical errors are a major impetus in the U.S. for teamwork as they are the

8th leading cause of death and cost between \$17 and \$29 billion a year. Interdisciplinary team training is key to establishing a culture of safety. (4)

- Second, there is not enough time for physicians alone to carry out recommended prevention guidelines. Research at Duke University's Department of Community and Family Medicine found that the time needed for a physician to deliver recommended prevention messages and services to an average panel of patients is 7.4 hours a day. To deliver all recommended care for patients with chronic conditions takes an additional 10.6 hours a day. (5) To embrace prevention strategies, address acute care needs and efficiently and effectively manage chronic disease, physicians must rely on interdisciplinary teams of providers.

- Finally, specific to primary care, is the threat of the shrinking primary care workforce. The number of third-year residents planning to pursue general medicine dropped from 54% in 1998 to 27% in 2003. (6) Between 1997 and 2005 the number of US graduates entering family practice residencies dropped by 50%. (7). An overall competition for nurses and physician assistants compounds the problem. Meeting future primary care needs will require strong teams of primary care providers from different disciplines.

Existing Teamwork Training and Structures

Exciting examples of interdisciplinary teamwork abound in the U.S. Examining, emulating, and disseminating these best practices will advance the state of interdisciplinary medical teamwork.

Much of the existing focus on teamwork, particularly regarding reducing errors, can be found in other high-reliability organizations where mistakes are easy to make and the consequences of mistakes are very high (e.g. military, commercial aviation and air traffic control). (8) Current examples of advanced, highly structured medical teamwork are often found in surgical and acute care settings that have borrowed strategies from these other industries.

The Veteran's Administration's Medical Team Training (MTT) program is based heavily on Crew Resource Management (CRM) training used in the aviation industry to train interdisciplinary teams. As of 2006, MTT training initiatives are active at 25 VA medical centers in operating rooms, intensive care units, ambulatory clinics and emergency departments. Facilities using MTT have found improved surgeon-anesthesiologist communication, improved job satisfaction and morale, prevented wrong-site surgical errors, and improved ICU staff understanding of daily patient goals. MTT training consists of a full day of training that introduces aviation-based CRM communication tools applied in the healthcare setting, followed by program participation including two months of preparation and planning and a minimum of 12 months follow-up with quarterly interviews, coaching, data collection, and follow-up questionnaires. (9)

The Department of Defense (DoD), which relies on interdisciplinary training throughout the active military, is also a leader in team-training in the medical environment. The Agency for Healthcare Research and Quality (AHRQ) has evaluated three DoD medical team training programs, all modeled after CRM training in aviation, and found that the programs have many characteristics worthy of emulation.

MedTeams is a behavior-based, scientifically tested healthcare team training that is delivered through teamwork courses, assessment tools, implementation guidance and consultation integrated into a facility-specific implementation plan. This program has yielded improved patient satisfaction, pain management and emergency department quality and most impressively, significant reduction in errors.

Medical Team Management (MTM) is a program developed by the U.S. Air Force to reduce medical errors and change the military medical culture from individual to team performance. MTM is comprised of a three-day train-the-trainer course and a medical treatment facility course. MTM training was mandated in 2001 for all high-risk specialties including emergency departments, operating rooms, obstetric departments, ICUs, and neonatal units.

Lifewings, formerly known as Dynamic Outcomes Management, is similar to MedTeams and MTM in its goal of error reduction. It includes 8 hours of classroom-based, interactive training including facilitated discussion, role-playing, case studies, behavior modeling and knowledge testing. Training is often delivered by former pilots and focuses heavily on team building.

Specialty areas of surgery also yield interesting examples of teamwork. The Anesthesia Crisis Resource Management (ACRM) designed by researchers at Stanford University almost a decade ago, is a technique also modeled from CRM training. ACRM trains anesthesiology teams -- comprised of physicians, nurses, technology assistants and other medical professionals -- to better manage crisis situations. ACRM uses a simulated anesthesia environment – complete with a real operating room and life-like mannequins with appropriate breath and heart sounds permitting team members to practice clinical procedures. Teams trained in this environment are taught to improve skills such as assertive communication, giving and receiving feedback, leadership, maintaining a positive team atmosphere, and reevaluating behavior. (10)

While medical errors are one impetus for teamwork, controlling costs, improving outcomes and emphasizing prevention are some others. To that end, primary care settings in the U.S. also offer examples of effective teamwork.

Rural physicians and providers working with other underserved populations are, in many cases, ahead of the curve in training and developing teams, as teamwork in these areas has often occurred naturally. To meet larger patient demands with fewer resources available in underserved areas, these physicians often rely heavily on interdisciplinary teams of physician assistants, nurses and office staff. Physicians in rural areas, in particular, are often keenly aware that if the demand isn't met by their office, it likely will not be met anywhere and are, therefore, heavily invested in making sure need is met through teamwork. (11)

Bodenheimer and Grumbach highlight two examples of current successful primary care teams. First, they examine the practice of a Maine physician, Dr. Charles Burger. Each member of his staff attend a 15-week course in quality management at a local college. Greeters, receptionists and schedulers – all of whom are cross-trained – participate in an additional six weeks of office training. The office is financially stable and busy – the two physicians and two nurse practitioners see 23-30 patients a day. The office makes good use of technology, from automated triage systems receptionists can use when scheduling patients to customer tracking systems used to anticipate patient demand throughout the year.

In contrast to this small private practitioner office, Bodenheimer and Grumbach discuss the primary care team strategy in place at Kaiser Permanente in Georgia, a large staff-model HMO where 9 primary care offices with 25 different teams operate. Each team consists of 3 to 5 clinicians, 2 registered nurses, and 1 to 2 receptionists or clerks and 6 to 7 licensed practical nurses or medical assistants and cares for a panel of 8,000 to 15,000 patients. Patients consider physicians as their primary caregiver but understand they might see a non-physician clinician for urgent needs. These teams also rely heavily on technology for triaging and capturing quality information. Teams have a certain level of financial autonomy and receive quarterly reports benchmarking their performance against each other.

Bodenheimer and Grumbach tease out from these examples five key elements of team building in primary care: 1) Defined goals including an overall organizational mission statement and specific, measurable operational objectives 2) Defined clinical and administrative systems 3) Division of labor that includes definition of tasks and assignment of roles 4) Training and cross-training and 5) Communication structures and processes. (12)

Teamwork in primary care also must focus strongly on how to seamlessly network a myriad of services and specialists when dealing with chronic care. Wagner's Chronic Care Model offers a multi-dimensional approach to improving care for complex illness

that emphasizes the need to create practice teams with clear division of labor that separates acute care from routine management. Under this system, physicians address acute care issues, assist in difficult cases and train non-physician team members. Non-physician team members support patient self-management, arrange for routine care tasks and ensure coordination. (13).

In the next section we will explore whether or not physicians should serve as the leaders of interdisciplinary teams. Chronic care is one area where physician leadership might be questioned. More than one hundred million people in the U.S. have at least one chronic illness and half of those people have more than one chronic illness. This staggering number of people living with chronic illness accounts for three-quarters of total national health expenditures. Better coordination and management of chronic care will lead to lower expenditures and higher quality of life; Sophisticated levels of interdisciplinary teamwork are essential. (14) Ponte describes a system of Nurse-Physician co-leadership which enhances an organization's ability to promote a positive work environment, patient involvement and commitment of front-line staff to goals and values – all of which will translate to higher, safer quality care. (15)

Bodenheimer et al discuss the advantages of nurse leadership in chronic care teams primarily because of better communication. Numerous studies looking at chronic care find that nurses are able to cover more prevention topics than physicians and patients are more likely to discuss self-management with nurses. (16)

Physician Leadership in a Changing Environment

Should physicians always lead interdisciplinary teams? If so, what training and infrastructure changes are needed to prepare them? Physicians in the U.S. already sit at the top of a natural hierarchy existing in medicine. They have the training and clinical skills to grasp the complexity of the entire medical system and they have the public's trust and confidence. However, the same hierarchy can sometimes inhibit interdisciplinary communication. (17) Medicine selects and encourages those capable of individual accomplishment above teamwork; and while physicians are often trusted more

than other professions, (18) that public trust has eroded in recent decades as physicians have taken on more cost-containment roles.

The managed care backlash in the mid-1990s provoked an especially sharp debate over the changing role of primary care physicians (PCPs). PCPs rejected the idea of "gatekeeper" as it expanded their clinical roles beyond their comfort level and pitted them financially and politically against specialists. As the media and political arenas increasingly focused on the negative aspects of managed care, insurance products softened this gatekeeper model of care. However, what got lost in that debate was the legitimate need – both in terms of cost-containment as well as quality – for coordinated care.

Bodenheimer et al envision this coordinator role for PCPs being akin to a symphony conductor. Conductors coordinate the efforts of individual musicians into something that allows the whole to be greater than its parts. Because physicians have the training and the status, they are in the unique position of coordinating the work of their interdisciplinary colleagues. (19)

This important idea of the physician as coordinator is not relevant beyond primary care. Physicians in all areas of health care delivery and research are constantly challenged to improve outcomes by working more efficiently and safely. Physicians can not do this alone. They need to harness the full power of colleagues from other disciplines.

To do so, physicians need to relinquish some of their power so that interdisciplinary colleagues can take on management tasks and free more of their time for leadership. Schwartz et al quote leadership guru Warren Bennis: "Leaders are people who do the right things. Managers are people who do things right. Both roles are essential." Managers are concerned with day-to-day operations. Leadership is concerned with the future. (20)

True teamwork is in many ways self-managed when team members have clear role

delineation and common established procedures and language. Leadership roles – goal setting, adaptation to new procedures or technology, providing overall vision – might not be easily shared among the group and will be, in many instances (but not all), the rightful domain of the physician.

However, this seemingly simple change – sharing management tasks and assuming leadership roles – requires very complex shifts both in the collective mindset of physicians and in the larger health care training infrastructure.

Incorporating Teamwork into Medical Education
While the health care industry still has much to learn about the science of teamwork, this science has existed for almost three decades (8). Building the bridge between existing information about teamwork to the health care environment will require first and foremost new approaches to training. Teaching and encouraging teamwork and leadership needs to be incorporated into every level of medical education -- from undergraduate to residency to practicing physicians.

In undergraduate and graduate medical education, students must be afforded more opportunities to practice teamwork. The IOM recommends that primary care providers should have interdisciplinary training opportunities so that in practice, team members can appreciate the overlapping and complementary skills of different disciplines. In this vision, students should be incorporated during their training into existing teams of interdisciplinary practitioners. (21)

Continuing education should also evolve. While there has been a proliferation of joint degree programs available to medical students (e.g. MD/JD, MD/MBA, etc.), leadership is not necessarily gained through another degree. This is especially true of older physicians who have a wealth of experience, are more set in their careers, and for whom a full-time degree program is impractical and cost prohibitive. Alternative ways to gain teamwork and leadership skills are needed. Many universities are offering master's degrees in medical management that are available to physicians part-time. The Duke

[Master's in Health Science Clinical Leadership Program (MHS-CL)](#) was designed to educate mid-career physicians, nurses, and other clinicians on variety of disciplines, including finance, healthcare law, strategy, operations, and managerial effectiveness. Not surprising, central to the program is a longitudinal team project that requires students of various professions to work together. It is also, unusually, the most challenging part of the curriculum, as the students pass, or fail, as a group.

Schwartz et al examine existing training opportunities available to current physicians and suggest that training should be local, offer long-term instruction, and be led by physicians. They conclude by stating that non-physician executives "will not and should not take the idea of physician leadership seriously until the physician community becomes as serious about leadership and management training as it is about clinical training." (20)

Common Vocabulary for Medical Teamwork
Interdisciplinary medical team members are especially hindered in work cohesively when they lack a common language for teamwork. Researchers at the U.S. Agency for Healthcare Research and Quality (AHRQ) recommend that a standard set of generic knowledge, skills and attitudes competencies be developed to further the concept of teamwork in medicine and eliminate potential confusion. AHRQ recommends defining "competency" as a cluster of related knowledge, skills and attitudes that 1) affect a major part of one's job 2) correlates with successful job performance 3) can be measured against well-accepted standards is defined 4) can be improved through training and development. (4) Building this infrastructure would ensure that all medical professionals are trained consistently for teamwork.

Selecting for Teamwork
 It is interesting to note that of the Top-5 medical schools listed by U.S. News and World Report, including Harvard, Johns Hopkins, University of Pennsylvania, University of California San Francisco and Washington University in St. Louis, none list aptitude for teamwork as an admissions requirement on their websites. (22) Watch any episode of

popular medical dramas on American television and it is obvious that U.S. medical training culture highly values individual accomplishment and fosters intense competition.

While this culture ensures a mastery of clinical skills, it rarely provides students with an ability to work effectively in teams. Medical schools should begin to address teamwork in the selection process. For example, Duke University's Physician Assistant program uses an evaluative team-based exercise tool to measure candidates' potential for teamwork. In addition to standard individual interviews, PA candidates at Duke participate in Team Process Exercise where they discuss scenarios surrounding various real-life ethical questions. During the discussion, evaluators rate candidates' ability to express themselves in a group setting and contribute to the content of the discussion, listen to and encourage others in a respectful fashion, and self-reflect. While this exercise is a small component in the overall evaluation of candidates, it yields important clues as to the future success of a PA who will one day work in teams. (23) Perhaps other programs educating physicians, nurses and PAs should investigate ways to select students with a willingness and aptitude for teamwork.

Borrowing Teamwork Strategies from Other Industries
The health care field has been correct in borrowing successful teamwork strategies from aviation crew resource management training as there are many similarities in teamwork requirements. Southwest Airlines, in particular, is famous for its team-focused vision in which pilots will assist in carrying baggage when needed. However, patients are not the same as airline passengers and there are other industries and fields also ripe with good ideas. (4) The service industry, nuclear power plants and the six sigma movement in manufacturing also yield interesting ideas for medicine.

Incorporating Teamwork into Existing Health Care Settings
Office settings, community clinics, hospitals and research organizations will have to carefully examine their structures – including employee culture, technology and the physical layout of office space – to identify gaps in teamwork; especially for areas where outcomes could be improved or errors reduced. Payers also must recognize the

importance of teamwork in ensuring quality, safety and cost-effectiveness and create incentives to encourage it. Licensing authorities, such as the National Board of Medical Examiners and Federation of State Medical Boards should look at including elements of teamwork and leadership into their evaluation processes.

Barriers to Nurturing Physician Leadership and Interdisciplinary Teamwork

To successfully navigate the cultural shifts we have outlined, the U.S. medical establishment needs to consider a variety of barriers to change. For example, an important consideration with the previously mentioned conductor analogy is that it is difficult, but not impossible, for a conductor to play an instrument while conducting. Physicians often must exercise clinical skills while also leading the team. This is an obstacle worth examining. If physicians' leadership duties demand too much of their role, is there enough time left to maintain clinical skills? In a profession where training focuses so heavily on the chance to practice clinical care, asking physicians to step back and let others assume greater roles could be perceived as a threat.

This raises important questions about how to achieve a balance between traditional physician training that ensures the highest level of clinical mastery and at the same time prepares physicians as leaders. Which elements of current medical education are counter-productive to leadership and what sorts of augmentation to traditional training are needed to instill leadership qualities?

Schwartz argues that most physicians inherently possess the character traits necessary for leadership such as honesty, compassion and passion, but few possess the technical competencies such as strategic planning, financial /economic knowledge and organizational principles – all competencies not currently addressed in physician training. He observes that from a clinical standpoint there is justification for the physician autonomy for which they are trained, but at the systems level, physicians must understand the need for team performance. (20)

The strong focus on competitive, individual accomplishment in medical training might be

hardwiring physicians to think in terms of individual success instead of teams. Also, the strict hierarchical culture can lead to stifled communication. However, medical education prepares graduates to make challenging, time-sensitive decisions, often irreversible, and with no clear favorable outcome, where the actions of others are wholly dependent on the decision of the physician. This ability to "take command" is further strengthened by a necessity to manage large volumes of rapidly changing information. More thinking and research is needed to find a way to harmonize the existing vision of physician leadership with a vision that is more conducive to interdisciplinary teamwork.

Another sticking point to physician leadership of interdisciplinary teams is attitude toward teamwork. Leipzig et al examine professional attitudes of working in interdisciplinary teams among medical residents, advance practice nurses, and master's level social work students. While all three student groups indicate positive attitudes about teams, the researchers find that medical residents were the least enthusiastic. These researchers suggest that larger forces might be at play: while the National Social Worker Code of Ethics and the Code for Nurses of the American Nurses Association both address the importance of interdisciplinary teamwork, the American Medical Association Code of Medical Ethics does not address interdisciplinary teamwork. Instead most physician codes focus on hierarchy rather than teamwork. The researchers suggest earlier exposure to teamwork is needed in medical training. (24) As discussed previously, the idea of actively selecting students who possess an aptitude of teamwork is also worth exploring.

Finally, a very stubborn roadblock to effective leadership is communication. Many studies have observed that interdisciplinary communication is crucial to preventing errors. Edmonson observes that interdisciplinary communication is also important in adapting new surgical techniques. In her study observing 16 operating rooms all learning to use a new cardiac surgery technique, she found that strong physician leadership that encouraged uninhibited team communication was crucial to success in adaptation. Edmondson found significant variance in surgical team performance depending on the communication skills of the lead surgeon. (17) These findings are also relevant in other areas of medicine. In primary care, it has been observed that patients are interrupted by

their physician after an average of 23 seconds and that the most common reason for noncompliance is poor physician-patient communication. (15) Fabri argues that poor communication also leads to higher nursing turnover, student abuse and patient dissatisfaction. (25) Although communication is seen as a softer skill, it must be emphasized more strongly at all levels of training.

Conclusion

Writing about teamwork is invariably a much easier task than participating in actual teamwork. However, small pockets within the U.S. health care system as well as other industries and disciplines with similar time and cost constraints have found ways to build teamwork training and practice infrastructures. Evidence from a variety of fields – information technology, aviation, the U.S. military to name a few – shows that teamwork lowers errors, improves organizational effectiveness, raises job satisfaction and lowers employee turnover. Within health care, entities such as academic medical centers, community health systems, rural physician practices and military health care settings have all successfully experimented with pilot projects addressing teamwork. To achieve larger system transformation, these examples must be carefully examined, successes emulated and supported, and pitfalls avoided.

Table I highlights the present and likely future state of the physician in healthcare delivery.

	Present	**Future**
How does the physician provide care?	Works ad hoc with nurses, social workers, and other health care professionals	Works in coordination with a team of nurses, social workers, and other health care professionals
How does the physician lead others?	In a top-down, hierarchical fashion with little opportunity for other group members to voice opinion. Lead role often imposed on physician.	As leader-participant who encourages input from all team members. Lead role often selected by physician.

How is the physician be educated?	Via traditional models of undergraduate and graduate medical education focusing on individual accomplishment	Via novel models of undergraduate and graduate medical education focusing on teamwork and communication and interdisciplinary opportunities

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