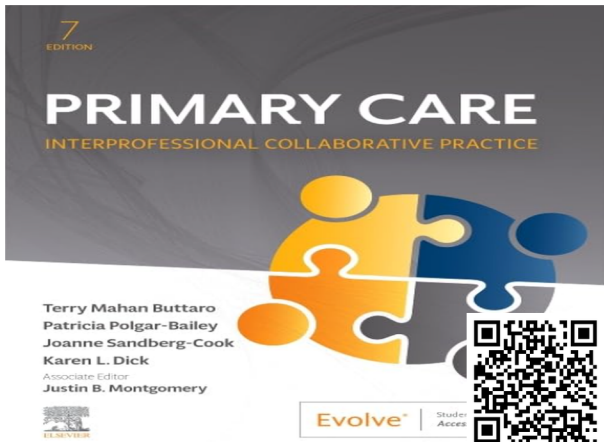


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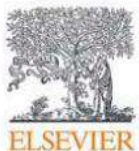
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# PRIMARY CARE

INTERPROFESSIONAL COLLABORATIVE PRACTICE



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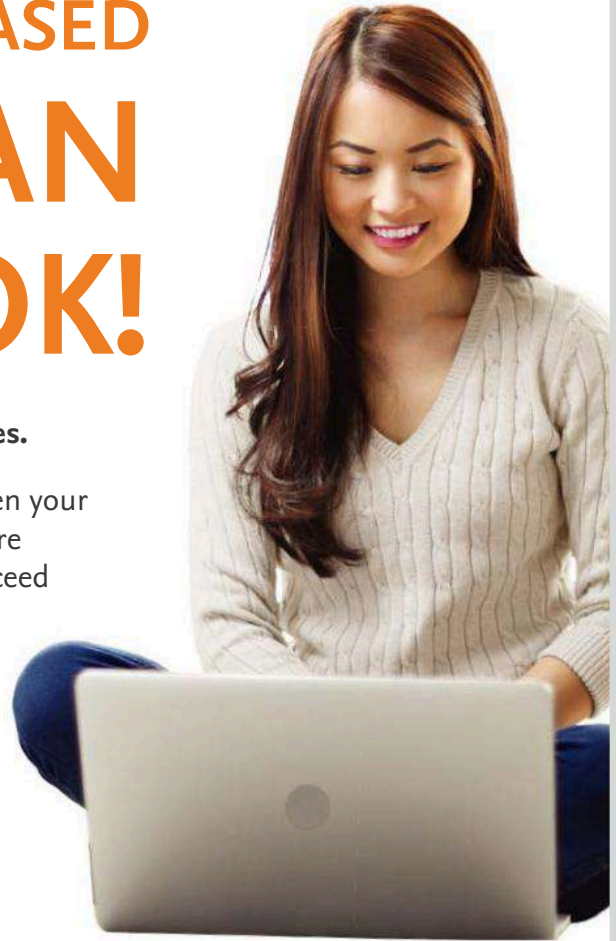
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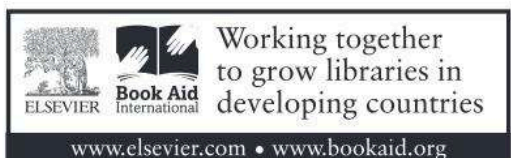
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*A Special Tribute*

*To the health care providers who during the COVID-19 global pandemic  
were on the frontlines caring for patients, communities, and each other  
and  
to all health care providers who are committed to health equity for every patient  
who entrusts their health and well-being to them.*

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# Preface

Since the first edition of *Primary Care: A Collaborative Practice*, our vision has been to emphasize the value of professionals working together to improve patient care and well-being. In the past 25+ years, hundreds of health care professionals from a wide geographic range have shared that vision and worked jointly with us and others in this intellectual endeavor.

We, as editors, work together respecting one another's unique talents and strengths and solving problems together, just as health care professionals do each day. In the clinical setting collaboration is the essence of interprofessional care, and team-based care is a fundamental component of complex care management. Most important, though, is the collaborative partnership between patient and provider. These relationships are the foundation of high-performing primary care practices.

## NEW CHAPTERS

In the seventh edition of this text we have added new chapters and expanded on others. In Chapter 1, we address the challenges and opportunities of interprofessional collaboration in a turbulent health care environment. Patient-centered care, quality care objectives, and the changing landscape of primary care are explored. [Chapter 2, \*Translating Evidence into Clinical Practice\*](#), addresses the relationship of primary care to research initiatives and how research translates and impacts clinical practice. The increasing incidence of chronic illness and the growing responsibilities of caring for patients across the continuum of care are discussed in [Chapter 4, \*Coordinated Chronic Care\*](#). Our hope in providing this chapter is that understanding the challenges that patients and families face when entering or leaving a health care facility will aid in preventing adverse events, stress, and rehospitalizations. In [Chapter 5, \*Promoting Health Equity and Overcoming Health Disparities\*](#), the challenge of working to resolve disparities in care experienced by specific at-risk populations and other factors impacting patient health and access to care are explored.

Other new chapters are included in the seventh edition. Each of these chapters recognizes aspects of clinical practice that are fundamental yet at times perhaps not fully considered. This edition continues to recognize the serious issues associated with human trafficking ([Chapter 14](#)) and some of the health issues that are associated with this hidden, criminal, and exploitative trend. Information about alternative therapies in which many patients and caregivers are interested is mentioned in the individual clinical chapters, enabling nurse practitioners and other primary care providers to more fully understand the risks and benefits of the supplements and alternative approaches that patients are using. [Risk Management, Chapter 8](#), identifies the attitudes and relationship skills in health care settings that can positively or negatively impact the patient's perceptions of the patient-provider relationship. The chapter author addresses the legal risks inherent in practice and recommends strategies to improve care, patient satisfaction, and risk management. In [Chapter 10](#) we have recognized the serious impact that the COVID-19 pandemic had on the physical and mental well-being

of health care providers across the board and offer self-care suggestions. [Chapter 12](#) explores the unique health care needs of the LGBTQ+ population with expanded information about the needs of patients who are transitioning, with the hope that the information in this chapter will aid all of us in improving care for all patients. Finally, given the worldwide impact of the COVID-19 pandemic, we decided to revisit the ways that primary care providers and practices can contribute during a public health emergency in [Chapter 21, \*Public Health Preparedness in Primary Care\*](#).

## FORMAT

The format of the seventh edition of *Primary Care: Interprofessional Collaborative Practice* is purposefully similar to the systematic approach used in primary care practice and is designed and organized to promote improved clinical reasoning skills. Each section is an important building block in the assessment and diagnosis of each patient's presentation. Understanding the **Epidemiology** and **Pathophysiology** of illness is integral to understanding a patient's symptoms and the consideration of possible causes. The **Clinical Presentation** and **Physical Examination** sections in each chapter address the cognitive, physical, or psychosocial features and physical exam findings that can be associated with the patient's complaint. Attention to the patient's concerns and detection of pertinent positive and negative findings are the clues that create the list of possible **Differential Diagnoses**. The Differential Diagnosis requires clinical judgment, a decision-making process that considers the "do not miss" differentials, and helps determine the most likely diagnosis and necessary **Diagnostics**. To aid in this process, the Differential Diagnosis sections discuss the possible differentials, and the Diagnostics boxes list the appropriate essential tests that should be considered. These include initial tests (tests that may be performed in the office setting, such as peak flow measurement or pulse oximetry), laboratory tests, imaging studies (radiographic, ultrasound, nuclear, or magnetic resonance imaging), or other miscellaneous studies that may be necessary in the evaluation of the disorder (such as EEGs or biopsies). Because the clinical presentation differs with each patient, not all diagnostic tests listed may be necessary in each circumstance. An asterisk is placed beside those tests that may be indicated by clinical presentation and physical examination findings. For more detailed information, the reader should refer to the Diagnostics and Differential Diagnosis sections included with each disorder.

The **Management** section of each chapter addresses goals of treatment and therapeutic interventions based on current evidence and guidelines. Pharmacologic agents are included, as are recommendations for nonpharmacologic therapies. The management sections make every attempt to incorporate the research contributions that create an evidence base for practice. Authoritative management guidelines, as well as current ongoing research findings, are incorporated whenever available. As with any evolving science, recommendations can be in a state of flux. Management recommendations may change, and new

recommendations for practice supersede the management recommendations presented in this textbook. In addition, the reader is directed to check drug indications, dosages, and potential drug-drug interactions in medication product information before prescribing or administering any medication.

**Complications** associated with the disease and treatments are described, and clear recommendations for **Patient and Family Education and Health Promotion** are included throughout the textbook. This information is crucial in promoting health literacy and assisting health care providers in interpreting information about the illness and management to patients and caregivers.

This edition continues to provide clear guidelines for referrals, and the **Emergency and Physician Referral Icons** highlight conditions that may require immediate consultation. The reader should be aware that more comprehensive referral or consultation criteria are contained in the text of the chapters that contain these special icons. The reader should also realize that the emergency icons might not represent all of the conditions requiring emergency referral. The editors are also aware that experienced providers may not require consultation for all the specified circumstances. In addition, state practice regulations may mandate referral under certain circumstances; these regulations supersede any consultation recommendations detailed in this text.

The seventh edition again provides a collection of Instructor Resources on an Evolve website (<http://evolve.elsevier.com/Buttaro>), available via your Elsevier Education Solutions Consultant for programs adopting classroom quantities of the book, and there are now review questions for students. The Instructor Resources consist of a Test Bank, PowerPoint Collection, and Image Collection. The Test Bank includes approximately 685 test items delivered in Evolve Assessment Manager for easy exam construction and administration. The PowerPoint Collection consists of approximately 685 slides for classroom or online instruction. The Image Collection includes all original images from the textbook. We trust that these frequently requested resources will help to facilitate high-quality instruction of Nurse Practitioner students.

## THE FUTURE

It is evident that an aging population, globalization, science, and technology continue to impact health care and clinical practice. An aging population with multiple comorbidities has already impacted health care expenditures and unless we are able to identify and control these diseases earlier and effectively, morbidity, mortality, and health care costs will continue to rise. Global travel and an increase in transnational businesses have increased the risk of disease spread and the importance of vigilant awareness of global threats to public health. Every day, scientific breakthroughs affect disease management, health care quality, and health information management. It is clear that to meet the health care needs of the future, innovative technology will be needed to relieve the cognitive burden created by these new discoveries. It is the editors' hope that *Primary Care: Interprofessional Collaborative Practice* will provide a solid foundation on which tomorrow's primary care providers can help patients to lead increasingly healthy lives.

## ACKNOWLEDGMENTS AND TRANSITIONS

This textbook represents a strong collaborative effort. We remain indebted to our contributors, past and present. They generously provided their time and expertise to make this textbook

the trusted resource that it is. We welcome and are appreciative of the contributions made by our patients, students, and colleagues. We continue to try to incorporate their suggestions to make this book a useful one for students and practicing clinicians alike.

This edition is also the last edition on which Terry Buttaro serves as lead editor and the last on which Joanne Sandberg-Cook will contribute. Both Terry and Joanne have been with this project from the beginning and their expertise and clinical knowledge will be missed. They have both found the work challenging, humbling, and extremely rewarding and appreciate the collaboration between all the editors and contributors. They are delighted to pass the torch on to the next generation of nurse practitioners.

We greatly appreciate the support of everyone at Elsevier. Still, we are particularly thankful for the guidance of Laura Fisher throughout the editing and production process, and to Lee Henderson, who encouraged us through the fourth, fifth, sixth, and now the seventh edition.

Finally, our families, friends, and colleagues deserve our eternal thanks. Their patience and understanding throughout this endeavor is greatly appreciated!

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## CHAPTER 1

**INTERPROFESSIONAL  
COLLABORATIVE PRACTICE:  
WHERE WE ARE TODAY**

Terry Mahan Buttaro • Joanne Sandberg-Cook

We continue to live and work in a world of volatility, uncertainty, complexity, and ambiguity (VUCA). Based on theories developed by Warren Bennis and Burt Nanus to characterize the world at large, VUCA is certainly applicable to the current state of interprofessional collaborative practice and primary care.<sup>1</sup> Primary care practice with well-defined rules and roles, time for each patient, fewer documentation requirements, and lower costs has been replaced by a new health care system, with new rules, complicated insurance, demanding electronic documentation systems, telehealth options, rapid changes in scientific knowledge, and new types of health care professionals. Fortunately, some familiar elements remain unchallenged: the recognition of the importance of an evidence base for practice decisions, disease prevention, health promotion, and maintenance of well-being; involvement of patients in their health decisions; and coordination of care given by a team of health care providers. Interprofessional collaboration throughout the continuum of care is essential for successful, cost-effective care. However, the US health care system is increasingly challenged by (1) an aging population with multiple chronic conditions that often require several (expensive) medications, (2) inadequate financial and social resources, and (3) health care providers pressed for time and resources.

An aging medical workforce is retiring and/or leaving health care in part because of the demands of the COVID-19 pandemic in 2020–2023. These changes are causing gaps in the provision of service and increased demands on those remaining practitioners. Provisions of the Affordable Care Act are frequently challenged, resulting in decreased coverage for many people who initially benefited. This is especially true in states that refused to expand Medicaid, those states that instituted new requirements for work to qualify for Medicaid benefits, or those that have removed the preexisting condition clause.<sup>2</sup> The type of insurance and policy level carried by a patient and family can determine the health care providers and hospitals, treatments, and medication costs for patients and their families. The worldwide COVID-19 pandemic exposed these weaknesses, challenging providers and an already overtaxed medical system. The current landscape of primary care is in a constant state of chaos with patients stuck in the center.

**CURRENT FORCES SHAPING THE PRIMARY CARE LANDSCAPE****Evidence-Based Practice**

The evidence-based practice (EBP) movement continues to shape the landscape of primary care. Research findings inform health care practice across the transitions of care. In primary care, clinical practice guidelines, best practice, and the accessibility of information technology (IT) at our fingertips promote a culture of EBP, providing resources to improve patient outcomes. Guidelines are also increasingly updated more frequently, contributing to standardized evidence-based care. Insurers use this information to create reimbursement structures, driving providers and patients to treatments found to be efficacious and cost effective, based on available evidence. See [Chapter 2](#) for background on how clinical evidence is created, evaluated, and disseminated.

**Value-Based Purchasing**

Value-based purchasing (VBP)<sup>3</sup> is a Center for Medicare and Medicaid Services (CMS) initiative that affects all practicing providers and those who admit Medicare patients to a hospital setting. A part of the Affordable Care Act of 2009, VBP is improving care quality by linking payment by the CMS for inpatient services to successful outcome measures. VBP measures hospital performance on an approved set of measures grouped into four domain areas of care: safety, clinical care, efficiency and cost reduction, and person and community engagement.<sup>3</sup>

As a result of the COVID-19 public health emergency (PHE), “hospitals could provide care to their patients that meets underlying clinical standards but results in worse measured performance prompting lower incentive payments in the Hospital VBP Program,” CMS stated. “It is not our intention to penalize hospitals on measure scores that we believe are destroyed by the COVID-19 PHE and not reflective of the quality of care that measures in the VBP program were designed to assess.”<sup>3</sup> In response, the CMS chose to suppress certain measures for 2022, including the following:

- Hospital Consumer Assessment of Health Care Providers and Systems (HCAHPS) survey
- Medicare spending per beneficiary (MSPB) measure
- Five health care–associated infection (HAI) measures

Just as certain measures are suppressed, so are three of the four domains discussed earlier. This means that, in fiscal year 2022, CMS was unable to award a total performance score because of incomplete data. Going forward with a likely easing of the public health emergency, CMS will likely return to its original quality measures for inpatient care.

Private insurers are using metrics similar to CMS when negotiating contracts with institutions and primary care providers (PCPs). The current practice is “pay for performance,” in which contracts are negotiated based on quality metrics, giving rise to

the field of practice analytics. There are currently sophisticated computer programs modeling financial opportunities for hospital service lines and individual health care practices based on payer mix per-case cost and contribution margin. Providers who admit their patients to the hospital and/or provide care to hospitalized patients now currently have an opportunity, along with inpatient care management, to affect not only the quality of care delivered to their patients but also the financial state of organizations in which their patients receive care, as well as their own financial opportunities.

### Management of Care Transitions

VBP is further shaping primary care delivery by reducing Medicare payments for all patients by a small percentage in a hospital where the unplanned readmission rate within 30 days of discharge exceeds the hospital's expected rate for patients with the selected conditions of acute myocardial infarction, heart failure, coronary artery bypass graft surgery, pneumonia, chronic obstructive pulmonary disease, hip arthroplasty, and knee arthroplasty.<sup>4</sup> This program, known as Hospital Readmissions Reduction Program (HRRP), encourages hospitals to improve communication and care coordination to better engage patients and caregivers in discharge plans and, in turn, reduce avoidable readmissions. The program supports the national goal of improving health care for the United States by linking payment to the quality of hospital care.<sup>4</sup>

This new reality highlights the importance of managing care transitions, particularly the transition from inpatient care to home. Interprofessional collaboration and communication facilitate these transitions. Many institutions have created transitional care teams, others make postdischarge phone calls, and some make postdischarge home visits often by nurses or nurse practitioners. See [Chapter 4](#) for a more in-depth exploration of transitional care.

### Patient-Centered Medical Home

The National Academies of Science, Engineering, and Medicine (formerly the Institute of Medicine) has developed a commonly accepted definition of primary care, which is as follows: "Primary care is the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community."<sup>5</sup> The term *integrated* in the definition encompasses "the provision of comprehensive, coordinated, and continuous services that provide a seamless process of care."<sup>5</sup> Using the following six aims of patient-centered care as a framework gives providers easily measurable care goals, resulting in improved care.<sup>6</sup> Primary care should meet the following criteria:

- **Safe:** Avoiding harm to patients from the care that is intended to help them
- **Effective:** Providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and misuse, respectively)
- **Patient centered:** Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions
- **Timely:** Reducing waits and sometimes harmful delays for both those who receive and those who give care

- **Efficient:** Avoiding waste, including waste of equipment, supplies, ideas, and energy
- **Equitable:** Providing care that does not vary in quality because of personal characteristics such as race, gender identity, gender, sexual orientation, ethnicity, geographic location, or socioeconomic status

The patient-centered medical home model of patient care meets each of the above, using a team approach with continuous participation of the patient and, where appropriate, the family. This model provides increased access to medical providers and coordinated care between providers. The goal of the patient-centered medical home care is to coordinate health care for a patient, prevent possible medical situations from arising, and provide increased quality and safety of medical care by approved practitioners. The model requires considerable practice resources and is often not appropriately reimbursed.

### Accountable Care Organizations

The vision of primary care as a collaborative practice is realized with the advent of accountable care organizations (ACOs), which potentially form the centerpiece of health care reform efforts. ACOs are groups of doctors, hospitals, and other health care providers who come together voluntarily to provide coordinated high-quality care to the Medicare patients they serve. Coordinated care helps ensure that patients, especially the chronically ill, get the right care at the right time, with the goal of avoiding unnecessary duplication of services and preventing medical errors. When an ACO succeeds in both delivering high-quality care and spending health care dollars more wisely, it will share in the savings it achieves for the Medicare program.<sup>7</sup> There are multiple models for ACOs, including one that defines an ACO as a group of patient-centered medical homes (see earlier), resulting in a medical "neighborhood."<sup>8</sup>

There are three levels, or tiers, of an ACO, each with its distinct requirements for organizational structure, performance measures, IT requirements, and payment models:

- Level 1 ACOs have the least amount of financial risk and fewest requirements. The organization's structure may be just a legal entity, and the ACO may have the IT capability to track a limited number of performance measures. Level 1 ACOs receive shared savings bonuses based on achievement of benchmarks for quality measures and expenditures.<sup>9</sup>
- Level 2 ACOs have the potential to capture a greater portion of below-target spending amounts but have accountability for above-budget spending. The level 2 ACO has an evolved infrastructure, with advanced IT systems and care coordination for chronic diseases such as asthma, diabetes, and heart failure. Performance measures are linked to outcomes for chronic diseases and reduction in health risks. These organizations must make financial projections and have minimum cash reserve standards.<sup>9</sup>
- Level 3 ACOs offer a full range of services and have the infrastructure to provide comprehensive health care services. They have electronic medical records linking all components and report on health-related outcomes, care experiences, and quality of life in multiple patient populations in the system. Level 3 ACOs have strict requirements for financial reporting and maintain larger cash reserves.<sup>9</sup>

High-quality primary care is essential to the success of ACOs. In addition, there must be sufficient technical capability and support, innovation in payment and reimbursement systems

(bundled payments), and establishment of performance measures using practice analytics that reflect improved health state in patients, all of which can be a financial burden for smaller practices. In an ACO, there are care navigators to assist patients with care access and sophisticated technology to communicate with and monitor patients. Nurses have various roles—system administrators, service line managers, practice managers, case managers, PCPs, educators, and home health providers. Recent studies have demonstrated fewer emergency room visits; shorter hospital stays, decreased readmission rates, and decreased Medicare spending when patients are a part of an ACO.<sup>10</sup> The downside may be that many community practices do not have the financial resources or enough patients to statistically reflect improvement in care and cost savings.

When smaller practices join together to form a super ACO, the patient numbers increase and cost savings become measurable.<sup>11</sup> The super ACO alliance is created to expand the reach of the smaller systems in the alliance to create initiatives that enhance the care experience for patients and providers, control costs, and maximize reimbursement potential.<sup>12</sup>

## NEW LOOK OF PRIMARY CARE

In a survey conducted by the Advisory Board Company, 4000 consumers were asked questions about primary care preferences. Patients' preferences for primary care included 24/7 access to care, a walk-in setting with the ability to see patients within 30 minutes, and close proximity to home.<sup>13</sup> The retail health movement, with urgent care walk-in clinics associated with pharmacy chains and department stores, is currently an accepted component of the health care delivery system and is part of the new look of primary care. Retail clinics have expanded services beyond minor acute emergencies: they currently include several components of usual primary care (e.g., annual physicals, some chronic disease management, and medical spa services) in response to documented patient preferences for close proximity to home and readily accessible primary care.<sup>13</sup> Primary care practices are responding to this emerging trend by establishing more flexible schedules, opening spaces for walk-ins, and increasing availability during the off hours. Some are opening urgent care centers in and near retail locations that are linked to the primary care practices. Other previously traditional primary care practices have become concierge practices, where patients pay an additional annual fee directly to the practice for 24/7 rapid access to the PCP and house calls.

During the early months of the COVID-19 pandemic, in-person visits to primary care offices became complicated, and virtual and phone visits became common and widely accepted. Reimbursement rules were relaxed, allowing primary care offices the ability to bill patients for these telehealth visits. This model remains popular, especially for those patients in rural areas or those without transportation options, allowing them to maintain ongoing contact with their providers. Other advantages of telehealth visits are listed in [Box 1.1](#).

The speed of this change has created additional strain for providers, nurses, and staff that have not changed from traditional models. Patients accustomed to calling their provider's offices now use portals in electronic health records to send a myriad of measures, often complex and urgent; requests for prescription refills come from pharmacies and patients through multiple electronic pathways. Managing the burden of "in basket" communication and adopting models that effectively meet this demand are critical for staff well-being.

### BOX 1.1

#### Advantages of Telehealth Visits

- **Location:** The health visit is not encumbered by any geographic restrictions
- **Eligible providers:** All health care providers eligible to bill Medicare can bill for telehealth services including Federally Qualified Health Centers (FQHCs) and Rural Health Clinics (RHCs)
- **Cost-sharing:** Providers can reduce or waive patient cost-sharing (copayments and deductibles) for telehealth visits
- **Licensing:** Providers can furnish services outside their state of enrollment. For questions about new enrollment flexibilities, or to enroll for temporary billing privileges, use the CMS list of administrative contractors (MACs) to call the hotline for your area
- **Modality:** The 2022 Physician Fee Schedule has codified the ability for behavior health services to do audio only. It is still required to complete an in-person appointment every 6 months

The new look of primary care has spawned new collaborative health care partner roles. As older physicians retire, primary care will be delivered increasingly by nurse practitioners and physician assistants. Many health care systems have community health resource specialists, sometimes called community workers, who assist patients with obtaining a variety of services; care navigators who help patients with coordinating care appointments and services; and practice-based clinical pharmacists who assist both providers and patients with medication regimens. Community and parish nurses provide care coordination and education, especially helpful during care transitions, and provide primary care coordination to frail elders and others in need of support. Emergency medical services providers in some communities now participate in the delivery of primary care and preventive services, such as fall-risk home evaluations and basic health monitoring. Community nurses, community workers, and community first responders not only monitor patients identified as high risk by hospitals and medical practices but also provide valuable community and individual social and demographic information to referring institutions. Numerous studies have demonstrated the effectiveness of team-based primary care that incorporates all of these roles working together to meet patient need. Additionally, retail spaces such as CVS and Walmart are offering primary care services to their patients.

Patients appreciate the convenience of "just-in-time" services and accessibility for routine and minor issues such as upper respiratory infections or urinary tract infections. However, the trade-off is that these clinics fail to build long-term relationships with patients and families, often are not concerned with the community in which they work, and frequently fail to provide preventative services. These clinics usually work independently from a client's primary providers, and communication is unreliable.

## CHALLENGES AND OPPORTUNITIES

### Opioid Crisis

The opioid crisis in the United States continues to escalate, with more than 100,000 overdose deaths in 2020. This escalating crisis was impacted by the COVID-19 pandemic and its resultant lockdowns and economic upheaval. The other contributors to this escalation are a more accessible and dangerous drug supply, disruption of addiction treatment and recovery support services,

social isolation, and increased levels of social and economic stress. The number of overdose deaths is currently so high that, for the first time since the 1960s, the average age of death has decreased.<sup>14</sup>

PCPs, including nurse practitioners and physician assistants, are in the perfect position to relieve the crisis, but there are barriers and myths to overcome. Currently federal law requires time-consuming training and limited PCP access to medications that are proven to reduce overdose deaths (e.g., buprenorphine, methadone, naltrexone). Other barriers that may prevent more PCPs from in-office addiction care include the erroneous belief that drugs such as methadone and buprenorphine substitute one addiction for another, that detox and rehab work are more successful options, that reducing the number of opioid prescriptions written will reduce overdoses (patients turn to the illicit market increasing the risk), and that in-office addiction treatment is time consuming and burdensome (protocols are the likely solution to this concern).<sup>15</sup>

Enlisting PCPs and relaxing access to training and life-saving addiction medications will be a straightforward and achievable first step in addressing the crisis and reducing overdose deaths.

### Advanced Practice Registered Nurse Compact License Movement

In May 2015 the National Council of State Boards of Nursing (NCSBN) took an unprecedented step forward in potentially shaping the landscape of primary care. The NCSBN created rules and a model for the advanced practice registered nurse (APRN) Compact legislation, modeled after the successful nurse compact model, currently in effect in 25 states.<sup>16</sup> The purpose of the APRN Compact is to allow APRNs within the compact states who meet the compact requirements to obtain a multistate license, thereby expanding advanced nursing practice and mobility for APRNs, fostering the use of technologies to monitor and communicate with patients, and increasing the safety of and access to health care. The proposed legislation under the compact mode includes provisions for independent APRN practice and prescriptive authority for controlled substances but can be implemented only when 10 states have enacted this legislation.<sup>16</sup> Currently only three states have passed relevant legislation. There is ongoing discussion about a similar compact model for medical licenses. PCPs interested in fostering collaborative efforts to increase access to high-quality health care should advocate for legislation to make the APRN Compact license a reality.

### Building Interprofessional Collaborative Practice Initiatives

Collaboration is a requirement for funding in research and program support. Collaborative research is exponentially productive because it combines resources, expertise, and thinking in the creation of knowledge for practice and should include a focus on patient outcomes. Collaborative leadership of health care initiatives allows more individuals to participate, and the outcome derives from a collective of minds. Collaboration in clinical practice offers improved quality of care for patients and significant others as professionals share expertise.

Interprofessional education (IPE) is a prerequisite to building a collaborative practice environment and optimizing patient care. The Interprofessional Education Collaborative (IPEC), composed of representatives from the major care delivery disciplines in health care, models collaboration that is advancing the practice.<sup>17</sup> An IPEC expert panel produced guidelines for collaborative

practice core competencies that begin with IPE to enable collaboration and improve outcomes. The IPEC report advocates for components of professional education of the various disciplines to occur together, in interprofessional teams, to build the core collaboration competencies of values and ethics needed to

- Maintain mutual respect and shared values
- Foster a better understanding of individual roles needed to assess the needs of patients
- Promote the health of the population
- Improve responsible communication between team members and with patients
- Use relationship-building values and team-building dynamics to plan, deliver, and evaluate care provided to patients and populations.<sup>17</sup>

The IPE efforts should instill the core competencies by following guiding principles of being patient centered; having a community or population focus; emphasizing relationships and processes; containing developmentally appropriate activities and assessments; and being outcome driven.<sup>18</sup>

Studies exploring the experience of collaboration among physicians, nurses, and unlicensed assistive personnel indicate that we have much work to do in the area of collaboration.<sup>19</sup> Most participants in this study indicated that they experienced a hierarchical feel to communication and decision-making. When there was collaboration between physicians and nurses, they failed to solicit input from unlicensed assistive personnel.<sup>19</sup> We also know that longer shifts, increasingly mandated by hospitals, negatively affect collaboration.<sup>20</sup> Patient care involves activities apportioned among physicians, nurses, and unlicensed assistive personnel; seamless coordination is required to prevent errors and a siloed experience for the patients and their families. Creating a model without a hierarchical structure requires that members of the team

- Understand the roles and expected contributions of each member
- Encourage one another to meet team expectations
- Make the outcomes desired for patients and families the center of focus<sup>19</sup>

This can be accomplished by overcoming barriers existing between health professionals, including communication and technical language and social barriers, acknowledging areas of overlapping work, and creating spaces where gaps can be addressed.<sup>17</sup>

### CONCLUSION

The landscape of the health care system is ever-changing. PCPs are delivering care in new venues with new technologies, with new types of collaborators, and in new kinds of health care systems. Health care reform continues to evolve and shape the vision for primary care. Health promotion and wellness is now and will be a critical component of future health care systems. The current focus on wellness and primary care continues to provide opportunities for nurse practitioners, particularly doctors of nursing practice, to shape the direction and structure of health care delivery systems. Although the focus on interprofessional collaboration continues, we still have many challenges and opportunities before interprofessional collaborative practice reaches its full potential.

The vision of primary care as a collaborative practice remains timely and important. Interprofessional collaborative practice represents the best response that a group of interdisciplinary expert clinicians can offer patients, families, and communities as we move forward in the evolving landscape of primary care.

## REFERENCES

1. Johnson, R. (2012). *Leaders make the future: Ten skills for an uncertain world* (2nd ed.). Berrett-Koehler Publishers.
2. Molyneux, J. (2018). Health care policy update: New Medicaid work requirements, preexisting conditions at risk, the drug cost crisis. *American Journal of Nursing*, 118(8), 22–24.
3. Centers for Medicare & Medicaid Services. Value based purchasing. <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/HVBP/Hospital-Value-Based-Purchasing>.
4. NEJM Catalyst. (2018). Hospital readmissions reduction program (HRRP). *NEJM*. <https://catalyst.nejm.org/doi/full/10.1056/CAT.18.0194>.
5. Donaldson, M. S., Yordy, K. D., Lohr, K. N., et al. (Eds.). (1996). *Institute of Medicine (US) Committee on the Future of Primary Care*. National Academies Press.
6. Agency for Healthcare Research and Quality. (2018). Domains of health care quality. <https://www.ahrq.gov/professionals/quality-patient-safety/talkingquality/create/sixdomains.html>.
7. Patel, P., Vaidya, V., & Gupte, R. (2020). Accountable care organizations and patient-centered medical homes: Health expenditures and health services. *American Journal of Accountable Care*, 8(2).
8. CureMD. Accountable care organizations vs patient centered medical homes. <https://www.curemd.com/aco-vs-pcmh/>.
9. McClellan, M., McKethan, A. N., Lewis, J. L., et al. (2010). A national strategy to put accountable care into practice. *Health Affairs (Project Hope)*, 29(5), 982–990.
10. Divyansh, A., & Werner, R. (2018). Effect of hospital and post-acute care provider participating in accountable care organizations on patient outcomes and Medicare spending. Health Services Research. <https://doi.org/10.1111/1475-6773.1323>.
11. Betheze, P. (2018). Regional “Super” ACOs may relieve small ACO risk problem. <https://www.healthleadersmedia.com/strategy/regional-super-acos-may-relieve-small-aco-risk-problem>.
12. Anderson, D. G., & Morris, D. E. (2015). Characteristics of successful “super ACOs.” *Healthcare Financial Management*. *Journal of the Healthcare Financial Management Association*, 69(6), 98–100.
13. Advisory Board Company. (2014). What do consumers want from primary care? <https://www.AdvisoryBoardCompany>.
14. Lopez, G. (2018, August 16). 2017 was the worst year ever for drug overdose deaths in America. <https://www.vox.com/science-and-health/2018/8/16/17698204/opioid-epidemic-overdose-deaths-2017>.
15. Wakeman, S., & Barnett, M. (2018). Primary care and the opioid overdose crises—buprenorphine myths and realities. *The New England Journal of Medicine*, 379, 1–4. <https://doi.org/10.1056/NEJMp1802741>.
16. National Council of State Boards of Nursing. APRN compact model. [https://www.ncsbn.org/APRN\\_Compact\\_Final\\_050415.pdf](https://www.ncsbn.org/APRN_Compact_Final_050415.pdf).
17. Interprofessional Education Collaborative (IC) Expert Panel. (2011). *Core competencies for Interprofessional collaborative practice: Report of an expert panel*. Interprofessional Education Collaborative.
18. World Health Organization. (2010). Framework for action on interprofessional education and collaborative practice 2010. [http://whqlibdoc.who.int/hq/2010/WHO\\_HRH\\_HPN\\_10.3\\_eng.pdf](http://whqlibdoc.who.int/hq/2010/WHO_HRH_HPN_10.3_eng.pdf).
19. Shahid, S., & Thomas, S. (2018). Situation, background, assessment, recommendation (SBAR) communication tool for handoff in health care—a narrative review. *Safety in Health*, 4, 7. <https://doi.org/10.1186/s40886-018-0073-1>.
20. Ma, C., & Stimpfel, A. W. (2018). The association between nurse shift patterns and nurse-nurse and nurse-physician collaboration in acute care hospital units. *The Journal of Nursing Administration*, 48(6), 335–341.

(PCP) to have skills in both translational science and implementation science. The combination of these frameworks helps the clinician not only determine the applicability of best evidence but also address the importance of implementation fidelity.<sup>1</sup>

Although translational science is focused on the best evidence and implementation science is focused on implementation fidelity, each requires the PCP to work within a collaborative group to promote unique perspectives. These differing perspectives can reflect the uniqueness of the health care team and improve overall implementation fidelity.

Translating research into clinical practice requires paying careful attention to deficiencies in practice and the overall desire to improve the delivery of care across health care systems.<sup>2</sup> This process begins with the recognition of gaps in practice where evidence is not used to define best practices or there is simply no practice currently in place.<sup>1</sup> The PCP’s ability to become immersed in the evidence and select an evidence-based solution initiates a process that either changes the practice or sets into motion a new process to deliver care.

## NURSING RESEARCH AS AN EXEMPLAR FOR THE EVOLUTION OF KNOWLEDGE DEVELOPMENT IN HEALTH CARE PROFESSIONS

Over the years, nursing research has had multiple evolutions in terms of what role nurses play in the discovery of empirical research-driven information and, most notably, how nurses should use this information to rightfully impact practice, the provisions of care, and patient outcomes. The role of nurses in research dates back to Florence Nightingale. Often considered the first nurse researcher, Nightingale was one of the first nurses to use evidence, from her practice, to make clinically relevant decisions based on the care of patients.<sup>3</sup> In her book *Notes on Nursing*, published in 1859, Nightingale discussed the importance of cleanliness, warmth, clean air, and personal hygiene as means of improving outcomes for patients. Much of what Nightingale did during this time was groundbreaking. Sadly, her efforts to use evidence to influence practice would not be recognized until many years after her death. However, much of what Nightingale did during her professional career as a nurse serves as a foundation for the current work of research nurses.

Medical research is focused on the discovery of information and evidence used to help patient outcomes. It serves to provide the foundation for practice changes that improve clinical care guidelines, enhance practice in public health, or provide evidence to serve the larger population. Medical care providers currently look to evidence-based guidelines to help frame their practice as they work to improve the health and safety of clients (patients) within their communities.<sup>5</sup> Evidence-based guidelines are most often derived from systemic reviews of random clinical trials, where the evidence of this research is compiled statistically to bring meaning to a large amount of data available on the clinical subject being studied. The Agency for Healthcare Research and Quality (AHRQ)<sup>4</sup> identifies clinical guidelines as the synthesis of empirical studies, cohesive evidence on best practices for care. The AHRQ publications clearinghouse closed in the fall of 2018, but publications and resources will continue to be available online at <https://archive.ahrq.gov/cpi/about/otherwebsites/guideline.gov/index.html>. These guidelines help nurse practitioners, physician assistants, physicians, and other PCPs provide patients with clinical care that is evidence based and consistent with best practices across the country.

## CHAPTER 2

# TRANSLATING EVIDENCE INTO CLINICAL PRACTICE

Jill Walsh • Patrick LaRose

Innovations and clinical discoveries through research continue to yield significant results that can be used to positively impact patient outcomes and processes across health care systems. Selecting the best evidence for practice changes or process improvements requires the primary care provider

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