Journal of Primary Care & Community Health
Volume 13: 1–6

DOI: 10.1177/21501319221085374
journals.sagepub.com/home/jpc
SAGE

Early Response of Primary Care Practices to COVID-19 Pandemic

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Abstract

Introduction: The emergence of the COVID-19 pandemic and subsequent public health mitigation strategies resulted in rapid and significant changes to delivery of primary care. The field of primary care faced an unprecedented dual challenge of providing routine care to patients while ensuring patient and staff safety and managing patients with a highly transmissible disease. This study describes how a diverse group of primary care practices addressed these challenges at the start of the COVID-19 pandemic, in Spring 2020. **Methods:** A cross-sectional electronic survey of representatives from primary care practices in the WWAMI region Practice and Research Network (WPRN). Survey topics included clinical workforce, operations, and use of telemedicine in the first 3 months of the COVID-19 pandemic. **Results:** To safely manage patients with COVID-19 symptoms all clinics modified operations; 81.3% diverted patients with respiratory symptoms to a telemedicine evaluation, 68.8% diverted these patients to be seen in-person at another location, and 75% made in-clinic changes to maintain safety. The set of operational changes employed by clinics was diverse. To continue to provide routine patient care, all clinics employed telemedicine. Over 80% of clinics had never used telemedicine prior to March 2020. **Conclusions:** A diverse group of primary care clinics all rapidly implemented a variety of operational adaptations to address patient needs and maintain patient and staff safety at the onset of the COVID- 19 pandemic. Telemedicine, together with other measures, provided critical pathways for maintaining delivery of care.

Keywords

COVID-19, telehealth, telemedicine, primary care, practice based research, community-based care, clinical operations

Dates received: 9 December 2021; revised: 17 February 2022; accepted: 17 February 2022.

Introduction

The first confirmed case of COVID-19 was announced in Washington State in January 2020. By March 2020, cases of COVID-19 were spreading throughout the Northwestern United States and the country overall. Lacking both information about the mechanisms of disease and widespread access to testing, state and local governments issued emergency public health measures including stay-at-home orders and school closures.[1,2] Healthcare systems limited in-person visits and canceled elective surgeries and procedures, and these services remained limited for months.[3,4]

In the United States, primary care provides patients with a usual source of care, comprehensive services, and an entry point to the healthcare system.[5,6] Approximately 75% of U.S. adults have an identified primary care provider.[7] Prior to the COVID-19 pandemic, primary care was provided almost exclusively in-person and telemedicine was rarely part of routine primary care clinical practice.[8–10]

The COVID-19 pandemic forced the field of primary care to address new challenges in delivery of care, including managing patients with a highly transmissible disease,

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ensuring the safety of the clinical workforce, patients, and the community, and continuing to provide care routine care for patients with non-COVID acute problems and chronic conditions. In May 2020, a national survey of primary care clinicians reported that 50% of practices had laid off or furloughed medical staff. A majority of these clinicians reported significant drops in patient volume, and 3-quarters reported high practice stress levels.[11]

This study aimed to understand how primary care practices undergoing this degree of disruption addressed the challenges of safely managing patients with a transmissible disease while also providing full-spectrum care to their patients during the emergence of the COVID-19 pandemic, from March to May, 2020.

Methods

This study was conducted in partnership with the WWAMI region Practice and Research Network (WPRN), a primary care practice-based research network of 32 healthcare organizations encompassing 97 clinics across the 5-state Washington, Wyoming, Alaska, Montana, and Idaho (WWAMI) region. In May 2020, the WPRN Coordinating Center distributed a survey, designed to assess how primary care practices in the WPRN responded to the emergence of the COVID-19 pandemic, via the REDCap[12] web tool. The survey was sent by email to the research liaison at each of the 32 WPRN member organizations. Liaisons are designated by their organization to communicate with the WPRN Coordinating Center about research initiatives and include physicians, nurse practitioners, clinical pharmacists, and behavioral health providers. Liaisons were asked to respond to the survey in consultation with others at their organization, as appropriate. All responses were received by the first week of June 2020. The UW Institutional Review Board determined the study to be exempt.

Measures

The survey asked about clinical workforce, operations, and use of telemedicine in the first 3 months of the COVID-19 pandemic, that is, since the beginning of March 2020. The survey addressed the approximate number of COVID-19 cases to-date in the clinic, changes in the volume of patient visits, workforce redeployment, strategies for managing patients with respiratory symptoms and for delivering routine care, proportion, and types of visits conducted via telemedicine, and use of and barriers to telemedicine. The research team categorized clinics as urban or rural/rural-serving based on the 2013 Rural-Urban Continuum Codes (RUCC).[13]

Analysis

The research team summarized responses descriptively as frequencies and percentages using Stata analytic software (version 12.1). For write-in responses throughout the survey, one team member coded the write-in responses; a second coder subsequently reviewed them; then both coders discussed and reconciled areas of disagreement. The research team reviewed reported strategies for managing patients with respiratory symptoms and categorized each strategy as either related to delivery of care in the clinic (eg, assigning dedicated staff to care for patients with known or suspected COVID-19) or to diverting patients away from clinic (eg, referring patients with suspected or known COVID-19 to a respiratory clinic).

Table 1. Clinic Characteristics.

Clinic characteristic	Number (percent) of clinics
Clinic location (n = 16)	
Urban	9 (56.3%)
Rural or Rural-Serving	7 (43.8%)
Organization type (n = 16)	
Hospital associated	10 (62.5%)
Federally Qualified Health Center or Community Health Center	6 (37.5%)
Patient visits/year (n = 15)	
Less than 10 000 (3600-5200)	2 (13.3%)
10 000-20 000 (10 000-20 000)	5 (33.3%)
Over 20 000 (21 000-67 000)	8 (53.3%)
Number of patients testing positive for COVID-19 as of date survey completed* (n = 16)	
None	1 (6.3%)
1-20	10 (62.5%)
More than 20	5 (31.3%)
Number of total positive cases of COVID-19 per 10 000 population in the clinic's county** (n = 16)	
Less than 5.0	4 (25.0%)
5.0-29.9	5 (31.0%)
30.0-37.0	3 (19.0%)
More than 37.0	4 (25.0%)

*May 14–June 11, 2020.
**February–May 2020.

Results

Sixteen respondents completed the survey, each representing one WPRN member clinic (50% response rate). Responding clinics were located in Washington (62.5%), Idaho (25.0%), and Montana (12.5%). Seven (43.8%) clinics were located in rural or rural-serving areas (RUCC $\geq$3) and 10 (62.5%) were hospital-associated outpatient clinics. Six (37.5%) were Community Health Centers. Almost two-thirds (62.5%) of clinics reported having 1 to 20 patients test positive for COVID-19 between March and May 2020. One clinic reported no patients with a positive COVID-19 test (Table 1).

Table 2. Barriers to Telemedicine.

How significant a barrier are each of the following in the use of telemedicine to provide primary care (n = 16)	Number (percent) of clinics rating this a moderately or highly significant barrier
Access to needed technology for patients	13 (81.3%)
Patient willingness to use telemedicine	10 (62.5%)
Billing or reimbursement for telemedicine	9 (56.3%)
Quality of care that can be provided via telemedicine	8 (50.0%)
Maintenance of appropriate staffing and workflows to deliver care via telemedicine	5 (31.3%)
Required provider training to deliver telemedicine	4 (25.0%)
Clinician or staff willingness to use telemedicine	2 (12.5%)
Access to needed technology for clinic staff	2 (12.5%)

Visits and Use of Telemedicine

All respondents reported a drop in volume of in-person clinic visits from March through April 2020, with clinics reporting that they saw an average of 54% of their typical "pre-COVID" monthly patient visits. All of the clinics offered telemedicine visits (interactive telephone and/or televideo visits). The majority of clinics (81.3%) reported never having used telemedicine prior to the emergence of the COVID-19 pandemic, and the 18.8% of clinics that had previously used telemedicine all reported a significant increase in telemedicine use after the start of the pandemic. The mean percent of visits conducted via telemedicine during this time was 36.6% (range 10%-70%). Three-quarters (75.0%) of clinics conducted at least half of their telemedicine visits via video, with 56.3% of clinics conducting 70% or more of these visits via video. The majority of clinics (81.3%) cited patient access to needed technology as a moderately or highly significant barrier to the use of telemedicine. Two-thirds (62.5%) of clinics reported patient willingness to use telemedicine as a moderately or highly significant barrier. About half (56.3%) of clinics identified billing or reimbursement for telemedicine as a moderately or highly significant barrier to telemedicine use. Only 12.5% of clinics reported that staff or clinician willingness to use telemedicine was a moderately or highly significant barrier (Table 2).

Managing Patients With COVID-19 Symptoms

All respondents reported that their clinics made at least one change to their operations to safely manage patients with respiratory conditions consistent with COVID-19. The vast majority (81.3%) of clinics diverted patients with respiratory symptoms to a telemedicine evaluation, rather than seeing them in clinic. Over two-thirds (68.8%) of clinics diverted patients with respiratory symptoms to be seen in-person at another location off-site, such as a tent, emergency department, or drive-in visit. (Table 3) The three clinics (18.8%) that did not use telemedicine evaluation for patients with respiratory symptoms used the other strategies to safely care for these patients (Table 4).

Three-quarters (75.0%) of clinics implemented at least 1 change to their in-person delivery of care to safely manage patients with COVID-19 symptoms. The most common change to in-person care was to redesign workspace and implement procedures to allow for social distancing (62.5%). Less than half of clinics segregated off sections of the clinic (31.3%), dedicated rooms for in-person care (37.5%), or assigned dedicated providers to provide in-person care (18.3%) (Table 3).

Strategies to Provide Routine Care

While managing patients with COVID-19 symptoms, primary care practices simultaneously continued to provide routine care to their patients. In addition to 100% of clinics using telemedicine, 87.5% of clinics used at least one additional strategy to provide routine patient care. Two-thirds (62.5%) of clinics implemented at least three strategies. The most common strategies beyond telemedicine for promoting and providing routine patient care (Table 3) included communicating with patients about the importance of continuing to access care (68.8%), connecting patients with community resources (56.3%), and conducting outreach to patients with chronic medical conditions (50.0%).

Staff Roles

Seventy-five percent of clinics reported retraining or redeploying staff or providers in the early months of the pandemic. Eight clinics (50.0%) shifted responsibilities of nursing staff and six (37.5%) redeployed providers. Three clinics (18.8%) redeployed front desk staff to new tasks (data not shown).

Examples of new roles for front desk staff included conducting health screenings at building entrances, working on quality improvement projects, and supporting housekeeping. New responsibilities for nurses varied across sites and included conducting COVID-19 testing, health screenings

Table 3. Managing Patient Care.

Strategies clinics reported using to safely manage care of patients with respiratory symptoms consistent with COVID-19 (n = 16)	Number (percent) of clinics
Diverted: Diverted patients with respiratory symptoms to a telemedicine evaluation	13 (81.3%)
Diverted: Diverted patients with respiratory symptoms to another location (eg, tent, emergency department, drive-in visit, home visit)	11 (68.8%)
In-clinic: Redesigning workspace and procedures to allow for social distancing (eg, Plexiglass barriers, temperature screening)	10 (62.5%)
In-clinic: Continued in-office care in dedicated rooms	6 (37.5%)
In-clinic: Segregated off a section of the clinic for patients with respiratory symptoms	5 (31.3%)
In-clinic: Continued in-office care with dedicated staff and/or clinician	3 (18.8%)
Strategies clinics reported using to safely provide routine care (n = 16)	**Number (percent) of clinics**
Offered telemedicine visits	16 (100%)
Communicated the importance of continuing to receive care and share the precautions in place to make care safe for patients	11 (68.8%)
Connected patients with community resources	9 (56.3%)
Conducted outreach to patients with chronic medical conditions	8 (50%)
Facilitated patients receiving equipment for self-management of chronic disease at home (eg, Home blood pressure monitoring kits)	5 (31.3%)
Offered care management services to patients with chronic disease	5 (31.3%)

Table 4. Number of Clinics Reporting Different Combinations of Strategies to Safely Manage Care of Patients With Respiratory Symptoms Consistent With COVID-19.

	Strategies to safely manage care for patients with respiratory symptoms consistent with COVID-19		
Number of clinics	Telemedicine	In-clinic changes	Diverted off-site
6	x	x	x
4	x	x	
3	x		x
1		x	x
1			x
1		x	
Total: 16	13	12	11

at building entrances, or telephone screening. One clinic trained nursing staff to help with surgery procedures; a different clinic shifted nursing staff from a chronic disease management role to providing acute care for COVID patients. Four (25%) clinics redeployed providers to provide care at clinics designated for patients with COVID-19 symptoms. Other examples of provider redeployment included shifting providers to performing COVID testing, telephone screening, or conducting urgent care via telehealth (data not shown).

Discussion

During the early months of the COVID-19 pandemic, in 16 primary care clinics in Washington, Idaho, and Montana, this study found that clinics rapidly modified their clinical operations to safely manage patients with COVID-19 symptoms and to continue to provide routine care for their patient panels. Only two months into the COVID-19 pandemic, all clinics implemented telemedicine, even though more than 80% had never used telemedicine prior to the pandemic. These findings echo those of other national studies showing that significant changes to primary care clinical practice were ubiquitous throughout the United States during this time,[11,14] including a rapid shift to the use of telemedicine in the first months of the pandemic.[10,15-18]

This study's findings add to a body of literature showing that primary care providers find telemedicine feasible and desirable to use, and are comfortable managing visits through this medium,[19,20] and that telemedicine is considered acceptable and desired by patients.[16,19] Nonetheless, studies have also demonstrated disparities in patient access and use of telemedicine,[21] particularly among elderly adults[22,23] and in rural settings.[24,25] As telemedicine is likely to remain an integral feature of clinical care,[26] it will be critical to address barriers to telemedicine for patients who face the "digital divide"[27] and do not have easy access to the necessary technology. Equally important will be establishing best practices for telemedicine in primary care, such as determining which conditions require in-person visits, and which are most appropriate for telemedicine.

All of the clinics in this study implemented a variety of operational innovations to meet the dual challenge of ensuring safety of healthcare workers and patients while caring for patients who might have a transmissible disease. Clinics employed multiple strategies to restructure clinical operations, combining efforts to divert patients with respiratory

symptoms to either telemedicine visits or offsite care with strategies to make care in the clinic safer. Notably, 25% of clinics did not report making any "in-clinic" changes to manage care for patients with respiratory symptoms consistent with COVID-19. These clinics may have instead depended on diverting these patients to off-site settings or to telemedicine. We found that clinics consistently employed multi-pronged approaches, including offering telemedicine visits, redesigning clinical space, or changing clinical workflows, though the combinations of strategies varied widely.

There may be several reasons for the variation in reported responses. In the early months of the pandemic, the lack of knowledge about COVID-19 including questions about routes of transmission and effects on different populations may have impaired decisions about how to appropriately structure operations. The need for rapid innovation and lack of previous experience of primary care to respond to an emerging infectious disease pandemic may have led clinics to explore and implement a variety of responses. Recently, suggestions for pandemic preparedness and response in primary care have been proposed,[28] and the actions that primary care clinics reported in this study to safely care for patients include recommended steps for response. Another explanation for the diversity of innovations may be that respondents represented diverse health care systems, each with different sizes, leadership structures, and physical spaces, and systems likely tailored innovations to their settings. The reduction in clinic visit volumes, which created a financial crisis for many health care providers,[11] may have also influenced the operational changes. Additionally, differential availability of personal protective equipment (PPE), which was in short supply at the beginning of the pandemic,[29] may have influenced clinics' diverse responses to the pandemic. Creating separate clinics for patients with respiratory symptoms allowed for conservation of supplies while still protecting other patients and staff from communicable disease.

Limitations of this study include that only half of those contacted responded to the survey, and each respondent represented only one clinic in their healthcare organization. Data was collected from individuals in differing organizational roles and is self-reported. Therefore, responses may not fully represent the full breadth of WPRN clinics and organizations' experiences related to COVID-19. However, the 16 clinics each represent a different healthcare organization with varied organizational structures and are located across three states with very different rates of COVID-19 cases, providing a unique perspective on the impact of COVID-19 on primary care practice. The cross-sectional nature of this study allowed us to identify types of operational modifications employed by clinics, but not the reasons for these changes or the outcomes associated with changes. Even with these limitations, this survey contributes to our knowledge about adaptations occurring in primary care early in the COVID-19 pandemic.

Conclusions

In the emerging COVID-19 pandemic, a huge shift occurred in primary care practice throughout the nation, with clinics rapidly adopting telemedicine, and implementing new and varied operational models. These adaptations show the resilience of primary care in the face of change and uncertainty. In this prolonged public health crisis, primary care is likely to face additional challenges and will need to identify ways to continue to adapt. Future research is needed to understand which operational changes have been sustained, which have evolved over time, and their impact on patient experience and outcomes.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the National Center for Advancing Translational Sciences of the National Institutes of Health under Award Number UL1 TR002319. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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