Telehealth will enable new models of care to emerge as health care continues to undergo significant changes. Health insurers, providers, and pharmacy benefit managers are merging, which will consolidate market share among fewer large companies. Recently, retail giants such as Walmart and Amazon have announced plans to compete in the health care industry. As these organizations seek to provide convenient and affordable access to care, telehealth will play a significant role in the competition for market share and will create new opportunities for innovation. Additionally, the increasing adoption of telehealth by retail outlets and vertically integrated health care organizations raises new policy questions in such areas as information access, privacy and security, the combination of health and consumer data, and ways to foster provider independence amid increasing consolidation.

The health care sector has been undergoing a significant transformation over the past few decades. Patients can now access health care services from almost anywhere at any time using telehealth and mobile networks. Health care organizations are consolidating throughout the supply chain, with mergers of payers, providers, and pharmacies becoming increasingly commonplace. Major retailers such as Walmart and Amazon are aggressively moving into the health care business through partnerships and acquisitions. Telehealth is likely to enable these organizations to deliver new models of care for consumers. Current policies are insufficient to address the opportunities and threats created by these new developments.

Consolidation In The Health Care Sector
The health care industry has been undergoing consolidation for decades. Initially, health care organizations merged with competing organizations to increase their market share, a process termed horizontal integration. For example, UnitedHealth has spent more than $22 billion since 1994 acquiring numerous health insurers (exhibit 1). Over the years many insurers, hospitals, and physician groups have merged with competitors to increase market share through horizontal integration. This has resulted in a smaller number of national health care companies. But in recent years there have been significantly fewer horizontal integration deals between health care insurers. Two separate mergers were canceled in early 2017 following opposition from the Department of Justice over antitrust issues: the $48 billion Anthem-Cigna merger and the $34 billion Aetna-Humana merger. Although horizontal integration activity has decreased, vertical integration has continued.

Vertical integration occurs when companies acquire or merge with organizations upstream or downstream in their supply chains, creating operational efficiencies and more control over costs. For example, CVS, one of the largest retail pharmacy chains, acquired one of the largest pharmacy benefit managers, Caremark, for...
$21 billion in November 2006. UnitedHealth has acquired organizations throughout the supply chain, including ambulatory surgical centers (for example, Surgical Care Affiliates), medical groups (DaVita Medical Group and Reliant Medical Group), urgent care facilities (MedExpress Urgent Care), pharmacy benefit managers (Catamaran Corporation), and technology vendors (Alere Health and Humedica) (exhibit 1). All five of the largest for-profit health insurers (UnitedHealth, Anthem, Aetna, Cigna, and Humana) have engaged in vertical integration efforts through proposed or completed mergers and acquisitions.9–13

Unfortunately, the benefit of these horizontal and vertical integration efforts for consumers is unclear. Studies have shown that horizontal mergers have historically driven up prices for consumers,14–18 and there is little evidence to demonstrate that cost savings from vertical integration will be passed along to consumers.

**Telehealth’s Role In Consolidation: Access, Convenience, More Data**

While horizontal and vertical integration consolidate market share among fewer large companies, consumers are finding more ways to access care outside of traditional health care office settings. Visits to urgent care clinics and telehealth video consultations have increased substantially year over year. Kaiser Permanente, a managed care provider, has reported that more than half of its patient transactions are now conducted virtually using telehealth (video, telephony, or mobile devices and apps).19 As health care organizations compete to increase their market shares, they must simultaneously meet consumers’ demands for convenience and affordability.

Telehealth is critical to organizations looking to offer convenient alternatives to accessing care. Most large health care organizations offer telehealth services by partnering with vendors (exhibit 2). Health care organizations with retail pharmacy operations such as CVS and Walgreens are investing heavily in telehealth to offer their customers virtual health care visits in addition to their in-store clinics and pharmacies. In August 2018 CVS announced a nationwide rollout of telehealth services accessible through its CVS Pharmacy app,21 while Walgreens and Rite Aid announced similar telehealth offerings in July 2018.22,23 The Publix supermarket chain announced a telehealth partnership with BayCare Health System in October 2017.24 Telehealth partnerships between retail chains and health

**EXHIBIT 1**

Selected acquisitions by UnitedHealth, by year

<table>
<thead>
<tr>
<th>Acquired company</th>
<th>Type of acquisition</th>
<th>Cost (millions)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramsay-HMO</td>
<td>Horizontal</td>
<td>$502</td>
<td>1994</td>
</tr>
<tr>
<td>GenCare Health Systems, Inc.</td>
<td>Horizontal</td>
<td>$520</td>
<td>1994</td>
</tr>
<tr>
<td>MetraHealth Cos.</td>
<td>Horizontal</td>
<td>$1,700</td>
<td>1995</td>
</tr>
<tr>
<td>AmeriChoice</td>
<td>Horizontal</td>
<td>$517</td>
<td>2002</td>
</tr>
<tr>
<td>Mid Atlantic Medical Services</td>
<td>Horizontal</td>
<td>$3,000</td>
<td>2003</td>
</tr>
<tr>
<td>Oxford Health Plans</td>
<td>Horizontal</td>
<td>$4,900</td>
<td>2004</td>
</tr>
<tr>
<td>Definity Health</td>
<td>Horizontal</td>
<td>$300</td>
<td>2004</td>
</tr>
<tr>
<td>PacifiCare Health Systems</td>
<td>Horizontal</td>
<td>$8,100</td>
<td>2005</td>
</tr>
<tr>
<td>Sierra Health Services</td>
<td>Horizontal</td>
<td>$2,600</td>
<td>2007</td>
</tr>
<tr>
<td>Humedica</td>
<td>Vertical; technology</td>
<td>—a</td>
<td>2013</td>
</tr>
<tr>
<td>Alere Health</td>
<td>Vertical; technology</td>
<td>$600</td>
<td>2014</td>
</tr>
<tr>
<td>Catamaran Corporation</td>
<td>Vertical; pharmacy benefit manager</td>
<td>$12,800</td>
<td>2015</td>
</tr>
<tr>
<td>MedExpress Urgent Care</td>
<td>Vertical; provider</td>
<td>$1,500</td>
<td>2015</td>
</tr>
<tr>
<td>Rocky Mountain Health Plan</td>
<td>Horizontal</td>
<td>$36</td>
<td>2016</td>
</tr>
<tr>
<td>Surgical Care Affiliates</td>
<td>Vertical; provider</td>
<td>$2,300</td>
<td>2017</td>
</tr>
<tr>
<td>DaVita Medical Group</td>
<td>Vertical; provider</td>
<td>$4,900</td>
<td>2017</td>
</tr>
<tr>
<td>Reliant Medical Group</td>
<td>Vertical; provider</td>
<td>$28</td>
<td>2018</td>
</tr>
<tr>
<td>Sound Inpatient Physician Holdings</td>
<td>Vertical; provider</td>
<td>$2,200</td>
<td>2018</td>
</tr>
</tbody>
</table>

*Source* Authors’ analysis of data from Becker’s Hospital Review, Crunchbase, the New York Times, the Wall Street Journal, and United Press International (detailed sources available from the authors on request). *Notes* The exhibit does not show a complete list of acquisitions. All horizontal acquisitions were acquisitions of a company in the health insurance business. Vertical acquisitions were acquisitions of a company in the health care industry supply chain that was not a health care insurer. *a* Detailed information not located in publicly available sources.
care organizations make sense in the context of increasing market share by offering more convenient access points for consumers.

Telehealth, in the form of video or telephony, can generate data that may be analyzed for insights, such as information about a patient’s health care status, emotional and physical conditions, and socioeconomic status. For example, video and audio data have been used to help train neural networks to detect and measure people’s moods, emotions, and mental health conditions. Researchers at the Massachusetts Institute of Technology, for example, trained a neural network to identify patients with depression by using audio and text data from interviews. Without a doubt, telehealth data will be a valuable data source that health care organizations can analyze to obtain better patient insights, which may lead to competitive advantages.

Health care organizations recognize the value of data in strengthening their competitive advantages. For example, UnitedHealth has invested heavily in its data analytics capabilities through Optum as well as by acquiring the health informatics firm Humedica. Other large companies, including Aetna and Humana, have also made data- and technology-related acquisitions (exhibit 3). Through horizontal and vertical integrations, these organizations have increased their access to valuable data across the health care supply chain that can be analyzed for business purposes.

### Exhibit 2

Selected partnerships between large corporations and telehealth vendors

<table>
<thead>
<tr>
<th>Corporation</th>
<th>Telehealth vendor</th>
</tr>
</thead>
<tbody>
<tr>
<td>UnitedHealth</td>
<td>American Well, Doctor on Demand</td>
</tr>
<tr>
<td>Anthem</td>
<td>American Well</td>
</tr>
<tr>
<td>Aetna</td>
<td>Teladoc</td>
</tr>
<tr>
<td>Cigna</td>
<td>American Well, MDLIVE</td>
</tr>
<tr>
<td>Humana</td>
<td>Doctor On Demand, MDLIVE</td>
</tr>
<tr>
<td>CVS</td>
<td>American Well, Doctor On Demand, Teladoc</td>
</tr>
<tr>
<td>Walgreens</td>
<td>MDLIVE, NewYork-Presbyterian</td>
</tr>
<tr>
<td>Rite Aid</td>
<td>InTouch Health</td>
</tr>
<tr>
<td>Express Scripts</td>
<td>MedAvail</td>
</tr>
<tr>
<td>Walmart</td>
<td>Doctor on Demand</td>
</tr>
<tr>
<td>Amazon</td>
<td>—</td>
</tr>
</tbody>
</table>

**Source:** Authors’ analysis of data from company websites, mHealth Intelligence, and the Wall Street Journal (detailed sources available from the authors on request).

**Note:** The exhibit does not show a complete list. *Detailed information not located in publicly available sources.

### Exhibit 3

Selected health technology-related acquisitions and investments by health care entities and retail outlets

<table>
<thead>
<tr>
<th>Organization</th>
<th>Acquisitions</th>
<th>Investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aetna</td>
<td>Healthagen/Triage (2011), Bswift (2014)</td>
<td>—*</td>
</tr>
<tr>
<td>Cigna</td>
<td>Choicelinx (2005), Brighter.com (2017)</td>
<td>—*</td>
</tr>
<tr>
<td>CVS Health</td>
<td>—*</td>
<td>MyHealthTeams (2015 and 2017)</td>
</tr>
<tr>
<td>Walmart</td>
<td>—*</td>
<td>—*</td>
</tr>
<tr>
<td>Rite Aid</td>
<td>Health Dialog (2014)</td>
<td>—*</td>
</tr>
<tr>
<td>Amazon</td>
<td>PillPack (2018)</td>
<td>—*</td>
</tr>
</tbody>
</table>

**Source:** Authors’ analysis of data from Becker’s Hospital Review, Crunchbase, mHealth Intelligence, the New York Times, and the Wall Street Journal (detailed sources available from the authors on request). *Detailed information not located in publicly available sources.

### Retail Outlets Competing In Health Care

Health care organizations are facing increasing competition from major retail outlets such as Walmart and Amazon, both of which are looking to expand into the $3 trillion health care industry. In 2018 Walmart engaged in preliminary talks to acquire Humana; the supermarket chain Albertsons and Rite Aid discussed, but then abandoned, the idea of merging; Amazon purchased the online pharmacy PillPack; and JPMorgan Chase, Berkshire Hathaway,
and Amazon formed a nonprofit health care venture led by Atul Gawande.\textsuperscript{34,35} While their exact plans remain unclear, major retailers seem intent on entering the health care business more aggressively. Furthermore, many retail outlets already provide health care services. For example, Walmart operates the fourth-largest retail pharmacy network in the US by store count (and the third-largest by number of pharmacists),\textsuperscript{36} and many other large retail chains operate pharmacies or clinics in their stores. Amazon is already a massive online supplier of health care goods and devices, selling more than a thousand varieties of wheelchairs online,\textsuperscript{37} and its recent acquisition of PillPack provides the company with licenses to ship prescription drugs to all fifty states.\textsuperscript{38} These developments indicate a clear trend on the part of both health organizations and retail outlets to compete by offering more convenient and accessible health care services.

**Telehealth Enhances Competitive Advantages**

National retail chains such as Walmart, CVS, and Walgreens have existing infrastructure, including physical locations and digital assets (websites and apps), while Amazon.com is one of the most popular sites on the internet.\textsuperscript{39} These outlets are visited frequently, making them convenient channels for offering telehealth to consumers. It is estimated that in 2017, 95 percent of Americans shopped at one of Walmart’s physical or online stores, while 64 percent of US households are Amazon Prime subscribers—many of whom go to Amazon.com or open the Amazon app at least once a week.\textsuperscript{40–42}

Not all future advantages are with retailers, however, as vertically integrated health care organizations such as UnitedHealth already have established networks of hospitals, clinics, and providers to which they can refer patients for in-person follow-up visits following telehealth consultations. Retailers such as Walmart and Amazon, in contrast, do not own large provider networks or hospitals. As health care organizations such as UnitedHealth continue acquiring large provider groups and vertically integrating,\textsuperscript{43} retail outlets may be left with a limited supply of providers with which to contract for in-person visits following telehealth services, particularly in certain regions of the country.

**Policy Implications**

While it is impossible to predict precisely how the health care industry will continue to evolve, telehealth is likely to be an increasingly significant factor for all entities competing to increase their market shares by offering more convenient access to health care services. The following are some of the policy issues that warrant further research, analysis, and consideration.

**Net Neutrality and Telehealth Accessibilty**

Telehealth, particularly video consultation, requires significant internet bandwidth. Telehealth data are transmitted through internet service providers. The major providers, such as Verizon and Comcast, own the underground copper and fiberoptic cables that constitute much of the US internet infrastructure. Without net neutrality, providers could theoretically charge more for transmitting high-bandwidth video or encrypted data, both of which would be required for telehealth. Much of the debate over net neutrality to date has focused on its impact on popular websites such as Netflix or peer-to-peer file-sharing platforms such as BitTorrent, but similar issues will apply to telehealth. Because telehealth has been particularly useful in providing care to underserved populations\textsuperscript{44} and during natural disasters,\textsuperscript{45,46} net neutrality policies should consider protections or exceptions for telehealth in certain circumstances. Conversely, current net neutrality laws may prohibit internet service providers from offering preferential bandwidth or reduced pricing for telehealth services that may benefit patient care. The effect of net neutrality on telehealth will depend on the specifics of the policy and its implementation, but more research and analysis could help inform the design and implementation of such policies and may be a significant factor in determining future patient access to care.

**Data Privacy and Security Issues**

Telehealth may introduce additional risks to patients’ privacy and data security. Even though telehealth data are encrypted “end-to-end” and “in transit”—which means that the data are undecipherable even if intercepted—organizations authorized to access the data could analyze them for internal purposes. The Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule permits the use, disclosure, and sharing of protected health information for “treatment, payment, and health care operations.”\textsuperscript{47} Although these exceptions were intended to facilitate care delivery, payment, and efficient operations, reevaluation of these guidelines may be warranted given significant changes in technology and the health care market since the guidelines were last revised, in April 2003.

**Combining Protected Health Information with Consumer Data**

The HIPAA Privacy Rule’s current guidelines may need further refinement in the context of telehealth data being used by retail outlets and vertically integrated health care organizations. Retail outlets and health care or-
organizations have access to large amounts of consumer and patient data, respectively. Though health care organizations already purchase consumer data through data brokers, current policies and regulations do not offer detailed guidance on circumstances in which one organization owns both consumer and patient data. The Privacy Rule provides guidance on the exchange of protected health information between covered entities, but it does not offer adequate guidance on the acceptable use of that information within an organization when that organization has operations outside of health care.

Large retailers and technology companies are looking to gather more data from people’s homes, which is one of the most common locations where patients conduct their telehealth sessions. Imagine if a retailer could have access to a patient’s telehealth video session done in their living room. The recording could be analyzed to infer health condition and emotional state, leading to additional insights for marketing and sales. Policies regarding permission and consent may need modification to take these scenarios into account. Because some patients may agree to certain data collection and use, guidelines will have to be developed to ensure that patients have a clear understanding of how organizations are permitted to use their data and when their authorization is required.

**INCREASED PROVIDER FLEXIBILITY** As the health care market becomes increasingly consolidated, physicians tend to be employed by larger provider groups and vertically integrated organizations. Independent physicians will likely have increasing difficulty starting and operating small medical practices because they have weaker leverage in contract negotiations with insurers compared to larger provider groups, while federal antitrust provisions prevent small physician groups from bargaining collectively.

Telehealth offers physicians an alternative to these single-employer contracts and creates opportunities to have more flexible working arrangements by allowing individual physicians to contract with multiple payers, provider groups, and retail outlets. Policies that support increased provider flexibility and practice independence are important considerations in an increasingly competitive environment, as more physicians are struggling with work-life balance, burnout, and depression. Telehealth can play a valuable role in supporting physicians’ well-being and maintaining a productive health care workforce.

**NOTES**


14. Baker LC, Bundorf MK, Kessler DP. Vertical integration: hospital ownership of physician practices is as-


17 Dafny LS. Evaluating the impact of health insurance industry consoli-
dation: learning from experience [Internet]. New York (NY): Com-


19 Kokalitcheva K. More than half of patients in the U.S. are served by physician-owned hospital systems. JAMA Intern Med. 2015;175(12): 1932–9.


21 Japsen B. CVS MinuteClinic launches video doctor visits via Telado


24 Wicklund E. Florida hospital, super


tain View, CA.


30 Al Hanai T, Ghassemi M, Glass J. Detecting depression with audio/ text sequence modeling of inter-


32 Levingston I. Albertsons to buy Rite Aid in latest Amazon counterme-


34 Mathews AW. Gawande to head health venture of Berkshire, Ama-


37 According to an online search of Amazon.com on September 4, 2018, for wheelchairs.

38 Thomas K, Ballentine C. Why Ama-


43 Garnick C. Tacoma-based Sound Physicians sold for $2.2 billion. Pu-

44 Mathews AW. Gawande to head health venture of Berkshire, Ama-


47 According to an online search of Amazon.com on September 4, 2018, for wheelchairs.
57 Dewa CS, Loong D, Bonato S, Thanh NX, Jacobs P. How does burnout affect physician productivity? A systematic literature review. BMC Health Serv Res. 2014;14:325.