

DRAFT ASHP Statement on Telehealth Pharmacy Practice

1 Position

2 ASHP believes appropriately trained and equipped pharmacists can use telehealth to remotely
3 oversee pharmacy operations and provide distributive, clinical, analytical, consultative, and
4 managerial services. ASHP advocates for telehealth utilization in suitable functions of pharmacy
5 operations and patient care to improve patient outcomes, expand access to healthcare,
6 enhance patient safety, achieve effective cost-of-care, and interact with other healthcare team
7 members. ASHP further advocates that boards of pharmacy adopt compatible regulations that
8 enable the use of United States-based telehealth services within and across state lines for
9 appropriate practice settings and that additional research be conducted to establish best
10 practices for telehealth.

11 Background

12 **Telehealth.** Definitions of telehealth vary widely. The Agency for Healthcare Research
13 and Quality has defined telehealth as "the use of information and telecommunications
14 technology in healthcare delivery for a specific patient involving a provider across distance or
15 time."¹ The Health Resources and Services Administration (HRSA) of the U.S. Department of
16 Health and Human Services (HHS) defines telehealth more broadly: "the use of electronic
17 information and telecommunications technologies to support and promote long-distance
18 clinical healthcare, patient and professional health-related education, and public health and
19 health administration. Technologies include videoconferencing, the internet, store- and-
20 forward imaging, streaming media, and landline and wireless communications."² The 2020

21 American Medical Association (AMA) Telehealth Playbook³ defines telehealth as “a digital
22 health solution that connects the patient and clinician through real-time audio and video
23 technology” and states that telehealth “can be used as an alternative to traditional in-person
24 care delivery and, in certain circumstances, can be used to deliver care such as the diagnosis,
25 consultation, treatment, education, care management, and self-management of patients.”

26 The Centers for Medicare & Medicaid Services (CMS) distinguishes between telehealth
27 and telemedicine, at least as it concerns Medicaid, defining “Telehealth (or Telemonitoring)” as
28 “the use of telecommunications and information technology to provide access to health
29 assessment, diagnosis, intervention, consultation, supervision and information across
30 distance.”⁴ CMS follows this definition by saying “[t]elehealth includes such technologies as
31 telephones, facsimile machines, electronic mail systems, and remote patient monitoring
32 devices, which are used to collect and transmit patient data for monitoring and interpretation.”
33 CMS notes that although such technologies “do not meet the Medicaid definition of
34 telemedicine they are often considered under the broad umbrella of telehealth services” and
35 may nevertheless be covered and reimbursed as part of a Medicaid coverable service.⁴ Other
36 authors⁵ have also made this distinction, while some organizations do not; the American
37 Academy of Pediatrics states that terms *telemedicine* and *telehealth* “are considered
38 synonymous and are used interchangeably to describe use of electronic information and
39 telecommunications technologies to support clinical healthcare, patient and professional
40 health-related education, public health and health administration.”⁶

41 Just as many definitions of telehealth include a broader scope of virtual healthcare
42 services than does telemedicine, ASHP believes “telehealth pharmacy practice” is a more

43 appropriate overarching term for the virtual delivery of pharmacists' patient care services than
44 "telepharmacy." For the purposes of this document, ASHP defines telehealth pharmacy practice
45 as use of electronic information and telecommunications technology by pharmacists to provide
46 patient care services. Telehealth patient care services and operations may include, but are not
47 limited to, the following:

- 48 • comprehensive medication management,
- 49 • chronic disease state management,
- 50 • medication selection and dispensing,
- 51 • sterile and nonsterile compounding verification,
- 52 • patient assessment and evaluation,
- 53 • adverse drug event detection and monitoring,
- 54 • patient counseling,
- 55 • medication reconciliation,
- 56 • clinical consultation,
- 57 • outcomes assessment,
- 58 • healthcare data analysis,
- 59 • interacting with other healthcare practitioners,
- 60 • healthcare personnel supervision,
- 61 • provision of drug information, and
- 62 • oversight of aspects of pharmacy operations.

63 ***Practice Advancement Initiative 2030 (PAI 2030)***. The ASHP PAI states that the
64 pharmacy enterprise “must have sufficient resources to develop, implement, and maintain
65 technology-related medication-use safety standards.”⁷ It further recommends that virtual
66 pharmacy services “should be deployed to optimize operational and clinical services that
67 extend patient care services and enhance continuity of care.”⁷

68 **Telehealth pharmacy practice applications**

69 Telehealth pharmacy practice has demonstrated value in a variety of settings for medication
70 selection, order review, and dispensing; intravenous (IV) admixture verification; patient
71 counseling and monitoring; and clinical services.⁸ Telehealth pharmacy services have long
72 proven useful in supporting settings that perform medication-use activities when a pharmacist
73 is not physically present or pharmacy resources may be limited, such as geographically isolated
74 ambulatory clinics and healthcare facilities.⁹⁻¹² Telehealth also provides a solution for order
75 review and verification in tertiary medical centers when staffing, particularly in specialty areas
76 such as oncology and pediatrics, is limited (e.g., due to attrition or staff turnover), creating a
77 mechanism for health systems to provide enterprise-level pharmacy services throughout the
78 system even when not all pharmacies operate 24 hours per day.^{13,14} Other facilities may use
79 telehealth services for supplemental workload balancing, which includes network workload
80 balancing and on-call assistance.¹⁵ In addition, telehealth provides a tool for virtual monitoring,
81 assessment, detection, decision-making, and adverse drug event management.¹⁶

82 **Medication selection, order review, and dispensing.** Telehealth has been used
83 successfully to enable pharmacists to be directly involved in the medication selection process
84 for patients at geographically remote hospitals. Specific tasks may include but are not limited to
85 remote review of new medication orders, entry of orders into the patient’s electronic health
86 record, release of medication from an automated dispensing cabinet, and electronic
87 supervision of technicians in the performance of pharmacy operations.^{9-12,17-20}

88 **IV admixture verification.** Although technology systems for remote checking of IV
89 admixture preparation were originally designed to reduce contamination risk by reducing the
90 need for pharmacists to physically enter sterile compounding areas to review and verify
91 finished preparations, these and similar technologies can be used for verification of admixtures
92 at different stages of preparation, across multiple sites, and over long distances.²⁰⁻²¹ The
93 technology also reduces exposure risk by reducing the number of pharmacy personnel and
94 other providers having to handle hazardous medications, such as chemotherapy.
95 Documentation and safety can also be enhanced with these systems, as images capture lot
96 numbers and expiration dates in addition to the step-by-step processes of preparation. Some of
97 these systems perform in-process verification steps (e.g., barcode verification of correct
98 product selection, gravimetric verification of additive quantities), which provide additional
99 assurance to the remote pharmacist that the preparation is correct.

100 **Patient counseling and monitoring.** Pharmacists have been using telecommunications
101 technology to counsel patients about the proper use of their medications for as long as
102 telephone service lines have been available. Early examples of pharmacists employing
103 videoconferencing technology to counsel geographically remote patients include the outreach

104 program by a Federally Qualified Health Center in eastern Washington State²² and another
105 program in North Dakota.²³ The Indian Health Service has also implemented videoconferencing
106 technology to provide pharmacist services to remote areas of Alaska,²⁴ and the U.S. Navy has
107 deployed use of this technology worldwide.²⁵ Other examples include the use of
108 videoconferencing to provide comprehensive medication management,²⁶ chronic disease state
109 management (e.g., diabetes mellitus, chronic obstructive pulmonary disease, congestive heart
110 failure and other cardiovascular conditions, post-MI cardiac rehabilitation, gout),²⁷⁻³⁸ specialty
111 pharmacy services (e.g., oncology, autoimmune diseases, multiple sclerosis, cystic fibrosis),³⁹⁻⁴²
112 and mental and behavioral health telehealth.^{43,44} Implementation of intensive care unit
113 telemedicine services, including telehealth pharmacy practice, led to reduced hospital length of
114 stay, an increase in institutional best practice adherence, and lower rates of preventable
115 complications.⁴⁵ Pharmacists are also being encouraged to use mobile applications to
116 communicate with patients to help them manage their diseases and medications.^{46,47}

117 ***Expanding pharmacy services.*** ASHP supports implementation of telehealth services to
118 “maintain pharmacy operations and pharmacist-led comprehensive medication management
119 that extend patient care services to and enhance continuity of care for rural or medically
120 underserved populations.”⁴⁸ Telehealth can be used to enable onsite pharmacy activities if the
121 pharmacist is not physically located at the point of pharmacy operation or patient care.

122 Millions of Americans live in areas, both rural and urban, devoid of pharmacies.⁴⁹ Until
123 recently, much of the focus of expanding telehealth pharmacy practice has been on rural areas.
124 According to the 2019 National Pharmacist Workforce Study (NPWS),⁵⁰ more licensed
125 pharmacists were unemployed or working outside of pharmacy than in the 2014 NPWS,⁵¹ which

126 suggests there has not been a shortage of pharmacists. However, workforce issues continue to
127 plague rural areas.⁵² Between 2003 and 2018, 16% (1,231) of independently-owned rural
128 pharmacies closed.⁵³ Similarly, 180 rural hospitals closed between 2005 and 2021, causing
129 pharmacists and other professionals to leave rural areas for employment.⁵⁴ Telehealth
130 pharmacy services in retail and hospital pharmacy settings can help fill the gap.⁵⁵⁻⁵⁷ More
131 recently, attention has also turned to the problem of “pharmacy deserts” in urban areas,^{58,59} as
132 Federally Qualified Health Centers (FQHCs) and other healthcare institutions increase utilization
133 of telehealth and explore strategies such as remote dispensing.⁶⁰⁻⁶²

134 **Federal regulation.** Federal regulation of telehealth has evolved, and CMS has
135 established standards for telehealth.⁶³ The Health Insurance Portability and Accountability Act⁶⁴
136 (HIPAA) and Subtitle D of the Health Information Technology for Economic and Clinical Health
137 (HITECH) Act,⁶⁵ which was enacted as part of the American Recovery and Reinvestment Act of
138 2009,⁶⁶ address privacy and security concerns associated with electronic transmission of health
139 information. FDA has jurisdiction over medical software and equipment that may be involved in
140 healthcare whether online, mobile, or in-house. Pharmacists communicating with a patient via a
141 mobile application should ensure it is compliant with FDA standards.⁶⁷

142 ASHP advocates for changes in federal (e.g., Social Security Act), state, and third-party
143 payment programs to define pharmacists as healthcare providers and provide mechanisms that
144 support improved interactions between pharmacists and other healthcare providers that
145 benefit patient care.^{68,69} ASHP recognizes that reimbursement for those provider services may
146 be contingent on credentialing by payers and other appropriate bodies. ASHP further
147 encourages health systems to include pharmacists in their credentialing and privileging

148 processes in a manner consistent with other healthcare professionals to assess pharmacists'
149 competence to engage in patient care services, including telehealth pharmacy practice.⁷⁰
150 Provider status and institutional privileging and credentialing processes expand pharmacists'
151 ability to bill for services they are already providing, enhancing the health system's
152 reimbursement for services and facilitating ongoing growth of telehealth pharmacy practice. In
153 addition, the Federal government and accrediting bodies should collaboratively establish
154 standards for telehealth pharmacy practice and associated technologies, and incorporate
155 regulatory and reimbursement imperatives to encourage adoption of standards regarding
156 telehealth practice that would foster wider adoption and improve patient care.

157 **State regulation.** The Model Act, while not a federal standard, provides boards of
158 pharmacy with model language for developing state laws or board rules.⁷¹ The Model Act
159 defines telehealth-related terms and provides requirements for remote pharmacy services.
160 Many states now have specific regulations for telehealth.⁷² However, these state laws and
161 regulations demonstrate wide variation in the application and control of telehealth systems.⁷³
162 States have variously described telehealth pharmacy practice in terms of remote order
163 management with or without dispensing using automated dispensing cabinets, remote
164 supervision of medication order filling with or without automated medication order dispensing,
165 and inpatient dispensing activities (including IV preparation). When providing pharmacy
166 services across state lines, pharmacists must be aware of the regulations of the state in which
167 the pharmacist is located and the state in which the patient is receiving care.⁷⁴ State laws and
168 regulations vary on the definition of telehealth, licensing requirements, education and training
169 for participating pharmacists and technicians, practice setting restrictions, and geographical

170 limitations for the remotely practicing pharmacist. State laws and regulations also vary widely
171 regarding the technology required to implement telehealth. Although most stipulate a camera
172 and some audio exchange between the pharmacy and the remote pharmacist, the specification
173 of the types of technology (video vs. still, telephone vs. voice over internet protocol [VoIP]) and
174 the types and amounts of transactional information captured vary widely. Some state boards of
175 pharmacy have identified specific training, certification, or experience that pharmacy
176 technicians engaged in telehealth must possess.^{75,76}

177 As use of telehealth expands, state board of pharmacy regulations and state laws
178 regarding its use will increase. ASHP advocates that federal and state governments adopt laws
179 and regulations that modernize and standardize telehealth practices nationwide and facilitate
180 the use of U.S.-based telehealth services to enhance interprofessional practices. ASHP further
181 advocates that boards of pharmacy and state agencies that regulate pharmacy practice address
182 the following regarding telehealth pharmacy practice:

- 183 1. Education and training of participating pharmacists;
- 184 2. Education, training, certification by the Pharmacy Technician Certification Board,
185 and licensure of participating pharmacy technicians;
- 186 3. Communication and information systems requirements;
- 187 4. Remote order entry, prospective order review, verification of the completed
188 medication order before dispensing, and dispensing;
- 189 5. Direct patient-care services, including comprehensive medication management
190 and medication therapy management services and patient counseling and
191 education;

- 192 6. Licensure (including reciprocity) of participating pharmacies and pharmacists;
- 193 7. Service arrangements that cross state borders;
- 194 8. Service arrangements within the same corporate entity or between different
195 corporate entities;
- 196 9. Service arrangements for workload relief in the point-of-care pharmacy during
197 peak periods;
- 198 10. Pharmacist access to all applicable patient information; and
- 199 11. Development and monitoring of patient safety, quality, and outcomes
200 measures.⁷⁷

201 ASHP advocates for interstate pharmacist licensure to expand the mobility of pharmacists,
202 especially during emergencies, and to enhance their ability to practice in multiple states, which
203 is particularly important to telehealth pharmacy practice.⁷⁸ National Association of Boards of
204 Pharmacy's (NABP) Electronic Licensure Transfer Program⁷⁹ is a good first step toward true
205 interstate licensure but should be enhanced at the state level to meet the needs presented by
206 the rapid expansion of telehealth pharmacy practice. ASHP supports exploration of licensure
207 models (e.g., endorsements, interstate agreements) that would allow pharmacists to provide
208 specific services across state lines and encourages advocacy to implement such models.⁷⁸

209 In addition, some state legislatures have passed laws ensuring that insurance
210 reimbursements for telehealth are the same as non-telehealth services. Whether these statutes
211 can or will be applied to pharmacy-related telehealth services in those states remains
212 unanswered. Many of the telehealth payment models involving pharmacists have been
213 implemented in managed care organizations that see value of increasing frequency of visits and

214 follow-up to improve quality of care in chronic disease state management.⁸⁰ As payment shifts
215 toward value-based care, insurance payers may be increasingly interested in telehealth
216 models.⁸¹

217 **Reimbursement for Telehealth Pharmacy Practice Services**

218 ASHP advocates for reimbursement for pharmacists' provision of telehealth pharmacy services
219 commensurate with the complexity and duration of service and consistent with other
220 healthcare providers, to ensure that patients can maintain access to vital services. During the
221 COVID-19 public health emergency, hospitals, health systems, and clinics quickly pivoted to
222 providing patient services via telehealth. The Centers for Medicare & Medicaid Services,
223 commercial payers, and state policymakers have indicated that they would like to maintain
224 telehealth services post-pandemic. Because pharmacists are not currently recognized as
225 healthcare providers through Medicare Part B, reimbursement for telehealth services has been
226 challenging.⁸²

227 ASHP advocates for full recognition of pharmacists as reimbursable healthcare providers
228 through Medicare, Medicaid, and all health insurance plans.⁶⁸ Since this has not yet been fully
229 realized, as an interim step, ASHP supports federal and state legislation and regulation that
230 would provide qualified pharmacists (i.e., as determined by the state board of pharmacy or the
231 credentialing board of a qualified healthcare institution) provider status to bill for services
232 rendered through telehealth. ASHP also advocates billing for services using existing billing
233 codes, and expansion of those codes, as the current set is limited and does not capture the full
234 potential of clinical pharmacy services, including services provided via telehealth.⁸³

235 Telehealth infrastructure

236 The technology infrastructure required for the implementation and maintenance of telehealth
237 services may be scalable and adjusted to fit the care setting. Two intra-system facilities may
238 already share a network, a pharmacy information system, and possibly an order management
239 system. In this scenario, perhaps the only additional equipment needed is a digital
240 communication system for transmission of any orders not provided via computerized provider
241 order entry (CPOE).

242 In contrast, the inter-system model provides telehealth services to a facility external to
243 the health system. This could involve a variety of infrastructures; for example, a cloud-based
244 health information exchange (HIE) where all patients and care providers interact through a
245 variety of hardware and software. Additionally, all data may be stored in a relational database
246 or data warehouse.

247 As more pharmacists are providing telehealth management, it is recommended that
248 organizations investigate the feasibility of integrating telehealth solutions (e.g., video
249 conferencing software, remote monitoring devices) into the electronic health record (EHR).
250 Telehealth EHR integration streamlines workflow, optimizes cognitive workload, minimizes
251 clinician burden, and facilitates documentation.^{84,85} In addition, incorporation of decision
252 support tools, machine learning, and internet-of-things technologies will offer greater insights,
253 earlier prediction, and better care by pharmacists to patients and caregivers in a variety of
254 settings, ranging from institutional to home-based care.

255 With all electronic systems and workflow processes, redundancies and contingency
256 plans must be carefully outlined and readily referenced in organizational policies and
257 procedures to ensure continuity of operations and safety in instances of unplanned events.

258 **Security of information and equipment**

259 The security and integrity of patient data is of paramount importance when determining the
260 information technology setup of a telehealth system. Security is vital when accessing and
261 modifying patient records. Adherence to HIPAA⁶⁴ and HITECH⁶⁵ regulations are important to
262 both the providers of telehealth pharmacy services as well as the entities who receive them. As
263 security continues to be threatened by breaches and ransomware, facilities are tightening their
264 security policies. Telehealth pharmacy providers may notice additional layers of security such as
265 multifactor authentication requirements for access to their network or electronic medical
266 record as well as shorter workstation session timeouts with inactivity.

267 Security is important wherever telehealth pharmacy is practiced. It is important to note
268 that some states require that pharmacists work only from licensed pharmacies. This includes
269 home-based practices and corporate environments which may need to be licensed as a
270 professional pharmacy according to state regulations. A professional and secure environment
271 should be provided in every setting. Care should be taken to keep the environment a
272 professional workspace with all necessary references, resources, confidentiality, and data
273 security practices.

274 Patient-centric considerations for the telehealth pharmacy visit

275 The environment for provision of telehealth services should be evaluated from the patient's
276 point of view. It should provide proper lighting to allow the patient to clearly see the
277 pharmacist's face. Dress and appearance should be consistent with what would be seen within
278 a healthcare facility. Ideally, the camera is at eye level to closely simulate a true face-to-face
279 interaction. The background should appear professional, free from clutter, commotion, and
280 provide a sense of privacy. Audio and video quality should be verified with the recipient as the
281 visit is initiated. The patient should be allowed access to all applicable patient care records
282 during an encounter when possible.

283 Conclusion

284 Telehealth is a method used in pharmacy practice in which pharmacists utilize electronic
285 information and telecommunications technology to provide patient care services. Telehealth,
286 supported by ASHP, allows expanded coverage, improved patient safety, and enhanced
287 communication between patients, healthcare providers, and pharmacists. Variability in laws
288 between states and evolving regulations must be closely monitored when implementing
289 services. ASHP advocates for more research to investigate a refined definition and best
290 practices in the implementation and delivery of telehealth services.

References

1. Totten AM, Womack DM, Eden KB et al. Telehealth: Mapping the Evidence for Patient Outcomes From Systematic Reviews. (Pacific Northwest Evidence-based Practice Center). Agency for Healthcare Research and Quality Publication No. 16-EHC034-EF. June 2016.

- https://effectivehealthcare.ahrq.gov/sites/default/files/pdf/telehealth_technical-brief.pdf (accessed 2021 Jan 27).
2. Health Resources and Services Administration Telehealth Programs. <https://www.hrsa.gov/rural-health/telehealth> (accessed 2021 Jan 27).
 3. American Medical Association. Telehealth Playbook. 2000. <https://www.ama-assn.org/system/files/2020-04/ama-telehealth-playbook.pdf> (accessed 2021 Jan 27).
 4. Centers for Medicare & Medicaid Services. Medicaid.gov. Telemedicine. <https://www.medicare.gov/medicaid/benefits/telemedicine/index.html> (accessed 2021 Jan 27).
 5. van Dyk L. A review of telehealth service implementation frameworks. *Int J Environ Res Public Health*. 2014; 11:1279-98. doi: 10.3390/ijerph110201279.
 6. American Academy of Pediatrics. What is Telehealth? <https://www.aap.org/en-us/professional-resources/practice-transformation/telehealth/Pages/What-is-Telehealth.aspx> (accessed 2021 Jan 27).
 7. American Society of Health-System Pharmacists. Practice Advancement Initiative (PAI) 2030 Recommendations. www.ashp.org/Pharmacy-Practice/PAI/PAI-Recommendations (accessed 2021 Feb 8).
 8. Calenda S, Levesque C, Groppi J et al. VHA seeks to expand telepharmacy's reach in 2014. *U.S. Medicine* <http://www.usmedicine.com/2014-issues/vha-seeks-to-expand-telepharmacys-reach-in-2014/> (accessed 2016 Jan 29).
 9. Keys CA, Dandurand K, Harris J et al. Providing nighttime pharmaceutical services through telepharmacy. *Am J Health-Syst Pharm*. 2002; 59:716-21.
 10. Boon AD. Telepharmacy at a critical access hospital. *Am J Health-Syst Pharm*. 2007; 64:242-4.
 11. Peterson CD, Rathke A, Skwiera J et al. Hospital telepharmacy network: delivering pharmacy services to rural hospitals. *J Pharm Technol*. 2007; 23:158-65.
 12. Stratton TP, Worley MM, Schmidt M, et al. Implementing after-hours pharmacy coverage for critical access hospitals in northeast Minnesota. *Am J Health-Syst Pharm*. 2008; 65:1727-34.
 13. American Society of Health-System Pharmacists. ASHP guidelines on remote medication order processing. *Am J Health-Syst Pharm*. 2010; 67:672-7.
 14. Amkreutz J, Lenssen R, Marx G, Deisz R, Eisert A. Medication safety in a German telemedicine centre: Implementation of a telepharmaceutical expert consultation in addition to existing tele-intensive care unit services. *J Telemed Telecare*. 2020 Jan-Feb;26(1-2):105-112. doi: 10.1177/1357633X18799796. Epub 2018 Sep 25. PMID: 30253681.
 15. American Society of Health-System Pharmacists. ASHP guidelines on remote medication order processing. *Am J Health-Syst Pharm*. 2010; 67:672-7.
 16. Copeland AC, Foster MC, Muluneh B et al. The utility of a telemedicine platform to monitor adherence and adverse effects of tyrosine kinase inhibitors. *Leuk Lymphoma*. 2019; 60:1842-4. doi: 10.1080/10428194.2018.1551540.
 17. Casey M, Elias W, Knudson A et al. Implementation of telepharmacy in rural hospitals: potential for improving medication safety. Upper Midwest Rural Health Research Center

- Final Report #8. http://rhrc.umn.edu/wp-content/files_mf/telepharmacy.pdf (accessed 2016 March 30).
18. Mahaney L, Sanborn M, Alexander E. Nontraditional work schedules for pharmacists. *Am J Health-Syst Pharm.* 2008; 65:2144-9.
 19. Garrelts JC, Gagnon M, Eisenberg C et al. Impact of telepharmacy in a multihospital health system. *Am J Health-Syst Pharm.* 2010; 67:1456-6.
 20. Wakefield DS, Ward MM, Loes JL et al. Implementation of a telepharmacy service to provide round-the-clock medication order review by pharmacists. *Am J Health-Syst Pharm.* 2010; 67:2052-7.
 21. O'Neal BC, Worden JC, Couldry RJ. Telepharmacy and bar-code technology in an i.v. chemotherapy admixture area. *Am J Health-Syst. Pharm.* 2009; 66: 1211-7.
 22. Clifton GD, Byer H, Heaton K et al. Provision of pharmacy services to underserved populations via remote dispensing and two-way videoconferencing. *Am J Health-Syst Pharm.* 2003; 60:2577-82.
 23. Peterson CD, Scott DM, Rathke A et al. Establishing a central order entry system for delivering telepharmacy services to remote rural hospitals. *J Pharm Technol.* 2010; 26:179-86.
 24. Rose JL. Improved and expanded pharmacy care in rural Alaska through telepharmacy and alternative methods demonstration project. *Int J Circumpolar Health.* 2007; 66 (Suppl 1): 14-22.
 25. Traynor K. Navy takes telepharmacy worldwide. *Am J Health-Syst Pharm.* 2010; 67:1134-6.
 26. Badowski ME, Wright EA, Bainbridge J et al. Implementation and evaluation of comprehensive medication management in telehealth practices. *J Am Coll Clin Pharm.* 2020; 3: 520–31. <https://doi.org/10.1002/jac5.1210> (accessed 2021 Feb 22).
 27. Nye AM. A Clinical Pharmacist in Telehealth Team Care for Rural Patients with Diabetes. *N Car Med J.* 2017; 78:183-184. DOI: <https://doi.org/10.18043/ncm.78.3.183>. <https://www.ncmedicaljournal.com/content/78/3/183.full> (accessed 2021 Feb 15).
 28. Maxwell LG, McFarland MS, Baker JW et al. Evaluation of the impact of a pharmacist-led telehealth clinic on diabetes-related goals of therapy in a veteran population. *Pharmacotherapy* 2016;36:348–56.
 29. Shane-McWhorter L, McAdam-Marx C, Lenert L, et al. Pharmacist-provided diabetes management and education via a telemonitoring program. *J Am Pharm Assoc* 2015;55:516–26.
 30. Shane-McWhorter L, Lenert L, Petersen M, et al. The Utah Remote Monitoring Project: improving healthcare one patient at a time. *Diabetes Technol Ther* 2014;16:653–60.
 31. McFarland M, Davis K, Wallace J, et al. Use of home telehealth monitoring with active medication therapy management by clinical pharmacists in veterans with poorly controlled type 2 diabetes mellitus. *Pharmacotherapy* 2012;32:420–6.
 32. Margolis A, Young H, Lis J et al. A telepharmacy intervention to improve inhaler adherence in veterans with chronic obstructive pulmonary disease [Letter]. *Am J Health-Syst Pharm.* 2013; 70:1875–6 (accessed 2021 Feb 15).

33. Peeples L. Telepharmacy Helps Keep HF Pts Close to Heart. *Pharmacy Practice News*. 2018.11.13. <https://www.pharmacypracticenews.com/Clinical/Article/11-18/Telepharmacy-Helps-Keep-HF-Pts-Close-to-Heart/53282>
34. Coakley C, Hough A, Dwyer D et al. Clinical video telehealth in a cardiology pharmacotherapy clinic. *Am J Health Syst Pharm* 2013;70:1974–5.
35. Omboni S, Tenti M. Telepharmacy for the management of cardiovascular patients in the community. *Trends in Cardiovascular Medicine* 2019; 29: 109–17. doi: 10.1016/j.tcm.2018.07.002 (accessed 2021 Feb 15).
36. Aberger EW, Migliozi D, Follick MJ et al. Enhancing patient engagement and blood pressure management for renal transplant recipients via home electronic monitoring and web-enabled collaborative care. *Telemed J E Health* 2014;20:850–4.
37. Peretti A, Amenta F, Tayebati SK et al. Telerehabilitation: Review of the State-of-the-Art and Areas of Application. *JMIR Rehabil Assist Technol*. 2017 Jul-Dec; 4(2): e7. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5544892/> (accessed 2021 Feb 15).
38. Goldfien RD, Ng MS, Yip G et al. Effectiveness of a pharmacist-based gout care management programme in a large integrated health plan: results from a pilot study. *BMJ Open* 2014;4:e003627. doi:10.1136/.bmjopen-2013-003627 (accessed 2021 Feb 16).
39. Chen ZJ, Liang WT, Liu Q, He R, Chen QC, Li QF, Zhang Y, Du XD, Pan Y, Liu S, Li XY, Wei X, Huang H, Huang HB, Liu T. Use of a Remote Oncology Pharmacy Service Platform for Patients With Cancer During the COVID-19 Pandemic: Implementation and User Acceptance Evaluation. *J Med Internet Res*. 2021 Jan 21;23(1):e24619. doi: 10.2196/24619. PMID: 33395398; PMCID: PMC7894743.
40. Howren A, Tsao NW, Choi HK, Shojania K, Kydd A, Friesen R, Avina-Zubieta JA, De Vera MA. eHealth-supported decentralized multi-disciplinary care for gout involving rheumatology, pharmacy, and dietetics: proof-of-concept study. *Clin Rheumatol*. 2020 Apr;39(4):1241-1249. doi: 10.1007/s10067-019-04809-6. Epub 2019 Nov 13. PMID: 31720913.
41. Settle JR, Maloni HW, Bedra M, Finkelstein J, Zhan M, Wallin MT. Monitoring medication adherence in multiple sclerosis using a novel web-based tool: A pilot study. *J Telemed Telecare*. 2016 Jun;22(4):225-33. doi: 10.1177/1357633X15597115. Epub 2015 Aug 6. PMID: 26253748.
42. Muirhead CA, Sanford JN, McCullar BG, Nolt D, MacDonald KD. One Center's Guide to Outpatient Management of Pediatric Cystic Fibrosis Acute Pulmonary Exacerbation. *Clin Med Insights Pediatr*. 2016 Jul 12;10:57-65. doi: 10.4137/CMPed.S38336. PMID: 27429564; PMCID: PMC4944828.
43. Uscher-Pines L, Thompson J, Taylor P et al. Where Virtual Care Was Already a Reality: Experiences of a Nationwide Telehealth Service Provider During the COVID-19 Pandemic. *J Med Internet Res*. 2020; 22::e22727. doi:10.2196/22727.
44. Nieves JE, Stack KM, Cruz M. Telepharmacy in mental health outpatient case management. *J Pharm Technol*. 2007; 23:281-3.
45. Meidl TM, Woller TW, Iglar AM et al. Implementation of pharmacy services in a telemedicine intensive care unit. *Am J Health-Syst Pharm*. 2008; 65:1464-9.

46. Dayer L, Heldenbrand S, Anderson P, et al. Smartphone medication adherence apps: Potential benefits to patients and providers. *J Am Pharm Assoc.* 2013; 53:172-181.
47. Holdford DA, Inocencio, TJ. Adherence and persistence associated with an appointment-based medication synchronization program. *J Am Pharm Assoc.* 2013; 53:576-583.
48. ASHP policy 2029: Preserving patient access to pharmacy services by medically underserved populations. In Hawkins B, ed. Best practices: positions and guidance documents of ASHP. 2020-2021 ed. Bethesda, MD: American Society of Health-System Pharmacists; 2021.
49. Telepharm. State-by-State Pharmacy Deserts Map. <https://info.telepharm.com/state-pharmacy-deserts-map> (accessed 2021 Mar 4).
50. Arya V, Bakken BK, Doucette WR et al. National pharmacist workforce study 2019. Pharmacy Workforce Center, Inc. https://www.aacp.org/sites/default/files/2020-03/2019_NPWS_Final_Report.pdf (accessed 2021 Jan 7).
51. Gaither CA, Schommer JC, Doucette WR et al. 2014 National pharmacist workforce survey. Pharmacy Workforce Center, Inc. <https://www.aacp.org/sites/default/files/finalreportofthenationalpharmacistworkforcesurvey2014.pdf> (accessed 2021 Sep 3).
52. Rural Health Information Hub. Rural Pharmacy and Prescription Drugs. <https://www.ruralhealthinfo.org/topics/pharmacy-and-prescription-drugs>. (accessed 2021 Feb 22).
53. Salako A, Ullrich F, Mueller KJ. Update: Independently Owned Pharmacy Closures in Rural America, 2003-2018. *Rural Policy Brief.* 2018 Jul 1;2018(2):1-6. PMID: 30080364.
54. Rural Hospital Closures: 2005-Present. Available at: <http://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/>. NC Rural Health Research Program. UNC-Chapel Hill (accessed 2021 Mar 10).
55. Sarkar, R., Metzger, B., Sayre, H., Slater, A Katamneni, S., Coustasse, A., & Drph. (2018). Telepharmacy and Access to Pharmaceutical Services in Rural Areas. *Journal of AHIMA / American Health Information Management Association.*
56. Pathak S, Haynes M, Qato DM, Urlick BY. Telepharmacy and Quality of Medication Use in Rural Areas, 2013-2019. *Prev Chronic Dis.* 2020;17:E101. Published 2020 Sep 3. doi:10.5888/pcd17.200012
57. RUPRI Center for Rural Health Policy Analysis, University of Iowa College of Public Health Department of Health Management and Policy. Rural pharmacy closures: implications for rural communities *Rural Policy Brief.* 2013 Jan 1;(2012 5):1-5. PMID: 25399456
58. Qato DM, Daviglius ML, Wilder J et al. 'Pharmacy deserts' are prevalent in Chicago's predominantly minority communities, raising medication access concerns. *Health Aff (Millwood).* 2014; 33:1958-65. doi: 10.1377/hlthaff.2013.1397.
59. Pednekar P, Peterson A. Mapping pharmacy deserts and determining accessibility to community pharmacy services for elderly enrolled in a State Pharmaceutical Assistance Program. *PLoS One.* 2018; 13:e0198173. doi: 10.1371/journal.pone.0198173.
60. Guadamuz JS, McCormick CD, Choi S et al. Telepharmacy and medication adherence in urban areas. *J Am Pharm Assoc (2003).* 2021 Mar-Apr; 61(2):e100-e113. doi: 10.1016/j.japh.2020.10.017.

61. Lori UP, Bouskill KE, Jessica S et al. Experiences of Medicaid Programs and Health Centers in Implementing Telehealth. *Rand Health Q.* 2020 Jun 15;8(4):RR-2564-ASPE.
62. Hudd TR, Tataronis GR. The impact of an urban telepharmacy on patient medication adherence in a Federally Qualified Health Center. *J Pharm Tech.* 2011; 27(3):117-22. doi:10.1177/875512251102700304.
63. Center for Medicare & Medicaid Services, U.S. Department of Health and Human Services. Telehealth. <https://www.cms.gov/Medicare/Medicare-General-Information/Telehealth> (accessed 2021 Feb 22).
64. Center for Medicare & Medicaid Services, U.S. Department of Health and Human Services. Privacy and Security Information. <https://www.cms.gov/Regulations-and-Guidance/Administrative-Simplification/HIPAA-ACA/PrivacyandSecurityInformation> (accessed 2021 Feb 22).
65. Department of Health and Human Services. Health Information Privacy: HITECH Act Enforcement Interim Final Rule. <http://www.hhs.gov/ocr/privacy/hipaa/administrative/enforcementrule/hitechenforcementinterim.html> (accessed 2021 Feb 22).
66. The American Recovery and Reinvestment Act of 2009, Pub. L. 111-5 (2009).
67. Food and Drug Administration. Device Software Functions Including Mobile Medical Applications. <https://www.fda.gov/medical-devices/digital-health-center-excellence/device-software-functions-including-mobile-medical-applications> (accessed 2021 Feb 22).
68. ASHP policy 1502, Pharmacist Recognition as a Healthcare Provider. In: Hawkins B, ed. Best practices: positions and guidance documents of ASHP. 2020-2021 ed. Bethesda, MD: American Society of Health-System Pharmacists; 2021. www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Document-Type/Policy-Positions (accessed 2021 Jul 21).
69. ASHP policy 1215, Pharmacist's Role in Team-Based Care. In: Hawkins B, ed. Best practices: positions and guidance documents of ASHP. 2020-2021 ed. Bethesda, MD: American Society of Health-System Pharmacists; 2021. www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Document-Type/Policy-Positions (accessed 2021 Jul 21).
70. ASHP policy 2011, Credentialing and Privileging by Regulators, Payers, and Providers of Collaborative Practice. In: Hawkins B, ed. Best practices: positions and guidance documents of ASHP. 2020-2021 ed. Bethesda, MD: American Society of Health-System Pharmacists; 2021. www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Document-Type/Policy-Positions (accessed 2021 Jul 21).
71. National Association of Boards of Pharmacy. Model Pharmacy Act/Rules. <https://nabp.pharmacy/resources/model-pharmacy-act/> (accessed 2021 Feb 22).
72. National Association of Boards of Pharmacy. Survey of pharmacy law—2020. Mount Prospect, IL: 2020. <https://nabp.pharmacy/resources/publications/survey-of-pharmacy-law/> (accessed 2021 Feb 22).

73. Thomas L, Capistrant G. State Telemedicine Gaps Analysis, Physician Practice Standards & Licensure. (2017). <https://utn.org/resources/downloads/50-state-telemedicine-gaps-analysis-physician-practice-standards-licensure.pdf> (accessed 2021 Feb 22).
74. Compton-Brown A, Mooradian S. State Regulation of Telepharmacy. *Pharmacy Times* (March 23, 2016). www.pharmacytimes.com/view/state-regulation-of-telepharmacy (accessed 2021 Jul 21).
75. National Conference of State Legislatures. State regulation of compounding pharmacies. <http://www.ncsl.org/research/health/regulating-compounding-pharmacies.aspx> (accessed 2021 Feb 22).
76. Casey MM, Sorensen TD, Elias W et al. Current practices and state regulations regarding telepharmacy in rural hospitals. *Am J Health-Syst Pharm*. 2010; 67:1085-92.
77. ASHP policy 1310: Regulation of telepharmacy. In: Hawkins B, ed. Best practices: positions and guidance documents of ASHP. 2020-2021 ed. Bethesda, MD: American Society of Health-System Pharmacists; 2021. www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Document-Type/Policy-Positions (accessed 2021 Jul 21).
78. ASHP policy 2030, Interstate Pharmacist Licensure. In: Hawkins B, ed. Best practices: positions and guidance documents of ASHP. 2020-2021 ed. Bethesda, MD: American Society of Health-System Pharmacists; 2021. www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Document-Type/Policy-Positions (accessed 2021 Jul 21).
79. National Association of Board of Pharmacy. Licensure. <https://nabp.pharmacy/programs/licensure/> (accessed 2021 Jul 21).
80. Longo KG. Telepharmacy business model allows satellite operation and increased patient convenience. *MJH Life Sciences and Drug Topics*. <https://www.drugtopics.com/view/telepharmacy-business-model-allows-satellite-operation-and-increased-patient-convenience> (accessed 2021 Jan 7).
81. Littauer SL, Dixon DL, Mishra VK et al. Pharmacists providing care in the outpatient setting through telemedicine models: a narrative review. *Pharm Pract*. 2017; 15(4):1134. <https://pubmed.ncbi.nlm.nih.gov/29317927/> (accessed 2021 Jan 7).
82. ASHP policy 2141, Pharmacist Engagement in and Payment for Telehealth. In: Hawkins B, ed. Best practices: positions and guidance documents of ASHP. 2020-2021 ed. Bethesda, MD: American Society of Health-System Pharmacists; 2021. www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Document-Type/Policy-Positions (accessed 2021 Jul 21).
83. ASHP policy 1710, Revenue Cycle Compliance and Management. In: Hawkins B, ed. Best practices: positions and guidance documents of ASHP. 2020-2021 ed. Bethesda, MD: American Society of Health-System Pharmacists; 2021. www.ashp.org/Pharmacy-Practice/Policy-Positions-and-Guidelines/Browse-by-Document-Type/Policy-Positions (accessed 2021 Jul 21).
84. American Hospital Association Centre of Health Innovation. Telehealth: A Path to Virtual Integrated Care.

https://www.aha.org/system/files/media/file/2019/02/MarketInsights_TeleHealthReport.pdf (accessed 2021 Feb 23).

85. Jason C. What Are the Top Telehealth, EHR Integrations in Healthcare? EHRIntelligence (Oct. 9, 2020). <https://ehrintelligence.com/news/what-are-the-top-telehealth-ehr-integrations-in-healthcare> (accessed 2021 Feb 23).