CORE READINESS: NEED FOR TELEHEALTH

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

When considering and developing a telehealth program, it is critical to understand the needs and motivation of the practice and patients and how telehealth can meet those needs. Identifying areas for improvement,[1] unmet patient needs,[2] the overall strategic plan for your practice[3,4] and how telehealth is incorporated within the practice vision can help create a strong case for telehealth. Telehealth involves a variety of services and identifying specific services to offer should be based on your practice context and the needs of your patients. A telehealth service that a colleague offers in his or her practice may not be the best fit for yours. Your practice should identify ways that telehealth can help address the needs of your practice and its patient population. Ultimately, the benefit of telehealth comes from its potential to provide value to different types of stakeholders, including patients, staff, vendors, and payers.[5]

ACTIONS TO TAKE

There are several types of actions to consider prior to telehealth implementation. These include identifying the need for telehealth to determine what services to offer and identifying benefits of those services.

IDENTIFY THE NEED FOR TELEHEALTH

Evaluate how telehealth aligns with the overarching goals of the practice including your strategic plan and vision for the future.[6,7] Telehealth may be able to help address concerns or fill gaps in your current practice.[3,4,8,9] Some needs telehealth can address include:

- Overcome patient barriers to receiving care (e.g., distance, availability or transportation difficulties).[10-12]

  Example: If a significant portion of your patient population requires comprehensive behavioral health care but there are limited local specialists, telehealth may be able to expand access to specialists and/or reduce the amount of time patients spend driving to appointments.

- Allow practices to facilitate patient care for chronic or complex conditions.

  Example: If a patient keeps a journal of glucose readings, a provider could review those and provide a virtual consult versus having a patient come in for a face-to-face visit.

- Improve provider and staff access to training, resources, or other critical elements.[13,14]

Some practices find that doing site visits with other places that have implemented telehealth is helpful to their understanding of how telehealth may work in their practice. Vendors can typically arrange this for you.

Identify if/how telehealth can contribute to your practice meeting local or national goals[15] such as reporting outcome measures, state campaigns, or payer-based initiatives.

- Organizations listed in the *Telehealth Resources* section may disseminate opportunities as they arise.

See additional details in ***Operations***.

Review how telehealth may fit into the existing infrastructure[16] and workflow of your practice.[7]

DETERMINE WHAT TELEHEALTH SERVICES TO OFFER

Identify services for which there is an immediate and compelling need[2] then expand to other areas.[1] This will help establish buy-in and ease the transition into telehealth.

Common places to start include:

- *Behavioral health services* – If there is a gap between the availability of on-site or local mental health services and patient needs, telehealth may be used to reach specialists and address this issue.[18,19]
- *Follow-up* – Telehealth can be used for follow-up care for chronic conditions, wound care and other conditions requiring multiple visits.[20]
- *Addressing Location barriers* - Remote or immobile patient populations may benefit from telehealth.[12,21] In addition, remote patient monitoring may enhance services already in place.[22,23]

Not every telehealth application or videoconferencing use will be valuable for every practice. For example, if your patient population does not have access to technology at home, then remote patient monitoring may not be a good fit.[5]

> ***Example:*** Practices in rural areas may use telehealth to facilitate a specialty visit in a larger city to reduce the travel time for patients to receive additional care.[24-26]

DOCUMENT BENEFITS OF TELEHEALTH SERVICES

Once you identify what telehealth services will be offered[27] then quantify the benefits you expect to achieve. This includes developing and sharing goals, considering the patient perspective and the practice perspective.

IDENTIFY ANTICIPATED BENEFITS OF TELEHEALTH

Based on your anticipated use of telehealth, identify the benefits you expect to see. Benefits can be to the practice, patients or both.

> ***Benefits to the practice*** could include reduced no-show rate, increased reporting of quality outcome measures, provider satisfaction, reduced provider travel time and increased efficiency.
>
> ***Benefits to patients*** could include improved outcomes, improved access to care, improved follow-up, and reduction in travel time.

DEVELOPING GOALS BASED ON BENEFITS

- Develop goals based on your expected use of telehealth and benefits and think about what goals you can measure. Goals to consider might include the number of encounters or outcome measures for a subpopulation.
- Establish guidelines for when you expect to use telehealth and keep that in mind when defining goals.[28]

> ***Example:*** You may establish a rule that all new patients must have a certain number of appointments in person before using telehealth. This could influence your goals if you have a transient population.

- Consider demographics of your patient population when setting your goals so that your goals align with your patient population's access to technology, technology acceptance and socioeconomic status.[3,4]

See ***Patient Readiness*** for more information.

- Keep in mind that change takes time for both the practice and patients.

See ***Staff Engagement: Change Management*** for more information.

- Consider the resources available to your practice when setting goals.

See ***Patient Readiness*** for more information.

- Establish goals that are measurable in order to assess if the practice is reaching its goals.

See ***Assessment Approach*** for more information.

SHARING GOALS

- Share the goals for the practice's use of telehealth with providers, practice staff and (when you deem it appropriate) patients and any referring providers.[29,30]
- Ask for input from both those who do and those who do not support telehealth and modify goals as appropriate.[3,4,31,32]

REFERENCES

1. Arkwright B. Telehealth readiness factors - what are they and why are they essential? 2014. http://www.himss.org/news/telehealth-readiness-factors-what-are-they-and-why-are-they-essential.
2. Weinstein RS, Lopez AM, Joseph BA, et al. Telemedicine, telehealth, and mobile health applications that work: opportunities and barriers. *Am J Med.* 2014;127(3):183-187. PMID: 24384059. doi: 10.1016/j.amjmed.2013.09.032
3. Jennett P, Jackson A, Healy T, et al. A study of a rural community's readiness for telehealth. *Journal of Telemedicine and Telecare.* 2003;9:259-263
4. Jennett P, Gagnon MP, Brandstadt HK. Preparing for success: readiness models for rural telehealth. *J Postgrad Med.* 2005;51(4)
5. Vassilev I, Rowsell A, Pope C, et al. Assessing the implementability of telehealth interventions for self-management support: a realist review. *Implementation Science.* 2015;10. PMID: WOS:000354182900001. doi: 10.1186/s13012-015-0238-9
6. CTEC. Assessing organizational readiness: is your organization ready for telemedicine? 2009. http://www.caltrc.org/wp-content/uploads/2013/10/08-1129-final_ctec_discovery_series.pdf.
7. Ross J, Stevenson F, Lau R, Murray E. Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). *Implement Sci.* 2016;11(1):146. PMID: 27782832. doi: 10.1186/s13012-016-0510-7
8. Yusif S, Hafeez-Baig A, Soar J. e-Health readiness assessment factors and measuring tools: a systematic review. *Int J Med Inform.* 2017;107:56-64. PMID: 29029692. doi: 10.1016/j.ijmedinf.2017.08.006
9. Zapka J, Simpson K, Hiott L, Langston L, Fakhry S, Ford D. A mixed methods descriptive investigation of readiness to change in rural hospitals participating in a tele-critical care intervention. *BMC Health Serv Res.* 2013;13:33. PMID: 23360332. doi: 10.1186/1472-6963-13-33
10. Bullock DR, Vehe RK, Zhang L, Correll CK. Telemedicine and other care models in pediatric rheumatology: an exploratory study of parents' perceptions of barriers to care and care preferences. *Pediatr Rheumatol Online J.* 2017;15(1):55. PMID: 28693580. doi: 10.1186/s12969-017-0184-y
11. Bullock DR, Vehe RK, Zhang L, Correll CK. Accessing pediatric rheumatology care: despite barriers, few parents prefer telemedicine. *Pediatric Rheumatology.* 2016;14. doi: 10.1186/s12969-016-0098-0
12. Jariwala N, Lipoff J. Evaluation of teledermatology implementation with insurance reimbursement in outpatient primary care practices. *Journal of the American Academy of Dermatology.* 2017;76(6):AB130-AB130. PMID: WOS:000403369301120
13. Glenn IC, Bruns NE, Hayek D, Hughes T, Ponsky TA. Rural surgeons would embrace surgical telementoring for help with difficult cases and acquisition of new skills. *Surg Endosc.* 2017;31(3):1264-1268. PMID: 27444835. doi: 10.1007/s00464-016-5104-6
14. Park H, Cormier E, Glenna G. Health consumers eHealth literacy to decrease disparities in accessing ehealth information. *Stud Health Technol Inform.* 2016;225:895-896. PMID: 27332397
15. Baird MB, Whitney L, Caedo CE. Experiences and attitudes among psychiatric mental health advanced practice nurses in the use of telemental health: results of an online survey. *J Am Psychiatr Nurses Assoc.* 2018;24(3):235-240. PMID: 28748728. doi: 10.1177/1078390317717330
16. El Sanadi N. Telehealth expansion requires advances in payment and coverage policies. *Mod Healthc.* 2015;45(37):25. PMID: 26619694
17. Asch DA. The hidden economics of telemedicine. *Ann Intern Med.* 2015;163(10):801-802. PMID: 26343261. doi: 10.7326/m15-1416
18. Waugh M, Voyles D, Thomas MR. Telepsychiatry: benefits and costs in a changing health-care environment. *International Review of Psychiatry.* 2015;27(6):558-568. doi: 10.3109/09540261.2015.1091291

19. Bouknight JG, Srinivasan S, Glover J, Mazumder M. Geriatric telepsychiatry: model programs and innovations in clinical services and education. *American Journal of Geriatric Psychiatry.* 2015;23(3):S9
20. Dodwad SJM, Hart BE, Lordon RJ, et al. Implementation of an mHealth postoperative wound management program. *Journal of the American College of Surgeons.* 2017;225(4):e88
21. Jamison RN. Are we really ready for telehealth cognitive behavioral therapy for pain? *Pain.* 2017;158(4):539-540. PMID: WOS:000400440200001. doi: 10.1097/j.pain.0000000000000801
22. Slotwiner D, Wilkoff B. Cost efficiency and reimbursement of remote monitoring: a US perspective. *Europace.* 2013;15 Suppl 1:i54-i58. PMID: 23737232. doi: 10.1093/europace/eut109
23. Terry NP. Mobile health: assessing the barriers. *Chest.* 2015;147(5):1429-1434. doi: 10.1378/chest.14-2459
24. Brooks E, Turvey C, Augusterfer EF. Provider barriers to telemental health: obstacles overcome, obstacles remaining. *Telemed J E Health.* 2013;19(6):433-437. PMID: 23590176. doi: 10.1089/tmj.2013.0068
25. Kruse CS, Karem P, Shifflett K, Vegi L, Ravi K, Brooks M. Evaluating barriers to adopting telemedicine worldwide: a systematic review. *Journal of Telemedicine and Telecare.* 2018;24(1):4-12. PMID: WOS:000419868900002. doi: 10.1177/1357633x16674087
26. Kruse CS, Krowski N, Rodriguez B, Tran L, Vela J, Brooks M. Telehealth and patient satisfaction: a systematic review and narrative analysis. *BMJ Open.* 2017;7(8):e016242. PMID: 28775188. doi: 10.1136/bmjopen-2017-016242
27. Ferreira A. Steps to telehealth success - organizational readiness. 2016. www.avizia.com/blog/telehealth-success-organizational-readiness.
28. Giambrone D, Rao BK, Esfahani A, Rao S. Obstacles hindering the mainstream practice of teledermatopathology. *J Am Acad Dermatol.* 2014;71(4):772-780. PMID: 24906611. doi: 10.1016/j.jaad.2014.04.043
29. Gagnon MP, Duplantie J, Fortin JP, Landry R. Implementing telehealth to support medical practice in rural/remote regions: what are the conditions for success? *Implementation Science.* 2006(18). doi: doi:10.1186/1748-5908-1-18
30. Gagnon MP, Ngangue P, Payne-Gagnon J, Desmartis M. m-Health adoption by healthcare professionals: a systematic review. *J Am Med Inform Assoc.* 2016;23(1):212-220. PMID: 26078410. doi: 10.1093/jamia/ocv052
31. Hoonakker PLT, Carayon P. Work system barriers and strategies reported by tele-intensive care unit nurses: a case study. *Critical Care Nursing Clinics of North America.* 2018;30(2):259-271. PMID: 129386687. Language: English. Entry Date: 20180508. Revision Date: 20180508. Publication Type: Article. Journal Subset: Core Nursing. doi: 10.1016/j.cnc.2018.02.008
32. Ray KN, Felmet KA, Hamilton MF, et al. Clinician attitudes toward adoption of pediatric emergency telemedicine in rural hospitals. *Pediatr Emerg Care.* 2017;33(4):250-257. PMID: 26785087. doi: 10.1097/pec.0000000000000583

CORE READINESS: ORGANIZATIONAL LEADERSHIP

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

Telehealth implementation involves change, with implications throughout the entire practice. If practice leaders take an active, hands-on role in supporting telehealth implementation, this support is more likely to be infused throughout the practice.[1-4] In addition to setting an example, having leadership support and buy-in can help when supporting staff engagement and addressing nay-sayers. When everyone in the practice is engaged and excited, it is easier to overcome implementation difficulties and patients will pick up on the excitement as well.

ACTIONS TO TAKE

There are several types of actions leaders should take before and during telehealth implementation. They include identifying other leaders, understanding practice readiness for and experience with change, engaging those who have indicated they are not in favor of telehealth, reinforcing the reasons behind telehealth and ensuring support for staff.

- IDENTIFY OTHER LEADERS WITHIN THE PRACTICE (e.g., practice manager, physician) who are in favor of telehealth and work with them to ensure they share their support throughout the practice and are on-board with necessary changes. Also, identify those who are early adopters of technology and those who are innovative.[2-5] They can serve as telehealth champions.

See ***Staff Engagement: Innovators/Champions*** for more information.

- UNDERSTAND PRACTICE READINESS FOR AND EXPERIENCE WITH CHANGE by reviewing how staff have handled previous changes, in particular those related to technology. Before implementation begins, your practice can look at what can be learned from previous changes, build on what went well, and identify areas to improve.[6] Some items to consider include:
  - Staff experience and attitude about previous changes.
  - Organizational and technical challenges that need to be addressed such as human resource implications (e.g., role, responsibility or job description changes), technical and workflow training, policies, and procedures needed.[1,2]
- IDENTIFY AND ADDRESS CONCERNS of staff, particularly anyone in the practice not in favor of telehealth and make sure they feel heard prior to roll-out. Seek staff input to identify foreseeable issues and develop strategies to address these issues.[5] Leaders must have authority to make changes if appropriate and respond to nay-sayers.[7]
- SHARE REASONING BEHIND TELEHEALTH IMPLEMENTATION and how it's right for your practice and patients so that everyone understands why this change is helpful for the practice. This is particularly important to get provider engagement. Revisit the vision, priorities, and goals for implementing telehealth with leadership to maintain buy-in and purpose for the initiative.

See ***Core Readiness: Need for Telehealth*** for more information.

- WORK WITH OTHER PRACTICE LEADERS TO GARNER SUPPORT FOR staff to demonstrate that this is a practice priority. This includes ensuring staff have sufficient time to adjust to telehealth.[7-9]
  - Allow time for clinical and administrative staff to adjust to telehealth.[9]
  - Work with staff to identify operational and design components that might influence telehealth implementation and use.[8]
  - Work to garner support and excitement around telehealth.

See ***Staff Engagement*** for more information.

- SHARE RESULTS from assessment and evaluation as telehealth implementation continues to demonstrate program value and identify any changes that should be made.

See ***Operations: Assessment Approach*** for more information.

REFERENCES

1. Jennett P, Jackson, A., Healy, T., Ho, K., Kazanjian, A., Woollard, R., Haydt, S., Bates, J. A study of a rural community's readiness for telehealth. *Journal of telemedicine and telecare.* 2003;9:259-263.
2. Jennett P, Gagnon, M. P., Brandstadt, H. K. Preparing for Success: Readiness Models for Rural Telehealth. *J Postgrad Med.* 2005;51(4).
3. CTEC. Assessing Organizational Readiness: Is Your Organization Ready for Telemedicine? 2009. http://www.caltrc.org/wp-content/uploads/2013/10/08-1129-final_ctec_discovery_series.pdf.
4. Ross J, Stevenson F, Lau R, Murray E. Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). *Implementation science : IS.* 2016;11(1):146.
5. Ferreira A. Steps to Telehealth Success - Organizational Readiness. 2016. www.avizia.com/blog/telehealth-success-organizational-readiness.
6. Meyer J, Rowan B. Institutionalized Organizations: Formal Structure as Myth and Ceremony. *The American Journal of Sociology.* 1977;83(2):340 - 363.
7. Ple-Plakon P, Lee PP, Blachley T, Musch DC, Woodward MA. Attitudes toward tele-ophthalmology. *Investigative Ophthalmology and Visual Science.* 2014;55(13):5565.
8. Kruklitis RJ, Tracy JA, McCambridge MM. Clinical and financial considerations for implementing an ICU telemedicine program. *Chest.* 2014;145(6):1392-1396.
9. Merchant KA, Ward MM, Mueller KJ. Hospital Views of Factors Affecting Telemedicine Use. *Rural policy brief.* 2015(2015 5):1-4.

FINANCIAL CONSIDERATIONS

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

Telehealth implementation can have a variety of financial considerations.[1-3] Telehealth can affect infrastructure, workflow, and reimbursement, all of which can influence the financial health of your practice.[4, 5] Some telehealth programs have been funded through State, Federal, foundation, and payer grant programs.[6] Others are funded through the practice or through partnerships with other organizations. Regardless of the funding source, creating a sustainable program is a key component of telehealth success. Identifying costs and benefits of telehealth before implementation is a critical part of sustainability. The payer landscape for telehealth is in flux,[7] so it is important to understand expected reimbursement. Identifying costs and benefits of telehealth can help you make an informed decision.

ACTIONS TO TAKE

Before implementing telehealth, you should consider several types of actions. These include identifying costs and benefits for telehealth to conduct a return-on-investment (ROI) analysis and seeking clarity from payers regarding reimbursement and requirements. In addition, grant funding might be available from State, Federal, or foundation sources or through a partnership (e.g., by partnering with a larger provider such as an academic medical center) to help support telehealth implementation.[8]

IDENTIFY THE NEED FOR TELEHEALTH

Telehealth vendors may have calculators to help identify costs and benefits. However, reviewing these items yourself can help you more fully understand costs and benefits that are specific to your practice so that you can make an informed decision about ROI.[9]

- IDENTIFY COSTS OF TELEHEALTH based on the service you are considering.[10, 11] Exact costs will vary based on the specific telehealth services you are implementing and the current technical infrastructure of the practice. Some categories of costs include:
  - Start-up costs such as technical infrastructure (e.g., cameras, lighting, computers), vendor costs, and training[4,12]
  - Ongoing costs such as staff time, connectivity, monthly service or licensing fees, and upgrades[13,14]
  - Opportunity costs of staff time[13]
- IDENTIFY THE BENEFITS OF TELEHEALTH, including sources of revenue or cost savings due to telehealth:
  - Additional revenue from payers (see below on obtaining clarity from payers)
  - Ability to see more patients per day because of time savings[9,15]
  - Ability to have larger patient panels in a capitated system[6]
  - Reduced mileage reimbursement for providers (if applicable)[17]
  - Better payments under value-based programs (if applicable)[18]

NON-MONETARY BENEFITS TO CONSIDER

The following benefits of telehealth may not result in direct financial benefits to your practice but are important to consider:[19]

- Improved adherence and follow-up with patients, which could lead to improved quality metrics and enhanced alternative care models[20]
- Better outcomes and reduced cost to patients[18, 21]
- Improved preventative or proactive care between in-person visits
- Travel reductions for patients and providers[22]
- Reduction in hospitalizations[15, 18]

GET CLARITY ABOUT REIMBURSEMENT AND REQUIREMENTS FROM PAYERS

IDENTIFY THE PAYERS THAT ARE THE HIGHEST VOLUME in your practice. This information will help you prioritize your efforts.

UNDERSTAND PAYER POLICIES ABOUT REIMBURSEMENT AND KEEP UP WITH CHANGES. The landscape for both public and private payers is changing[7,23] due to telehealth policy updates and regulatory changes at the Federal and State levels.

- Maryland Medicaid reimburses for services under the Telehealth Program.
  - The Telehealth Program serves Medicaid participants regardless of geographic location within Maryland.
  - Telehealth providers must be enrolled in the Maryland Medical Assistance Program among other things.
- Medicare pays for a limited number of services furnished by physicians or practitioners to eligible beneficiaries in rural/shortage areas via telehealth.
  - Rural and health professional shortage areas are defined by the Health Resources and Services Administration.
  - Reimbursed services or codes are identified in the Physician Fee Schedule.

You can get more information about telehealth reimbursement by calling payers or going online to the payer's medical policies. Some questions you may wish to ask or look up include:[24-29]

- What services are reimbursed? Do some services receive higher reimbursement? Are some services covered more often than others or for particular populations?
- What are the requirements for reimbursement? (e.g., setting of care, special coding requirements, coding identifiers, or documentation requirements)
- Are some things not reimbursed?
- Are particular identifiers needed for billing?

You can review external resources for further information about telehealth, available resources, and reimbursement policies.

See ***Telehealth Resources*** for more information.

EXPLORE EXTERNAL SUPPORT

If external support (e.g., grant funding and partnerships with other organizations) is available, it may give practices resources such as technology, personnel, technical assistance, and financial support.

- Sources of grant funding for telehealth include payers, the Maryland Health Care Commission, the Maryland Community Resources Commission, foundations, and Federal agencies.
- External partners that may provide support include payers and academic medical centers that are seeking practices to participate in their telehealth efforts.
- These opportunities are disseminated through organizational listservs and mailings.
- External support should not be exclusively relied on to develop and sustain a telehealth program given that these types of support may be awarded for a limited time period focused on implementation or be subject to other changes over time.

REFERENCES

1. Ferreira, A. *Steps to Telehealth Success—Organizational Readiness*. 2016.
2. Gagnon, M.P., J. Duplantie, J.P. Fortin, and R. Landry, *Implementing telehealth to support medical practice in rural/remote regions: what are the conditions for success?* Implement Sci, 2006. **1**: p. 18.
3. Gagnon, M.P., et al., *m-Health adoption by healthcare professionals: a systematic review.* J Am Med Inform Assoc, 2016. **23**(1): p. 212-20.
4. Effertz, G., et al., *Sustaining and expanding telehealth: a survey of business models from selected prominent U.S. telehealth centers.* Telemed J E Health, 2017. **23**(2): p. 137-142.
5. Arkwright, B. *Telehealth Readiness Factors—What are They and Why Are They Essential?* 2014.
6. Adler-Milstein, J., J. Kvedar, and D.W. Bates, *Telehealth among US hospitals: several factors, including state reimbursement and licensure policies, influence adoption.* Health Aff (Millwood), 2014. **33**(2): p. 207-15.
7. Campagna, M., F. Naka, and J. Lu, *Teledermatology: an updated overview of clinical applications and reimbursement policies.* Int J Womens Dermatol, 2017. **3**(3): p. 176-179.
8. Chen, S., A. Cheng, and K. Mehta, *A review of telemedicine business models.* Telemed J E Health, 2013. **19**(4): p. 287-97.
9. Bashshur, R.L., et al., *Sustaining and realizing the promise of telemedicine.* Telemed J E Health, 2013. **19**(5): p. 339-45.
10. Binder, W.J., et al., *Telemedicine in the intensive care unit: improved access to care at what cost?* Crit Care Nurs Clin North Am, 2018. **30**(2): p. 289-296.
11. Hertz, B.T., *Telemedicine: patient demand, cost containment drive growth. Joining the trend may not be as expensive or time-consuming as you think, experts say.* Med Econ, 2013. **90**(3): p. 37, 39-42.
12. Ross, J., et al., *Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update).* Implement Sci, 2016. **11**(1): p. 146.
13. Waugh, M., D. Voyles, and M.R. Thomas, *Telepsychiatry: benefits and costs in a changing health-care environment.* International Review of Psychiatry, 2015. **27**(6): p. 558-568.
14. Kruklitis, R.J., J.A. Tracy, and M.M. McCambridge, *Clinical and financial considerations for implementing an ICU telemedicine program.* Chest, 2014. **145**(6): p. 1392-1396.
15. Schwamm, L.H., *Telehealth: seven strategies to successfully implement disruptive technology and transform health care.* Health Aff (Millwood), 2014. **33**(2): p. 200-6.
16. Rosen, A.R., et al., *Landscape of business models in teledermatology.* Cutis, 2016. **97**(4): p. 302-304.
17. Russo, J.E., R.R. McCool, and L. Davies, *VA telemedicine: an analysis of cost and time savings.* Telemed J E Health, 2016. **22**(3): p. 209-15.
18. Morphew, T., et al., *Mobile health care operations and return on investment in predominantly underserved children with asthma: the breathmobile program.* Popul Health Manag, 2013. **16**(4): p. 261-9.
19. Kumar, G., et al., *The costs of critical care telemedicine programs: a systematic review and analysis.* Chest, 2013. **143**(1): p. 19-29.
20. North, F., et al., *Telemedicine barriers associated with regional quality measures.* Telemed J E Health, 2014. **20**(2): p. 179-81.
21. Okon, N., et al., *Telestroke network cost-effectiveness in the pacific Northwest: geography and facility size support a cost-sharing model between hub and spoke.* Stroke, 2015. **46**(1).
22. MacKinney, A.C., et al., *The business case for tele-emergency.* Telemed J E Health, 2015. **21**(12): p. 1005-11.
23. Trout, K.E., et al., *Legal mapping analysis of state telehealth reimbursement policies.* Telemed J E Health, 2017. **23**(10): p. 805-814.

24. Weinstein, R.S., et al., *Telemedicine, telehealth, and mobile health applications that work: opportunities and barriers.* Am J Med, 2014. **127**(3): p. 183-7.
25. Glenn, I.C., et al., *Rural surgeons would embrace surgical telementoring for help with difficult cases and acquisition of new skills.* Surg Endosc, 2017. **31**(3): p. 1264-1268.
26. Blackman, K., *Covering and reimbursing telehealth services.* NCSL Legisbrief, 2016. **24**(4): p. 1-2.
27. Brooks, E., C. Turvey, and E.F. Augusterfer, *Provider barriers to telemental health: obstacles overcome, obstacles remaining.* Telemed J E Health, 2013. **19**(6): p. 433-7.
28. Ladika, S., *Telehealth dials up discussion about payment to providers.* Manag Care, 2016. **25**(6): p. 15-9.
29. Rutledge, C.M., et al., *Telehealth and eHealth in nurse practitioner training: current perspectives.* Adv Med Educ Pract, 2017. **8**: p. 399-409.

OPERATIONS: TELEHEALTH ROLES

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

As with any change, telehealth will impact roles and responsibilities for staff throughout your practice. It is important to understand how telehealth will modify roles and responsibilities from referral through billing so you can prepare and train staff accordingly. This will help garner a consistent understanding of expectations of the program and staff responsibilities to contribute to the success of the telehealth program. Proactively identifying areas of tension and minimizing conflict between roles and the amount of disruption to normal workflow,[1-3] can improve the success of telehealth initiatives.

ACTIONS TO TAKE

There are several types of actions your practice should consider prior to telehealth implementation related to roles and responsibilities. These include engaging staff during planning, identifying changes to roles and developing a plan for helping staff integrate their new telehealth roles into their regular workflow.

IDENTIFYING ROLES AND CHANGES

- Engage staff during planning to obtain their buy-in. This includes reiterating the benefits you expect to achieve, identifying goals and identifying resources.
- Identify staff to help manage logistics and provide technical support to patients. This is in addition to a champion who will support telehealth buy-in.[4]

See ***Staff Engagement, Innovators and Champions*** for more information.

MANGAGE LOGISTICS - Identify physical space where telehealth will be used, appointment scheduling, information coordination across providers, and how staff time will be used.

TECHNICAL SUPPORT includes staff who will set up technology for patients, assist patients with questions, and provide support during the appointment.

- Identify activities needed to support the telehealth program, identify the roles to complete those activities, assign responsibility and structure training and workflow accordingly.[5]
  - Consider what support providers and staff need to effectively use the technology.

While you should consider vendor suggestions for training policy and procedure changes and workflow changes based on their previous experience you should adopt changes based on your practice's needs. For example some vendors suggest workflows based on having a full-time telehealth coordinator. A solo practitioner is unlikely to have staff for a dedicated person but will need to identify a person to serve this role in addition to their other roles and responsibilities.

  - Review current staff roles, considering how they would need to change to accommodate telehealth based on what you are implementing.[6]

If you are not sure what role is appropriate for a given task, do not leave it to chance, but make a decision based on alignment with current work. Items without a role assigned end up with diffused responsibility and may not get done consistently.

- Identify staff with availability and review other initiatives or duties which might conflict with telehealth efforts.[6] In cases of conflicting roles or in a small practice where staff wear many hats, leadership must establish priorities.

- Ensure roles and responsibilities are clear and avoid spreading responsibility too widely.[7]
- Develop a process for onboarding new staff or transitioning telehealth roles in case of turnover.[7]
- Ensure that there is a role and process to use emergency personnel or resources if needed.

INTEGRATING TELEHEALTH AND OTHER ROLES

In order to ensure that staff are able to fulfill their telehealth roles and feel comfortable with any additional responsibilities, it is necessary to consider the roles they already fill at the practice and discuss expectations with them honestly and openly. Keep the lines of communication open.

See ***Operations: Scheduling and Workflow*** for more information.

COMMUNICATE THE CHANGES IN ROLES AND RESPONSIBILITIES TO STAFF.

- Assess how relationships among staff will change given the new program, work with staff to address concerns, and develop strategies to ensure good communication.[8,9] Encourage collaboration among clinical and administrative staff to increase buy-in.[10,11]
- Clarify the resources needed for each staff and increase buy-in by including staff and leadership in planning the new role.[12]

COMMUNICATE THE EXPECTED LIFECYCLE OF TELEHEALTH PROJECT IMPLEMENTATION AND PERMANENCE OF ANY CHANGES TO THE ORGANIZATION.

- Ensure staff have an understanding of the impact of telehealth on their regular duties through education and dissemination of protocols and that best practices for face to face visits such as care coordination also apply for telehealth visits.

See ***Operations: Scheduling and Workflow*** for more information.

- Work with the telehealth champion to reinforce protocols and the role of telehealth in the practice.[3]
- Ensure that roles and responsibilities are structured to reduce the amount of time physicians spend on administrative aspects of telehealth services so they have more time for clinical activities.[13]

See ***Staff Engagement, Innovators and Champions*** for more information.

REFERENCES

1. McGregor D, Keep M, Brunner M, et al. Preparing e-Health ready graduates: a qualitative focus group study. *Stud Health Technol Inform.* 2017;239:91-96. PMID: 128801371. doi: 10.3233/978-1-61499-783-2-91
2. Phillips J, Yu D, Poon SK, et al. E-health readiness for teams: a comprehensive conceptual model. *Stud Health Technol Inform.* 2017;239:119-125. PMID: 28756446
3. Shaw RJ, Kaufman MA, Bosworth HB, et al. Organizational factors associated with readiness to implement and translate a primary care based telemedicine behavioral program to improve blood pressure control: the HTN-IMPROVE study. *Implement Sci.* 2013;8:106. PMID: 24010683. doi: 10.1186/1748-5908-8-106
4. Ross J, Stevenson F, Lau R, Murray E. Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). *Implement Sci.* 2016;11(1):146. PMID: 27782832. doi: 10.1186/s13012-016-0510-7
5. James HE. Pediatric neurosurgery telemedicine clinics: a model to provide care to geographically underserved areas of the United States and its territories. *J Neurosurg Pediatr.* 2016;25(6):753-757. PMID: 27589599. doi: 10.3171/2016.6.peds16202
6. CTEC. Assessing organizational readiness: is your organization ready for telemedicine? 2009. http://www.caltrc.org/wp-content/uploads/2013/10/08-1129-final_ctec_discovery_series.pdf.
7. Vimarlund V, Le Rouge C. Barriers and opportunities to the widespread adoption of telemedicine: a bi-country evaluation. *Stud Health Technol Inform.* 2013;192:933. PMID: 23920707
8. Meyer J, Pare G. Telepathology impacts and implementation challenges a scoping review. *Arch Pathol Lab Med.* 2015;139(12):1550-1557. PMID: WOS:000368422300015. doi: 10.5858/arpa.2014-0606-RA
9. Rutledge CM, Kott K, Schweickert PA, Poston R, Fowler C, Haney TS. Telehealth and eHealth in nurse practitioner training: current perspectives. *Adv Med Educ Pract.* 2017;8:399-409. PMID: 28721113. doi: 10.2147/amep.s116071
10. Herrin J, Harris KG, Kenward K, Hines S, Joshi MS, Frosch DL. Patient and family engagement: a survey of US hospital practices. *BMJ Quality & Safety.* 2015. doi: 10.1136/bmjqs-2015-004006
11. Wu RC, Abrams H, Baker M, Rossos PG. Implementation of a computerized physician order entry system of medications at the University Health Network--physicians' perspectives on the critical issues. *Healthc Q.* 2006;9(1):106-109. PMID: 16548441
12. Zapka J, Simpson K, Hiott L, Langston L, Fakhry S, Ford D. A mixed methods descriptive investigation of readiness to change in rural hospitals participating in a tele-critical care intervention. *BMC Health Serv Res.* 2013;13:33. PMID: 23360332. doi: 10.1186/1472-6963-13-33
13. Stempniak M. Revisiting e-visits. Electronic visits slow to be embraced by payers and providers. *Hosp Health Netw.* 2013;87(10):25. PMID: 24303632

OPERATIONS: SCHEDULING AND WORKFLOW

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

Telehealth implementation represents a change in the mode of care delivery, with corresponding changes in clinical and administrative processes.[1] Telehealth impacts activities from identifying patients and scheduling them through consultation, documentation and billing.[2] Your practice should identify potential changes needed for telehealth implementation and how to address them. When possible, try to build on existing processes and practices to minimize disruption.[3] Once you identify and document changes to clinical and administrative workflows, it is important to disseminate these to the staff through training and education.

ACTIONS TO TAKE

There are several types of actions to consider prior to telehealth implementation. These include identifying processes that will change given telehealth, such as scheduling and workflow, and integrating telehealth into practice.

IDENTIFYING IMPACTS OF TELEHEALTH

Identify processes that will change due to telehealth implementation ahead of time so that your practice is prepared.[1] Preparation includes documenting and disseminating how your practice will handle changes.[1,4]

There are a number of aspects to consider when reviewing your workflows and identifying changes.[5] Questions to consider include:

- STAFFING:
  - Which staff will be involved in the telehealth program and who will have input into decisions?
  - How will responsibilities and staff roles be aligned?
  - What are the time implications and are there ways to save time on administrative tasks?[6]
- SCHEDULING:
  - Will you schedule telehealth consults throughout clinic hours or during a particular time? If there will be after-hours telehealth visits, who will staff them?
  - Will they be flagged somehow so staff are aware it's a telehealth visit?
  - Will all providers deliver telehealth services or just some? How will this impact the schedule? Do the providers who will be offering telehealth services have particular scheduling preferences with respect to telehealth?
  - How will staff know about scheduling decisions?[2]
- WORKFLOW:
  - BEFORE VISIT: How will processes work for identifying and referring telehealth patients, communication between sites (i.e., location of the patient versus location of the provider)? When

and how will patient consent for telehealth be obtained and stored, especially for patients who have not visited the practice?[7] In cases where there is coordination between providers, how will information exchange occur?

- DURING VISIT: Who will help the patient with the technology during the actual telehealth encounter?
- AFTER VISIT: How will documentation and billing be handled?[8] How will staff work together and how they will communicate clinical and administrative information across sites and coordinate care.[9] How will information be stored and who will have access to it? Will this process differ from other services? How will encounter information be shared with the patient's referring provider?

INTEGRATION INTO EXISTING WORKFLOW

Once you have outlined things that will change due to telehealth, it is important to identify how your practice will accommodate these aspects. Integrating telehealth into your practice's current clinical and administrative processes has less of a learning curve and is less disruptive than designing new processes.[10] It is important to consider your current infrastructure and workflow and integrate telehealth services accordingly.[11,12]

- PROTOCOLS: Identify and document activities for a telehealth encounter, including the service (i.e., when and how telehealth will be used), person(s) involved, system involved and any other considerations. If staff have questions about the protocols or raise concerns, it is easier to make changes before roll-out than after. It is important to have multiple roles and perspectives involved to fully understand impacts.[13,14] Design simple and easy to read telehealth protocols, which can include flow charts, or look similar to the practice's current protocol design. Samples may be available from telehealth associations or other organizations.
- DOCUMENTATION: Work with your vendor to ensure that telehealth services and documentation are integrated into the current electronic health record (EHR) to prevent multiple documentation streams.[11,12,15] Work with your vendor to try to minimize toggling back and forth between screens and how many different systems or interfaces need to be accessed.[16-19]
- DISSEMINATION WITHIN THE PRACTICE: Communicate expectations with the staff about how telehealth will fit into the practice and its processes, expectations for involvement of staff, and patients who will use services.[16,17,20] This will help staff plan for scheduling, workflow, and fulfilling the expectations for involvement.
- TEST ENCOUNTER: Conduct a test telehealth encounter, compare it to protocols developed and make any changes that are necessary to improve workflow and ensure that the protocols closely matches encounters in practice.

The *Telehealth Resources* document and your vendor will be important resources for you when evaluating your workflow and considering how telehealth will impact it.

See the ***Telehealth Resources*** document for more information.

REFERENCES

1. Kreofsky BLH, Blegen RN, Lokken TG, Kapraun SM, Bushman MS, Demaerschalk BM. Sustainable telemedicine: designing and building infrastructure to support a comprehensive telemedicine practice. *Telemed J E Health.* 2018. PMID: 29658828. doi: 10.1089/tmj.2017.0291
2. James HE. Pediatric neurosurgery telemedicine clinics: a model to provide care to geographically underserved areas of the United States and its territories. *J Neurosurg Pediatr.* 2016;25(6):753-757. PMID: 27589599. doi: 10.3171/2016.6.peds16202
3. Shaw RJ, Kaufman MA, Bosworth HB, et al. Organizational factors associated with readiness to implement and translate a primary care based telemedicine behavioral program to improve blood pressure control: the HTN-IMPROVE study. *Implement Sci.* 2013;8:106. PMID: 24010683. doi: 10.1186/1748-5908-8-106
4. Maunder K, Walton K, Williams P, Ferguson M, Beck E. A framework for eHealth readiness of dietitians. *Int J Med Inform.* 2018;115:43-52. PMID: 29779719. doi: 10.1016/j.ijmedinf.2018.04.002
5. Zapka J, Simpson K, Hiott L, Langston L, Fakhry S, Ford D. A mixed methods descriptive investigation of readiness to change in rural hospitals participating in a tele-critical care intervention. *BMC Health Serv Res.* 2013;13:33. PMID: 23360332. doi: 10.1186/1472-6963-13-33
6. Soegaard Ballester JM, Scott MF, Owei L, Neylan C, Hanson CW, Morris JB. Patient preference for time-saving telehealth postoperative visits after routine surgery in an urban setting. *Surgery.* 2018;163(4):672-679. PMID: 29398042. doi: 10.1016/j.surg.2017.08.015
7. Glenn IC, Bruns NE, Hayek D, Hughes T, Ponsky TA. Rural surgeons would embrace surgical telementoring for help with difficult cases and acquisition of new skills. *Surg Endosc.* 2017;31(3):1264-1268. PMID: 27444835. doi: 10.1007/s00464-016-5104-6
8. Binder WJ, Cook JL, Gramze N, Airhart S. Telemedicine in the intensive care unit: improved access to care at what cost? *Crit Care Nurs Clin North Am.* 2018;30(2):289-296. PMID: 29724446. doi: 10.1016/j.cnc.2018.02.010
9. Hoonakker PLT, Carayon P. Work system barriers and strategies reported by tele-intensive care unit nurses: a case study. *Critical Care Nursing Clinics of North America.* 2018;30(2):259-271. PMID: 129386687. Language: English. Entry Date: 20180508. Revision Date: 20180508. Publication Type: Article. Journal Subset: Core Nursing. doi: 10.1016/j.cnc.2018.02.008
10. Ferreira A. Steps to telehealth success - organizational readiness. 2016. www.avizia.com/blog/telehealth-success-organizational-readiness.
11. Gagnon MP, Duplantie J, Fortin JP, Landry R. Implementing telehealth to support medical practice in rural/remote regions: what are the conditions for success? *Implementation Science.* 2006(18). doi: doi:10.1186/1748-5908-1-18
12. Gagnon MP, Ngangue P, Payne-Gagnon J, Desmartis M. m-Health adoption by healthcare professionals: a systematic review. *J Am Med Inform Assoc.* 2016;23(1):212-220. PMID: 26078410. doi: 10.1093/jamia/ocv052
13. Ross J, Stevenson F, Lau R, Murray E. Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). *Implement Sci.* 2016;11(1):146. PMID: 27782832. doi: 10.1186/s13012-016-0510-7
14. Griffith ML, Siminerio L, Payne T, Krall J. A shared decision-making approach to telemedicine: engaging rural patients in glycemic management. *J Clin Med.* 2016;5(11). PMID: 27869655. doi: 10.3390/jcm5110103
15. Jennett P, Gagnon MP, Brandstadt HK. Preparing for success: readiness models for rural telehealth. *J Postgrad Med.* 2005;51(4)
16. Brooks E, Turvey C, Augusterfer EF. Provider barriers to telemental health: obstacles overcome, obstacles remaining. *Telemed J E Health.* 2013;19(6):433-437. PMID: 23590176. doi: 10.1089/tmj.2013.0068

17. Kruse CS, Karem P, Shifflett K, Vegi L, Ravi K, Brooks M. Evaluating barriers to adopting telemedicine worldwide: a systematic review. *Journal of Telemedicine and Telecare.* 2018;24(1):4-12. PMID: WOS:000419868900002. doi: 10.1177/1357633x16674087
18. L'Esperance ST, Perry DJ. Assessing advantages and barriers to telemedicine adoption in the practice setting: a MyCareTeam (TM) exemplar. *Journal of the American Association of Nurse Practitioners.* 2016;28(6):311-319. PMID: WOS:000378357300005. doi: 10.1002/2327-6924.12280
19. Haverhals LM, Sayre G, Helfrich CD, et al. E-consult implementation: lessons learned using consolidated framework for implementation research. *Am J Manag Care.* 2015;21(12):e640-647. PMID: 26760426
20. Kruse CS, Krowski N, Rodriguez B, Tran L, Vela J, Brooks M. Telehealth and patient satisfaction: a systematic review and narrative analysis. *BMJ Open.* 2017;7(8):e016242. PMID: 28775188. doi: 10.1136/bmjopen-2017-016242

OPERATIONS: OPERATIONAL REQUIREMENTS

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

Telehealth involves patients and providers who are not co-located and thus has unique operational considerations related to coordination, licensure, reimbursement, and credentialing.[1] There are also legal considerations, including privacy and professional liability concerns that must be monitored as the policy landscape evolves.[2,3] Representatives from both the originating site (where the patient is located) and the distant site (where the provider is located) must work together to determine what types of services telehealth should be used for, workflow, identify common policies and procedures, and identify communication and coordination mechanisms. Identifying points of contact at the originating and distant sites and taking steps to develop and maintain good relationships between sites is useful in working through telehealth implementation and use.

ACTIONS TO TAKE

There are several types of actions to consider prior to telehealth implementation. These include formalizing relationships between sites, understanding licensing and credentialing considerations, creating protections for privacy, and navigating malpractice concerns.

FORMALIZING RELATIONSHIPS BETWEEN SITES

- COORDINATE BETWEEN SITES: Relationships between originating and distant sites vary in formality**.** Some of the most formal involve contracting with a third party to provide telehealth services and supports including clinical staff. Others may involve a referring relationship between a primary care and specialty provider without specific written agreements. Regardless of the contractual nature of the relationship, it is important to ensure that you coordinate policies and procedures between sites and establish clear expectations for communication and processes.[2,3]
- BUILD RELATIONSHIPS: Provide opportunities for referring providers to build relationships with consulting providers. This can be accomplished through in-person meetings, phone calls or using telehealth technology. This can help build trust and establish patterns for referrals.[4]
- IDENTIFY COORDINATORS: Identify a person at each site who is responsible for coordination and administrative activities and provide opportunities for them to discuss expectations around documentation, coordination, scheduling and referrals.[5]
- CLARIFY EXPECTATIONS: Ensure that coordinators understand the expectations and address workflow concerns and considerations with the relevant people in your practice. For example, if there is a concern about how pictures will be taken and shared between sites, practice leadership should seek input from those who will take and upload pictures and those who will receive and view the pictures. Testing telehealth with a patient or two then debriefing with the care team about the process, areas of tension and potential areas of improvement can help foster a collaborative working relationship between sites.[6,7]

LICENSURE AND CREDENTIALING

Your practice should review licensure and credentialing considerations when building and/or expanding telehealth programs and establish a mechanism for monitoring changes. One reason to keep up with changes is that these items impact provider arrangements and the availability of services.[8,9] If you intend to provide services within Maryland to patients in Maryland, then credentialing across organizations is more important than licensing, which is more relevant when practicing across state lines.

STATE LICENSURE

Practices should consider the impact of state and local policies on licensing.[10] Generally, telehealth providers deliver services in the same state as the patient.[11] If your practice is considering providing services across state lines, there are several things to consider.

- The Maryland Board of Physicians requires certain practice standards of certain practitioners who practice telemedicine, which are outlined in the regulation COMAR 10.32.05 (available at http://www.dsd.state.md.us/COMAR/SubtitleSearch.aspx?search=10.32.05.*). Practitioners licensed by the Board of Physicians, using telehealth or planning to use telehealth, should be familiar with these licensure requirements.
- Identify if there are providers in the practice who hold multiple state licenses. If so, those providers are good candidates to provide services across states.[12]
- If your practice chooses to provide telehealth services across state lines, decide if this is feasible based on state requirements, patient volume (e.g., does the anticipated volume justify the resources needed to secure another state license), or other needs outside of telehealth.[12,13] This may involve practitioners applying for licenses in a neighboring state to ensure they can cover telehealth visits for patients living there, or the facility asking for distant providers to apply for licenses to practice within Maryland.

See ***Telehealth Resources*** for more information.

CREDENTIALING

If providers in your practice intend to provide telehealth services to facilities, you need to consider the credentialing processes at these facilities. Hospitals may have different types of credentialing for telehealth services versus face to face services. This might apply to you if your practice expects to be the distant site (where the provider is) and the facility the originating site (where the patient is). For example, a psychiatrist could provide tele-behavioral health in a nursing home rather than going to the facility, but that may require separate credentialing from the facility. Call the credentialing office of the facility itself to learn more about their processes and inquire if they allow credentialing by proxy with any of your currently credentialed facilities.[14] Also ask facilities if they participate in delegated credentialing.

DELEGATED CREDENTIALING. In 2011 the Centers for Medicare and Medicaid Services (CMS) allowed for delegated credentialing to the distant hospitals and clinics essentially trusting that their providers have been appropriately vetted by another facility's credentialing office. If a facility in which you are considering offering telehealth services participates in delegated credentialing then your practice's providers may be able to avoid going through the credentialing process again.[7]

This rule can be found on the CMS website at https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/downloads/SCLetter11_32.pdf.

LEGAL CONSIDERATIONS

- REVIEW YOUR TELEHEALTH PROGRAM AS YOU WOULD ANY NEW SERVICE IN YOUR PRACTICE. Consider the standard of care that applies, scope of practice, where providers may be held liable, and what malpractice insurance may cover.[15]
  - Consult with others on the oversight needed for legal considerations. Your vendor will likely have resources based on previous experience. There may also be specific state or federal guidelines across services. Consult organizations that typically help with regulatory issues at your practice (e.g., your professional or medical society/association), and consider reaching out to others that have implemented a telehealth program to learn about their experiences.[16]
  - Contact your malpractice insurance company prior to implementation. Ask about coverage options, conditions that apply, ePrescribing via telehealth, and if there are safeguards they suggest.[17] If there are special considerations that govern telehealth coverage, make sure you understand them.
  - Identify how you will obtain patient consent virtually.
  - Identify processes and requirements for ePrescribing via telehealth.
- ASK VENDORS ABOUT PRIVACY AND SECURITY POLICIES AND REGULATIONS.[17] If you are working with a vendor that provides distant site telehealth practitioners, identify the protections they have in place for malpractice and sign agreements outlining your understanding.[18]
- ESTABLISH A METHOD TO KEEP UP WITH CHANGING REGULATIONS that may impact the practice of telehealth. As the field evolves, you may find that your previous policies need to be updated.[11,19]

REFERENCES

1. Weinstein RS, Lopez AM, Joseph BA, et al. Telemedicine, telehealth, and mobile health applications that work: opportunities and barriers. *Am J Med.* 2014;127(3):183-187. PMID: 24384059. doi: 10.1016/j.amjmed.2013.09.032
2. Jennett P, Jackson A, Healy T, et al. A study of a rural community's readiness for telehealth. *Journal of Telemedicine and Telecare.* 2003;9:259-263
3. Jennett P, Gagnon MP, Brandstadt HK. Preparing for success: readiness models for rural telehealth. *J Postgrad Med.* 2005;51(4)
4. Hertz BT. Telemedicine: patient demand, cost containment drive growth. Joining the trend may not be as expensive or time-consuming as you think, experts say. *Med Econ.* 2013;90(3):37, 39-42. PMID: 23875274
5. James HE. Pediatric neurosurgery telemedicine clinics: a model to provide care to geographically underserved areas of the United States and its territories. *J Neurosurg Pediatr.* 2016;25(6):753-757. PMID: 27589599. doi: 10.3171/2016.6.peds16202
6. Becevic M, Boren S, Mutrux R, Shah Z, Banerjee S. User satisfaction with telehealth: study of patients, providers, and coordinators. *Health Care Manag (Frederick).* 2015;34(4):337-349. PMID: 26506296. doi: 10.1097/hcm.0000000000000081
7. Uscher-Pines L, Kahn JM. Barriers and facilitators to pediatric emergency telemedicine in the United States. *Telemed J E Health.* 2014;20(11):990-996. PMID: 25238565. doi: 10.1089/tmj.2014.0015
8. Giambrone D, Rao BK, Esfahani A, Rao S. Obstacles hindering the mainstream practice of teledermatopathology. *J Am Acad Dermatol.* 2014;71(4):772-780. PMID: 24906611. doi: 10.1016/j.jaad.2014.04.043
9. Robeznieks A. State boards' policy for telemedicine may present roadblocks. *Mod Healthc.* 2014;44(12):12. PMID: 24933751
10. Vimarlund V, Le Rouge C. Barriers and opportunities to the widespread adoption of telemedicine: a bi-country evaluation. *Stud Health Technol Inform.* 2013;192:933. PMID: 23920707
11. Crane M. Exploring telehealth models. *Med Econ.* 2014;91(14):17-20. PMID: 25233550
12. Adler-Milstein J, Kvedar J, Bates DW. Telehealth among US hospitals: several factors, including state reimbursement and licensure policies, influence adoption. *Health Aff (Millwood).* 2014;33(2):207-215. PMID: 24493762. doi: 10.1377/hlthaff.2013.1054
13. Brooks E, Turvey C, Augusterfer EF. Provider barriers to telemental health: obstacles overcome, obstacles remaining. *Telemed J E Health.* 2013;19(6):433-437. PMID: 23590176. doi: 10.1089/tmj.2013.0068
14. Rogove H, Stetina K. Practice challenges of intensive care unit telemedicine. *Crit Care Clin.* 2015;31(2):319-334. PMID: 25814457. doi: 10.1016/j.ccc.2014.12.009
15. Kulcsar M, Gilchrist S, George MG. Improving stroke outcomes in rural areas through telestroke programs: an examination of barriers, facilitators, and state policies. *Telemed J E Health.* 2014;20(1):3-10. PMID: 24286197. doi: 10.1089/tmj.2013.0048
16. Khan F. The "uberization" of healthcare: the forthcoming legal storm over mobile health technology's impact on the medical profession. *Health Matrix Clevel.* 2016;26:123-172. PMID: 27263251
17. Picking the right telehealth platform for a small or solo practice. https://mhealthintelligence.com/features/picking-the-right-telehealth-platform-for-a-small-or-solo-practice. Accessed June, 2018.
18. Yang YT, Silverman RD. Mobile health applications: the patchwork of legal and liability issues suggests strategies to improve oversight. *Health Aff (Millwood).* 2014;33(2):222-227. PMID: 24493764. doi: 10.1377/hlthaff.2013.0958

19. North F, Crane SJ, Takahashi PY, et al. Telemedicine barriers associated with regional quality measures. *Telemed J E Health.* 2014;20(2):179-181. PMID: 24205836. doi: 10.1089/tmj.2013.0167

OPERATIONS: ASSESSMENT APPROACH

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

Telehealth implementation involves a change in the mode of care delivery, with corresponding changes in clinical and administrative processes.[1] In order to more fully understand the influence of telehealth on your practice and patients it is important to identify how you will assess progress towards goals, measure impact, and make changes, if necessary, based on the results. An assessment can also be valuable to justify the need to continue or expand the telehealth services to leadership or others. When developing your implementation plan, think about and document how you will assess outcomes and promote continuous improvement for telehealth in your practice.[2] Then, you can implement assessment and clinical and administrative processes in tandem.

ACTIONS TO TAKE

There are several types of actions to consider prior to and during telehealth implementation. These include planning for and conducting assessment tasks throughout the practice and planning to act on the results.

DEVELOP A PLAN TO ASSESS AND EVALUATE TELEHEALTH

Consider how you will identify if your practice has met telehealth goals and the data needed to determine this. There are a number of resources available to assist in developing an evaluation plan in the *Evaluation and Assessment* subsection within the *Resource* section. Those resources outline the mechanics of developing an evaluation plan.

See the ***Telehealth Resources*** document for more information.

REVIEW TELEHEALTH IMPLEMENTATION REGULARLY AND MAKE CHANGES

- Develop a process to review how telehealth sessions went and make improvements. Your vendor might have a suggestion for this review.
- Discuss perceptions of ease of use and quality with providers. Work to address their concerns to increase satisfaction with telehealth. Your vendor may have experience with this based on their work with other practices and can help arrange site visits with other practices so that your clinicians and staff can see telehealth in action.[3]
- Identify internal processes to assess if telehealth is being used as intended. For example, is telehealth being offered consistently to patients of interest? If triggers are in place to initiate a telehealth encounter, are those being followed consistently?
- Help staff maintain positive interactions with their patients and encourage them to seek patient feedback and identify things that are going well and things that can be improved.[4]

- Some staff may fear that implementing telehealth will mean that they no longer have valued face-to-face interactions with patients. Assuage these fears by showing staff that they can have meaningful interactions with patients using telehealth.

FACTORS TO CONSIDER IN ASSESSMENT

Assessment should include identifying factors for study and associated data to address them. Factors to identify include:[5]

- ***Technical performance:*** System uptime; documented hardware or software needs; usability[6]
- ***Volume:*** Number of encounters, number of encounters eligible for telehealth
- ***Provider and Staff acceptance:*** Engagement, involvement and satisfaction with technology, processes, and work environment[3]
- ***Quality of care:*** Quality outcomes; staff perception[7]
- ***Patient satisfaction:*** Patient satisfaction survey items (if already collected); patient uptake; no-show rate; changes in adherence or other factors associated with the telehealth intervention[7,8]
- ***Workflow and processes:*** Integration of telehealth into processes such as scheduling, consults, initiating visits; documentation, billing and information exchange[9]
- ***Financial performance:*** Costs (start-up and ongoing); revenue sources; sustainability considerations such as upcoming changes in reimbursement[10]

PLAN TO ACT ON THE RESULTS

Use assessment results to inform continuous quality improvement. Your implementation and assessment should include how often your practice leadership will review results and act on them.

Some common areas to address and associated actions to take include:

- ***Technical:*** work with your vendor if there are changes from a technical perspective
- ***Training:*** provide additional or refresher training
- ***Outcomes:*** make changes to what you are measuring if the results show what you are measuring does not align with the goals
- ***Patient satisfaction:*** identify if there are ways to improve the patient experience or opportunities to re-engage patients if necessary, perhaps by determining if patients are appropriate for telehealth
- ***Workflow:*** make changes to procedures or protocols if you can to make things run more smoothly or to improve progress towards goals or desired outcomes.
- ***Financial performance:*** identify if there are ways to increase volume and reimbursement of services through retraining or patient outreach

Example: A general surgery practice identified a need for wound management and partnered with a wound care center in a larger city to provide wound care remotely. A nurse at the general surgery site provided real-time evaluations of patients with poorly healing wounds and shared that information with the wound care center. This included physical examination, recording measurements of the wound, and taking pictures. The wound care clinic reviewed the images remotely and developed treatment recommendations that the general surgery practice carried out.

During regular reviews of the wound care practice, both practices found that a physician to physician consultation was needed in addition to the nurse to physician interaction. Thus, both practices modified their protocols such that treatment recommendations were given to the physician and the nurse simultaneously instead of to the nurse alone. This improved physician satisfaction at the general surgery practice. The practice found that they were able to keep more of their patients with poorly healing wounds in the practice and prevent patients from having to travel. They also reduced admissions due to wounds. Patient feedback was overwhelmingly positive.

REFERENCES

1. Kreofsky BLH, Blegen RN, Lokken TG, Kapraun SM, Bushman MS, Demaerschalk BM. Sustainable telemedicine: designing and building infrastructure to support a comprehensive telemedicine practice. *Telemed J E Health.* 2018. PMID: 29658828. doi: 10.1089/tmj.2017.0291
2. Richert S. Beyond videoconferencing: Is your infrastructure ready for telemedicine? *Health Manag Technol.* 2017;38(4):10. PMID: 29474038
3. Boob D. *What is the level of satisfaction for patients and/or families and healthcare providers as measured by satisfaction tool that have received telestroke consultation services*: doctoral dissertation2017.
4. Brookes N, Murata L, Tansey M. Guiding practice development using the Tidal Commitments. *Journal of Psychiatric and Mental Health Nursing.* 2006;13(4):460-463. PMID: 2009258330
5. Zapka J, Simpson K, Hiott L, Langston L, Fakhry S, Ford D. A mixed methods descriptive investigation of readiness to change in rural hospitals participating in a tele-critical care intervention. *BMC Health Serv Res.* 2013;13:33. PMID: 23360332. doi: 10.1186/1472-6963-13-33
6. Picking the right telehealth platform for a small or solo practice. https://mhealthintelligence.com/features/picking-the-right-telehealth-platform-for-a-small-or-solo-practice. Accessed June, 2018.
7. Binder WJ, Cook JL, Gramze N, Airhart S. Telemedicine in the intensive care unit: improved access to care at what cost? *Crit Care Nurs Clin North Am.* 2018;30(2):289-296. PMID: 29724446. doi: 10.1016/j.cnc.2018.02.010
8. North F, Crane SJ, Takahashi PY, et al. Telemedicine barriers associated with regional quality measures. *Telemed J E Health.* 2014;20(2):179-181. PMID: 24205836. doi: 10.1089/tmj.2013.0167
9. LeRouge C, Garfield MJ. Crossing the telemedicine chasm: have the U.S. barriers to widespread adoption of telemedicine been significantly reduced? *Int J Environ Res Public Health.* 2013;10(12):6472-6484. PMID: 24287864. doi: 10.3390/ijerph10126472
10. Ross J, Stevenson F, Lau R, Murray E. Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). *Implement Sci.* 2016;11(1):146. PMID: 27782832. doi: 10.1186/s13012-016-0510-7

OPERATIONS: TECHNICAL INFRASTRUCTURE

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

The existing technical infrastructure of your practice influences telehealth implementation. It is important to assess your practice's technical state prior to vendor selection and telehealth implementation. Practices with a robust technical infrastructure including hardware, software and broadband connectivity may not need to invest as much as practices who do not have these technical resources.

Previous experience with health information technology (health IT) can also help practices launch successful telehealth programs. If your practice has implemented health IT such as Electronic Health Records (EHRs) then you can draw upon that experience when identifying telehealth implementation needs and requirements.[1] Before implementation begins, the practice may want to consider what can be learned from previous health IT implementations and/or reach out to practices that have implemented their own telehealth programs.

ACTIONS TO TAKE

There are several types of actions to consider prior to telehealth implementation. These include establishing a strong bandwidth connection capable of supporting telehealth, selecting technology that aligns with the goals of the project and the current state of the practice, and taking practice staff's experience with technology into account.

CONNECTIVITY

Most telehealth applications require a robust bandwidth connection.[2-4] Without sufficient bandwidth, even the best hardware and software may experience lags and interruptions, resulting in inefficient telehealth encounters.[5] Simultaneous demands on connectivity such as operating administrative equipment, EHRs, and patient devices on guest Wi-Fi may also contribute to the need for additional bandwidth.[6] These issues can cause both staff and patients to lose faith in the program and worry about the quality of telehealth interactions.

- TEST YOUR WIRELESS CONNECTION in places where telehealth will be used and at different times of the day to see if connectivity is adequate; i.e., the technology performs as expected (your vendor may have some input in this area). If not, you may need to upgrade bandwidth or explore options such as using a wireless extender.
- MAKE SUGGESTIONS TO YOUR PATIENTS AND OTHER PROVIDERS ABOUT CONNECTIVITY AND TESTING if telehealth will be used in locations outside of your practice (e.g., provider's home, ancillary location, patient's home).

HARDWARE & SOFTWARE

IDENTIFY SPECIFIC HARDWARE NEEDS, such as cameras or "smart" medical devices, such as digital stethoscopes or otoscopes; software, such as web conferencing programs or platforms to share notes between providers; or additional applications to connect to patients or remote practitioners.[7]

- If telehealth will be used in locations outside of your practice, identify what technology will be needed in those locations.
- If equipment purchases are needed, look for other uses for the equipment beyond telehealth to maximize the value of the investment.

COMPATIBILITY

Ensure that hardware and software are compatible with the practice's current systems and will support your practice in the future.[8] For example, before purchasing digital otoscopes, your practice could ask the vendor for a test unit to ensure that the device will connect with the telehealth platform and upload information to the EHR automatically.

- IDENTIFY THE TECHNOLOGY AND PROCESS NEEDED TO ENSURE INTEROPERABILITY to share information across platforms to support care coordination through information that is regularly shared.[9] Outline the uses for each system and where information will be stored, create processes for sharing information, and work to reduce the effort needed to switch between telehealth and traditional visits.
- IDENTIFY HOW TELEHEALTH AND TECHNOLOGY USE WILL FIT INTO WORKFLOWS. Does the equipment allow staff to take patient histories or perform examinations as they would in the clinic?[10] Before implementation, consider how telehealth may be able to address each element of a patient interaction and complete a walkthrough or practice session to test your understanding.

See ***Scheduling and Workflows*** for more information

USABILITY

Usability (interface and features) is a key part of vendor selection and implementation.[11]

- STAFF SHOULD BE TRAINED on the equipment prior to implementation and given adequate resources for learning; however, training does not replace usability.[11-13] Training ensures that staff know how to use the equipment, but if the interface is cumbersome or the features do not fit with regular practice, staff may find the technology is a hindrance.
- CONSIDER USABILITY WITH RESPECT TO YOUR SPECIFIC PATIENT POPULATION. For example, if your patient population is largely seniors and you are implementing a patient-facing technology, you may wish to select a telehealth application or software that allows for changes in font size to improve readability.

PRIVACY AND SECURITY

As with any new technology or service implementation within the practice, consider privacy and security implications. Whether your practice outsources compliance activities or manages them in-house, it is important to ensure that telehealth complies with your privacy and security policies and procedures.

- ASK VENDORS ABOUT HOW THEY MANAGE HIPAA COMPLIANCE FOR PRIVACY AND SECURITY[2]. Questions to ask include:

- Does the vendor have a standard business associate agreement (BAA)? Would they be willing to sign a comprehensive BAA? These agreements help ensure HIPAA requirements are upheld by everyone with access to the information, such as consultants for the vendors or other practices.
- What safeguards does the vendor have in place to ensure that data are protected before, during and after visits?
- Would the vendor be willing to be audited for compliance with HIPAA privacy and security rules?
- How would information be protected and given to the practice if the vendor goes out of business?

❖ IDENTIFY WAYS TO PROTECT PRIVACY AND SECURITY IN YOUR PRACTICE. Some suggestions to protect privacy include:

- Prior to visits where the patient is in a remote location, you can protect patient's privacy by establishing security questions or protocols such as having the patient present an ID to the camera to ensure the patient is who they say they are.
- If the patient is joining from outside of a practice, suggest they connect through private networks (i.e. not on a library computer or public Wi-Fi) so their data remains secure.
- For visits in the office, ensure that shared rooms are not used.
- During the visit, ensure that only necessary practitioners are able to hear and see the patient.
- After the visit, ensure that no logs of the conversation are kept outside of secure data systems and that patient information is only transferred securely to approved entities.

SUGGESTIONS TO MAINTAIN SECURITY: In a small solo practice, the champion is likely to be the physician without a separate administrative champion because he or she is likely involved in both clinical and administrative components of the practice with a small staff.

❖ Include telehealth in general security standards and policies.

❖ Identify and address potential risks, particularly with respect to physical infrastructure.

See ***Operations: Physical Space*** for more information.

STAFF EXPERIENCE WITH TECHNOLOGY

EVALUATE YOUR STAFF'S IT SKILLS AND EXPERIENCE to inform decisions about providing telehealth services and identify training requirements.[6] Once you have an understanding of your staff's health IT and IT literacy, this can inform your training. Your vendor is an important resource for training and education, as are the organizations in *Telehealth Resources.* In addition, you may wish to have additional support available during roll-out.

See ***Staff Engagement: Education and Outreach*** for more information.

See ***the Telehealth Resources*** document for more information.

IDENTIFY STAFF WITH IT EXPERIENCE. Leverage experience from staff who are familiar with IT systems, have experience with similar technology implementations, or are willing to learn new processes.[6] Learning from these staff or including them in planning may help identify potential barriers, strategies, or opportunities for improvement.

See ***Staff Engagement: Champions and Staff Engagement*** for more information.

REFERENCES

1. Zapka J, Simpson K, Hiott L, Langston L, Fakhry S, Ford D. A mixed methods descriptive investigation of readiness to change in rural hospitals participating in a tele-critical care intervention. *BMC Health Serv Res.* 2013;13:33. PMID: 23360332. doi: 10.1186/1472-6963-13-33
2. Picking the right telehealth platform for a small or solo practice. https://mhealthintelligence.com/features/picking-the-right-telehealth-platform-for-a-small-or-solo-practice. Accessed June, 2018.
3. Rogers H, Madathil KC, Agnisarman S, et al. A systematic review of the implementation challenges of telemedicine systems in ambulances. *Telemedicine and E-Health.* 2017;23(9):707-717. PMID: WOS:000410807000003. doi: 10.1089/tmj.2016.0248
4. Vassilev I, Rowsell A, Pope C, et al. Assessing the implementability of telehealth interventions for self-management support: a realist review. *Implementation Science.* 2015;10. PMID: WOS:000354182900001. doi: 10.1186/s13012-015-0238-9
5. Glenn IC, Bruns NE, Hayek D, Hughes T, Ponsky TA. Rural surgeons would embrace surgical telementoring for help with difficult cases and acquisition of new skills. *Surg Endosc.* 2017;31(3):1264-1268. PMID: 27444835. doi: 10.1007/s00464-016-5104-6
6. Yusif S, Hafeez-Baig A, Soar J. e-Health readiness assessment factors and measuring tools: a systematic review. *Int J Med Inform.* 2017;107:56-64. PMID: 29029692. doi: 10.1016/j.ijmedinf.2017.08.006
7. Maunder K, Walton K, Williams P, Ferguson M, Beck E. A framework for eHealth readiness of dietitians. *Int J Med Inform.* 2018;115:43-52. PMID: 29779719. doi: 10.1016/j.ijmedinf.2018.04.002
8. Binder WJ, Cook JL, Gramze N, Airhart S. Telemedicine in the intensive care unit: improved access to care at what cost? *Crit Care Nurs Clin North Am.* 2018;30(2):289-296. PMID: 29724446. doi: 10.1016/j.cnc.2018.02.010
9. Stempniak M. Revisiting e-visits. Electronic visits slow to be embraced by payers and providers. *Hosp Health Netw.* 2013;87(10):25. PMID: 24303632
10. James HE. Pediatric neurosurgery telemedicine clinics: a model to provide care to geographically underserved areas of the United States and its territories. *J Neurosurg Pediatr.* 2016;25(6):753-757. PMID: 27589599. doi: 10.3171/2016.6.peds16202
11. Brewster L, Mountain G, Wessels B, Kelly C, Hawley M. Factors affecting front line staff acceptance of telehealth technologies: a mixed-method systematic review. *J Adv Nurs.* 2014;70(1):21-33. PMID: 23786584. doi: 10.1111/jan.12196
12. Jennett P, Jackson A, Healy T, et al. A study of a rural community's readiness for telehealth. *Journal of Telemedicine and Telecare.* 2003;9:259-263
13. Jennett P, Gagnon MP, Brandstadt HK. Preparing for success: readiness models for rural telehealth. *J Postgrad Med.* 2005;51(4)

OPERATIONS: PHYSICAL SPACE

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

Telehealth involves a provider and patient who are not in the same space; thus, it is important to think about the physical space for both parties prior to implementation, whether the spaces are physician offices, facilities, patient homes, health fairs or other locations.[1-3] Physical space considerations include identifying the space itself and ensuring equipment availability, video quality, and patient privacy. If staff and patients have had previous negative interactions with technology or with telehealth, ensuring the space is suitable for telehealth and will promote positive encounters is of particular importance to overcome that previous experience.[4,5]

ACTIONS TO TAKE

There are several types of actions to consider prior to telehealth implementation. These include identifying physical space needs and ensuring that the space is appropriate.

- IDENTIFY A PHYSICAL SPACE WHERE THE TELEHEALTH CONSULTATION WILL TAKE PLACE AND ENSURE IT MEETS THE NEEDS FOR A TELEHEALTH VISIT. Testing telehealth visits in the space during implementation can help you fine tune things. Resource organizations may have quick reference guides regarding space considerations. Characteristics of the space include:
  - PRIVATE SPACE: Protect patient privacy so that the person on the other end does not perceive that those not involved in their care may be listening.[6] If others are there (e.g., a nurse or scribe), make sure to introduce them. If multiple people are using one space, use screens or partitions to reduce background distractions. Remember to pair these with headphones or a headset so audio is clear and to prevent others from overhearing.
  - NOT VIEWABLE FROM THE OUTSIDE**:** Spaces should not have windows where others can see the interaction to protect patient privacy.[1,2,6]
  - QUALITY LIGHTING**:** Ensure spaces do not have lighting that will cause a glare or make it difficult to see.[6] Lighting should also be sufficient in all areas of the space if the clinical encounter will require the patient to move in the space. Consider optimal lighting placement and lighting source that reduces shadows and allows for natural clarity and color.*
  - SUFFICIENT SIZE: The space should be big enough for telehealth equipment and ensure that patients are able to sit at a comfortable distance from any monitors[7] or comfortably and safely move if needed during the encounter.
  - ACOUSTICS: Ensure acoustics of the space are such that all parties can be heard. You may find that headphones or a headset are needed to ensure that audio is clear, especially for computer-based applications.

* More information can be found through the American Telemedicine Association at http://thesource.americantelemed.org/resources/telemedicine-practice-guidelines.

- SAFETY: The space should provide a safe and comfortable environment for the individual patient and facilitator; ensure any telehealth equipment and other items in the space are not too distracting or intimidating for the patient. If there is a concern about patient safety, steps should be taken to ensure that the space does not have items that can be used by the patient to hurt himself/herself or to hurt others in the room.

❖ REVIEW THE SPACE AVAILABLE AT THE DISTANT SITES TO THE EXTENT POSSIBLE in addition to making accommodations to your own space. If you are coordinating with another medical site that will host telehealth encounters, mention these best practices to promote a positive experience. If you are providing services to a patient in his or her home, review the above considerations with them prior to the first visit. Encourage patients to select a private space with strong wifi and/or cellular signal to promote reliable technology interaction.

❖ IDENTIFY EMERGENCY PROTOCOLS needed given that the provider and patient are not co-located.

- For in-facility visits, protocols may involve having staff on-call for concerns.
  For home visits, protocols might involve having patients report the address they are calling from prior to initiating the visit.

EXAMPLE: If a provider is engaging in a telehealth visit with a patient and that patient demonstrates signs of a heart attack, there needs to be a way to call for and provide immediate help.

REFERENCES

1. Jennett P, Jackson, A., Healy, T., Ho, K., Kazanjian, A., Woollard, R., Haydt, S., Bates, J. A study of a rural community's readiness for telehealth. *Journal of telemedicine and telecare.* 2003;9:259-263.
2. Jennett P, Gagnon, M. P., Brandstadt, H. K. Preparing for Success: Readiness Models for Rural Telehealth. *J Postgrad Med.* 2005;51(4).
3. Kreofsky BLH, Blegen RN, Lokken TG, Kapraun SM, Bushman MS, Demaerschalk BM. Sustainable Telemedicine: Designing and Building Infrastructure to Support a Comprehensive Telemedicine Practice. *Telemedicine journal and e-health : the official journal of the American Telemedicine Association.* 2018;2018 Apr 16. doi: 10.1089/tmj.2017.0291. [Epub ahead of print].
4. Rogers H, Madathil KC, Agnisarman S, et al. A Systematic Review of the Implementation Challenges of Telemedicine Systems in Ambulances. *Telemed e-Health.* 2017;23(9):707-717.
5. Vassilev I, Rowsell A, Pope C, et al. Assessing the implementability of telehealth interventions for self-management support: a realist review. *Implement Sci.* 2015;10.
6. James HE. Pediatric neurosurgery telemedicine clinics: a model to provide care to geographically underserved areas of the United States and its territories. *Journal of neurosurgery Pediatrics.* 2016;25(6):753-757.
7. Maunder K, Walton K, Williams P, Ferguson M, Beck E. A framework for eHealth readiness of dietitians. *International journal of medical informatics.* 2018;115:43-52.

STAFF ENGAGEMENT: EDUCATION AND AWARENESS

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

Successful telehealth programs rely on the commitment and effort of administrative and clinical staff. If staff members understand the benefits of telehealth and why the practice is offering it, that will facilitate implementation. Providing training before implementation can help overcome barriers,[1] shape staff's perspective on telehealth, improve engagement in the program,[2] prepare staff for implementation, and motivate them to continue the program in the future.[3] To create trainings that motivate and prepare staff for implementation, practices must consider the needs of staff, their motivations in the workplace, and how training can support the development of the program. Staff who are educated and enthusiastic about telehealth will share that enthusiasm with patients and strengthen the program as a whole.

ACTIONS TO TAKE

Before implementing telehealth, you should consider several types of actions. These include steps to develop a training program and plan for its delivery. Telehealth vendors often have general training programs, and it is important to ensure that your practice allocates time for them before, during, and after implementation.

TRAINING DEVELOPMENT

DESIGN TRAINING PROGRAMS ABOUT TELEHEALTH TO FACILITATE POSITIVE STAFF ATTITUDES AND SUPPORT FOR TELEHEALTH BY DEMONSTRATING THE VALUE AND EASE OF USE.

- Ensure training is personalized to your staff and helps staff understand why the practice is implementing telehealth even if your vendor has telehealth programs that they will administer.[2,4]
- Address the value added to patients[5] and how to engage them in training efforts.[6] If your practice has a unique patient population, identify a few practice-specific examples for which telehealth might be helpful. Sharing those with the staff can help illustrate the importance of telehealth in a meaningful way.
- Emphasize and demonstrate the reliability and benefits of telehealth to staff.[7] This can help overcome resistance to something new.
- Allocate time for demonstrations of the system and time for staff to adjust to changes.[8]

COMPREHENSIVE TRAINING PROGRAMS SHOULD INCLUDE PROCESSES, EXPECTATIONS, AND OTHER FACTORS IN ADDITION TO TECHNOLOGY USE.

- If practice staff are not technically savvy, ensure they work with the vendor on training programs that teach digital communication skills, technology literacy and usage skills, and mHealth products and services.[9,10]
- Share how staff can access ongoing support for information on the system.[11]
- Ensure that training addresses regulatory and compliance issues and any strategies for addressing them (e.g., if there are particular documentation requirements for telehealth encounters).[5,11]
- Educate the staff on the typical flow of a telehealth encounter.[12]
- Inform staff of the roles and responsibilities individuals will play throughout telehealth implementation.[13]

TRAINING DELIVERY

INCLUDE ADMINISTRATIVE AND CLINICAL STAFF IN TRAINING.

- Staff should be trained on the technology and processes relevant to the program[14-16] and any specific requirements for telehealth encounters that are different.[5,17]
- Telehealth training is not often included in professional programs such as residencies, so clinical staff will likely need training on best practices in addition to digital competency.[5,18]
- Practices should provide opportunities to assess staff competency levels with using technology and target training for staff who might need additional trainings.

PROVIDE EDUCATION IN A VARIETY OF FORMATS TO REACH THE GREATEST NUMBER OF INDIVIDUALS.

- Vendors generally provide a combination of synchronous and asynchronous educational programs, so take advantage of those and make them available to your team.
- Programs include in-person information campaigns, formal trainings, and train-the-trainer programs.[19,20]
- Training may be completed through online webinars, training handbooks, book chapters, academic medical center–supported trainings, and vendor-supplied training.[21]
- Practices can conduct mock telehealth visits to train and engage staff in a visit that closely resembles a live telehealth session.

CREATE OPPORTUNITIES FOR ONGOING EDUCATION DURING AND AFTER IMPLEMENTATION.

- Designate people that staff can contact for additional questions or requests for training before, during, and after implementation, including after-hours support if necessary.[21-23]

- Ensure ongoing and periodic education is available; it is particularly important when telehealth technology is not used by staff on a regular basis, for example, only used during certain acute situations.
- Establish resources that practitioners and other staff can use to practice with the technology frequently.[24] These resources may include on-demand videos that can be referenced for technical support or trouble-shooting. Involve the equipment in regular staff meetings or schedule practice telehealth sessions at regular intervals.

REFERENCES

1. Moore MA, Coffman M, Jetty A, Petterson S, Bazemore A. Only 15% of FPs report using telehealth; training and lack of reimbursement are top barriers. *Am Fam Physician.* 2016;93(2):101. PMID: 26926405
2. Davis MM, Freeman M, Kaye J, Vuckovic N, Buckley DI. A systematic review of clinician and staff views on the acceptability of incorporating remote monitoring technology into primary care. *Telemed J E Health.* 2014;20(5):428-438. PMID: 24731239. doi: 10.1089/tmj.2013.0166
3. Nayar P, McFarland KK, Chandak A, Gupta N. Readiness for teledentistry: validation of a tool for oral health professionals. *J Med Syst.* 2017;41(1):4. PMID: 27822871. doi: 10.1007/s10916-016-0654-7
4. Tubat E. *Efficacy of telemental health training on mental health practitioner's knowledge, attitudes, beliefs, and intent to offer telemental health services*: doctoral dissertation2017.
5. Powell RE, Stone D, Hollander JE. Patient and health system experience with implementation of an enterprise-wide telehealth scheduled video visit program: mixed-methods study. *JMIR Med Inform.* 2018;6(1):e10. PMID: 29439947. doi: 10.2196/medinform.8479
6. Vassilev I, Rowsell A, Pope C, et al. Assessing the implementability of telehealth interventions for self-management support: a realist review. *Implementation Science.* 2015;10. PMID: WOS:000354182900001. doi: 10.1186/s13012-015-0238-9
7. Campagna M, Naka F, Lu J. Teledermatology: an updated overview of clinical applications and reimbursement policies. *Int J Womens Dermatol.* 2017;3(3):176-179. PMID: 28831431. doi: 10.1016/j.ijwd.2017.04.002
8. Driessen J, Castle NG, Handler SM. Perceived benefits, barriers, and drivers of telemedicine from the perspective of skilled nursing facility administrative staff stakeholders. *J Appl Gerontol.* 2018;37(1):110-120. PMID: WOS:000417697100008. doi: 10.1177/0733464816651884
9. Baird MB, Whitney L, Caedo CE. Experiences and attitudes among psychiatric mental health advanced practice nurses in the use of telemental health: results of an online survey. *J Am Psychiatr Nurses Assoc.* 2018;24(3):235-240. PMID: 28748728. doi: 10.1177/1078390317717330
10. Slovensky DJ, Malvey DM, Neigel AR. A model for mHealth skills training for clinicians: meeting the future now. *Mhealth.* 2017;3:24. PMID: 28736733. doi: 10.21037/mhealth.2017.05.03
11. Ross J, Stevenson F, Lau R, Murray E. Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update). *Implement Sci.* 2016;11(1):146. PMID: 27782832. doi: 10.1186/s13012-016-0510-7
12. James HE. Pediatric neurosurgery telemedicine clinics: a model to provide care to geographically underserved areas of the United States and its territories. *J Neurosurg Pediatr.* 2016;25(6):753-757. PMID: 27589599. doi: 10.3171/2016.6.peds16202
13. Meyer J, Pare G. Telepathology impacts and implementation challenges a scoping review. *Arch Pathol Lab Med.* 2015;139(12):1550-1557. PMID: WOS:000368422300015. doi: 10.5858/arpa.2014-0606-RA
14. Slater H, Campbell JM, Stinson JN, Burley MM, Briggs AM. End user and implementer experiences of mhealth technologies for noncommunicable chronic disease management in young adults: systematic review. *J Med Internet Res.* 2017;19(12). PMID: WOS:000417796900001. doi: 10.2196/jmir.8888
15. Yusif S, Hafeez-Baig A, Soar J. e-Health readiness assessment factors and measuring tools: a systematic review. *Int J Med Inform.* 2017;107:56-64. PMID: 29029692. doi: 10.1016/j.ijmedinf.2017.08.006
16. Ferreira A. Steps to telehealth success - organizational readiness. 2016. www.avizia.com/blog/telehealth-success-organizational-readiness.
17. Kim H, Goldsmith JV, Sengupta S, et al. Mobile health application and e-Health literacy: opportunities and concerns for cancer patients and caregivers. *J Cancer Educ.* 2017;2017 Nov 14. doi: 10.1007/s13187-017-1293-5. [Epub ahead of print]. PMID: 29139070. doi: 10.1007/s13187-017-1293-5

18. McGregor D, Keep M, Brunner M, et al. Preparing e-Health ready graduates: a qualitative focus group study. *Stud Health Technol Inform.* 2017;239:91-96. PMID: 128801371. doi: 10.3233/978-1-61499-783-2-91

19. Jennett P, Jackson A, Healy T, et al. A study of a rural community's readiness for telehealth. *J Telemed Telecare.* 2003;9:259-263

20. Jennett P, Gagnon MP, Brandstadt HK. Preparing for success: readiness models for rural telehealth. *J Postgrad Med.* 2005;51(4)

21. Brooks E, Turvey C, Augusterfer EF. Provider barriers to telemental health: obstacles overcome, obstacles remaining. *Telemed J E Health.* 2013;19(6):433-437. PMID: 23590176. doi: 10.1089/tmj.2013.0068

22. Kruse CS, Karem P, Shifflett K, Vegi L, Ravi K, Brooks M. Evaluating barriers to adopting telemedicine worldwide: a systematic review. *J Telemed Telecare.* 2018;24(1):4-12. PMID: WOS:000419868900002. doi: 10.1177/1357633x16674087

23. Haverhals LM, Sayre G, Helfrich CD, et al. E-consult implementation: lessons learned using consolidated framework for implementation research. *Am J Manag Care.* 2015;21(12):e640-647. PMID: 26760426

24. Uscher-Pines L, Kahn JM. Barriers and facilitators to pediatric emergency telemedicine in the United States. *Telemed J E Health.* 2014;20(11):990-996. PMID: 25238565. doi: 10.1089/tmj.2014.0015

STAFF ENGAGEMENT: INNOVATORS AND CHAMPIONS

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

Implementing telehealth at your practice takes time, dedication, and buy-in from the entire staff. As with any change, before implementing telehealth, it is important to consider the perspectives of staff. Having someone to champion telehealth and discuss the value of telehealth with patients and staff is of paramount importance. The champion can serve several functions throughout implementation and beyond, including maintaining focus on the goal of implementation, responding to naysayers, facilitating communication, and building enthusiasm.[1, 2] The champion should support telehealth throughout the process of planning and implementation and use.

ACTIONS TO TAKE

Your practice should consider several types of actions before and during telehealth implementation. These include working with practice leadership, identifying the champion(s), and providing support to the champion(s).

WORKING WITH PRACTICE LEADERSHIP

ENSURE THERE IS SUPPORT FROM PRACTICE LEADERSHIP (e.g., senior physician, practice manager).[3] Administrative and clinical leadership can work with the champion to:

- Dedicate time and capacity for telehealth activities.[3]
- Emphasize the importance of telehealth and support from the top down to the staff.[4]
- Present a united front to foster positivity toward telehealth.[1]

ENGAGE SENIOR CLINICAL STAFF in using telehealth and share their experiences. Those widely recognized as leaders can set an example for appropriate use. Understanding the benefits and challenges can be a useful technique for developing staff buy-in.

IDENTIFYING THE CHAMPION(S)

Depending on the structure of your practice, you may wish to identify both clinical and administrative champions.

- Champion(s) should have authority and be well respected.
- The champion must be approachable so that staff feel they can ask questions, share concerns, and elicit feedback.
- Clinical champions can help educate staff on the clinical benefits of telehealth and work through related workflow and quality implications.
- Administrative champions can educate non-clinical staff about telehealth and work through coordination and communication implications from an administrative perspective. This way both the

clinical and administrative staff will feel that they have a point of contact who understands their unique concerns.

EXAMPLE: In a small solo practice, the champion is likely to be the physician without a separate administrative champion because he or she is likely involved in both clinical and administrative components of the practice with a small staff.

In a larger practice with more physicians and mid-level providers, a physician who is a telehealth supporter should be the clinical champion. The office manager or front office coordinator would make a suitable administrative champion.

THE ROLE OF THE CHAMPION(S)

Work with the champion(s) to provide support to fulfill their responsibilities, including:

- Communicate goals with the staff.[4]
- Help counter resistance to change.[5]
- Get input from staff about potential uses of telehealth.[6]
- Garner excitement so that staff share that excitement with patients.[1]
- Help set expectations with staff and share how telehealth can benefit patients and the practice.[7]
- Work with other sites to help develop relationships.[7-10]
- Help identify potential implications (workflow, operations, technical) so that they can be addressed as part of planning and reviewed on an ongoing basis.[7]
- Review implementation and use on an ongoing basis and work with providers and staff to address issues and make changes that optimize telehealth implementation and use. Changes may include adding to telehealth offerings, modifying the workflow, and offering refresher trainings. As clinicians or administrative staff gain positive experience with the program, encourage the champion to share these stories. Concrete examples of how the program improved workflow or helped a patient can create buy-in.

REFERENCES

1. Ross, J., et al., *Factors that influence the implementation of e-health: a systematic review of systematic reviews (an update).* Implement Sci, 2016. **11**(1): p. 146.
2. Crane, M., *Exploring telehealth models.* Med Econ, 2014. **91**(14): p. 17-20.
3. Arkwright, B. *Telehealth Readiness Factors—What are They and Why Are They Essential?* 2014.
4. Zapka, J., et al., *A mixed methods descriptive investigation of readiness to change in rural hospitals participating in a tele-critical care intervention.* BMC Health Serv Res, 2013. **13**: p. 33.
5. Vimarlund, V. and C. Le Rouge, *Barriers and opportunities to the widespread adoption of telemedicine: a bi-country evaluation.* Stud Health Technol Inform, 2013. **192**: p. 933.
6. Davis, M.M., et al., *A systematic review of clinician and staff views on the acceptability of incorporating remote monitoring technology into primary care.* Telemed J E Health, 2014. **20**(5): p. 428-38.
7. Uscher-Pines, L. and J.M. Kahn, *Barriers and facilitators to pediatric emergency telemedicine in the United States.* Telemed J E Health, 2014. **20**(11): p. 990-6.
8. *Ready for e-health.* Gerontechnology, 2016. **15**: p. 67s-67s.
9. Brooks, E., C. Turvey, and E.F. Augusterfer, *Provider barriers to telemental health: obstacles overcome, obstacles remaining.* Telemed J E Health, 2013. **19**(6): p. 433-7.
10. Kruse, C.S., et al., *Evaluating barriers to adopting telemedicine worldwide: a systematic review.* J Telemed Telecare, 2018. **24**(1): p. 4-12.

PATIENT READINESS: PATIENT ENGAGEMENT AND HEALTH LITERACY

WHY THIS IS IMPORTANT FOR YOUR PRACTICE

The success of telehealth is largely predicated on patient acceptance and buy-in. Patient engagement and health literacy are important markers for telehealth acceptance. Patients (or their caregivers) who are engaged in their care and/or have high health literacy are more likely to use telehealth and have good acceptance[1,2] than those with low health literacy and engagement.[3] Characteristics of your patient population such as age and socioeconomic status can influence telehealth acceptance.[4] In addition, if the perceived need by patients and the barriers to a face-to face-visit are high, those patients may be motivated to use telehealth.[5] Once you understand your patients' demographics and needs pertaining to telehealth, experience with technology, literacy, and engagement, your practice can tailor the telehealth service, outreach, educational activities, and support services accordingly.

ACTIONS TO TAKE

Your practice should consider several types of actions before and during telehealth implementation. These include reviewing your patient population and identifying how telehealth can meet their needs so that you can tailor offerings accordingly. Evaluating your population's needs and experience with technology can help you decide if you want to tailor telehealth services for particular populations within your practice, what telehealth services you should offer, and what outreach and educational activities are needed. For example, if your patient population needs support with self-management of diabetes, a patient education or follow-up reminder program focused on the disease may be a good place to start.

CONSIDER YOUR PATIENT POPULATION

Review your patient population and any subpopulations of interest to identify which telehealth interventions might be the best fit. Your electronic health record may have reports you can run on your population on different variables. Alternatively, your physicians and mid-level providers can think about these demographics for their own patient panels. Think about and identify:

- PATIENT DEMOGRAPHICS can help you choose telehealth technologies that are accessible and adaptable to your patient population. For example, if the practice decides to target telehealth interventions at an older patient population, then you will want to use technology that requires minimal setup or maintenance and incorporates larger screens or fonts.
  - Patient demographics can include factors such as age, socioeconomic status, insurance status (marker of demographics), technology use and availability, any large segment of a particular culture, or language other than English that is spoken[6-9]
- PERCEIVED NEED AND MOTIVATION FOR TELEHEALTH.[4,10,11] Understanding the motivation for patients can help practices determine which technologies will fit their needs best and motivate them to continue using telehealth. For example, patients may feel that the practice is easily accessible but

be unwilling or unable to drive to a referred specialist. In this case, they may use a service that allows them to teleconference with specialists at the practice more than a service that allows them to reach the practice from home.

- Are the patients mobile? Are there barriers to access to care such as distance, ability to leave the home, transportation, missed days of work, and caregiver availability that telehealth can overcome?[5,12-14]
- Are there associated caregivers (e.g., fathers for an intervention targeting pregnant women or family members for a family intervention) who might benefit from telehealth?[15]
- Do they have conditions requiring multiple visits?[16,17]

❖ PATIENT EXPERIENCE WITH TECHNOLOGY AND HEALTH IT [18,19]

- Do patients use telehealth?[20] Do they have experience with other technologies such as portals, self-monitoring, and messaging either with your practice or other health systems in the area?[20,21]
- Does your population have access to and experience with technology and the internet (e.g., do they own a smartphone or computer?)?[20,22-29]
- Do patients trust technology? Do they express privacy concerns?[30-32]

❖ PATIENT ENGAGEMENT AND HEALTH LITERACY

- How engaged are your patients with their health?[19,33,34]
- Do your patients comprehend health instructions and would technology help or hinder their comprehension?[24]

❖ TELEHEALTH SERVICES THAT WOULD FIT YOUR PATIENT POPULATION. Or, revisit if these services if they have already been identified.

❖ EDUCATION AND OUTREACH NEEDS based on your patient population. For example, if your patient population is technically savvy, you will need to provide less education about technical aspects than if your patient population is not used to technology.

Consider polling your patients directly about their willingness to use or confidence using telehealth. This should be done in tandem with your own review and not as a substitute because those who respond to the survey are not necessarily representative of your population.

❖ While patient demographics, motivation, experience with technology, and health literacy can all be good indicators of telehealth engagement, these can be complex factors to evaluate, and surveys can be used to supplement the practice information.

❖ Surveying patients before implementing a program may also encourage them to view the service as a response to their needs and desires. This type of survey could be done as part of existing patient surveys you may have in place or informally as part of intake.

REVIEW TELEHEALTH SERVICES

Determine the services for which you would like to use telehealth. You may have already identified services of interest when evaluating core readiness. Reviewing these services once more with the patient population in mind can help you refine your telehealth offerings.

- Review the patient population demographics to determine if the service is a suitable fit for the patient population.[20] For example, if your population does not have access to the internet (or reliable access) at home and/or is not technically savvy, then an in-office telehealth application would be more suitable than a remote application that requires home internet and technical literacy.
- Given the population, determine if your initial ideas for what you would use telehealth for are appropriate. For example, if your telehealth offering includes patient follow-up via telehealth, determine if your patient population is likely to respond promptly and honestly to follow-up contact.
- Identify components of education and outreach that are important based on this review. For example, if you are considering remote patient monitoring, then instructions for home use should be given.

DEVELOP OUTREACH AND EDUCATIONAL EFFORTS

Identify components for education and outreach materials for the patients you are targeting for telehealth based on the population characteristics you have identified above.[20,35] Check in with your vendor to see if they have suggestions as well and make sure to include the elements below in patient educational resources:

- The telehealth service(s) you are offering, why it is useful, what they (patients and/or caregivers) will see that is different and the same from the current state, how they will benefit[18]
- Ensure staff are educated on telehealth so they can answer questions[13,36]
- If there are any requirements from patients (e.g., technology needed for home monitoring), make sure those are clearly outlined[37]
- How information will be protected[31,32,38]

Develop and deliver education and outreach materials to patients. These materials need not be detailed – a simple flier explaining telehealth and the services you offer will work.

- Keep it short—bullet points are fine
- Consider a frequently asked questions (FAQ) format where you anticipate questions that patients are likely to ask and then answer them
- See if your vendors have materials you can modify
- Identify a point of contact for patients for questions or technical issues (either in the practice or at the vendor)
- Make sure staff are aware of the talking points from the fliers so they can explain the program and answer questions about the materials.
- Do not simply hand out fliers; have staff give the fliers to patients while explaining benefits and explaining why telehealth is a good fit for them.

- Demonstrate technology with patients before the first use so they know what to expect.
- Deliver materials in multiple ways:
  - In the office during visits, put up posters in the office, share on your social media, send postcards or other mailings to patients, and share information with referring providers (if relevant).
  - Continue to engage with patients after initial implementation:
  - If patients refuse to continue with telehealth or if telehealth use and engagement fall off, ask them why and help them troubleshoot. Identify a person in your practice to stay engaged with patients.
  - Have staff wear “ask me about telehealth” buttons even after implementation so that patients feel comfortable reaching out to staff even if they are in the office for another purpose.

REFERENCES

1. Kruse CS, Karem P, Shifflett K, Vegi L, Ravi K, Brooks M. Evaluating barriers to adopting telemedicine worldwide: a systematic review. *J Telemed Telecare.* 2018;24(1):4-12. PMID: WOS:000419868900002. doi: 10.1177/1357633x16674087
2. Kruse CS, Krowski N, Rodriguez B, Tran L, Vela J, Brooks M. Telehealth and patient satisfaction: a systematic review and narrative analysis. *BMJ Open.* 2017;7(8):e016242. PMID: 28775188. doi: 10.1136/bmjopen-2017-016242
3. Paige SR, Krieger JL, Stellefson M, Alber JM. eHealth literacy in chronic disease patients: an item response theory analysis of the eHealth literacy scale (eHEALS). *Patient Educ Couns.* 2017;100(2):320-326. PMID: 27658660. doi: 10.1016/j.pec.2016.09.008
4. Georgsson M, Staggers N. Patients' perceptions and experiences of a mHealth diabetes self-management system. *Comput Inform Nurs.* 2017;35(3):122-130. PMID: 27748662. doi: 10.1097/cin.0000000000000296
5. Bullock DR, Vehe RK, Zhang L, Correll CK. Telemedicine and other care models in pediatric rheumatology: an exploratory study of parents' perceptions of barriers to care and care preferences. *Pediatr Rheumatol Online J.* 2017;15(1):55. PMID: 28693580. doi: 10.1186/s12969-017-0184-y
6. Koivunen M, Saranto K. Nursing professionals' experiences of the facilitators and barriers to the use of telehealth applications: a systematic review of qualitative studies. *Scand J Caring Sci.* 2018;32(1):24-44. PMID: WOS:000426524200003. doi: 10.1111/scs.12445
7. Pflugeisen BM, Mou J. Patient satisfaction with virtual obstetric care. *Matern Child Health J.* 2017;21(7):1544-1551. PMID: 28176034. doi: 10.1007/s10995-017-2284-1
8. Polinski JM, Barker T, Gagliano N, Sussman A, Brennan TA, Shrank WH. Patients' satisfaction with and preference for telehealth visits. *J Gen Intern Med.* 2016;31(3):269-275. PMID: 26269131. doi: 10.1007/s11606-015-3489-x
9. Driessen J, Castle NG, Handler SM. Perceived benefits, barriers, and drivers of telemedicine from the perspective of skilled nursing facility administrative staff stakeholders. *J Appl Gerontol.* 2018;37(1):110-120. PMID: WOS:000417697100008. doi: 10.1177/0733464816651884
10. Bullock DR, Vehe RK, Zhang L, Correll CK. Accessing pediatric rheumatology care: despite barriers, few parents prefer telemedicine. *Pediatric Rheumatology.* 2016;14. doi: 10.1186/s12969-016-0098-0
11. Radhakrishnan K, Xie B, Berkley A, Kim M. Barriers and facilitators for sustainability of tele-homecare programs: a systematic review. *Health Serv Res.* 2016;51(1):48-75. PMID: 26119048. doi: 10.1111/1475-6773.12327
12. Ladika S. Telehealth dials up discussion about payment to providers. *Manag Care.* 2016;25(6):15-19. PMID: 27464368
13. Deen TL, Fortney JC, Schroeder G. Patient acceptance of and initiation and engagement in telepsychotherapy in primary care. *Psychiatr Serv.* 2013;64(4):380-384. PMID: 23370530. doi: 10.1176/appi.ps.201200198
14. Newman-Casey PA, Killeen OJ, Renner M, Robin AL, Lee P, Heisler M. Access to and experiences with e-Health technology among glaucoma patients and their relationship with medication adherence. *Telemed J E Health.* 2018;2018 Apr 23. doi: 10.1089/tmj.2017.0324. [Epub ahead of print]. PMID: 29683401. doi: 10.1089/tmj.2017.0324
15. Mackert M, Guadagno M, Lazard A, et al. Engaging men in prenatal health promotion: a pilot evaluation of targeted e-Health content. *Am J Mens Health.* 2017;11(3):719-725. PMID: 27956587. doi: 10.1177/1557988316679562
16. Crane M. Exploring telehealth models. *Med Econ.* 2014;91(14):17-20. PMID: 25233550
17. North F, Crane SJ, Takahashi PY, et al. Telemedicine barriers associated with regional quality measures. *Telemed J E Health.* 2014;20(2):179-181. PMID: 24205836. doi: 10.1089/tmj.2013.0167

18. Gurupur V, Shettian K, Xu P, et al. Identifying the readiness of patients in implementing telemedicine in northern Louisiana for an oncology practice. *Health Informatics J.* 2017;23(3):181-196. PMID: 27102886. doi: 10.1177/1460458216639740
19. Call VR, Erickson LD, Dailey NK, et al. Attitudes toward telemedicine in urban, rural, and highly rural communities. *Telemed J E Health.* 2015;21(8):644-651. PMID: 25839334. doi: 10.1089/tmj.2014.0125
20. Slater H, Campbell JM, Stinson JN, Burley MM, Briggs AM. End user and implementer experiences of mhealth technologies for noncommunicable chronic disease management in young adults: systematic review. *J Med Internet Res.* 2017;19(12). PMID: WOS:000417796900001. doi: 10.2196/jmir.8888
21. Yusif S, Hafeez-Baig A, Soar J. e-Health readiness assessment factors and measuring tools: a systematic review. *Int J Med Inform.* 2017;107:56-64. PMID: 29029692. doi: 10.1016/j.ijmedinf.2017.08.006
22. O'Connor S, Hanlon P, O'Donnell CA, Garcia S, Glanville J, Mair FS. Understanding factors affecting patient and public engagement and recruitment to digital health interventions: a systematic review of qualitative studies. *BMC Med Inform Decis Mak.* 2016;16(1):120. PMID: 27630020. doi: 10.1186/s12911-016-0359-3
23. O'Connor S, Hanlon P, O'Donnell CA, Garcia S, Glanville J, Mair FS. Barriers and facilitators to patient and public engagement and recruitment to digital health interventions: protocol of a systematic review of qualitative studies. *BMJ Open.* 2016;6(9):e010895. PMID: 27591017. doi: 10.1136/bmjopen-2015-010895
24. Viers BR, Pruthi S, Rivera ME, et al. Are patients willing to engage in telemedicine for their care: a survey of preuse perceptions and acceptance of remote video visits in a urological patient population. *Urology.* 2015;85(6):1233-1239. PMID: 25863832. doi: 10.1016/j.urology.2014.12.064
25. Jennett P, Gagnon MP, Brandstadt HK. Preparing for success: readiness models for rural telehealth. *J Postgrad Med.* 2005;51(4)
26. Jenkins C, Burkett NS, Ovbiagele B, et al. Stroke patients and their attitudes toward mHealth monitoring to support blood pressure control and medication adherence. *Mhealth.* 2016;2. PMID: 27347490. doi: 10.21037/mhealth.2016.05.04
27. McGillicuddy JW, Weiland AK, Frenzel RM, et al. Patient attitudes toward mobile phone-based health monitoring: questionnaire study among kidney transplant recipients. *J Med Internet Res.* 2013;15(1):e6. PMID: 23305649. doi: 10.2196/jmir.2284
28. L'Esperance ST, Perry DJ. Assessing advantages and barriers to telemedicine adoption in the practice setting: a MyCareTeam (TM) exemplar. *J Am Assoc Nurse Pract.* 2016;28(6):311-319. PMID: WOS:000378357300005. doi: 10.1002/2327-6924.12280
29. Mark JR, Rodriguez MC, Freischlag JA, Melnikow J, Humphries MD. Are patients with critical limb ischemia ready for telemedicine? *J Vasc Surg.* 2017;65(6):115S-115S. PMID: WOS:000403108000204. doi: 10.1016/j.jvs.2017.03.216
30. Campagna M, Naka F, Lu J. Teledermatology: an updated overview of clinical applications and reimbursement policies. *Int J Womens Dermatol.* 2017;3(3):176-179. PMID: 28831431. doi: 10.1016/j.ijwd.2017.04.002
31. Becevic M, Boren S, Mutrux R, Shah Z, Banerjee S. User satisfaction with telehealth: study of patients, providers, and coordinators. *Health Care Manag (Frederick).* 2015;34(4):337-349. PMID: 26506296. doi: 10.1097/hcm.0000000000000081
32. Depatie A, Bigbee JL. Rural older adult readiness to adopt mobile health technology: a descriptive study. *Online J Rural Nurs Health Care.* 2015;15(1):150-184. PMID: 103297499. Language: English. Entry Date: 20161207. Revision Date: 20170515. Publication Type: Article. doi: 10.14574/ojrnhc.v15i1.346
33. Chesser A, Burke A, Reyes J, Rohrberg T. Navigating the digital divide: a systematic review of eHealth literacy in underserved populations in the United States. *Inform Health Soc Care.* 2016;41(1):1-19. PMID: 25710808. doi: 10.3109/17538157.2014.948171

34. Kim H, Goldsmith JV, Sengupta S, et al. Mobile health application and e-Health literacy: opportunities and concerns for cancer patients and caregivers. *J Cancer Educ.* 2017;2017 Nov 14. doi: 10.1007/s13187-017-1293-5. [Epub ahead of print]. PMID: 29139070. doi: 10.1007/s13187-017-1293-5

35. Park H, Cormier E, Glenna G. Health consumers eHealth literacy to decrease disparities in accessing ehealth information. *Stud Health Technol Inform.* 2016;225:895-896. PMID: 27332397

36. Jennett P, Jackson A, Healy T, et al. A study of a rural community's readiness for telehealth. *J Telemed Telecare.* 2003;9:259-263

37. Woo K, Dowding D. Factors affecting the acceptance of telehealth services by heart failure patients: an integrative review. *Telemed J E Health.* 2018;24(4):292-300. PMID: 28767315. doi: 10.1089/tmj.2017.0080

38. Schwamm LH. Telehealth: seven strategies to successfully implement disruptive technology and transform health care. *Health Aff (Millwood).* 2014;33(2):200-206. PMID: 24493761. doi: 10.1377/hlthaff.2013.1021

TELEHEALTH RESOURCES

FOR FURTHER INFORMATION

GENERAL RESOURCES

- American Telehealth Association (ATA): http://www.americantelemed.org/home
- Center for Connected Health Policy, The National Telehealth Policy Resource Center: http://www.cchpca.org/telehealth-policy
- Center for Telehealth and e-Health Law (CTel) - Robert J Waters Center for Telehealth & e-Health Law: http://ctel.org/
- Maryland Health Care Commission (MHCC) Telehealth: http://mhcc.maryland.gov/mhcc/pages/hit/hit_telemedicine/hit_telemedicine.aspx
- Maryland Telehealth Alliance, Inc.: https://www.marylandtelehealth.org/
- Mid-Atlantic Telehealth Resource Center: https://www.matrc.org/
- Telehealth Resource Centers: https://www.telehealthresourcecenter.org/

PRIVACY AND SECURITY

- MHCC Cybersecurity: http://mhcc.maryland.gov/mhcc/Pages/hit/hit_cybersecurity/hit_cybersecurity.aspx
- MHCC HIPAA: http://mhcc.maryland.gov/mhcc/Pages/hit/hit_hipaa/hit_hipaa.aspx
- U.S. Department of Health and Human Services (HHS) Health Insurance Portability and Accountability Act (HIPAA) for Professionals: https://www.hhs.gov/hipaa/for-professionals/index.html
- HHS – Helping Entities Implement Privacy and Security Protections: https://www.hhs.gov/hipaa/for-professionals/training/index.html
- HHS Privacy Rule Guidance Materials: https://www.hhs.gov/hipaa/for-professionals/privacy/guidance/index.html
- HHS Security Rule Guidance Materials: https://www.hhs.gov/hipaa/for-professionals/security/guidance/index.html

EVALUATION AND ASSESSMENT

- Centers for Disease Control and Prevention (CDC) – Developing an Effective Evaluation Plan: https://www.cdc.gov/obesity/downloads/cdc-evaluation-workbook-508.pdf
- Community Toolbox – Developing an Evaluation Plan: https://ctb.ku.edu/en/table-of-contents/evaluate/evaluation/evaluation-plan/main
- Health Compass - How to Develop a Monitoring and Evaluation Plan: https://www.thehealthcompass.org/how-to-guides/how-develop-monitoring-and-evaluation-plan
- Healthcare Information and Management Systems Society (HIMSS) – Using Public Health Models to Assess Health Information Technology (health IT) Implementation: https://s3.amazonaws.com/rdcms-himss/files/production/public/HIMSSorg/Content/files/RTI%20Public%20Health%20Evaluation.pdf

About the TRA Tool

As a result of lessons learned from telehealth demonstration projects and discussions with telehealth leaders in Maryland, a need was identified for an assessment tool to help practices understand barriers, facilitators, patient and environmental factors associated with telehealth readiness. To address this need, the Maryland Health Care Commission (MHCC) collaborated with RTI International to develop the TRA tool.

In February, 2018, the TRA tool development project was initiated. TRA tool content is founded in literature and a comprehensive environmental scan of existing resources and information. The literature review and environmental scan identified more than 150 references including guidelines, best practices, and other information applicable to telehealth implementation in small physician practices. TRA tool content was also reviewed and field tested with key stakeholder groups, including the Maryland Telehealth Alliance and Maryland Medicaid, and 20 small physician practices in Maryland, including those that had and those that had not implemented telehealth. Field testing consisted of cognitive interviews to ensure that the TRA tool content is understandable, engaging, relevant, and appropriate for the intended audience.

The TRA tool allows small physician practices to determine their readiness for implementing or scaling up a telehealth project, including identifying patients who are good candidates for telehealth services and providers that are well-positioned to adopt telehealth.

About the MHCC

The MHCC is an independent regulatory agency whose mission is to plan for health system needs, promote informed decision-making, increase accountability, and improve access in a rapidly changing health care environment by providing timely and accurate information on availability, cost, and quality of services to policy makers, purchasers, providers and the public. The MHCC is responsible for advancing health information technology statewide and fostering innovation in a way that balances the need for information sharing with the need for strong privacy and security policies.