

Engaging Patients With Mental Health Disorders Through Technology



This program is paid for by
Otsuka Pharmaceutical Development
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Objectives



Discuss current developments in digital health for psychiatry and consider the advantages and challenges of using digital tools



Examine the use of technology in promoting treatment adherence



Review shared decision making in psychiatry and the contribution that digital tools can make to its implementation

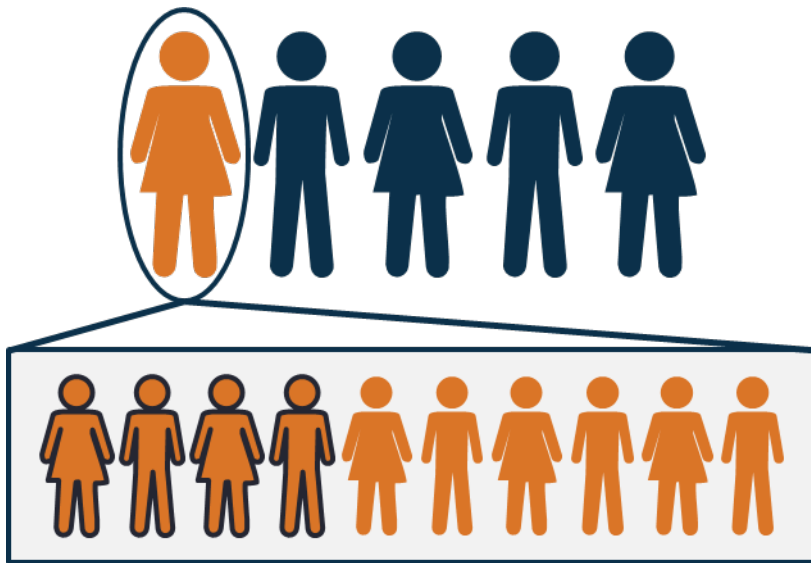
Digital Technology in Mental Health



Mental Illness in America

In 2016...

1 in 5 American adults were living with mental illness*



Only ~40% of patients with mental illness received treatment in the past year*

An estimated ~10 million (1 in 25) American adults live with SMI*

There are approximately:

2.4
million
people living with
schizophrenia

16
million
people living with
major depression

6.1
million
people living with
bipolar disorder

42
million
people living with
anxiety disorders

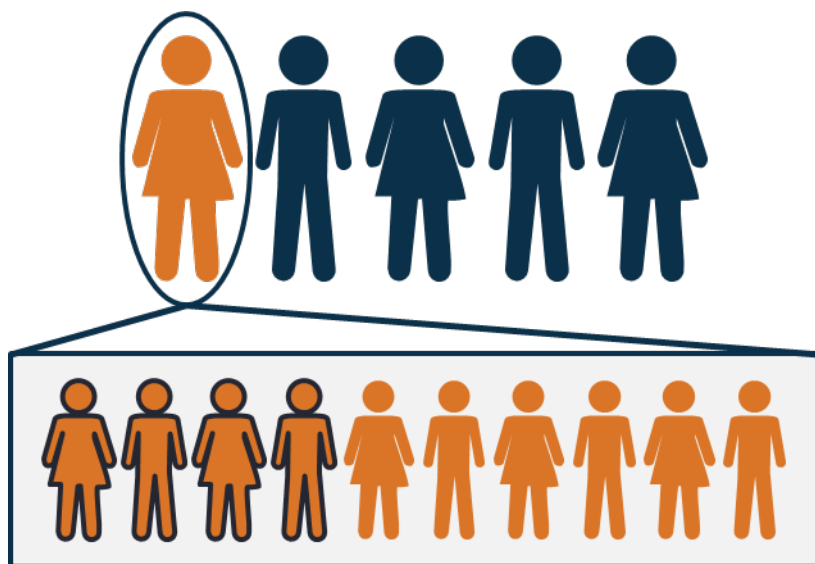
\$193.2
billion
in costs to the US in lost
earnings due to SMI

*Based on data from the 2016 National Survey on Drug Use and Health (NSDUH) performed by the Substance Abuse and Mental Health Services Administration (SAMHSA).
SMI, severe mental illness, US, United States.
NAMI. Mental Health Facts in America. Available at: <https://www.nami.org/NAMI/media/NAMI-Media/Infographics/GeneralMHFacts.pdf>. Accessed October 2, 2018.

Mental Healthcare Access in America

In 2016...

1 in 5 American adults were living with mental illness*



Only ~40% of patients with mental illness received treatment in the past year*

On average, the US has
1 mental health provider[†] for every
536 individuals²



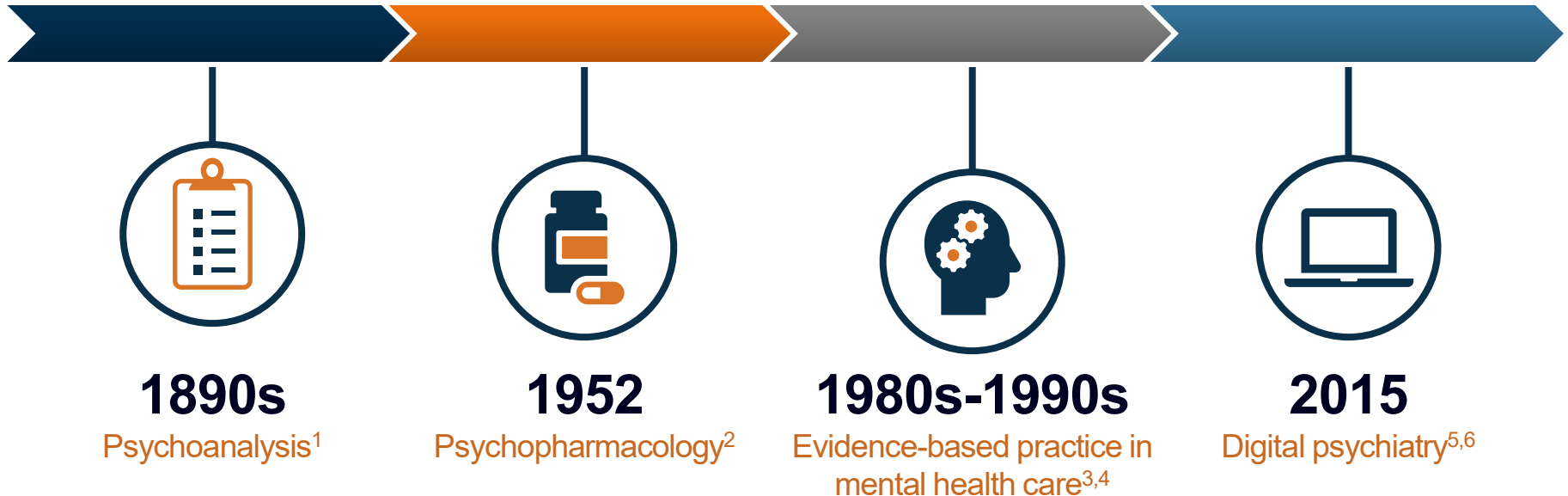
*Based on data from the 2016 National Survey on Drug Use and Health (NSDUH) performed by the Substance Abuse and Mental Health Services Administration (SAMHSA).

[†]The term "mental health provider" includes psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists, and advanced practice nurses specializing in mental health care.

1. NAMI. Mental Health Facts in America. Available at: <https://www.nami.org/NAMI/media/NAMI-Media/Infographics/GeneralMHFacts.pdf>. Accessed September 30, 2018.

2. Mental Health America. The State of Mental Health in America. 2018. Available at: <http://www.mentalhealthamerica.net/issues/state-mental-health-America>. Accessed September 30, 2018.

Digital Technology Is Poised to Become the Fourth Wave of Evolution in Mental Health Care



1. Gleitman H, et al. Psychology. 8th ed. W. W. Norton & Company. 2011:591-633.
2. Ahuja N. A Short Textbook of Psychiatry. 7th ed. Jaypee Brothers Medical Publishers (P) Ltd. 2011:172-198.
3. Spring B. *J Clin Psychol*. 2007;63:611-631.

4. APA Presidential Task Force on Evidence-Based Practice. *Am Psychol*. 2006;61:271-285.
5. Kumar S, et al. *Am J Prev Med*. 2013;45:228-236.
6. Mohr DC, et al. *Gen Hosp Psychiatry*. 2013;35:332-338.
7. Lehman AF, et al. *Am J Psychiatry*. 2004;161:1-184.

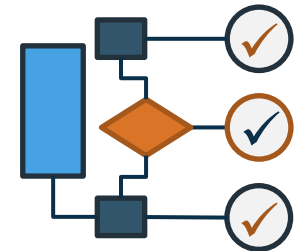
Digital Technology May Provide New Tools for the Assessment and Management of Mental Health



mHealth sensors¹



Digital interventions and assessments²



Clinical decision support systems³



Mobile apps for mental health⁴



Medication adherence technology^{5,6}



Telepsychology and telepsychiatry^{7,8}

mHealth, mobile health.

1. Ben Zeev D et al. *Psychiatr Rehabil J*. 2015;38(3):218-226.
2. Firth J et al. *J Psychiatr Research*. 2016;80:3-4.
3. Davis S et al. *J Am Med Informatics Assn*. 2017;24(4):857-866.
4. Donker T et al. *J Med Internet Res*. 2013;15(11):e247.
5. Mistry N et al. *J Am Med Inform Assoc*. 2015;22(e1):e177-93.

6. Granholm E et al. *Schizophrenia Bull*. 2012;38(3):414-25.
7. Joint Task Force for the Development of Telepsychology Guidelines for Psychologists. *American Psychologist*. 2013;68(9):791-800.
8. American Psychiatric Association and American Telemedicine Associations. *Best Practices in Videoconferencing-Based Telemental Health*. 2018.

Technology Use in the United States

The January 2018 Core Trends Survey from the Pew Research Center surveyed 2,002 adults aged 18 or older nationwide with access to a landline or cell phone

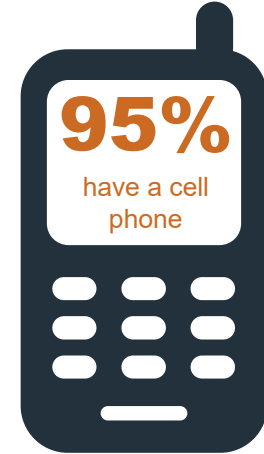
89%

currently use
the internet



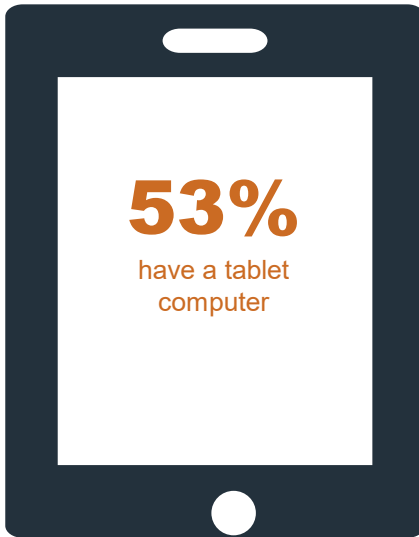
95%

have a cell
phone



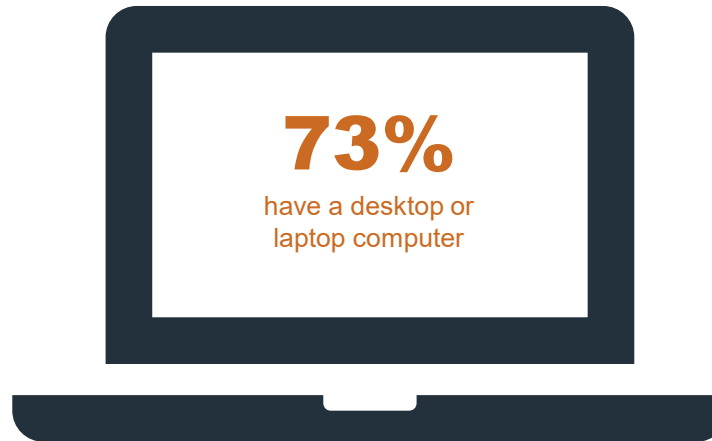
53%

have a tablet
computer



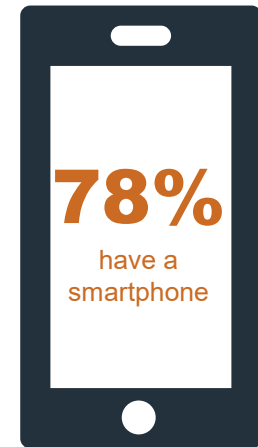
73%

have a desktop or
laptop computer



78%

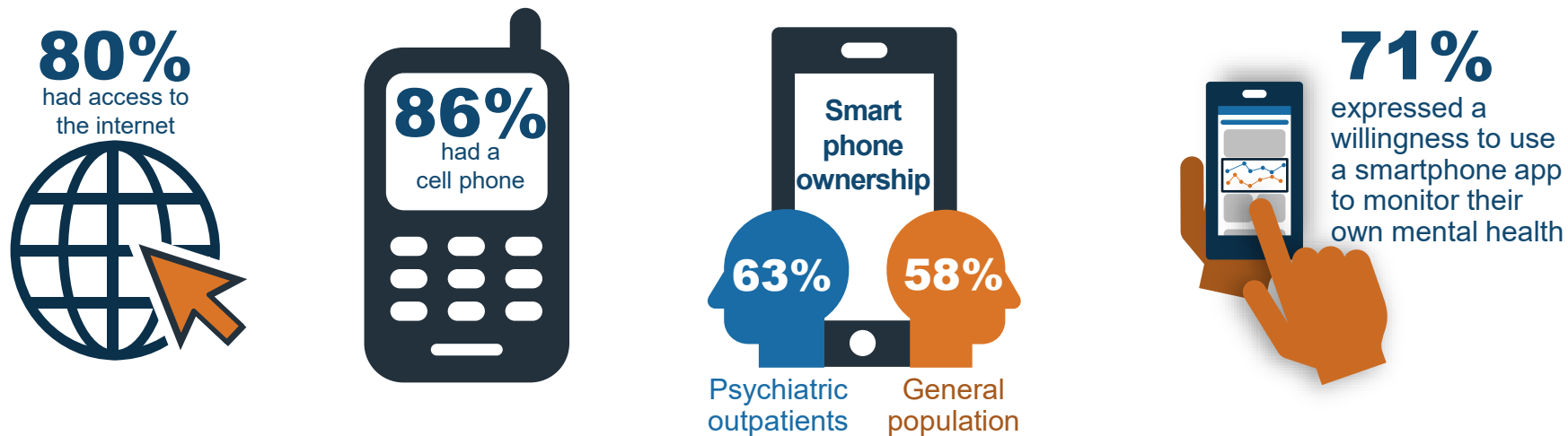
have a
smartphone



1. Pew Research Center. January 2018 Core Trends Survey Topline Results. Available at: <http://www.pewinternet.org/dataset/jan-3-10-2018-core-trends-survey/>. Accessed August 30, 2018.
2. Pew Research Center. Tech Adoption Climbs Among Older Adults. May 2017. <http://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/>. Accessed August 30, 2018.

Widespread Use of Digital Devices Includes Patients Diagnosed With SMI

- Digital exclusion of patients with SMI had declined in recent years, despite being a major concern in the past¹
- A 2014 survey of psychiatric outpatients across 4 US study sites found:



- Patients diagnosed with SMI own and use digital technology, often on a daily basis^{3,4}
 - However, a digitally excluded minority still exists and efforts to facilitate inclusion of this population may require assistance in developing skills necessary for the use of technology

SMI, serious mental illness; US, United States.

1. Robotham D, et al. *J Med Internet Res*. 2016; 18(11):e309.
2. Torous J, et al. *JMIR Ment Health*. 2014; 1(1):e5.

3. Carras MC, et al. *J Psychiatr Pract*. 2014;20:94-103.
4. Firth J, et al. *Schizophr Bull*. 2016;42(2):448-55.

Digital Technology May Offer Some Advantages for Assessing and Managing Mental Illnesses

- Gathering more comprehensive data¹
 - Multiple sensors and modalities may provide more ecologically rich data sets
- Analysis of real-world behaviors or experiences^{2,3}
 - Ecological momentary assessment methods allow assessment of behaviors and experiences in their ecological context
- Providing “in-the-moment” interventions⁴
 - Pervasive nature of mobile technologies allows the delivery of interventions in the moment
 - Potential to provide a continuous connection between a care system and the patient
- Assessment and interventions for treatment adherence¹
 - Discerning those factors that influence adherence behaviors
 - Providing feedback and support to improve adherence

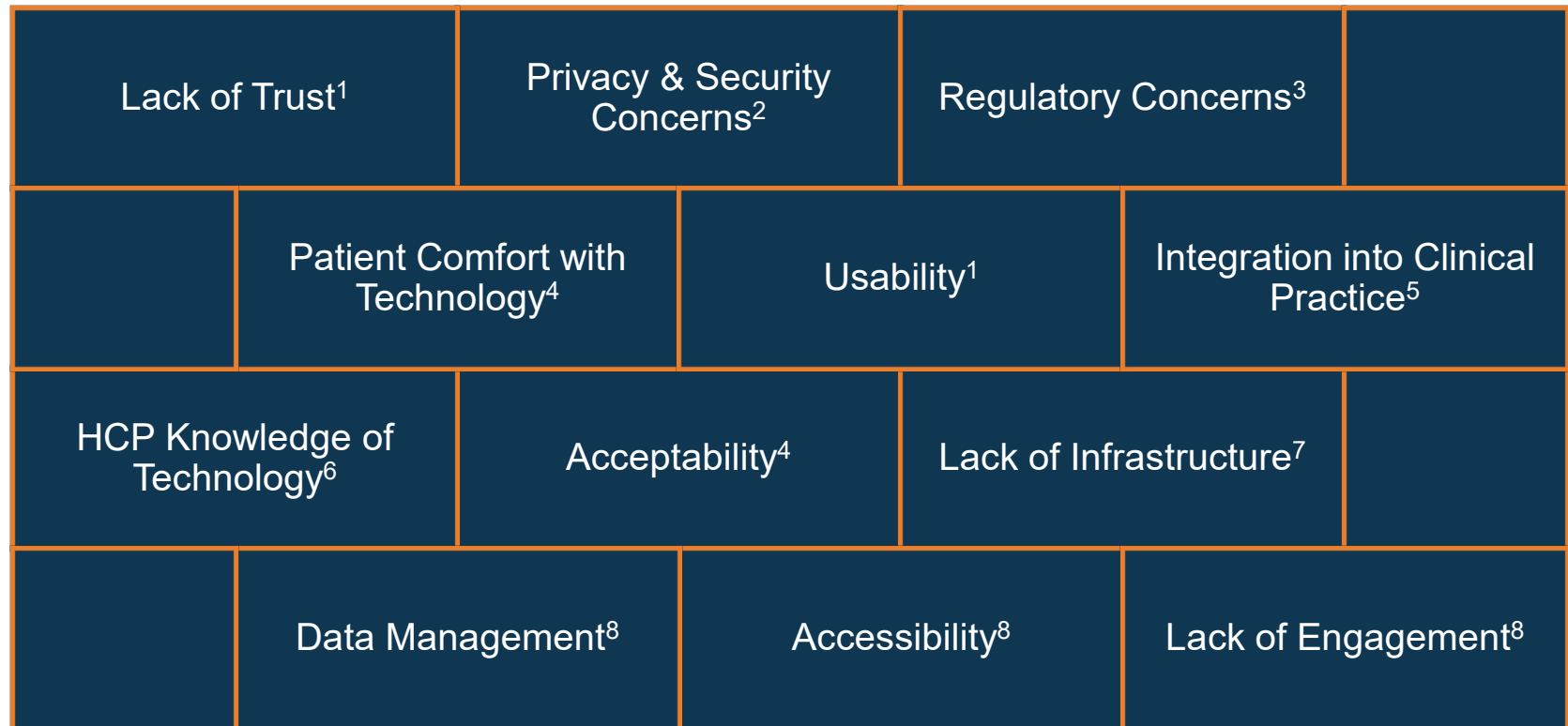
1. Kumar S, et al. *Am J Prev Med*. 2013;45:228-236.

2. Schwarz N. In: Stone A, et al, eds. *The Science of Real-Time Data Capture: Self-Reports in Health Research*. Oxford University Press. 2007;11-26.

3. Stone AA, et al. In: Stone AA, et al, eds. *The Science of Real-Time Data Capture: Self-Reports in Health Research*. Oxford University Press. 2007;3-10.

4. Mohr DC, et al. *Gen Hosp Psychiatry*. 2013;35:332-338.

Selected Barriers to the Adoption of Digital Technology in Mental Health Care



1. Torous J, et al. *Digit Biomark*. 2017;1:87–91.
2. Kumar S, et al. *Am J Prev Med*. 2013;45:228-236.
3. NIMH. Technology and the Future of Mental Health Treatment. Available at: <https://www.nimh.nih.gov/health/topics/technology-and-the-future-of-mental-health-treatment/index.shtml>. Accessed September 14, 2018.
4. Depp CA, et al. *J Nerv Ment Dis*. 2010;198:715-721.

5. Palmier-Claus JE, et al. *BMC Psychiatry*. 2013;13:34.
6. Gittlen S. NEJM Catalyst: Survey Snapshot: What Patient Engagement Technology is Good For. July 10, 2017. Available at: <https://catalyst.nejm.org/patient-engagement-technology-good-for/>. Accessed September 2018.
7. Mardon R, et al. Agency for Healthcare Research and Quality. 2014. Publication No. 14-0047-EF.
8. Mohr DC, et al. *Gen Hosp Psychiatry*. 2013;35:332-338.

Discussion



Treatment Adherence and the Potential Role of Digital Technology



Suboptimal Response May Have Severe and Long-term Consequences in Serious Mental Illness



SMI, serious mental illness.

1. Gelenberg AJ, et al. *Am J Psychiatry*. 2010;167:1-118.

2. Hirschfeld RMA, et al. *Am J Psychiatry*. 2002;159:1-50.

3. Ascher-Svanum H, et al. *Schizophr Bull*. 2008;34:1163-1171.

4. Harvey PD, et al. *Schizophr Res*. 2012;140:1-8.

5. Rush AJ, et al. *Am J Psychiatry*. 2006;163:1905-1917.

6. Perlis RH, et al. *Am J Psychiatry*. 2006;163:217-224.

Outcomes Associated With Poor Adherence in Schizophrenia or Bipolar Disorder

↑Hospitalizations¹⁻⁵

↑Length of Stay^{2,4}

↑Number of Suicide Attempts^{4,5}

↓Recovery Rate^{4,6}

↑Relapse Rate^{3,4}

In a 2015 analysis of an insurance database encompassing 32,374 patients with bipolar disorder or schizophrenia, adherence decreased total health costs by \$19,497⁷

1. Ascher-Svanum H, et al. *BMC Res Notes*. 2009;2:6.
2. Sun SX, et al. *CMRO*. 2007;22(10):2305-2312.
3. Morken G, et al. *BMC Psychiatry*. 2008;8:32.
4. Levin JB, et al. *CNS Drugs*. 2016;30:819-835.

5. Higashi K, et al. *Ther Adv Psychopharmacol*. 2013;3(4):200-218.
6. Novick D, et al. *Schizophr Res*. 2009;108(1-3):223-230.
7. Jiang Y et al. *Pharmacotherapy*. 2015;35(9):813-822.

Multiple Factors Influence Nonadherence

Social/economic factors

- Lack of social/family support^{1,2}
- Caregiver attitudes to medication and illness^{1,3}
- Caregiver ability to supervise/remind patient³
- Transportation issues¹
- Unemployment/financial constraints^{1,2}
- Homelessness^{1,2}
- Lack of daily routines²
- Illiteracy/low level of education¹

Health care systems/HCT factors

- Therapeutic alliance^{2,3}
- Ease of access/inadequate reimbursement^{1,3}
- Availability of resources⁵
- Discharge planning^{3,6}
- Poor medication distribution systems¹

Treatment-related factors

- Effectiveness¹⁻³
- Side effects¹⁻³
- Dose frequency, formulation and treatment duration^{1,3}
- Financial cost to patient^{2,3}
- Co-prescribed drugs and complexity of regimen^{1,3}
- Past medication experience^{1,3}

Patient-related factors

- Past history of adherence^{3,4}
- Stigma about mental illness^{1,3}
- Fear of potential side effects^{1,2}
- Belief that medications are not needed^{1,2}
- Attitudes to medication and illness^{2,3}

Disease-related factors

- Poor insight^{2,3}
- Cognitive impairment^{2,3}
- Severity of symptoms¹⁻³
- Substance abuse¹⁻³
- Comorbid medical or psychiatric conditions¹⁻³

HCT, health care team.

1. Sabaté E. WHO. 2003.
2. Velligan DI, et al. *J Clin Psychiatry*. 2009;70:1-46.
3. Haddad PM, et al. *Patient Relat Outcome Meas*. 2014;5:43-62.

4. Ascher-Svanum H, et al. *J Clin Psychiatry*. 2006;67:1114-1123.
5. Busby KK, Sajatovic M. *CNS Neurosci Ther*. 2010;16:308-315.
6. Steffen S, et al. *Acta Psychiatr Scand*. 2009;120:1-9.

Methods for Measuring Adherence

Subjective Methods



Objective Methods



Rx, prescription.

Sajatovic M et al. *J Psychosom Res* 2010; 69(6):591-599.

Limitations of Current Adherence Measurement Methods May Be Factors in the Underestimation of Nonadherence

Adherence Measurement Methods	Limitations
Physician ratings and patient self-report	<ul style="list-style-type: none"> Overestimation of adherence¹ Unreliable¹
Adherence assessment scales/interviews	<ul style="list-style-type: none"> Questionable correlation with compliance^{1,2}
Medication measurement (e.g., pill count, weighting)	<ul style="list-style-type: none"> Counting inaccuracies may lead to overestimation of adherence³ Pills can be stockpiled or discarded^{3,4} Timing of dosage and patterns of missed dosage cannot be captured⁵
Pharmacy records/databases (MPR)	<ul style="list-style-type: none"> Filling prescription does not indicate ingestion^{3,6} May have obtained the drug elsewhere⁶ Global estimate – no patterns of behavior captured³
Electronic monitoring (e.g., MEMS)	<ul style="list-style-type: none"> Missing data if cap is left off⁷ May take more than one pill out of the bottle⁷
Directly observed ingestion	<ul style="list-style-type: none"> Labor-intensive³ May be intrusive³
Hair analysis	<ul style="list-style-type: none"> Specialized lab; some require 3 months' growth⁸ Does not indicate timing of dosage⁸
Therapeutic drug monitoring	<ul style="list-style-type: none"> Not available for all drugs⁹ Data indicates only short-term patient behavior³ Plasma levels of drug or metabolite can be affected by comedications,⁹ intra-individual variability,³ and timing of sample⁹

1. Byerly MJ, et al. *Psychiatr Serv.* 2007;58:844-847.

2. Fialko L, et al. *Schizophr Res.* 2008;100:53-59.

3. Rieker KA. In: O'Donohue WT, Levensky ER, eds. *Promoting Treatment Adherence: a Practical Handbook for Health Care Providers.* Sage Publications; 2006:17-34.

4. Velligan DI, et al. *Schizophr Bull.* 2006;32:724-742.

5. Sabaté E. *Adherence to Long-term Therapies: Evidence for Action.* World Health Organization; 2003:3-5.

6. Valenstein M, et al. *Schizophr Bull.* 2004;30:255-264.

7. Velligan DI, et al. *Psychiatr Serv.* 2007;58:1187-1192.

8. SAMHSA. *Clinical drug testing in primary care.* HHS:2012;1-96.

9. Baumann P, et al. *Ther Drug Monit.* 2004;26:167-170.

Adherence Improvement Toolbox

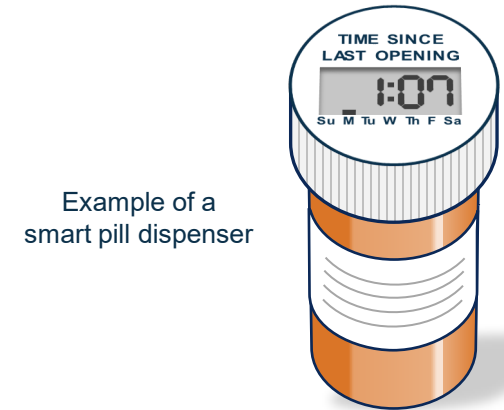


- ☐ Cuing¹
- ☐ Literacy interventions¹
- ☐ Health coaching²
- ☐ Medication synchronization²
- ☐ Financial assistance¹
- ☐ Medication therapy management³
- ☐ Reminders¹
- ☐ Smartphone apps¹
- ☐ Smart pill bottles⁴
- ☐ Dispenser systems⁵

1. Bosworth et al. *Am Heart J*. 2011;162(3):412-424.
2. McKesson. Be a Top-Performing Pharmacy on Star Ratings Measures: Improve Medication Adherence Rates. Available at: <http://www.mckesson.com/blog/star-ratings-measures/>. Accessed October 2017.
3. Viswanathan M et al. Medication Therapy Management Interventions in Outpatient Settings [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); 2014 Nov. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK294482/?report=reader>. Accessed October 2017.
4. Medical Technology. Patient Medication Adherence: A "Smart" Pill Bottle. Available at: <https://www.medtechimpact.com/patient-medication-adherence-a-smart-pill-bottle/> Accessed October 24, 2017.
5. Stipe E et al. *Front Pharmacol*. 2013;4:100.

Examples of Adherence Technologies in Psychiatry

- Electronic monitoring (e.g., medication cap sensors) may help track medication access by electronically recording the date and time of bottle opening¹⁻³
- Telemonitoring platforms communicate information from the electronic dispenser to the clinical team and may thus offer warnings about nonadherence and pattern of medication taking⁴
- Reminders via text messages may provide a simple and broadly applicable tool to improve adherence^{5,6}
- Computer-based relational agents are another tool that may help promote adherence and other healthy behaviors⁷



Example of a smart pill dispenser



SMS text reminders on mobile phones

1. Stip E, et al. *Front Pharmacol*. 2013;4:100.
2. Nakonezny PA, et al. *Psychiatry Res*. 2008;157:259-263.
3. Sajatovic M, et al. *Patient Prefer Adherence*. 2015;9:753-758.
4. Frangou S, et al. *Telemed J E Health*. 2005;11:675-683.

5. Granholm E, et al. *Schizophr Bull*. 2012;38:414-425.
6. Montes JM, et al. *Psychiatry Res*. 2012;200:89-95.
7. Bickmore TW, et al. *Interact Comput*. 2010;22:276-288.

Beyond Increasing Adherence: Improving Clinical Outcomes



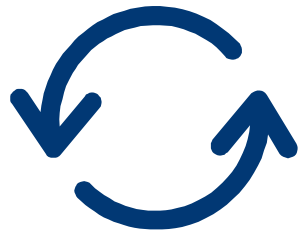
Treatment



Adherence



Outcome



e.g., med
synchronization



improved
adherence



better symptom
control

Discussion



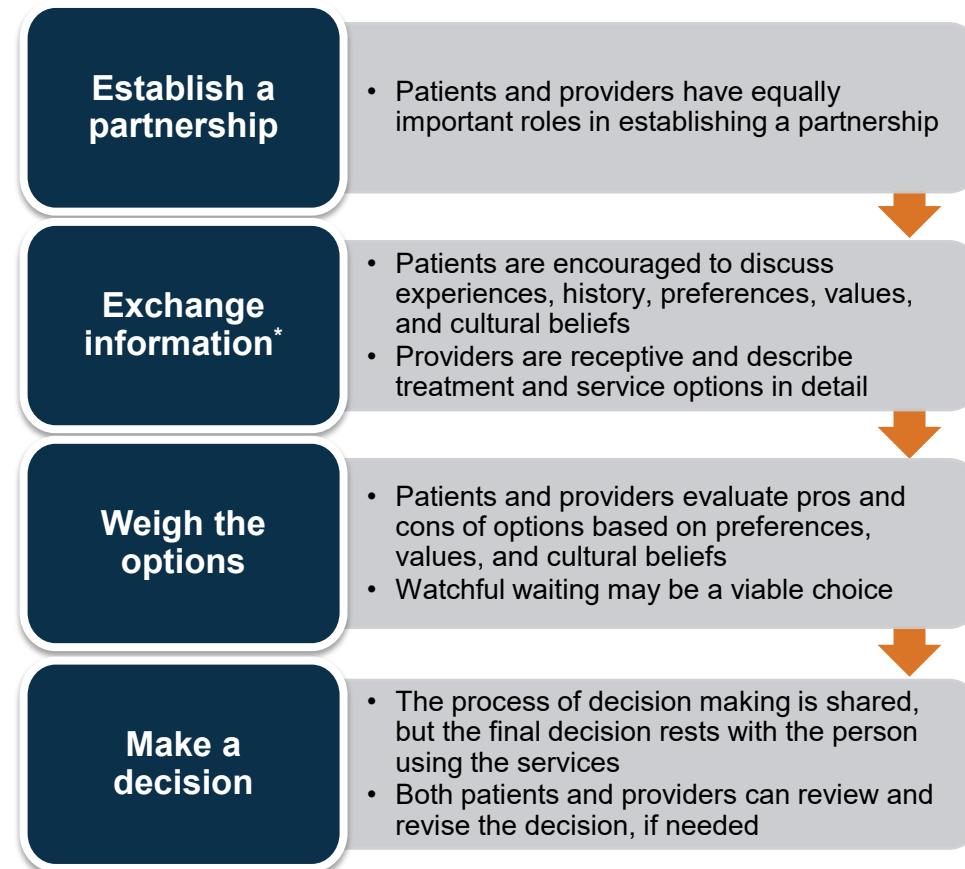
Shared Decision Making and the Potential Role of Digital Technology



Shared Decision Making: An Emerging Best Practice in Health Care

- SDM offers a systematic process and tools to help patients and their providers:
 - Obtain, understand, and exchange complex care research and information
 - Consider and discuss care options together
 - Make a care decision

Steps of the SDM Process



*Shared decision-making tools (e.g., decision aids and resources) can support this step in the process.

SDM, shared decision making.

US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Shared decision making: making recovery real in mental health. https://radarcart.boisestate.edu/radar/pdfs/file/General_Issue_Brief_8_10.pdf. Published 2010. Accessed September 8, 2017.

Goals of Shared Decision Making

- SDM helps balance information about conditions and treatment options with individual's preferences, goals, cultural values, and beliefs¹
- It is especially important when patients arrive at a crossroads of medical options³
 - For some decisions, there is 1 clearly superior path
 - For most, however, ≥ 1 reasonable path exists, and different paths entail different combinations of possible therapeutic effects and side effects



SDM, shared decision making.

1. US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Shared decision making: making recovery real in mental health. https://radarcart.boisestate.edu/radar/pdfs/file/General_Issue_Brief_8_10.pdf. Published 2010. Accessed September 8, 2017.
2. Mental Health America. You're on the team: help for providers. <http://mentalhealthamerica.net/youre-team-help-providers>. Published 2017. Accessed September 8, 2017.
3. Barry MJ, Edgman-Levitan S. *N Engl J Med*. 2012;366(9):780-1.

Benefits of Shared Decision Making

- As a patient-engagement strategy, SDM can help enhance the therapeutic alliance¹⁻³
- Studies indicate that using SDM in mental health care can help improve^{4,5}:
 - Patient satisfaction
 - Patient engagement in managing care
- Studies outside of the mental health arena have also illustrated that SDM may help to:
 - Reduce costs^{4,6,7}
 - Increase patient knowledge⁸
 - Foster accurate risk perceptions⁸
 - Lessen internal conflict about decisions⁸
 - Increase the likelihood that patients receive care aligned with their personal values⁸

SDM, shared decision making.

1. Health policy brief: patient engagement. Health Affairs web site. http://www.healthaffairs.org/healthpolicybriefs/brief.php?brief_id=86. Published February 14, 2013. Accessed September 14, 2017.
2. Eliacin J et al. *Qual Health Res*. 2015;25(5):668-678.
3. Matthias MS et al. *Psychiatr Serv*. 2014;65(12):1488-1491.
4. Agency for Healthcare Research and Quality. The SHARE Approach: achieving patient-centered care with shared decision making: a brief for administrators and practice leaders (workshop curriculum: tool 9). <https://www.ahrq.gov/professionals/education/curriculum-tools/shareddecisionmaking/tools/tool-9/index.html>. Published April 2014. Accessed September 8, 2017.
5. Swanson KA et al. *Med Care Res Rev*. 2007;64(4):416-430.
6. Lee OE et al. *N Engl J Med*. 2013;368(1):6-8.
7. The Commonwealth Fund Commission on a High Performance Health System. Bending the Curve: Options for Achieving Savings and Improving Value in U.S. Health Spending. New York, NY: The Commonwealth Fund; 2007.
8. Stacey D et al. *Cochrane Database Syst Rev*. 2017;4. doi: 10.1002/14651858.CD001431.pub5.

Potential Barriers to Provider Participation in SDM

Lack of awareness

SDM is often not included as part of providers' education

Integration concerns

A strategy to integrate SDM into the practice's workflow is required

Lack of reimbursement

Lack of clear communication

Lack of clarity on the part of the provider when discussing treatment options may leave patients with insufficient information for making their decision, or may overwhelm them with confusing information

Judgmental behavior that does not consider patient preferences

While many patients tend to have similar concerns (e.g., cost, level of functionality, QoL), patients with different lifestyles may select different treatment protocols

Perceived time requirement and constraints

Lack of empathetic communication

Lack of empathy may hinder patient trust, leading the patient to disengage from SDM

Provider bias

Assumptions that the provider knows what the patient is most concerned about or would choose may not be correct

QoL, quality of life; SDM, shared decision making.

Xtelligent Media; Patient Engagement HIT. Using Shared Decision-Making to Improve Patient Engagement. Available at: <https://patientengagementhit.com/features/using-shared-decision-making-to-improve-patient-engagement>. Accessed September 2018.

Breaking Through Barriers to Shared Decision Making: Providers

To engage patients in shared decision making, providers must be prepared to:



Relinquish their role as the single, paternalistic authority¹



Become more comfortable with discussing emotionally charged issues²



Train to become more effective coaches or partners¹



Avoid labeling decisions as “wrong” based on differing values or preferences¹



Consider technological aids for decision making with your patients¹



Get more comfortable with acknowledging their uncertainty²

Patients are more likely to engage in their care if they believe providers will consider their feelings and opinions and if they think they have the information and support they need to make an informed decision²

1. Barry MJ, Edman-Levitan S. *N Engl J Med*. 2012;366(9):780-1.
2. Williams N, et al. *J Comp Eff Res*. 2017;6(8):683-692.

Talking With Patients About Setting Goals to Support Wellness

- Talking with patients about setting goals to support wellness
 - Goal setting may help patients focus on what they would like to achieve in the future¹
 - Keeps patients engaged in their treatment choices and plan²
 - Increased engagement may improve adherence³



1. US Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Illness Management and Recovery: Practitioner Guides and Handouts. Rockville, MD: Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, US Department of Health and Human Services; 2009.

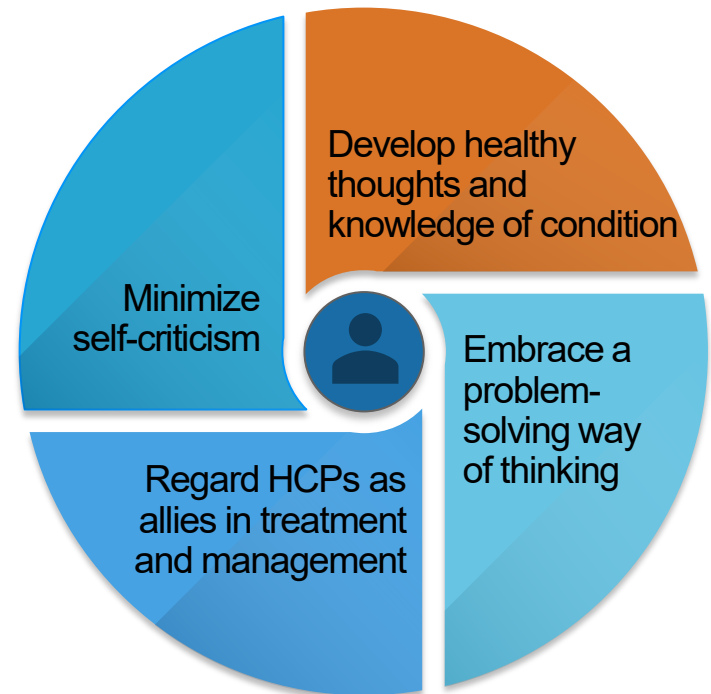
2. National Alliance on Mental Illness. Engagement: A New Standard for Mental Health. Arlington, VA: National Alliance on Mental Illness; 2016.

3. Substance Abuse and Mental Health Services Administration. Innovations in Practice Shared Decision Making in Mental Health. SMA 10-1121. Washington, DC; US Department of Health and Human Services; 2010.

Normalizing Language in Mental Health

- Normalization is a CBT strategy that may help patients understand that their feelings and experiences are often felt by others, even those not diagnosed with a mental health condition
 - Can be used to support a strong therapeutic relationship
- Key messages of normalization
 - The patient is not alone
 - Many people experience mental health issues and symptoms every day
 - Symptoms may be effectively managed and/or treated

Goals of normalization



CBT, cognitive behavioral therapy; HCPs, healthcare providers.

Wright JH, Turkington D, Kingdon DG, Ramirez Basco M. Cognitive-Behavior Therapy for Severe Mental Illness: An Illustrated Guide. Arlington, VA: American Psychiatric Association Publishing; 2009.

Tools for Setting Goals to Support Wellness

Goal Setting

- Which wellness goals are most important to me?
- What is my time frame to address these goals?
- How can I work toward achieving them?
- What obstacles might I face?
- Who can help me?
- How will I track progress?



Recovery Goals: Preparing for Appointments

- My recovery goal is:
- How have I been feeling recently?
- How have my medicines been working?
- Have I been having any side effects?
- Have I been able to do what I want recently?

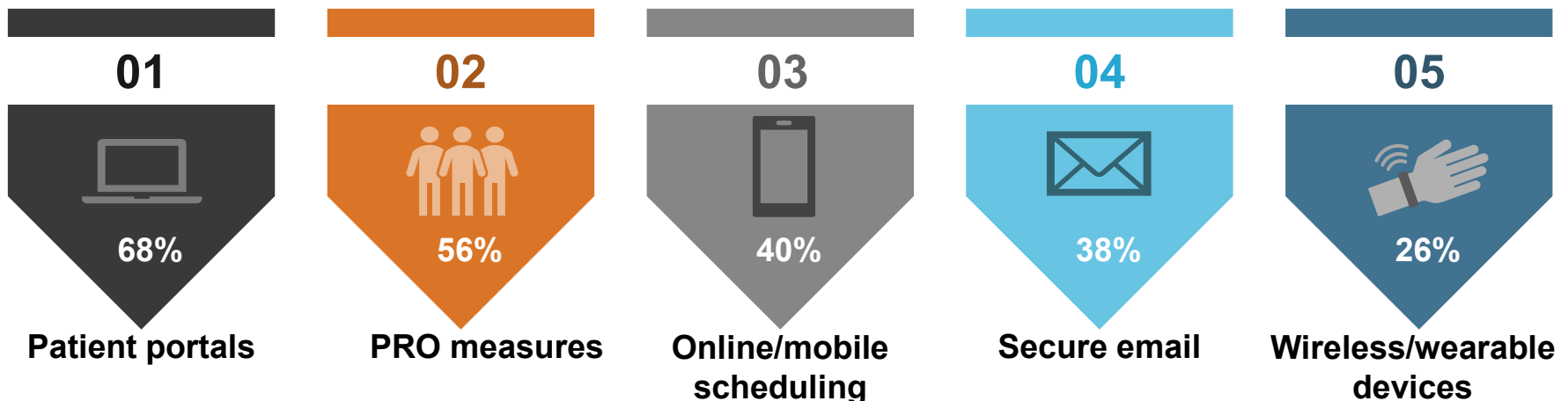
Recovery Goals: At the Appointment

- This is what I'm going to do between visits:
- This is what we're going to discuss at my next appointment:

Otsuka Pharmaceutical Development & Commercialization. Goal-Setting and Recovery Goals Worksheets. December 2017. Available at <https://www.frameworkshealth.org/programs/mh/>. Accessed September 30, 2018.

Digital Tools in Shared Decision Making

- Tools, such as interactive decision aids, patient portals, personal health records, and secure electronic messaging, can help with shared decision making¹
 - Patients can access decision aids and education materials via a patient portal and communicate via secure messaging with their health care team about their decisions
 - Practices can build triggers into EHR to remind providers to give patients a decision aid
- A *NEJM* Catalyst Insights Council survey* on patient engagement reported that respondents believed the most effective engagement tools to embed care into delivery were^{2†}:



*Includes 555 completed surveys from a qualified group of US executives (26%), clinical leaders (26%), and clinicians (48%) at organizations directly involved in health care delivery.

†Respondents also reported using apps and text messaging to collect patient input

EHR, electronic health record; *NEJM*, *New England Journal of Medicine*; PRO, patient-reported outcomes; US, United States.

- National Learning Consortium. Shared Decision Making Fact Sheet. December 2013. Available at: https://www.healthit.gov/sites/default/files/nlc_shared_decision_making_fact_sheet.pdf. Accessed September 30, 2018.
- Volpp KG and Mohta NS. *NEJM* Catalyst. Insights Report May 2017. Patient Engagement Survey How to Hardwire Engagement into Care Delivery Processes. Available at: <https://catalyst.nejm.org/patient-engagement-solutions-care-delivery-processes/>. Accessed September 30, 2018.

Possible Features of Shared Decision Making Digital Tools

Apps for shared decision making for use by patients with SMI may include¹:

- ✓ Daily diary to track experiences
- ✓ Access to treatment plans, goals, and safety plans
- ✓ Suggested questions for patients to ask their HCP and a way to save answers
- ✓ A visual scale to weigh the pros and cons of decisions
- ✓ Content featuring physicians and patients discussing the pros and cons of various medical screenings, procedures, and treatment options
- ✓ Access to selected resources, such as:
 - Condition overviews and guides
 - Self-management tools
 - Videos featuring patients who have faced a treatment decision

Apps created for shared decision making in other therapeutic areas have included^{2,3}:

- ✓ The ability to track satisfaction with current performance in a goal area over time
- ✓ Interactive decision aids that prompt patients to think about what matters most to them
 - Can be saved to the patient record, giving the care team better insight
- ✓ Focused health education materials to support the patient after a decision has been made
- ✓ Online training to help providers enhance and practice their communication skills in realistic situations

HCP, healthcare provider; SMI, serious mental illness.




1. Edridge C L, et al. *JHD*. 2018;3(1):63–74.

2. University of Otago, Wellington. Digital technology in rehabilitation. Available at: <https://www.otago.ac.nz/wellington/departments/medicine/postgraduate/rehabilitation/otago668757.html#ADOC>. Accessed September 30, 2018.

3. Healthwise. Press Release: Healthwise Launches New SDM Programs To Improve Outcomes. October 2017. Available at: <https://www.healthwise.org/press/healthwise-launches-new-sdm-programs.aspx>. Accessed September 30, 2018.

Study Findings Regarding Digital Tools in Shared Decision Making

Studies from Norway examined the use of an internet-based portal designed to support recovery processes for service users and their ongoing collaboration with mental health providers^{1,2}

Patients 	<ul style="list-style-type: none"> Combining peer support with toolbox resources was an empowering frame of reference 24/7 access promoted a sense of providers' presence and availability Use of the goal module strengthened the person-centered nature of collaboration The portal helped to focus collaboration on the needs and goals that users considered relevant to daily life Some became empowered to request changes in treatment
Providers 	<ul style="list-style-type: none"> Reported that the portal strengthened service users' sense of ownership in their care, largely through the goal module and writing process Writings from service users offered HCPs broader and more nuanced insights, aiding in a more person-centered collaboration
Patient-provider pairs 	<ul style="list-style-type: none"> Benefit from using the portal appeared to be associated with the degree to which pairs' relations were open and flexible before portal introduction <ul style="list-style-type: none"> For those who experienced frustrations, the portal may have both exposed and added to suboptimal working relationships Difficulties arose when users' and HCPs' expectations were not aligned and when the resulting difficulties were not addressed

HCP, healthcare provider.

1. Strand M, et al. *JMIR Ment Health*. 2017;4(4):e54.
2. Gammon D, et al. *J Med Internet Res*. 2017;19(5):e145.

Considerations in the Use of Technology in Supporting SDM: Pros*

Can impact satisfaction with patient–provider interactions†

Can empower patients

Can improve SDM opportunities and encourage greater participation in medical decision-making

May increase efficiency of HCPs, save them time, and provide a platform for real-time connectivity with their patients

Updated features make provision of the most up-to-date information possible

Does not require travel to HCP (extends reach in more remote areas)

May be cost-efficient and reduce burden of paper documents

Can provide better visualizations, allowing for improved patient understanding

*Based on mobile health applications.

†App features such as fast accessibility, easy-to-follow procedures, and/or affordability can also impact satisfaction.

HCP, healthcare provider; SDM, shared decision making.

Abbasgholizadeh Rahimi S, et al. *Glob Health Action*. 2017;10(suppl 3):1332259.

Considerations in the Use of Technology in Supporting SDM: Cons*

Overuse may undermine quality of patient–HCP relationship†

May increase health disparities for patients who lack health literacy skills, knowledge to use app, or access to app

Apps that challenge traditional roles are unlikely to change situations in which strong hierarchy of authority is preferred

Apps containing incorrect information could mislead patients

Relative lack of regulations concerning mHealth apps

Some apps may increase anxiety among patients (e.g., too frequent reminders)

Security concerns exist regarding patients' information

Training may be required for use

*Based on mobile health applications.

†If HCPs use to replace spending time with patients.

HCP, healthcare provider; SDM, shared decision making.

Abbasgholizadeh Rahimi S, et al. *Glob Health Action*. 2017;10(sup3):1332259.

Summary

- While mental illness is common in the US, a shortage of mental health care providers to treat these patients remains¹
- Patients with SMI own and regularly use digital technology, putting such technology in a prime position to assist with care²
- Evaluation of adherence is important, as nonadherence has been associated with poor outcomes³
 - Current methods of assessing adherence have limitations
 - Digital technology (e.g., electronic monitoring and dispensers) can be used to assess treatment adherence and may overcome some of these limitations
- Shared decision making, an emerging best practice in health care, can also be supported by the use of digital technology⁴⁻⁶
 - This approach can empower patients and encourage greater participation in medical decision making, but barriers to its usage and adoption remain

SMI, serious mental illness; US, United States.

1. Mental Health America. The State of Mental Health in America. 2018. Available at: <http://www.mentalhealthamerica.net/issues/state-mental-health-America>. Accessed September 30, 2018.
2. Carras MC, et al. J Psychiatr Pract. 2014;20(2):94-103.
3. Velligan DI, et al. J Clin Psychiatry. 2009;70(suppl 4):1-46.
4. SAMHSA. Shared Decision Making Tools. 2018. Available at <https://www.samhsa.gov/brss-tacs/recovery-support-tools/shared-decision-making>. Accessed September 30, 2018.

5. Volpp KG and Mohta NS. NEJM Catalyst. Insights Report May 2017. Patient Engagement Survey How to Hardwire Engagement into Care Delivery Processes. Available at: <https://catalyst.nejm.org/patient-engagement-solutions-care-delivery-processes>. Accessed September 30, 2018.
6. Xtelligent Media; Patient Engagement HIT. Using Shared Decision-Making to Improve Patient Engagement. Available at: <https://patientengagementhit.com/features/using-shared-decision-making-to-improve-patient-engagement>. Accessed September 30, 2018.

Discussion

