

# The Zoom Interface

The screenshot shows a Zoom Webinar window with a dark header bar. The main content area displays the TTC logo and a welcome message. A 'Question and Answer' window is open, showing a test question and a text input field. A 'Zoom Webinar Chat' window is also open on the right. The bottom toolbar contains icons for audio settings, chat, raise hand, Q&A, and leave. Annotations with arrows point to these elements, providing instructions on how to use them.

**Zoom Webinar** You are viewing David Terry's screen View Options

Click here to maximize your session view Enter Full Screen

**TTC**  
Technology Transfer Centers  
Funded by Substance Abuse and Mental Health Services Administration

**Thank you for joining us today!**

You will not be on video during today's session

Select a Speaker  
✓ Speakers (Realtek(R) Audio)  
Same as System  
Test Speaker & Microphone...  
Leave Computer Audio  
Audio Settings...

Question and Answer  
All questions (1) My questions (1)  
You 07:35 AM  
This is a test question!  
You can switch between questions you've asked and those asked by others using these buttons.  
You can use the Q&A feature to ask questions of the host and presenters. These questions can receive text or live responses. To begin asking a question use the field below. You can see a test question above.  
Type your question here...

**Zoom Webinar Chat**

The chat feature will allow you to talk with other people in today's webinar.

The To field will tell you who will receive your message. Be mindful of who you are chatting to.

To: All panelists  
Your text can only be seen by panelists

Audio Settings Click Here to adjust your audio settings Chat Raise Hand Q&A Click here to leave the session Leave

All attendees are muted. Today's session will be recorded.

# Telebehavioral Health Services: Planning and Investing for the Future of Your Services

Session 1: The Future of Telebehavioral Health and  
Digital Mental Health Services

Jay Ostrowski

Behavioral Health Innovation

7/14/2021



Northeast and Caribbean (HHS Region 2)

**MHTTC**

Mental Health Technology Transfer Center Network

Funded by Substance Abuse and Mental Health Services Administration

# About Us ...

The Northeast and Caribbean MHTTC received 5 years (2018 – 2023) of funding to:

- Enhance capacity of behavioral health workforce to deliver evidence-based and promising practices to individuals with mental illnesses.
- Address full continuum of services spanning mental illness prevention, treatment, and recovery supports.
- Train related workforces (police/first responders, primary care providers, vocational services, etc.) to provide effective services to people with mental illnesses.

Supplemental funding to:

- Support school teachers and staff to address student mental health
- Support healthcare providers in wellness and self-care activities



# Grow Your Knowledge and Skills

Keep up with the latest effective practices, resources, and technologies!

**Subscribe** to receive our mailings.  
All activities are free!

<https://bit.ly/2mpmpMb>

# We Want Your Feedback!

Our funding comes from the Substance Abuse and Mental Health Services Administration (SAMHSA), which requires us to evaluate our services. We appreciate your honest, ANONYMOUS feedback about this event, which will provide information to SAMHSA, AND assist us in planning future meetings and programs.

Feedback about this training will assist us in developing future trainings that are relevant to your professional needs. Therefore, your feedback counts!

# Video Recording Information

## *Please Note:*

We will be recording this webinar and posting it to our website along with the presentation slides and any relevant resources.

# Disclaimer

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At the time of this presentation, Tom Coderre served as Acting Assistant Secretary for Mental Health and Substance Use at SAMHSA. The opinions expressed herein are the views of the speakers, and do not reflect the official position of the Department of Health and Human Services (DHHS), or SAMHSA. No official support or endorsement of DHHS, SAMHSA, for the opinions described in this presentation is intended or should be inferred.

This work is supported by grant H79SM081783 from the DHHS, SAMHSA.

# Your Interactions With Us

## Question and Answers

- Q & A will occur at the end of the call.
- Type your questions in the Q & A feature in Zoom located on the task bar (hover over task bar).
- Note: your question is visible to all participants.

## Chat and Polls

- Throughout the webinar, we will be asking for your input.
- Use the Chat or Poll features in Zoom located on the task bar.
- You can control who can see your chat comments.



The MHTTC Network uses affirming, respectful and recovery-oriented language in all activities. That language is:

STRENGTHS-BASED  
AND HOPEFUL

INCLUSIVE AND  
ACCEPTING OF  
DIVERSE CULTURES,  
GENDERS,  
PERSPECTIVES,  
AND EXPERIENCES

HEALING-CENTERED AND  
TRAUMA-RESPONSIVE

INVITING TO INDIVIDUALS  
PARTICIPATING IN THEIR  
OWN JOURNEYS

PERSON-FIRST AND  
FREE OF LABELS

NON-JUDGMENTAL AND  
AVOIDING ASSUMPTIONS

RESPECTFUL, CLEAR  
AND UNDERSTANDABLE

CONSISTENT WITH  
OUR ACTIONS,  
POLICIES, AND PRODUCTS

# Our Presenter



Jay Ostrowski MA, LPC-S, NCC, DCC, ACS, CTCP

# Jay Ostrowski

## Roles

CEO - Behavioral Health Innovation

CEO - Adaptive Telehealth

Consultant - Mid-Atlantic Telehealth  
Resource Center

## Licenses and Certifications:

Licensed Professional Counselor Supervisor

Licensed Professional Counselor (MI, SC)

Approved Clinical Supervisor

National Certified Counselor

Board Certified - Telemental Health Provider

# Jay Ostrowski's Disclosures

MATRC - Mid-Atlantic Telehealth Resource Center

BHI - Behavioral Health Innovation

ATHN - Appalachian Telemental Health Network

Dialcare Mental Wellness

Interest in Adaptive Telehealth software

## Learning Objectives



1. Describe the history of telebehavioral health development
2. Describe the future of telebehavioral health
3. Understand the drivers behind the move to telebehavioral health.
4. List four types of telebehavioral health services and describe their use-cases

# Fast Growing Mental Health Problem - Worldwide


## Facts:

1. We have a **serious shortage** of mental/behavioral health providers in the US and around the world.
2. There is **growing awareness** of the significance of mental health on overall physical health and healthcare compliance.
3. The **pace of training** new providers is **FAR outpaced by** population growth around the world.



**Conclusion 1:** We **will never have enough** mental/behavioral health providers to meet the mental health needs of the world.

**Conclusion 2 :** We **need new paradigms and scalable resources** for detecting and treating mental/behavioral health issues.

A conceptual image illustrating a transition or change. On the left, a vibrant green field is partially covered by a large, flowing blue fabric that extends towards the top left corner. A rope is attached to the edge of this fabric, and a woman in a black dress is pulling it from the right. The ground she is on is a cracked, dry, greyish landscape. The sky is dark and stormy, with lightning bolts visible. The overall scene suggests a struggle or effort to bridge two contrasting states or environments.

Mental and Behavioral  
Healthcare services  
is undergoing a major  
change.

# Early Identification

## **What If...?**

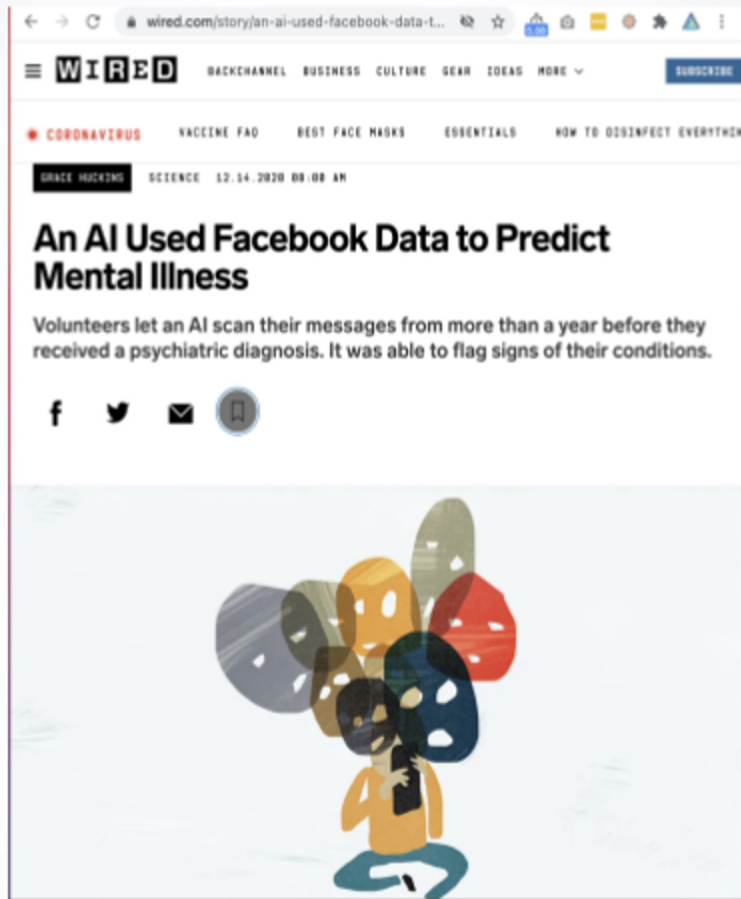


What if...

We could predict that someone would develop psychotic symptoms 1-1.5 years ahead of a clinical diagnoses?

Wired Magazine  
Grace Huckins,  
12.14.2020 08:00 AM

<https://www.wired.com/story/an-ai-used-facebo-ok-data-to-predict-mental-illness/>



**Minority Report** (movie)  
for behavioral health or  
preventative medicine?

# Technology-based solutions are the only viable pathway to meet the needs.

## Today's Agenda

- Video
- Apps
- Chatbots
- Virtual Reality
- Artificial Intelligence



# What is Possible?

# Automate Workflows



Dashboard

INVITE TO COMMUNITY NOTEPAD SCHEDULE CREATE CLIENT

THU Sep 24	09/24/2020 12:00 PM, 1:00 Louise Lacham	09/24/2020 01:00 PM, 1:00 Jeff Mowery	FRI Sep 25

Client

Records per page 10

All User Time	Profile image	First Name	Last Name
15:35			
4:15			
2:17		Louise	Lacham
2:02		Karen	Gooding

## Simple, Automated, Video

- HIPAA-Compliant encrypted video meetings
- Schedule video appointments from calendar
- Instant meeting option available
- Appointments automatically generate video links for all invited to the meeting
- Link to the meeting is on calendars and dashboards
- Calendar sync
- SMS meeting reminders
- Screen sharing and many additional user controls
- Staff users can add or remove participants at any time without disrupting video links
- Prompts to self-test microphone and video prior to meeting

# Video Use-Cases

## Use-Case Examples

1. Screening-Monitoring
2. Video Assessments - Evals
3. Individual Treatment
4. Case Management
5. Clinical Supervision
6. Group Therapy
7. Psychoeducational Classes
8. Medication Management
9. Medication Assisted Treatment
10. Suicidal/Homicidal Eval
11. Scalable individualized treatment programs

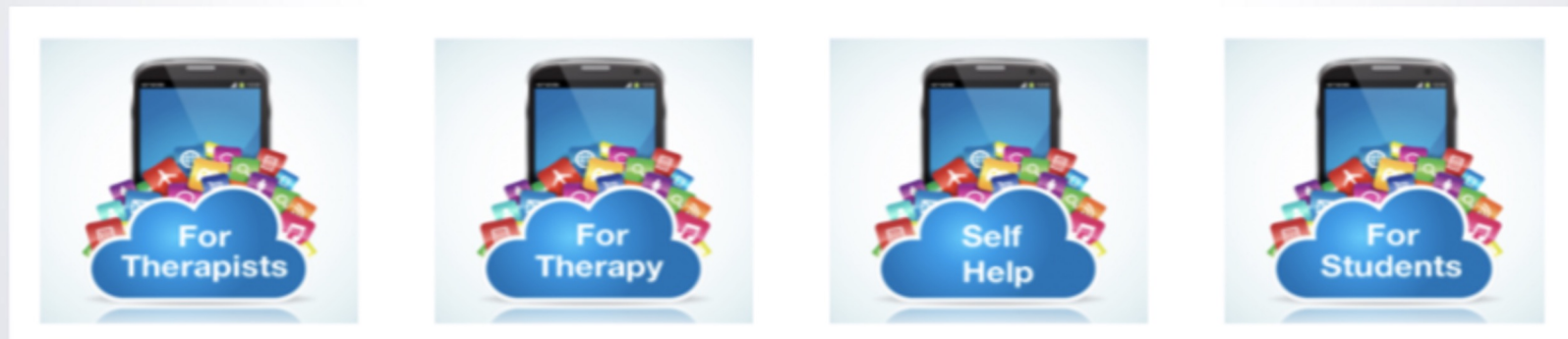


# Apps for Mental Health

An App won't be sufficient to replace therapists and psychiatrists.

All Apps are different and made for different purposes.

Using the wrong software for the job?



# Types of Uses In Mental & Behavioral Health

## Patient-Client Monitoring & Intervention

- Prediction
- Prevention
- Detection
- Response-Treatment
- Maintenance
- Relapse-Prevention

## Users

Patients - Providers - Researchers

## Provider Training and Support

- Epidemiology Studies
- Monitoring and Alert Systems
- Evidence-based Treatment Plans
- Intervention Recommendations
- Training Tools - Simulations, Provider Feedback
- Provider Resiliency Monitoring & Support



# We can use technology in mental and behavioral health to:

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## Treatment

- Individual video medication management or therapy
- Group video or text therapy (chats, forums)
- Measurements - assessments, surveys track status and progress
- Self-led clinical workbooks, cognitive behavioral computerised treatment, other apps
- Chronic Care Management

Novelty, gamification, and convenience keep clients engaged long enough to get well.





# Telebehavioral Health Modalities

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Four Types of User Experiences in Telebehavioral Health

*Video*



*Text-Based*



*Self-Help  
Content Driven  
Apps*



*Avatar or  
Virtual Reality,  
Augmented Reality*



# Added Benefits Reduce Costs and Increase Revenue

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## Operational Efficiencies:

- Automate everything that can be automated, reducing the need for some staff costs
- Saves staff time, reduces errors
- Saving time increase capacity
- More convenient, more likely to complete.
- Reducing provider fatigue and burnout
- Reduces staff turnover

## Treatment logistics:

- Identification, monitoring, automating reminders
- Reminders, easy online scheduling fill the schedule and reduce no-show rate
- Online payment
- Goal/change trackers

# Telebehavioral Health Modalities

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Four Types of User Experiences in Telebehavioral Health

*Video*



*Text-Based*



*Self-Help  
Content Driven  
Apps*



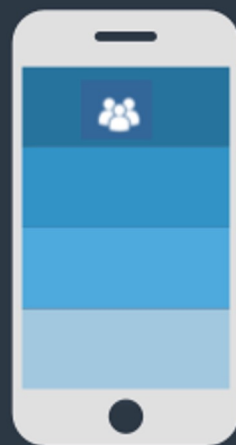
*Avatar or  
Virtual Reality,  
Augmented Reality*



**Artificial Intelligence may be in use.**

## Apps for Telebehavioral Health

Retain patients at the appropriate level of treatment.



Patient Engagement

Treatment Adherence

Communication

Access to...

Strategy:

# Engagement

Engaged patients are more likely to stay in treatment long enough to get better, follow treatment recommendations, change habits and stay clean

## Disinhibition Effect

*What makes chatbots and virtual therapists able to perform so well?*

Some studies show that we react to avatars as if they were real humans. Mel Slater of University College London, UK, and his colleagues observed this behavior when they conducted experiments where people were aware that they were interacting with robots, yet they related to them as if they were real.<sup>5</sup>

Some psychologists also argue that we find it easier to share potentially embarrassing information with a virtual therapist. In human-to-human interaction, there is often a degree of self-restraint. Shame can prevent people from sharing openly with another person. However, when sitting with a virtual therapist, subjects were found to be more willing to express themselves, which could have an important therapeutic advantage. When patients talk to a psychotherapy bot, they report not feeling judged. This tendency to disclose more online than in-person is called the Disinhibition Effect.



Self check-ins don't require a mental health provider.

AI can use this data for early identification mental health problems, symptom escalation. patient triage and more.

**Take the Mental Health Meter**

Now you're ready to take our Mental Health Meter. Please answer every question below as honestly as you can. Read each statement, indicating whether you "Agree" or "Disagree" with it. Then, click on the "Submit" button at the end to get your score and your results.

**Disclaimer**  
This is not a scientific test. Information provided is not a substitute for professional advice. If you feel that you may need advice, please consult a qualified health care professional.

**ABILITY TO ENJOY LIFE**

	AGREE	DISAGREE
I tend to live in the moment and appreciate the "now."	<input type="radio"/>	<input type="radio"/>
I often dwell on past experiences and daydream about different outcomes.	<input type="radio"/>	<input type="radio"/>
I recognize that some things can't be changed.	<input type="radio"/>	<input type="radio"/>
My feelings of happiness are often overshadowed by worry about the future.	<input type="radio"/>	<input type="radio"/>
My home is a comfortable, pleasant place.	<input type="radio"/>	<input type="radio"/>
I worry a lot about my friends and family.	<input type="radio"/>	<input type="radio"/>

**RESILIENCE**

	AGREE	DISAGREE
When life gets tough, I retreat from friends and family.	<input type="radio"/>	<input type="radio"/>
When I'm under serious stress, I can't lead a normal life.	<input type="radio"/>	<input type="radio"/>

**Work-Life Balance Quiz**

Your results will be available upon completion at the bottom of the quiz.

**Are You in Balance?**

More than ever before, Canadians play many different roles in their lives. They are workers, parents, spouses, friends, caregivers of elderly relatives and volunteers in their communities. They must also make room in their lives for taking care of their own physical and mental well-being. Not surprisingly, achieving balance among all these competing priorities can be difficult. This overload can be heightened by new technologies that were actually intended to make our work lives easier – through email, cell phones and other electronic devices, many workers are expected to be available 24/7, making the achievement of a balance between work and the rest of our lives even more difficult.

Achieving work/life balance means having equilibrium among all the priorities in your life – this state of balance is different for every person. But, as difficult as work/life balance is to

SHARES     



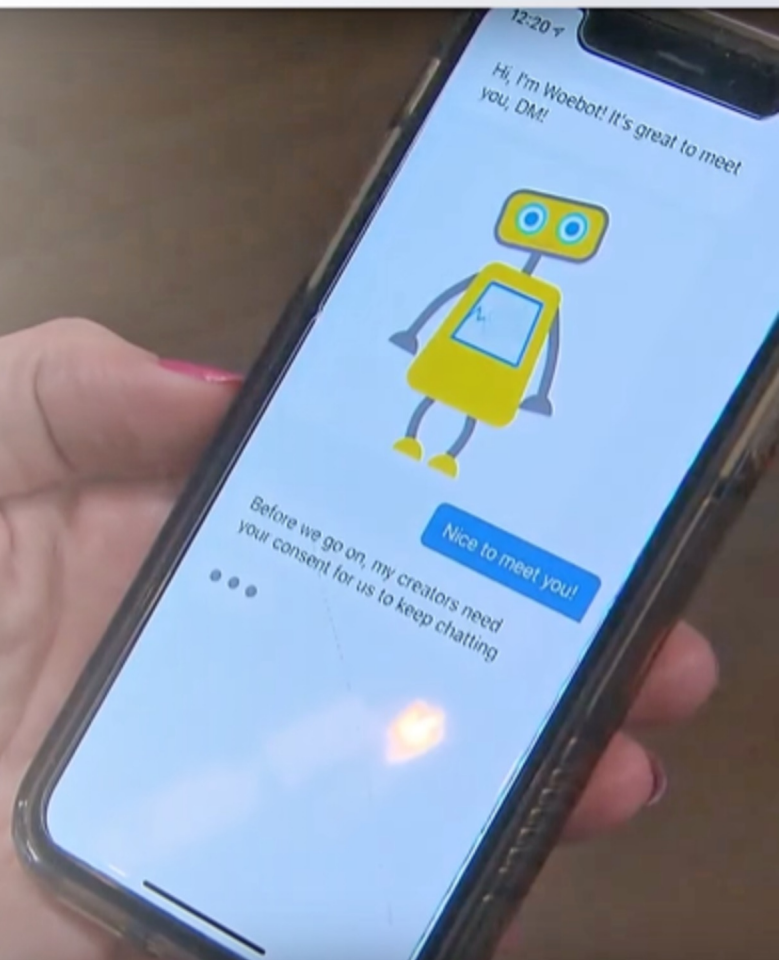
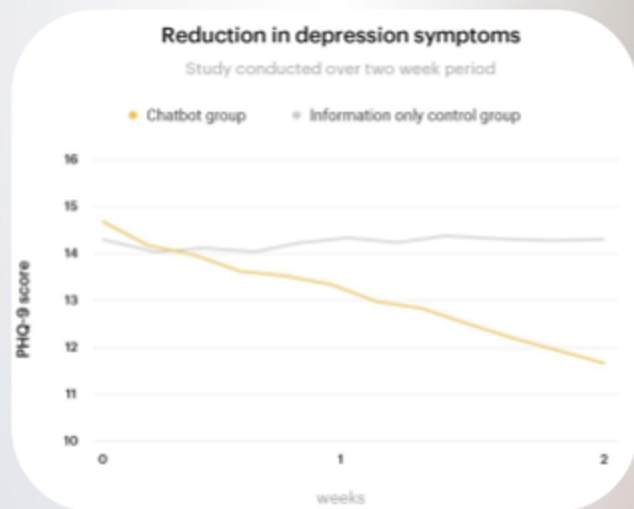
## Eliza

### The first mental health Chatbot

Some of the early chatbots were designed in the 1960s at the MIT Artificial Intelligence Laboratory. Their program **ELIZA** was able to simulate a short conversation between a therapist and a patient and is considered the grandparent of systems being used today.

# Chatbots

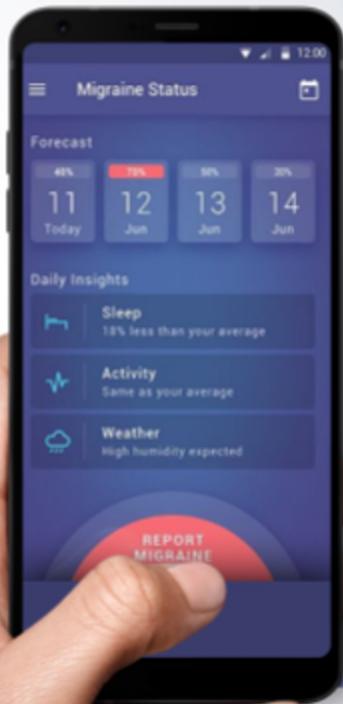
In a [study](#) of university students suffering from depression, **those using the chatbot experienced close to a 20% improvement in two weeks**, based on PHQ-9 scores.





# Passive Continuous Monitoring

- Smart-phone sensors track patients' sleep, motion, and vocal attributes.
- Abnormalities detected in the patient's day-to-day behavior, which could be identified by a change in the pitch of a patient's voice or the patient's travel patterns
- Machine-learning algorithms detect real-time changes in a patient's clinical behavior two to four weeks prior to the occurrence of a mental health episode.
- Alert log is displayed through a dashboard, delivering information and warning signs.
- ML algorithms adapt to the patient and send necessary alerts to the doctor when a patient exhibits out of the ordinary behavior.



## Responsive Surveys & Outcomes

### Outcome of PHQ-9



PHQ-9

Over the last 2 weeks, how often have you been bothered by any of the following problems?

• If PHQ Score is less than 6

Your score indicates you are doing ok, to stay that way try one of the programs [here](#).

CANCEL

OK

• If PHQ Score is less than 10

Your score indicates you could do with some self help. We recommend you try one of the programs here ([click here](#)) or chat with our personal assistant.

CANCEL

IM CHAT

CANCEL

IM CHAT

• If PHQ Score = 10 or More

Your score indicates you could need some self help. Our personal assistant would like to help you on IM chat.

CANCEL

IM CHAT

# What is Possible?

## Data Screening Questions

**Drug Screening Questionnaire (DAST)**  
Using drugs can affect your health and some medications you may take. Please help us provide you with the best medical care by answering the questions below.

Patient name: \_\_\_\_\_  
Date of birth: \_\_\_\_\_

Which recreational drugs have you used in the past year? (Check all that apply)

<input type="checkbox"/> methamphetamines (speed, crystal)	<input type="checkbox"/> cocaine
<input type="checkbox"/> cannabis (marijuana, pot)	<input type="checkbox"/> narcotics (heroin, oxycodone, methadone, etc.)
<input type="checkbox"/> inhalants (glue, nitrous, aerosol, glue)	<input type="checkbox"/> hallucinogens (LSD, mushrooms)
<input type="checkbox"/> tranquilizers (valium)	<input type="checkbox"/> other _____

How often have you used these drugs?  Monthly or less  Weekly  Daily or almost daily

1. Have you used drugs other than those required for medical reasons?	No	Yes
2. Do you abuse (use) more than one drug at a time?	No	Yes
3. Are you unable to stop using drugs when you want to?	No	Yes
4. Have you ever had blackouts or flashbacks as a result of drug use?	No	Yes
5. Do you ever feel bad or guilty about your drug use?	No	Yes
6. Does your spouse (or partner) ever complain about your involvement with drugs?	No	Yes
7. Have you neglected your family because of your use of drugs?	No	Yes
8. Have you engaged in illegal activities in order to obtain drugs?	No	Yes

Automated  
workflow for  
each  
response.



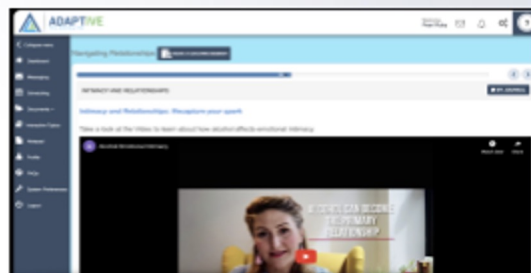
Library



Chat or  
workbook



Video  
Meeting



# Clinical Workbook Example

Welcome to the  
Health Coaching  
Program!

START PERSONAL SNAPSHOT  
ASSESSMENT

Welcome to the  
Health Coaching Program



That's the first part done!

Now let's take a look at your drinking.

Here are some examples of one standard drink. For example, a full strength stubbie contains one standard drink.

Low Strength Beer  
475ml  
3.2% Alcohol

Pre-mix Spirits

Wine  
500ml  
13.5% Alcohol

Spirits  
30ml  
40% Alcohol

Full Strength Beer  
Can or Stubbie  
375ml  
4.8% Alcohol



Now, let's take a  
look on your  
drinking

Patient logs in to see  
a welcome message  
and fills in the  
assessment forms

## Coaching Program

Client successfully registers to the portal and gets to see the welcome message with user guides. They can then fill out the assessments for drinking problems which they will also have an option to schedule appointment with providers via online video if preferred.

# What is Possible?



**PEARL RUBY**

**Chat Sessions**

Records per page: 10

Working Schedule | Attending Health Coach

08/23/2020 09:30 AM - 09:30 AM

Showing 1 of 1 entries

**Clinical Notes**

Complete for client: Select

Records per page: 10

**Notepad Notes - Shared by Client**

File Edit View Format

Format

**Notepad Notes - Shared by Client**

Records per page: 10

Shared at: Contact

08/23/2020 08:45 AM

Navigating Relationships END OF PARTNER RELATIONSHIP

My alcohol addiction is consuming much of my personal time and affecting my relationship and intimacy with my partner.

**Snapshot**

PERSONAL SNAPSHOT

4TH WEEK CHECK-UP SNAPSHOT

8TH WEEK CHECK-UP SNAPSHOT

FINAL SNAPSHOT

**Risk Profile**

SUICIDE CHECK: 7

Stages of 5 or over should be followed up.

**DASS 21**

Depression: Severe

Anxiety: Extremely Severe

Stress: Moderate

**CURRENT RELATIONSHIP DIFFICULTIES**

Safety Concerns: Yes

Physical Violence: Yes

**ALCOHOL DETOXING**: Yes

**ALCOHOL USE**: Reliant

**Tracker**

Daily Summary

## Monitor Client Self-Report

# What's Possible?



## My Tracker

### Daily Summary



Mood



Stress

0

Stress

### NUMBER OF DRINKS PER WEEK



### STRESS



### MOOD



You're doing great! We're about half way through the questions.

Next 8/11

Let's check out how you are going with your relationship with alcohol.

Please think about your current situation and drinking habits, even if you have given up drinking completely. Read each question below carefully and then decide whether you agree or disagree with the statements.

Strongly Disagree Disagree Unsure Agree Strongly Agree

It's a waste of time thinking about my drinking because I do not have a problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy my drinking but sometimes I drink too much.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is nothing seriously wrong with my drinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I think I should quit or cut down on my drinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Anyone can talk about wanting to do something about their drinking, but I'm actually doing something about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am a fairly normal drinker.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My drinking is a problem sometimes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am actually changing my drinking habits right now (either cutting down or drinking).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have started to carry out a plan to cut down or quit drinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is nothing I really need to change about my drinking.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sometimes I wonder if my drinking is out of control.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am actively working on my drinking problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next 9/11

## Trackers for Client's Behaviors

## Clinical Workbooks

Interactive workbooks that are either self-selected or assigned by a provider. They include private patient worksheets that can be shared with the provider. The customer's content can be made into workbooks.

The screenshot displays the ADAPTIVE TELEHEALTH user interface. At the top left is the ADAPTIVE TELEHEALTH logo. The top right shows a user profile for 'Welcome, Pearl Ruby' with icons for messaging, notifications, settings, and a help icon. A left sidebar contains navigation options: Collapse menu, Dashboard, Messaging, Scheduling, Documents, Interactive Topics, Notepad, Profile, FAQs, System Preferences, and Logout. The main content area is titled 'Navigating Relationships' and includes a 'BOOK A COACHING SESSION' button. Below this is a section for 'INTIMACY AND RELATIONSHIPS' with a 'MY JOURNAL' button. The content includes the title 'Intimacy and Relationships: Recapture your spark' and a text prompt: 'Take a look at the Video to learn about how alcohol affects emotional intimacy.' A video player is embedded, showing a woman on a yellow chair with the text 'ALCOHOL CAN BECOME THE PRIMARY RELATIONSHIP' overlaid. The video title is 'Alcohol Emotional Intimacy' and it has 'Watch later' and 'Share' options.

# Choosing Telehealth Tools

**Video**

**Text Based**

**cCBT**

**Apps**

**Service Combinations**

The screenshot shows a user interface for a telehealth platform. At the top right, it says "Welcome, Jay L. Ostrowski" with a profile picture and a notification icon. The main navigation bar includes "INVITATIONS", "CREATE CLIENT FILE", "CREATE NOTE", and "ADD EVENT". A sidebar menu on the left lists: Dashboard, Messaging, Scheduling, Notepad, Video on Demand, Clients, Client Accounting, Referrals, Community, and Documents. The main content area features a calendar for "THU 25 FEB" with slots for 08:00 AM (1 hour), 09:00 AM (1 hour), 10:00 AM (15 minutes), and 10:15 AM (30 minutes). Below the calendar is a search bar and a table of clients.

LAST NAME	LAST LOGIN	STATUS	GROUPS	DATE
Client	12/09/2015 04:25 AM	Registered	-	10/02 08:58
Test	12/24/2015 08:14 AM	Yes Contacted By Client	Morning Meditation, Group 1	10/03 08:58
Larry	No activity yet	Registered	-	10/02 08:58
Wilson	02/25/2016 08:45 AM	2 Yes Yes Active	-	10/02 08:58
Smith	03/20/2016 09:40 AM	1 [Choose status]	Morning Meditation, Adolescent Group	10/03 08:58



# AI + Clinician

- AI individualized emotional support.
- Combination of machine learning and clinical network
- 24/7 online CBT, mindfulness and resilience training.
- Interactions with coaches and therapists can range from unlimited live chats to video sessions.

The Future of Telebehavioral Health © 2021  
Jay Ostrowski Behavioral Health Innovation

The image is a composite of three elements. On the left, a mobile app interface shows a 'VIDEO SESSION' with Deborah Williams, M.D. Below this is a 'YOUR CARE TEAM' section with three members: Catherine, Gillian, and Alex. A chat window is open, showing a conversation about stress and family. On the right, a close-up of a smiling woman with glasses and a yellow top is shown. In the background, there is a diagram of a brain with dashed lines and orange 'X' marks, and a text snippet that reads 'Identifying errors in your brain's logic'.

7:29

VIDEO SESSION

Deborah Williams, M.D.

11:43

YOUR CARE TEAM

CATHERINE GILLIAN ALEX MEM

Today

It sounds like you've been dealing with a lot of stress lately and it's starting to negatively impact your relationships, is that right?

Yes, it's so hard to turn off my brain once I get home and I find myself thinking about work problems when I really want to be connecting with my family.

I hear you, family is so important to you. You really value your time with them and want to make the most of it. What have you tried doing so far to help you feel more able to focus on your family when you're at home?

I've turned off my work emails which has helped some, but it's more so I can't turn off my thoughts about work.

Identifying errors in your brain's logic

what you can expect to take away from this activity:

Learn about how your brain might jump to conclusions.

Learn to catch errors in logic before you reach a path of conclusions.

# Avatars

Ellie was designed to treat veterans experiencing depression and post-traumatic stress syndrome.

What is so special about the technology is that Ellie can detect not only words but also nonverbal cues (e.g., facial expression, gestures, posture). Nonverbal signs are very important in therapy, yet can be subtle and difficult to pick up.

Ellie can gather and analyze multisensory information and help assess a user.

Ellie's creators argue that this virtual human can advance mental health and improve diagnostic precision.

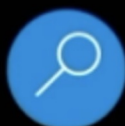
**Other Avatars** - Can be used to as treatment tools or to provide a novel treatment environment.







# Project Talia: More effective digital mental healthcare with AI



## Stratify

Understand patient sub-types which respond best to treatment + interventions



## Predict

Understanding client engagement and outcomes



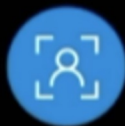
## Intervene

Intervene timely to ensure earlier intervention and improved outcomes



## Improve

Identify successful patterns in supporter behavior in relation to patient sub-type to improve therapy effectiveness



## Personalize

Tailor content and delivery to achieve optimal therapy outcomes for individual patients

## AI in Mental Health - Right Now

- EHRs (some)
- Mood Rating Scales (some)
- Brain Imaging
- Novel Monitoring Systems
- Social Media Platforms

Artificial Intelligence can finish my sentence.

## AI in Mental Health - Right Now

- EHRs (some)
- Mood Rating Scales (some)
- Brain Imaging
- Novel Monitoring Systems
- Social Media Platforms



Artificial Intelligence

# Artificial Intelligence Uses In Behavioral Health

---

## Patient-Client Monitoring & Intervention

- Prediction
- Prevention
- Detection
- Response-Treatment
- Maintenance
- Relapse-Prevention

### Users

Patients  
Providers  
Caregivers  
Researchers

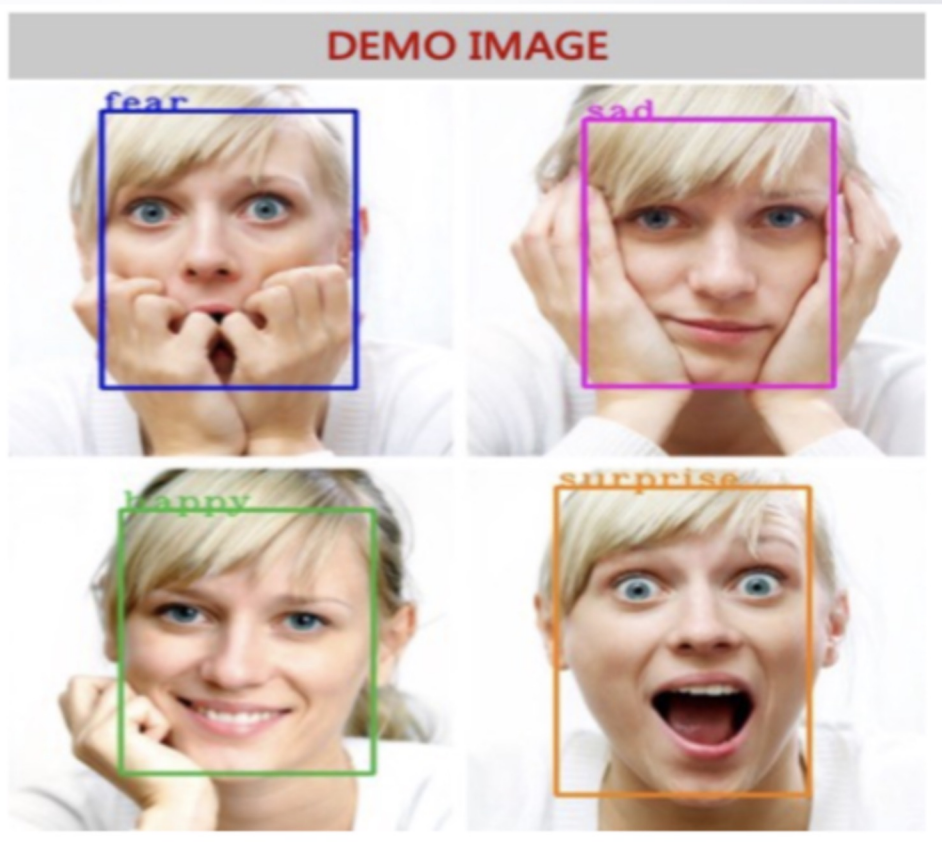
## Provider Training and Support

- Epidemiology Studies
- Monitoring and Alert Systems
- Evidence-based Treatment Plans
- Intervention Recommendations
- Training Tools - Simulations, Provider Feedback
- Provider Resiliency Monitoring & Support



## Emotion Detection

Face Emotion Recognition (FER) from Kaggle and built a CNN to detect emotions. The emotions can be classified into 7 classes — happy, sad, fear, disgust, angry, neutral and surprise.





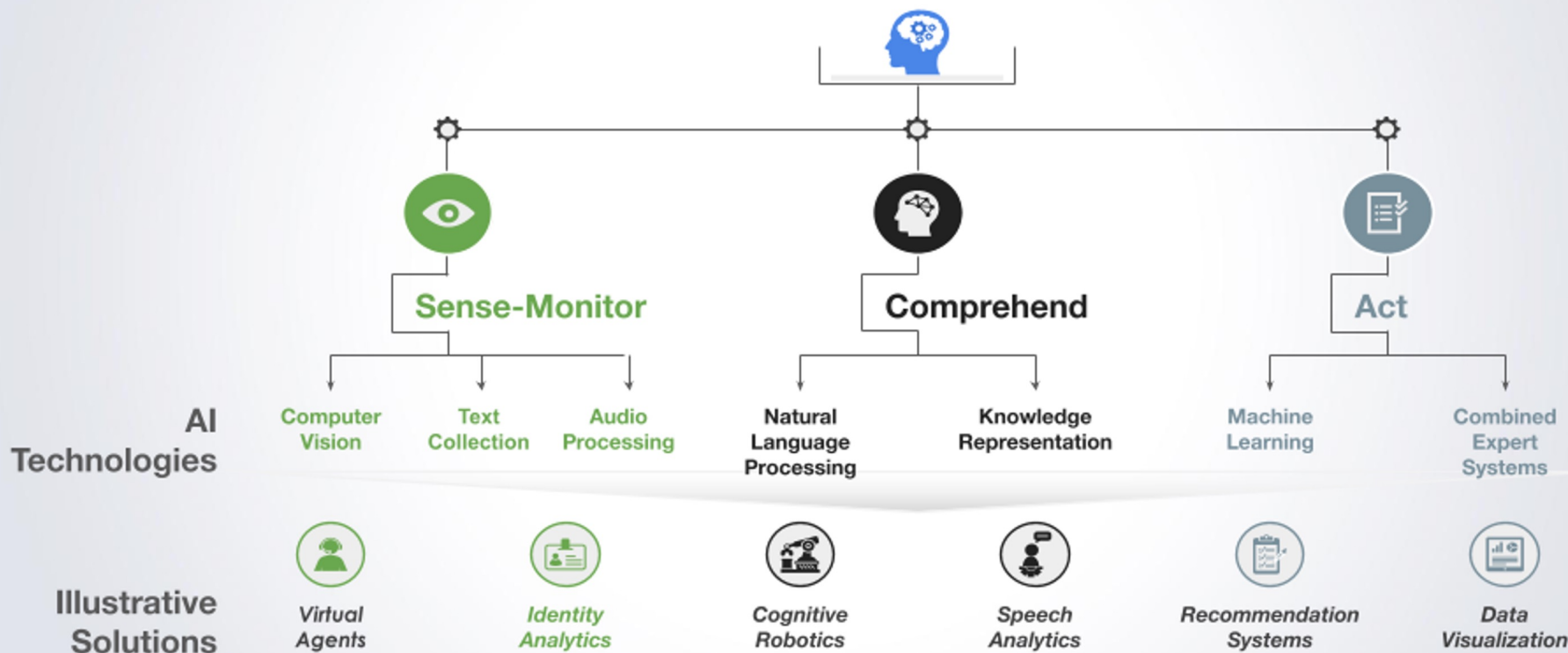
# What is AI?

---

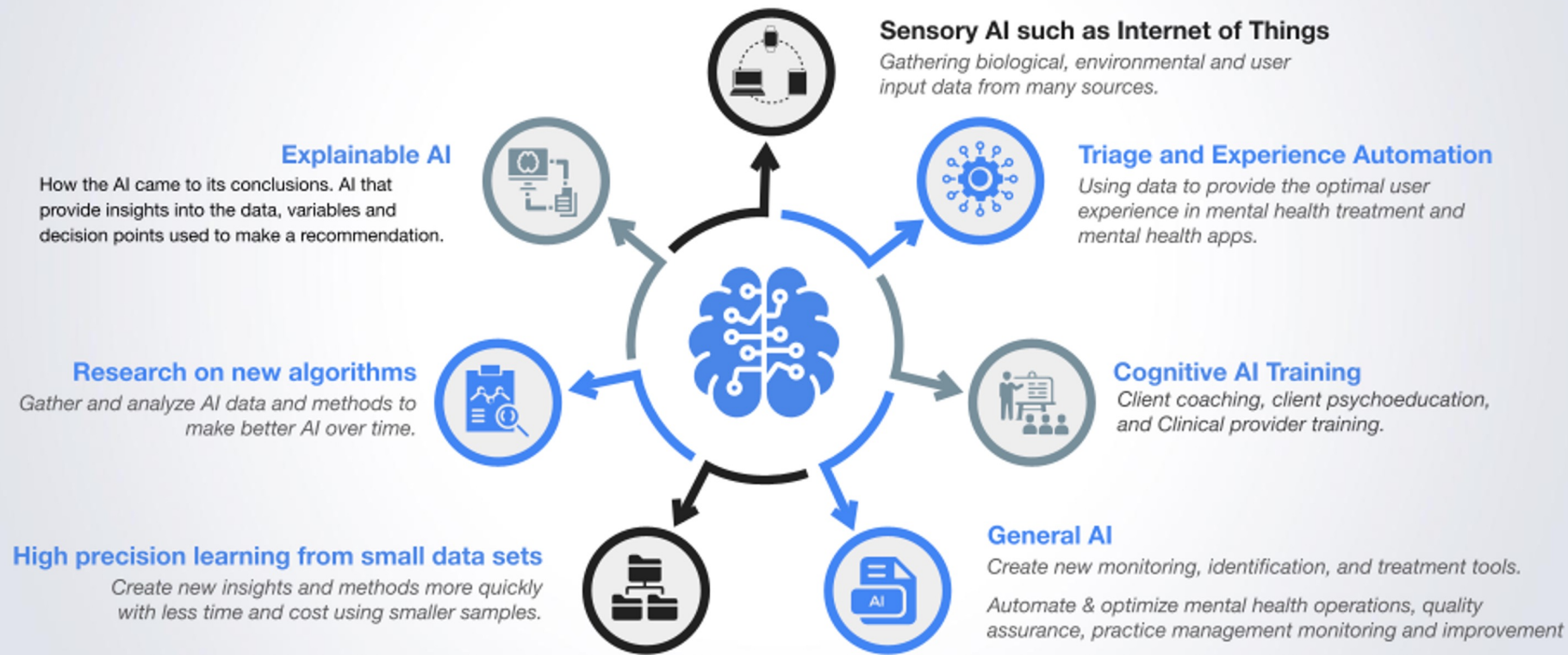
AI refers to Artificial Intelligence, which is the Intelligence demonstrated by the machines,



# Artificial Intelligence Overview



# Core Areas of Artificial Intelligence For Mental Health



# Limitations

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- Data - Garbage in, Garbage out
- Clinical Validation
- Clinical Decision-Making - Legal Risks
- Perception & Adoption by Providers
- Perception & Adoption by Clients-Patients



# Challenges of AI Adoption in Mental Health

- **Technology-ignorant or technophobic**
- **Practitioners trained in soft skills**
- **Subjective Data**
- **Handwritten notes**
- **Research re: Relationship is the highest predictor of positive outcomes**

While AI technology is becoming more prevalent in almost everything digital and specifically medicine for physical health applications, the discipline of **mental health has been slower to adopt AI** [8,22].



## Why is there reluctance to to use Telebehavioral Health and Apps?



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# Telebehavioral Health Center of Excellence



## TELEBEHAVIORAL HEALTH CENTER OF EXCELLENCE

The most current information in a rapidly evolving market.

The Telebehavioral Health Center of Excellence is dedicated to providing the most current, vetted, practical information for starting or enhancing Telebehavioral or Telemental health-related services. These resources are intended to provide you with the most current information to help you get started. They are not comprehensive in the historical sense but represent the best of the current Telebehavioral Health resources available.

New to Telebehavioral Health? We recommend starting with the [Overview](#).

Leave a message

Говори в шкереде



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FOR COVID-19**

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Our Region



Hot Topics



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Assistance



Request a Speaker



## HOW CAN WE HELP?



Our Region



Hot Topics



Get Technical Assistance



Request a Speaker

### Announcements

**MATRC.org**  
**SECOND HALF**  
**OF THE PAGE**

Many Telehealth Funding Opportunities Available

#FUNDING. Here are a list of grant funding opportunities with potential for telehealth that have been recently

**OPEN OFFICE HOURS**  
**Every Other Friday**  
**12-2 EST**

TELEHEALTH RESOURCES FOR COVID-19

#MATRC Toolkit Has Been Updated to Reflect New Guidance for #FQHCs and #Telehealth

### Events

24 APRIL

Questions about Telehealth Basics or Telemental Health?



Join us for virtual office hours with Jay Ostrowski.

Second and Fourth Friday of each month from 12 PM - 2 PM

Video Chat: <https://telehealthbehavioralhealth.com/join> 212-473-3225  
Or join by phone: +1 845 528-8626 (US Toll) or +1 408 628-2868 (US Toll)  
Enter Meeting ID: 421 473 3225

[Click Here To Join The Live Meeting](#)

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Não sou um robô





**Thank you.**

**Machine learning (ML)** is an AI approach that involves various methods of enabling an algorithm to learn [27,29,31-35]. ML methods identify patterns of information in data that are useful to predict outcomes at the individual patient level, and do not distinguish samples and populations.

### **Supervised Machine Learning (SML):**

Here data are pre-labeled (e.g., diagnosis of major depressive disorder (MDD) vs. no depression) and the algorithm learns to associate input features derived from a variety of data streams (e.g., sociodemographic, biological and clinical measures, etc.) to best predict the labels [36,42].

### **Unsupervised Machine Learning (UML):**

Here algorithms are not provided with labels; thus, the algorithm recognizes similarities between input features and discovers the underlying structure of the data, but is not able to associate features with a known label [37].

### **Machine learning for big data analysis**

Machine learning (ML) is an AI approach that involves various methods of enabling an algorithm to learn [27,29,31-35].

### **Natural Language Processing (NLP):**

NLP is a subfield of AI that involves using the aforementioned algorithmic methods; however, it specifically refers to how computers process and analyze human language in the form of unstructured text, and involves language translation, semantic understanding, and information extraction [50].

### **Deep Learning (DL):**

DL algorithms learn directly from raw data without human guidance, providing the benefit of discovering latent relationships [45]. DL handles complex, raw data by employing artificial neural networks (ANNs; computer programs that resemble the way a human brain thinks) that process data through multiple “hidden” layers [13,38,46].

*“Machine learning really meets a **specific need** that we have in psychiatry — and that’s the **need for personalization**,” he says. “For decades, we’ve been working on group averages and statistics that apply to populations who may have the same diagnosis but don’t translate as well to an individual patient. **Machine learning allows us to get at individual predictions in a way we haven’t been able to before.**”*

*David Benrimoh, MD, CM, a psychiatry resident at [McGill University](#)*

# Question and Answer



# Evaluation Information

The MHTTC Network is funded through SAMHSA to provide this training. As part of receiving this funding we are required to submit data related to the quality of this event.

At the end of today's training please take a moment to complete a **brief** survey about today's training.



# Connect With Us

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Northeast and Caribbean (HHS Region 2)

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Services Administration