A National Web Conference on Enhancing Behavioral Health Care Using Health IT

February 27, 2013
2:00pm – 3:30pm ET
Moderator:
Charlotte Mullican, BSW, MPH
Agency for Healthcare Research and Quality

Presenters:
Ketan Mane, PhD, MS
Benjamin Druss, MD
Silke von Esenwein, PhD
Wende Baker, MEd

There are no financial, personal, or professional conflicts of interest to disclose for the speakers or myself.
VisualDecisionLinc: Data-driven Approaches to Augment Clinical Decisions in EMR Era

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Senior Research Scientist
Renaissance Computing Institute
UNC-Chapel Hill
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To Reduce Cognitive Overload

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Symbiotic Use Analysis and Visualization

Process large volume of data

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<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Mean of x</td>
<td>9.0</td>
</tr>
<tr>
<td>Variance of x</td>
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</tr>
<tr>
<td>Mean of y</td>
<td>7.5</td>
</tr>
<tr>
<td>Variance of y</td>
<td>4.12</td>
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<tr>
<td>Correlation</td>
<td>0.816</td>
</tr>
<tr>
<td>Linear regression</td>
<td>( y = 3 + 0.5x )</td>
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Reference: Anscombe Quartets
Can Informatics Help Here?

Doctors Are the Third Leading Cause of Death in the U.S.

770,000 deaths/Year (ADE) [AHRQ]


<table>
<thead>
<tr>
<th>Deaths Per Year</th>
<th>Cause</th>
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<tbody>
<tr>
<td>106,000</td>
<td>Non-error, negative effects of drugs</td>
</tr>
<tr>
<td>80,000</td>
<td>Infections in hospitals</td>
</tr>
<tr>
<td>45,000</td>
<td>Other errors in hospitals</td>
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<tr>
<td>12,000</td>
<td>Unnecessary surgery</td>
</tr>
<tr>
<td>7,000</td>
<td>Medication errors in hospitals</td>
</tr>
<tr>
<td>250,000</td>
<td>Total deaths per year from iatrogenic* causes</td>
</tr>
</tbody>
</table>

* The term iatrogenic is defined as "induced in a patient by a physician's activity, manner, or therapy. Used especially to pertain to a complication of treatment."
Largest de-identified psychiatry outcome data warehouse in existence

Widely distributed to 25 US institutions (academic institutions (25%), community mental health centers (50%), and private practice, hospitals, other combined (25%)

110,000 patients or 2,400,000 clinical encounters collected over a 10-year span

Sample data for analysis:

~ 30,000 visits of patients with Major Depressive Disorder (MDD)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Primary Diagnosis</th>
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<tbody>
<tr>
<td>Child</td>
<td>Additional</td>
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<tr>
<td>Adolescent</td>
<td>Adjustment</td>
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<tr>
<td>Adult</td>
<td>Anxiety</td>
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<tr>
<td>Senior</td>
<td>Bipolar</td>
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<tr>
<td></td>
<td>Childhood</td>
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<tr>
<td></td>
<td>Cognitive</td>
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<tr>
<td>Gender</td>
<td>Depression</td>
</tr>
<tr>
<td>Male</td>
<td>Dissociative</td>
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<tr>
<td>Female</td>
<td>Eating</td>
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<td>Factitious</td>
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<tr>
<td>Race</td>
<td>GMC</td>
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<tr>
<td>Black</td>
<td>Impulse Control</td>
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<tr>
<td>White</td>
<td>Mood</td>
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<td>Other</td>
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<td>Race unknown</td>
<td>Personality</td>
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<td></td>
<td>Sexual</td>
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<td></td>
<td>Sleep</td>
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<tr>
<td></td>
<td>Somatoform</td>
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<td></td>
<td>Substance</td>
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Table 1: Characteristics of patients in MindLinc
Our Focus

EMR data available

Brainstorming with Clinician/Researchers

Raw EMR Data

Actionable Data for Decision Support for Physicians
Theme: EMR Data for Clinical Decision Support

- Explored Areas

I. Build an Integrated View of Patient History
II. Leverage EMR Data for Personalized Care
III. Bridge Evidence Gap from Clinical Trials
IV. Decision Support in Real Time at the Point-of-Care
Data Challenges: Integration and Quality

Primary Diagnosis

Comorbid Conditions

Visit-types

Demographics

Medications

Treatment Outcome

Emergency

Side-effects

Therapy

Patient History
A. Need for Integrated Patient Profile View

- Information in tabs (silos), fragmented – fails to give at a glance overview + Tabular
A. Processing Data to Display

- Primary Diagnosis
- Comorbid Conditions
- Visit-types
- Demographics
- Medications
- Treatment Outcome

Aggregate
Summarize
Linking
Visual Mapping

Data Views
A. Visual-based Integrated Patient Profile View

- Patient demographics
- Profile of outcome response to prescribed medications
- Profile of about prescribed medications and therapy

Single View: Patient Treatments & Outcome
Visual Analytics
Decision Support
In Real Time
B. Can We Leverage EMR Data for Personalized Care?

Comparative Effectiveness Research

Visual Analytics Layer

- Stratify Patient Population
- Alternate Treatment Options
- Predictive Insight
- Patient-Centric Rx

Target Patient
B. Collective Data to Deliver Personalized Care with Predictive Insight

Patient MRN: 175
Age: 48 | Gender: Female | Race: White

Profile of Patient Treatment Outcome
Patient CGI-I response to medications over time: 10/31/2006 - 9/3/2011, total visits: 140

Profile of outcome response to prescribed medications

Treatment evidence aggregated from comparative population

Open filter panel
C. Interactive & Ad-hoc Filtering for Real-time Decision Support
D. Knowledge Gap in Treatment Guidelines

Distribution in the current format (text/flowchart) clearly needs more refinement.

D. Patient-Centric Guidelines

Helps offer insight about:

+ How is my patient being treated in the context of the guideline?

+ Where is my patient in the guideline?

+ How has my patient responded to past treatments?
In response to new medication, female population has higher incidence of emergency visits in early days than male population.
Exploratory Data Analysis

Effect of switching patients to new medications (by gender)

Before

After

Rx switch more likely to affect female population more severely than male population.
CDS Work Possible Because of...

Funding Source

- AHRQ
- NSF
- RENCI

Researchers / Clinicians Involved

RENCI
- Ketan Mane (Project Lead)
- Charles Schmitt
- Phillips Owen
- Kirk Wilhelmsen
- Stan Ahalt

Duke
- Ken Gersing
- Ricardo Pietrobon
- Igor Akushevich

UNC
- Javed Mostafa
Contact Information

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An Electronic Personal Health Record for Mental Health Consumers

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Silke von Esenwein, PhD
Department of Health Policy and Management
Emory University
Disparities are “systematic, plausibly avoidable health differences adversely affecting socially disadvantaged groups.” (Healthy People 2020)¹

Trends in Studies of Excess Mortality in SMI

<table>
<thead>
<tr>
<th>Year of Publication</th>
<th>Excess Risk of Death</th>
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<td>1.84</td>
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<td>1980s</td>
<td>2.98</td>
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<tr>
<td>1990s</td>
<td>3.20</td>
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1. Saha et al *Arch Gen Psychiatry*. Oct 2007;64(10):1123-1131

Care for these patients is typically provided across multiple settings (primary care, mental health, substance abuse) and poorly coordinated.

Patients commonly not well engaged in self-management behaviors or as participants in formal medical care.
What is an Electronic Personal Health Record (PHR)?

- “An electronic application through which individuals can access, manage, and share health information.”

- Like an electronic medical record, a PHR
  - Enhances exchange of information across the health system
  - Maintains privacy of information

- Unlike an electronic medical record
  - Is under control of the patient rather than the health system
  - Contains information across multiple providers
  - May also include health goals and other personal information

1. Markle Foundation 2003
PHRs, Quality and Outcomes

- PHRs might be able to improve care via improved patient activation and/or improved provider coordination.
- However, almost no research exists on using PHRs to improve care in either the medical or mental health literature.
Randomized Trial

- Randomized trial of PHR vs. Usual Care for patients with one or more chronic medical condition (n=170)
- Participants received a manualized computer skills assessment and basic computer skills training before setting up their PHR.
Shared Care Plan

- Perhaps the best established community-based electronic personal health record; developed at Peace Health in Bellingham, WA

- Developed using principles of user-centered design, with initial plan created by a group of patients with chronic medical conditions
Adapting the Shared Care Plan

- Collaborated with Shared Care developers, MH consumer leaders
- Focus groups with consumers, MH and medical providers
  - Enormous excitement from consumers
  - Providers: some initial concerns about TMI, trustworthiness of information
- Modifications based on focus groups
Adapting the Shared Care Plan

- Mental health advanced directives
- Links to community resources and health information
- Personal mental health goals
- Option of adding a “Health Partner”

Other lessons from focus groups:
- Consumer focus groups revealed that access to computers is not a major barrier to conducting the study.
- Gathered information about what kind of information would be useful to clinicians to increase buy-in.
Example of a PHR
Printouts, More Pics

Johnnie D Thomas, RN
7/27/1969, 40 years old, female

Emergency Contact (help)
Your Emergency Contact is the person you would like called first should you have an emergency. Your Backup Emergency Contact is the person you would like called if your primary Emergency Contact is unavailable.

<table>
<thead>
<tr>
<th>Contact</th>
<th>Name</th>
<th>Phone Number</th>
<th>Alternate Phone Number</th>
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No Emergency Contact record. Please click "Add New" to add a new Emergency Contact.

Care Team Members (help)
Care Team Members are people and/or organizations who help you manage your health. Anyone who you feel has a role in your health care can be part of your Care Team.

<table>
<thead>
<tr>
<th>Name</th>
<th>Contact</th>
<th>Role/Description</th>
<th>Access Level</th>
<th>Comments</th>
<th>Action</th>
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<tbody>
<tr>
<td>Johnnie Thomas, RN</td>
<td><a href="mailto:johnniethomas@usa.net">johnniethomas@usa.net</a></td>
<td>Patient</td>
<td>Fully Edit</td>
<td></td>
<td>Edit</td>
</tr>
<tr>
<td>John Doe</td>
<td><a href="mailto:svones@emory.edu">svones@emory.edu</a></td>
<td>Spiritual Support</td>
<td>View Only</td>
<td></td>
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<tr>
<td>John Doe</td>
<td><a href="mailto:janeygirlati@yahoo.com">janeygirlati@yahoo.com</a></td>
<td>Nurse</td>
<td>Fully Edit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. Jane Smith</td>
<td>(404) 555-1212</td>
<td>Nurse</td>
<td>No Access</td>
<td></td>
<td>Edit</td>
</tr>
<tr>
<td>Community Clinicians</td>
<td>Emergencies &amp; Treatment</td>
<td>Fully Edit</td>
<td>Click [Edit] to adjust clinical access to your Health Records.</td>
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Invited Care Team Members

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Data Output

- Wallet cards that provide a quick overview or detailed printouts
- Summaries of their medical histories
- Tracking of personal health goals including: number of depressed days, number of cigarettes smoked, blood pressure, and glucose monitoring
Addressing Low Digital Literacy

- Low digital literacy for about 50% of consumers
- Community resources too burdensome on consumers
- Nursing student provides each client with individualized assessment and training
- Computer training classes increase retention of consumers with low digital literacy
- Computer training provides added incentive for participation
Implementing the PHR

- Consumer primary driver behind maintaining the PHR
- The nurse specialist only gathers and verifies initial labs
- The primary role of nurse specialist is to help the consumer identify the treatment data that is the most essential, obtain from their medical records, and enter it into their PHR
- Patient activation tool (PAM) is used as a tool to drive intervention approach
- After 6 months, patients “graduate” to maintaining and shaping record themselves
Data Entry and Maintenance

- Consumer-driven; initial data entry in collaboration with nurse specialist
- Explain to consumers how they might identify the treatment data that is most essential, obtain it from their records elsewhere, and enter it into their PHR
Privacy and Sharing

- Explain to consumers how they might manage access to their PHR data most effectively, especially how they might set varied security settings.
PRELIMINARY RESULTS
Results – PHR Usage

- **Time**: 6 months and 12 months
- **# of times used/year**
  - 6 months: Mean = 129, Mode = 97
  - 12 months: Mean = 114, Mode = 73
- **Legend**:
  - Mean
  - Mode
Results – Preventive Services

- Physical exam received
- Recommended vaccinations
- Health education by provider
- Overall preventive services received
Results – Preventive Services

% Received Recommended Vaccinations

Baseline | 1 year
---|---
Control: 8 | Case: 8
Control: 6 | Case: 19

Group * Time Interaction: p < 0.0001
Results – Preventive Services

% Received Health Education from Provider

Time

Group * Time Interaction: p < 0.0001
Results – Preventive Services

% Eligible Preventive Services Received

Group * Time Interaction: $p < 0.0001$
Lessons Learned

■ Consumers: computer training has proved critical in engaging consumers in the project

■ Low digital literacy: significant portion of consumers; but can be successfully addressed with basic computer training

■ Providers: primary care providers have found the records helpful

■ Consolidated record helps bypass a fragmented system
  - Printouts help direct consumer - clinician interactions
  - “Activated” consumers take over directing their own health care and are less passive receivers of healthcare
Looking Ahead

- PHRs may be important tool not only for improving care but for consumer empowerment
- Integrated community-based PHRs with lab data, pharmacy data, and multiple EHRs
- Transition to mobile technology
Contact Information

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Enhancing Behavioral Health Care Using Health IT:
Issues and Challenges for Implementing HIE in a Behavioral Health Environment

Wende Baker, MEd
Executive Director
Electronic Behavioral Health Information Network
The Epidemic of Premature Death in Older Persons with Serious Mental Illness

The average life expectancy in the US has steadily increased to 77.9 years (increasing by almost 5 years since the 90s alone) At the same time..........

Mentally ill die 25 years earlier, on average
By Marilyn Elias, USA TODAY

Adults with serious mental illness treated in public systems die about 25 years earlier than Americans overall, a gap that’s widened since the early ’90s when major mental disorders cut life spans by 10 to 15 years, according to a report due Monday.

For people with serious mental illness:
The average life expectancy is 53 yrs.
“50 is the New 75”
Healthy People 2010

- In 2002 - responded to statistic with a call to action
- Poor access and communication between BH and medical settings
- How to utilize technology to “follow the patient” between treatment settings
- Health information exchange technology emerging
- AHRQ THQHIT grant facilitates capabilities assessment
Study Findings

- Nature of BH illnesses characterized by episodic need for acute care
- Regular movement of patients from rural to urban areas to access acute care services
- Big disparities in technology capability between providers – hospital EMRs while most provider organizations paper-based
- No organized system for referral of patients between treatment settings – follow-up inconsistent
- Duplication of testing services, time consumed in determining appropriate service level
# How Providers View EHRs

<table>
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<tr>
<th>Theme</th>
<th>Description</th>
<th>Benefits</th>
<th>Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Safety and Quality of Care</td>
<td>Care is delivered so as to prevent harm and achieve positive outcomes.</td>
<td>100%</td>
<td>59%</td>
</tr>
<tr>
<td>Privacy and Security</td>
<td>Client information is only accessible to those with the need and right.</td>
<td>22%</td>
<td>100%</td>
</tr>
<tr>
<td>Delivery of Behavioral Health Services</td>
<td>Behavioral health organizations and providers operate in a time and cost-efficient manner.</td>
<td>66%</td>
<td>97%</td>
</tr>
</tbody>
</table>
First Challenge – What Data is Shared?

- All providers in region submitting same data set to register and discharge patients
- Added “enhancements” for crisis intervention and emergency contacts
Summary Record Scope

- Demographic Information including Name, Date of Birth, and Social Security Number
- Emergency Contact Information
- Substance Abuse History Summary
- Diagnosis Information
- Insurance Information
- Trauma History Summary
- Current Medications and Allergies
- Employment Information
- Mental Health Board Disposition
- Living Situation and Social Supports
- Billing Information
Federal Regulation (42 CFR Part 2) addresses compliance in two ways:

- Technical Infrastructure
- Organizational Policies and Procedures
Technical Infrastructure

- System Architecture

Diagram:
- NEHII
- ASO (e.g. Magellan)
- HEALTH INFORMATION EXCHANGE (HIE)
- CENTRAL DATA REPOSITORY PARTICIPATING PROVIDER STATEWIDE AGGREGATE
- NEXTGEN EPM & EMR DATA ENTRY
- OTHER MIS/EMR
- NO MIS CAPABILITIES

Connections:
- NEHII to HIE via Direct Secure Messaging
- ASO to HIE via File Transfer
- HIE to CENTRAL DATA REPOSITORY via Application Integration
- CENTRAL DATA REPOSITORY to NEXTGEN EPM & EMR via Direct/Manual Entry
- CENTRAL DATA REPOSITORY to OTHER MIS/EMR via Application Interface
- CENTRAL DATA REPOSITORY to NO MIS CAPABILITIES via Consent Needed
System Functionality

Health Information Exchange:

- Shared Record Exchange across Treatment Settings
- Longitudinal Patient Records
- Closed Loop Referrals
- Wait List Management & Interim Services Tracking
- Medication Reconciliation
- Aggregate Reporting at Provider, Region, and State Levels from Centralized Data Repository
Prohibition on Redisclosure

Redisclosure Notice

eBHIN on behalf of other participating alcohol and drug abuse programs covered under 42 CFR part 2 is disclosing protected health information to you from the master patient index and the standard behavioral health data base pursuant to signed written consent of the patient. On behalf of the disclosing providers, eBHIN is required to provide you with the following written statement:

"This information has been disclosed to you from records protected by Federal confidentiality rules (42 CFR part 2). The Federal rules prohibit you from making any further disclosure of this information unless further disclosure is expressly permitted by the written consent of the person to whom it pertains or is otherwise permitted by 42 CFR part 2. A general authorization for the release of medical or other information is NOT sufficient for this purpose. The Federal rules restrict any use of the information to currently investigate or prosecute any alcohol or drug abuse patient."

The patient (or patient's representative) has authorized you to access this record and to download the information into your own agency medical record for purposes of providing treatment services to the patient. If you do download this information into your medical record, you are required to safeguard the confidential information consistent with the HIPAA and federal alcohol and drug abuse privacy rules that apply to your agency and your records. Before you redisclose this information, you are required to obtain your own agency authorization for such disclosure from the patient or the patient's representative."
Opt-In Template

NextGen EHR: Consent Test  MRN: 000000004531  NICKNAME: AGE: 28 years 5 months  OTHER: - [CHSParticipationSettings]

CHS Participation Settings

Patient Name: Consent  Test  Portal Passport:  Generate New Passport

Date of Birth: 06/14/1964  SSN: 909-71-2302

Controlling Options

- Patient will be automatically Opted Out On: 11/23/2013

Comments

Client opted in at St Monicas.

Save Settings  Return
Organizational Policies and Procedures

Participation Agreements include:

- Standard Qualified Service Organization Agreement (QSOA) or Business Associate Agreement (BAA)
- Operations Manual
- Privacy Policies
- Security Policies
- Standard Forms:
  - Consent to Release
  - Revocation of Consent
  - Amendment of Record
**Consent Requirements**

**CONSENT TO DISCLOSE CONFIDENTIAL PROTECTED HEALTH INFORMATION**

- Participates in an electronic health information exchange with other health care providers.
- With your permission, our participation in eBHIN does two things:
  - Prohibits the electronic exchange of electronic health information about you to other Participants who are treating you and requiring your information;
  - Requires other Participants to electronically disclose their confidential health information about you to us if we request your information for your treatment.

The purpose of this consent is to obtain your permission for the disclosure of a limited summary of your behavioral health record to eBHIN, which includes:

- Demographic Information
- Emergency Contact Information
- Substance Abuse History Summary
- Diagnosis Information
- Employment Information
- Substance Abuse/Other History Summary
- Substance Abuse History Summary
- Trauma History Summary
- Medical History Summary
- Drug Abuse Treatment Information
- Substance Abuse Treatment Information
- Mental Health Treatment Information
- Alcohol Treatment Information

**I consent to the disclosure of a limited summary of my behavioral health record, which includes:**

- [ ] Emergency Contact Information
- [ ] Substance Abuse History Information
- [ ] Diagnosis Information
- [ ] Employment Information
- [ ] Substance Abuse/Other History Information
- [ ] Medical History Information
- [ ] Drug Abuse Treatment Information
- [ ] Substance Abuse Treatment Information
- [ ] Mental Health Treatment Information
- [ ] Alcohol Treatment Information

**I consent to the following actions:**

- Any other Participant or Project, with and without my knowledge, may disclose a limited summary of my behavioral health record to other Participants or Project that is required for the delivery of treatment.
- Any other Participant or Project, with and without my knowledge, may disclose a limited summary of my behavioral health record to other Participants or Project that is required for the delivery of treatment, unless the disclosure is prohibited by federal law, except as permitted by federal law, and required by law. However, when the Participant incorporates alcohol and drug abuse treatment information into its own clinical record, the prohibition may apply. In such cases, the participant will be governed by the state and federal rules applicable to the Participant.

**Prohibition Re-Disclosure:** Wherever a Participant requests records of a behavioral health record, the Participant will only disclose a limited summary of the information that is required for the delivery of treatment, unless the disclosure is prohibited by federal law, except as permitted by federal law, and required by law. However, when the Participant incorporates alcohol and drug abuse treatment information into its own clinical record, the prohibition may apply. In such cases, the participant will be governed by the state and federal rules applicable to the Participant.

**Rights:**

- I understand that the law gives me the following rights:
- [ ] I may refuse to sign this Consent. I understand that I may refuse to sign this Consent. I may revoke this Consent at any time except to the extent that this Consent has already been acted upon.
- [ ] I may request to see or inspect my records. I understand that I have the right to inspect or copy the specific health information that I have authorized to be disclosed by this Consent Form.
- [ ] I may request that my records be amended. I understand that I have the right to request that my records be amended, corrected, or otherwise changed, if I believe that the information is incorrect or incomplete.

**Expiration Date:**

- Under the conditions of the consent, this consent expires in one year from the date I signed it upon the following event: [ ] The consent has been revoked by the Participant.

**Signature of Patient or Legal Representative:**

[ ] Print Name

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Organizational development:

- Consistent concerns expressed regarding privacy and security
- Communication, communication, communication!
  - Stakeholder involvement in policies and procedures development
  - Bottom to top training with messaging specific to role – i.e., end user vs. administrator
  - Influence leader engagement to develop broader acceptance
Provider Adoption

Technical development:

- Serve stakeholder interests
  - Attention to streamlined workflow and single point of data entry
  - Stakeholder involvement in reports development – serve their interests!
  - Demonstrate ROI wherever possible
Outcomes

- Enhanced care coordination across treatment settings
- Economies of scale in equipment, network operations, and applications – acquisition and administration
- Workflow efficiencies and service delivery standardization
- Enhanced data integrity and meaningful reporting
- Integration with physical healthcare to improve access
- Data analytics for performance improvement and quality assurance

Improved patient outcomes!

Contact Information

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402-472-5687
Please submit your questions by using the Q&A box to the lower right of the screen.
CME/CNE Credits

To obtain CME or CNE credits:

Participants will earn 1.5 contact credit hours for their participation if they attended the entire Web conference.

Participants must complete an online evaluation in order to obtain a CE certificate.

A link to the online evaluation system will be sent to participants who attend the Web Conference within 48 hours after the event.