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EPSTEIN BECKER GREEN

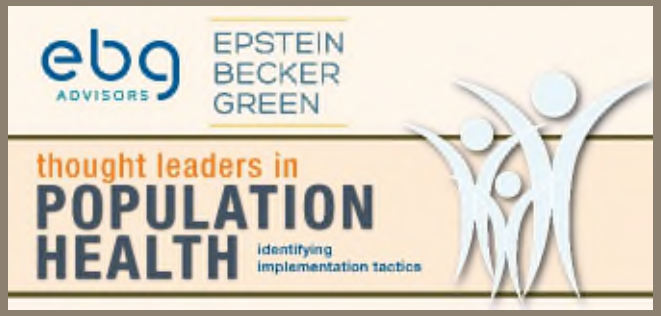
thought leaders in

POPULATION HEALTH

identifying implementation tactics

The Challenges and Rewards of Integrating Behavioral Health into Primary Care

October 13, 2015



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Presentation Overview

This session will discuss the advances in policy and practice regarding the integration of behavioral health with physical health, as well as some of the gaps in identifying, aggregating, and analyzing data critical to a more holistic and comprehensive view of the individual. In addition, the speakers will:

- Identify the clinical, legal, social, and financial impacts of behavioral health disorders on chronic medical conditions.
- Describe the challenges involved in improving clinical and financial outcomes in patients with chronic medical conditions who also have behavioral health symptoms and/or conditions.
- Demonstrate the rewards for implementing new information technology applications and analysis for better clinical and financial outcomes for these specific populations.

Why integration?

- Integration: Tearing down silos
  - **Social:** Cartesian dualism, stigma, discrimination
  - **Legal:** mental health records, consent, HIPAA, 42CFR Part 2, federal/state laws, privacy
  - **Clinical:** primary/specialist care, settings, whole person, multidimensional
  - **Technical:** EHR, HIE, DS4P, C2S, data rights, breach, analytics, real-time CDS
  - **Financial:** MCO/MBHO, payers, claims, dx, shared savings, dx, outcomes*

The Problems are the Opportunities for Improving Mental Health Care Management

40million

US adults (18-54) have an anxiety disorder in given year

35%

Of patients with a chronic illness have a mental illness

26%

Americans 18 and older suffer from a diagnosable mental disorder

2X Costs

Unmanaged patients with mental illnesses Cost Payers more than double to manage chronic conditions

$3T

Global disease burden for Mental illnesses due to disability #1 cost for businesses (WHO)

28%

Of patients re-admitted to hospitals related to mental illness

Source: NAMI, APA, CMS, Project Red

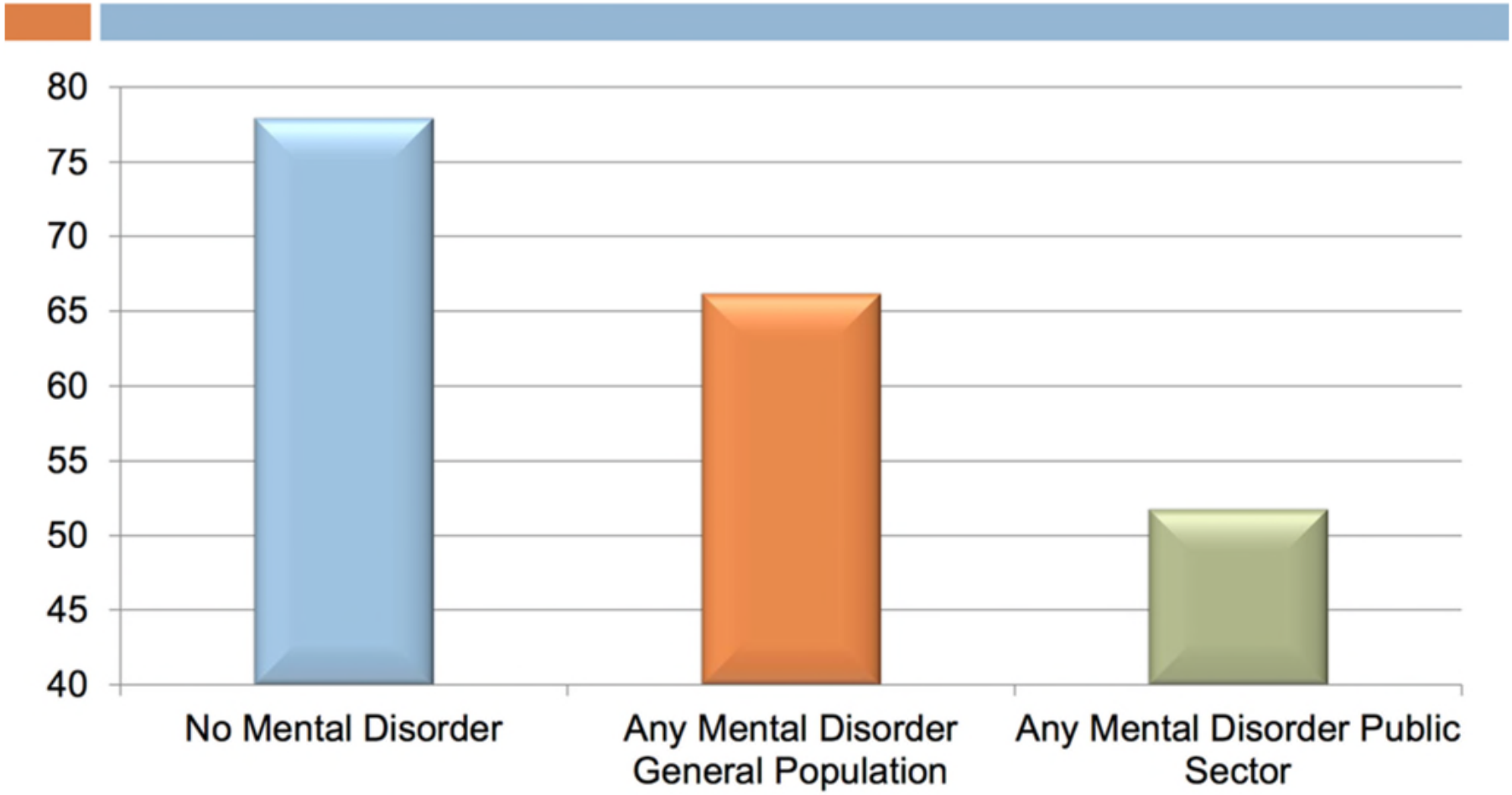
What's worse is that across these top 9 chronic conditions, depression and anxiety go UNDIAGNOSED 85% of the time.

Medical Costs per Disease State					
Chronic Medical Condition	PMPM With Behavioral Condition	PMPM Without Behavioral Condition	% Treated For Depression or Anxiety	Expected Depression or Anxiety Prevalence	% Missed
Arthritis	$871.88	$564.76	7.1%	32.3%	77.9%
Asthma	$861.99	$470.05	6.8%	60.5%	88.8%
Cancer (Malignant)	$1,180.96	$1,018.45	5.7%	39.8%	85.7%
Chronic Pain	$1,210.56	$884.70	5.9%	61.2%	90.4%
Coronary Artery	$1,305.00	$958.34	5.7%	48.2%	88.1%
Diabetes	$1,110	$828.18	5.2%	30.8%	83.2%
Heart Failure	$2,242.85	$1,888.11	7.0%	43.8%	84.1%
Hypertension	$880.33	$588.04	5.5%	30.5%	82.0%
Ischemic Stroke	$1,461.57	$1,254.68	7.7%	52.4%	85.2%

Cost Burdens from unrecognized/undiagnosed/Mental Health Cases.

Source: http://www.ncbi.nlm.nih.gov/

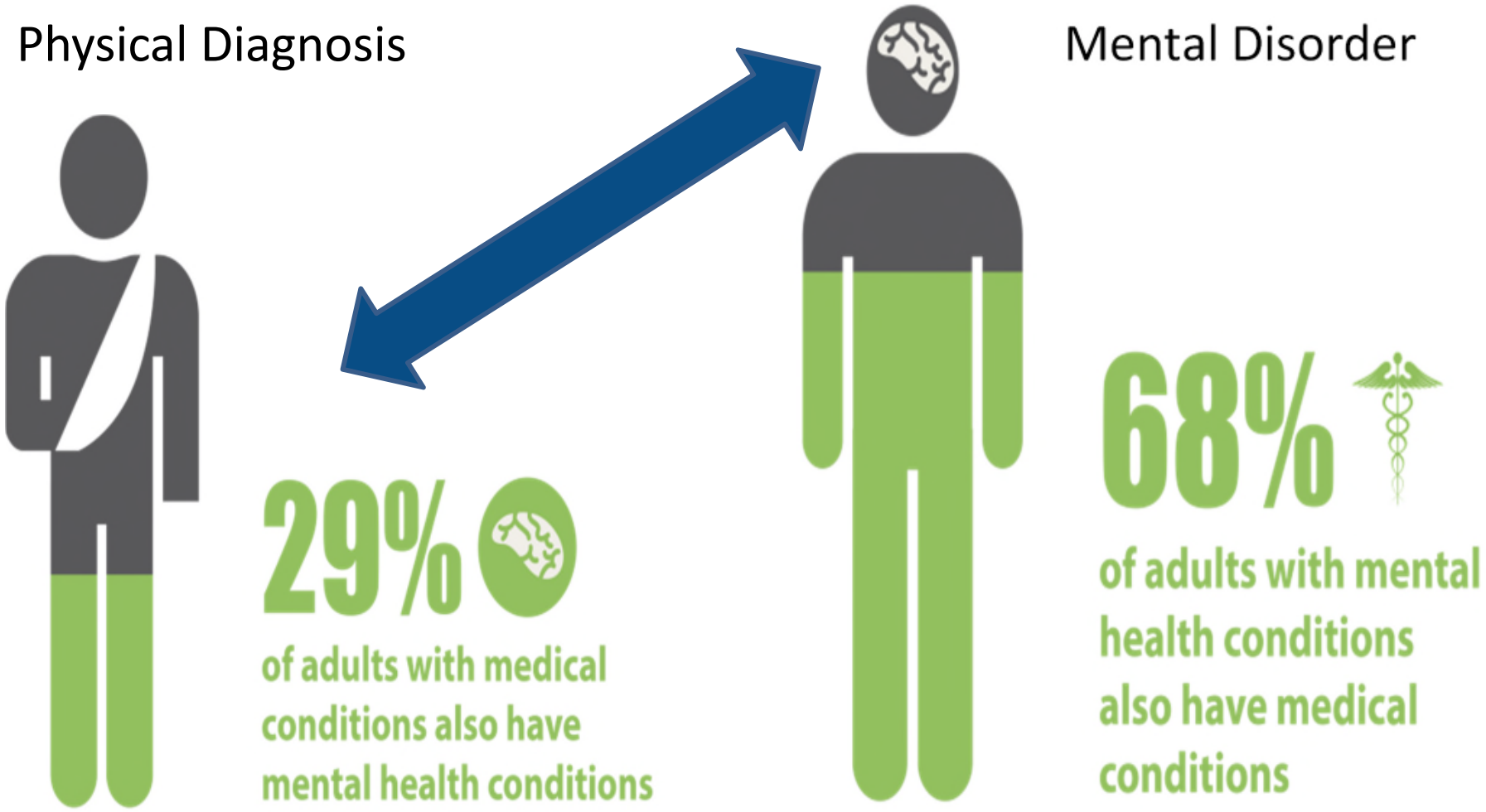
Life expectancy cut by up to 25 years



Psychiatry Res. 2010 Apr 30;176(2-3):242-5
Med Care. 2011 Jun;49(6):599-604

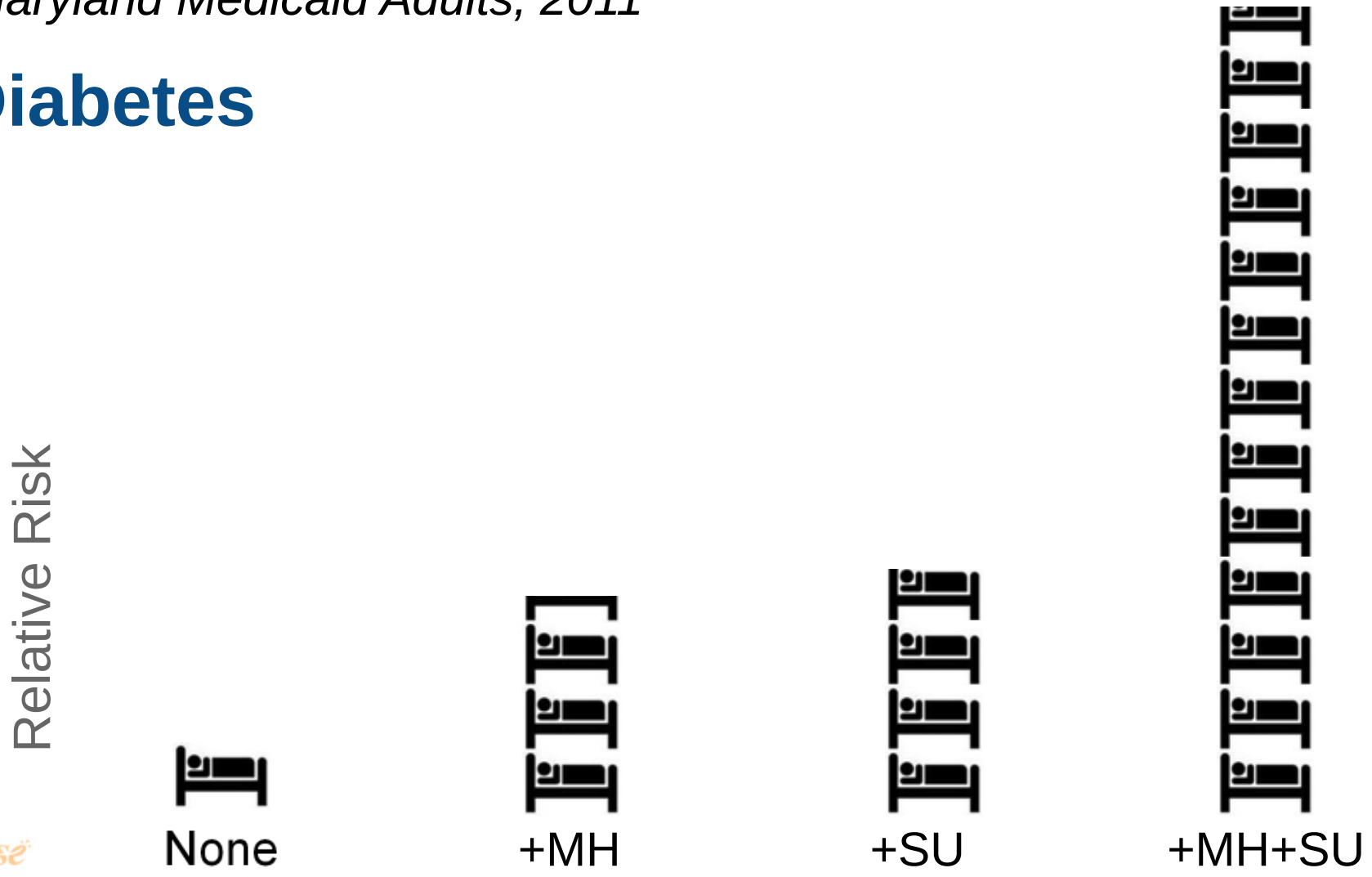
Slide courtesy of Ben Druss MD

Mental Health Affects Clinical Conditions and Outcomes in a BIG WAY



Relative risk of medical admission with & without MH and SU comorbidity
-- Maryland Medicaid Adults, 2011

Diabetes



Source: Hilltop Institute, 2012

Relative risk of medical admission with & without MH and SU comorbidity

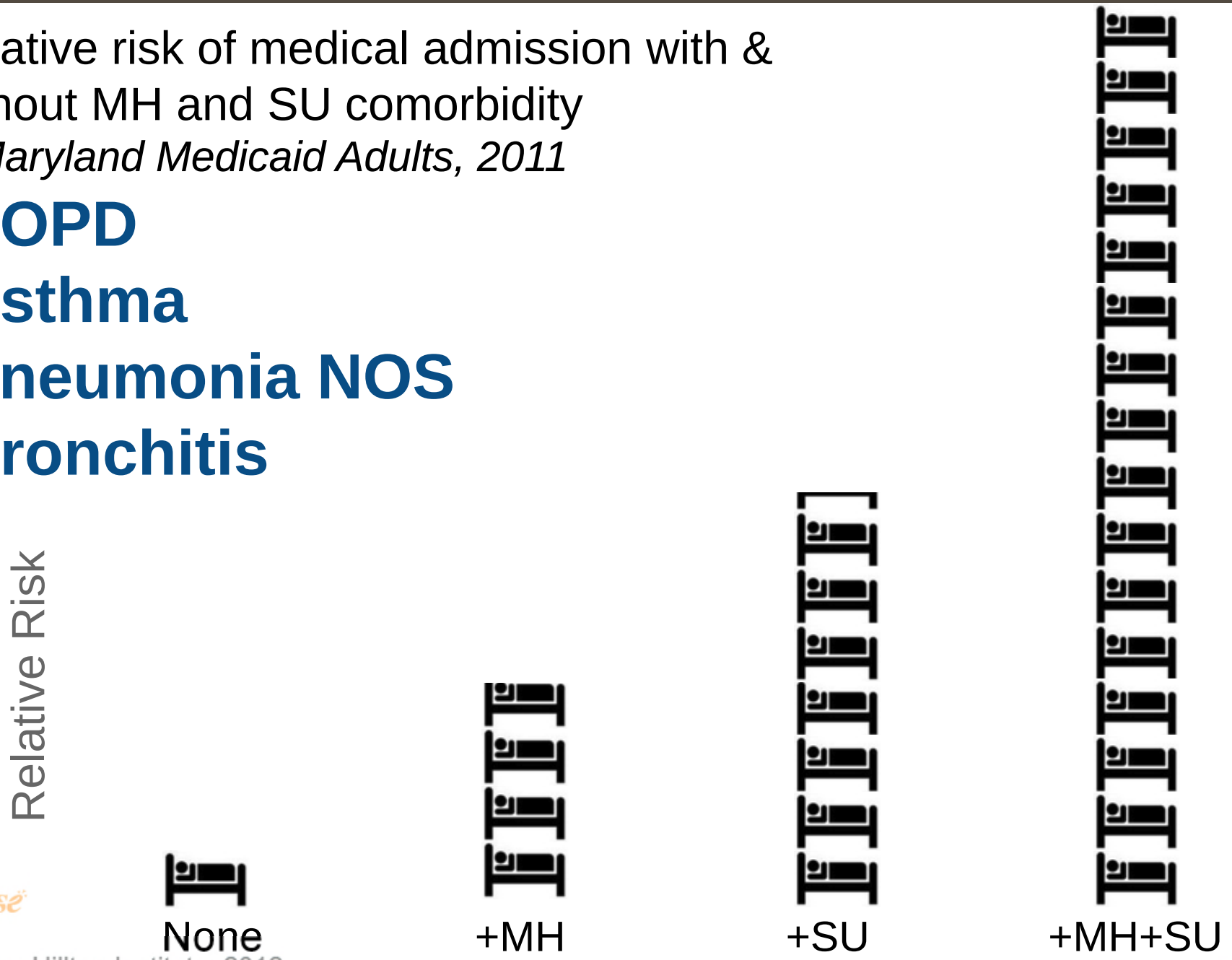
-- Maryland Medicaid Adults, 2011

COPD

Asthma

Pneumonia NOS

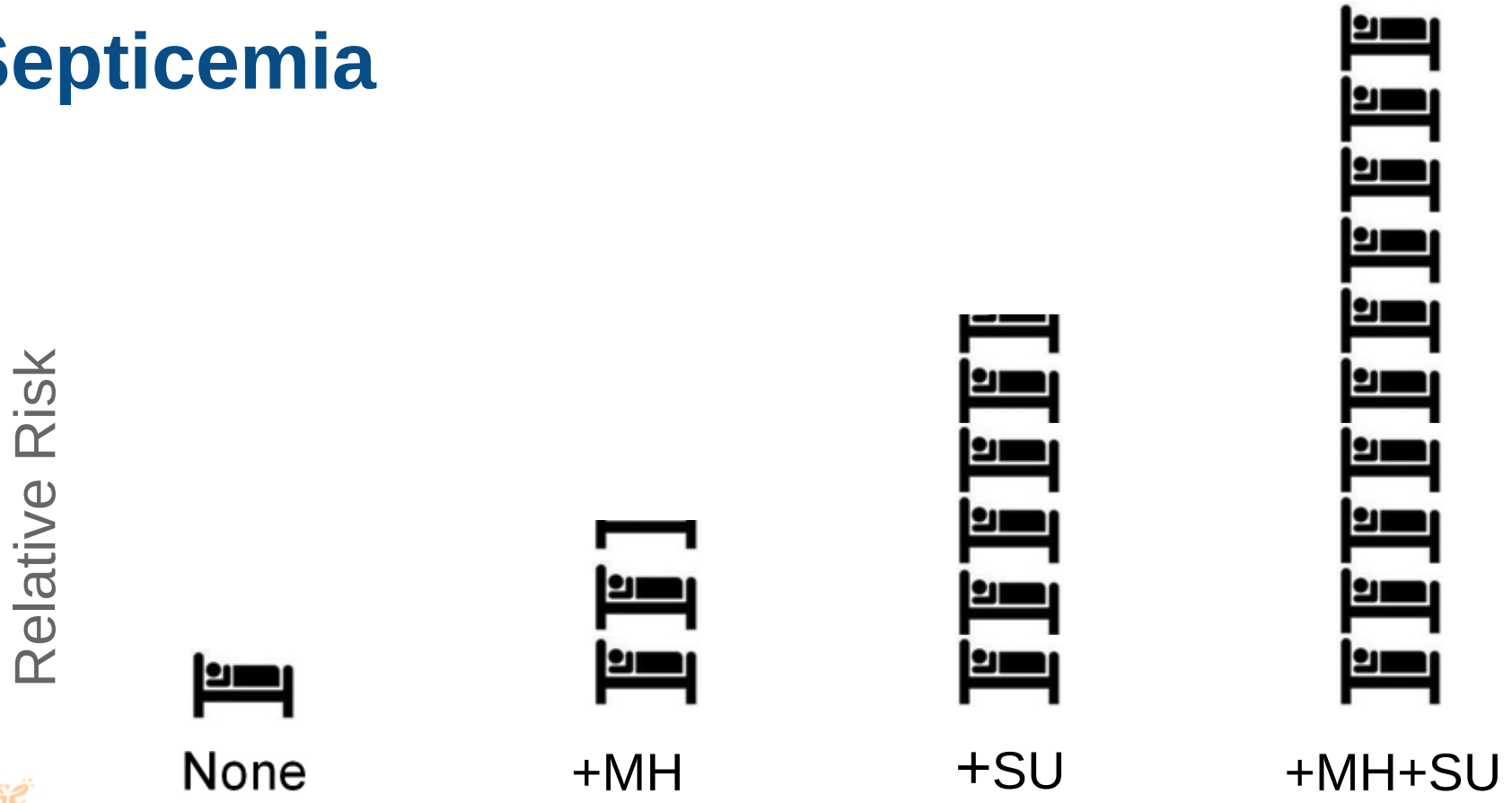
Bronchitis



Source: Hilltop Institute, 2012

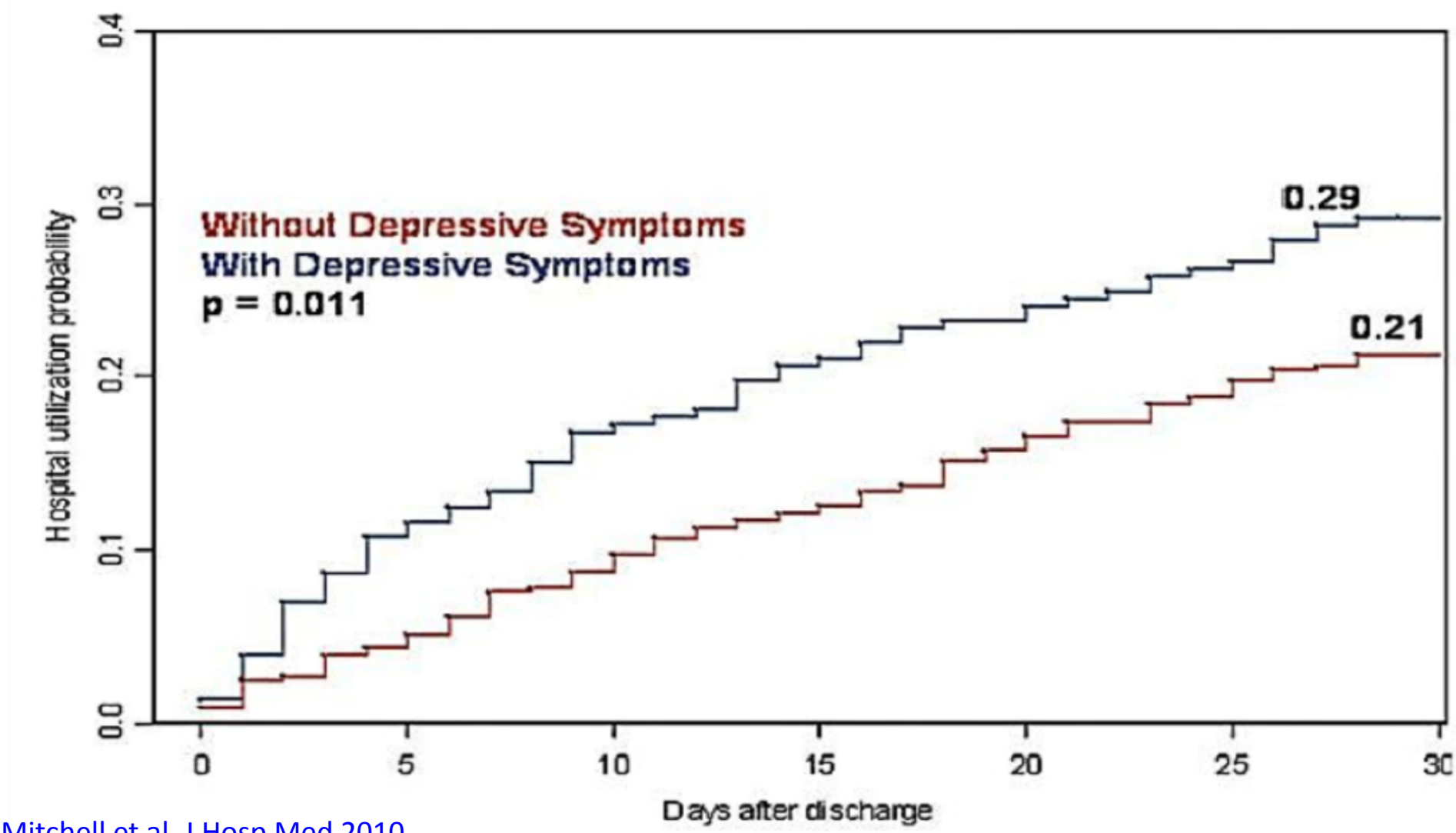
Relative risk of medical admission with & without MH and SU comorbidity
-- Maryland Medicaid Adults, 2011

Cellulitis
Septicemia



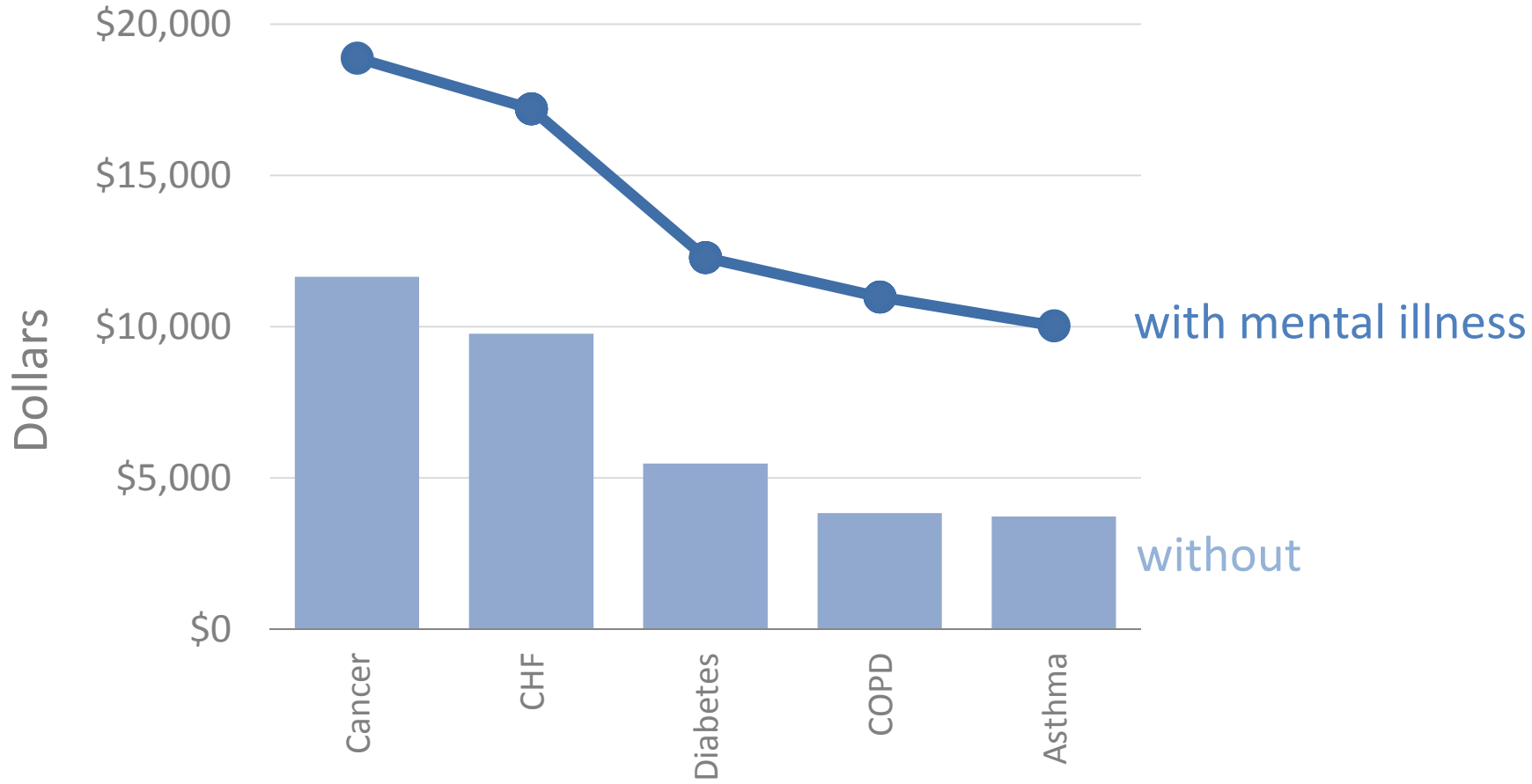
Source: Hilltop Institute, 2012

Depression increases risk of 30-day readmission by nearly 40%



Mitchell et al, J Hosp Med 2010

Increased costs of chronic medical conditions with comorbid mental illness



Source: Cartesian Solutions, consolidated health claims data

Impact on Chronic Healthcare Costs

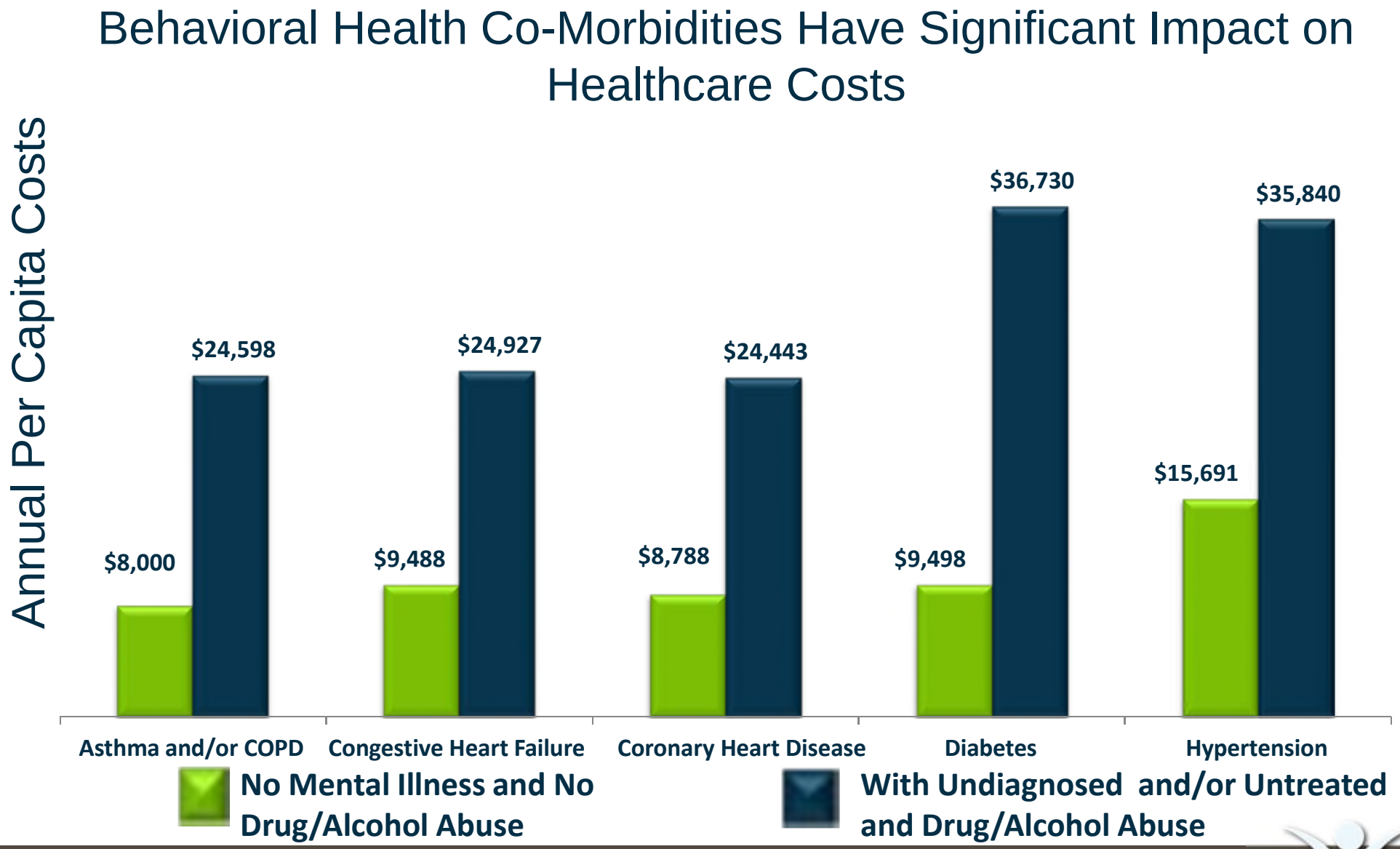


Table 1: Impact of Behavioral Health Diagnosis on Costs

POPULATION	% WITH BEHAVIORAL HEALTH DIAGNOSIS	PMPM WIHTOUT BH DIAGNOSIS	PMPM WITH BH DIAGNOSIS	INCREASE IN TOTAL PMPM WITH BH DIAGNOSIS
Commercial	14%	$340	$941	276%
Medicare	9%	$583	$1429	245%
Medicaid	21%	$381	$1301	341%
All Insurers	**15%**	**$397**	**$1085**	**273%**

Melek, Norris, & Paulus. Economic impact of integrated medical-behavioral healthcare: Implications for Psychiatry. Milliman, 2014

Breakdown of U.S. Population, Estimated Annual Costs, and Cost Reduction from Managing Behavioral Health Conditions

Total U.S. Population	321,043,000	1
Total Adult U.S. Population	234,000,000	2

Breakdown by Chronic Disease	**Population Total**		**Undiagnosed Behavioral Health Conditions**			**Estimated Monthly Per Patient**		**Estimated Total Annual**	
			Population Percentage		Population Subtotal	Cost Reduction		Cost Reduction	
Diabetes	35,314,730	3	25.6%	11	9,040,571	282	11	30,603,055,674	
COPD CHF Asthma	14,742,000	4	31.3%	11	4,614,246	412	11	22,795,667,229	
Cancer Arthritis	5,100,000	5	36.8%	11	1,876,800	355	11	7,989,312,384	
Hypertension	25,683,440	6	53.7%	11	13,792,007	392	11	64,867,672,000	
Ischemic Heart	14,483,830	7	34.1%	11	4,938,986	163	11	9,631,615,437	
Disease	53,118,000	8	25.2%	11	13,385,736	307	11	49,332,326,884	
	68,094,000	9	25.0%	11	17,023,500	292	11	59,709,585,780	
	14,040,000	10	44.7%	11	6,275,880	207	11	15,581,001,758	
Total for Top 8 Diseases	230,576,000	*			70,947,726	*		260,510,237,146	*

Costs to Treat		**As % of Costs**	**Cost to Treat**	
Milliman Estimate	12	16.00%	41,681,637,943	*
Unutzer Collaborative Model Estimate	13	10.00%	26,051,023,715	*

Potential Savings
$218,828,599,203
$234,459,213,432

*** Actual amounts are less because some patients have more than one chronic condition.**

1 Population Clock, U.S. Census Bureau, Retrieved March 6, 2015
2 Chronic Disease Overview, Center for Disease Control and Prevention
3 U.S. Diabetes Rate Levels off in 2011, Gallop.com, December 16, 2011, Retrieved May 8, 2013
4 6.3% of U.S. Adults Report Having COPD, Center for Disease Control and Prevention (only includes reported cases)
5 Heart Failure Fact Sheet, Centers for Disease Control and Prevention
6 Asthma Statistics, American Academy of Allergy Asthma & Immunology
7 Cancer Prevalence: How Many People Have Cancer?, American Cancer Society
8 CDC: Center for Disease Control and Prevention; (Arithitis: 2010--2012 -- Data and Statistics)
9 Center for Disease Control and Prevention; Hypertension among adults in the United States; National Health and Nutrition Examination Survey, October 2013
10
11 CDC: Center for Disease Control and Prevention; (Morbidity and Mortality Weekly Report: October 14, 2011)
12 Based on OptumHealth Report: Co--Morbid Behavioral Health Conditions in PCP Practice
13 Milliman, 2013. Economic impact of integrated medical--behavioral healthcare Unutzer, 2008. American Journal of Managed Care

This is a BIG number in COST SAVINGS.

DOI: 10.1377/hlthaff.2014.0353
HEALTH AFFAIRS 33,
NO. 10 (2014): 1808–1816

By Valerie A. Lewis, Carrie H. Colla, Katherine Tierney, Arica D. Van Citters, Elliott S. Fisher, and Ellen Meara

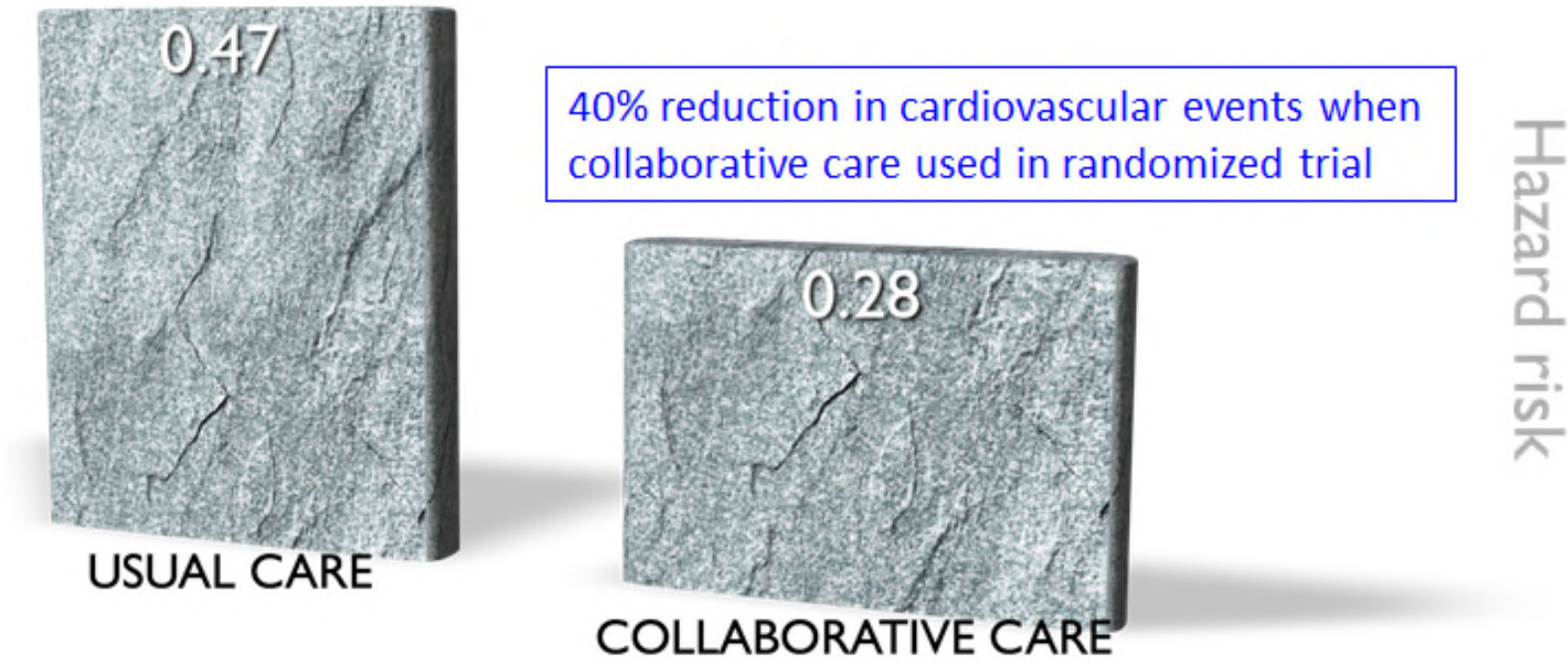
Few ACOs Pursue Innovative Models That Integrate Care For Mental Illness And Substance Abuse With Primary Care

2013 National Survey of ACOs, n=257

> "…we found that the decision to pursue integrated models depends powerfully on the design of the ACO payment model, details of contracts, and the quality measures used in contracts."

Effect of Collaborative Care for Depression on Risk of Cardiovascular Events:

Data From the IMPACT Randomized Controlled Trial



Stewart, Perkins, & Callahan, Psychosomatic Med 2014 76:129

IMPACT reduces health care costs

ROI: $ 6.5 saved / $ 1 invested

4-yr Cost Category	Intervention group cost in $	Usual care group cost in $	Difference in $
IMPACT program cost	522	0	522
Outpatient mental health costs	558	767	-210
Pharmacy costs	6,942	7,636	-694
Other outpatient costs	14,160	14,456	-296
Inpatient medical costs	7,179	9,757	-2578
Inpatient mental health / substance abuse costs	61	169	-108
Total 4-yr health care cost	29,422	32,785	**-$3363**

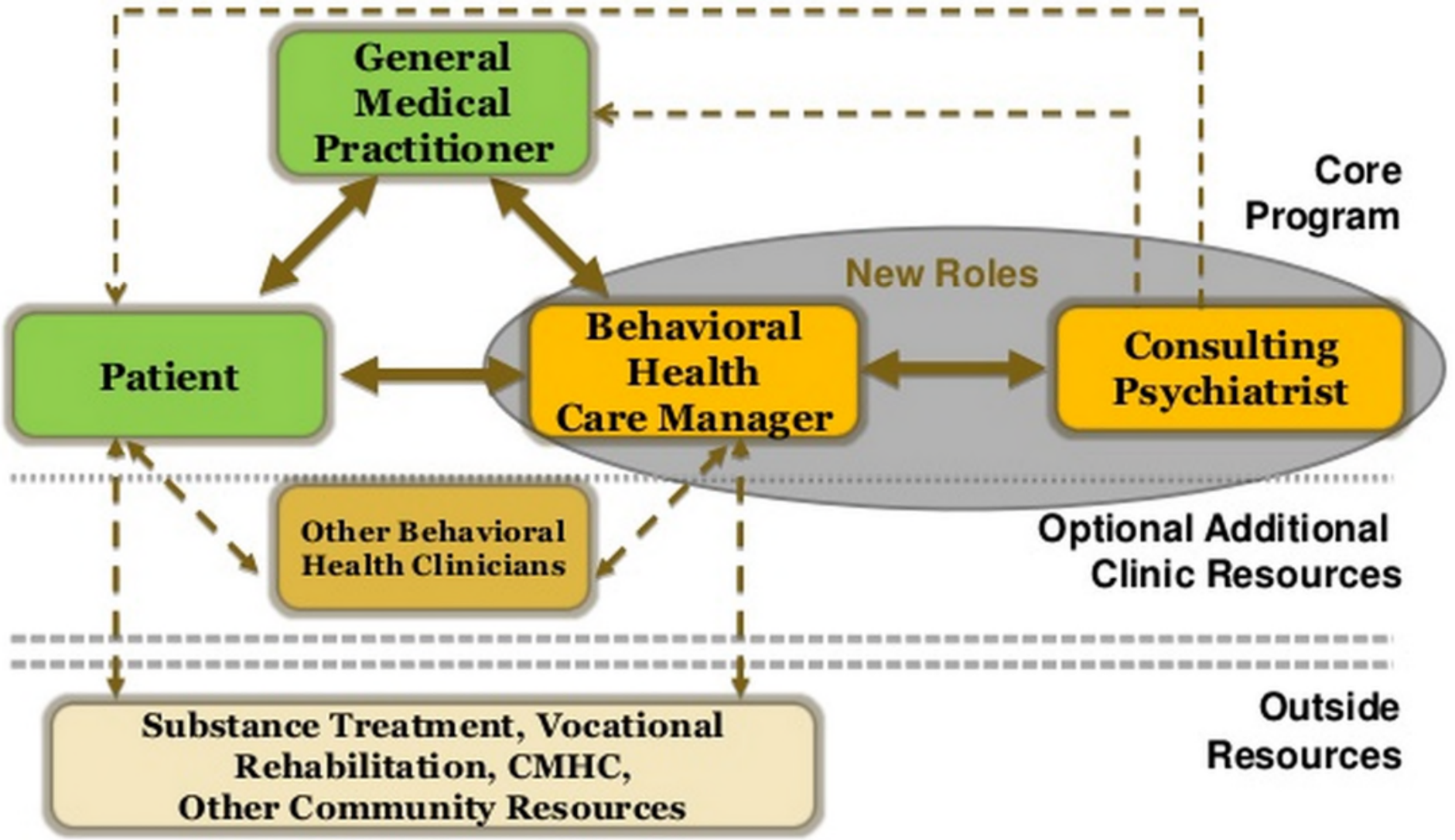
Savings

N=551 depressed pts 60+ yrs > randomized

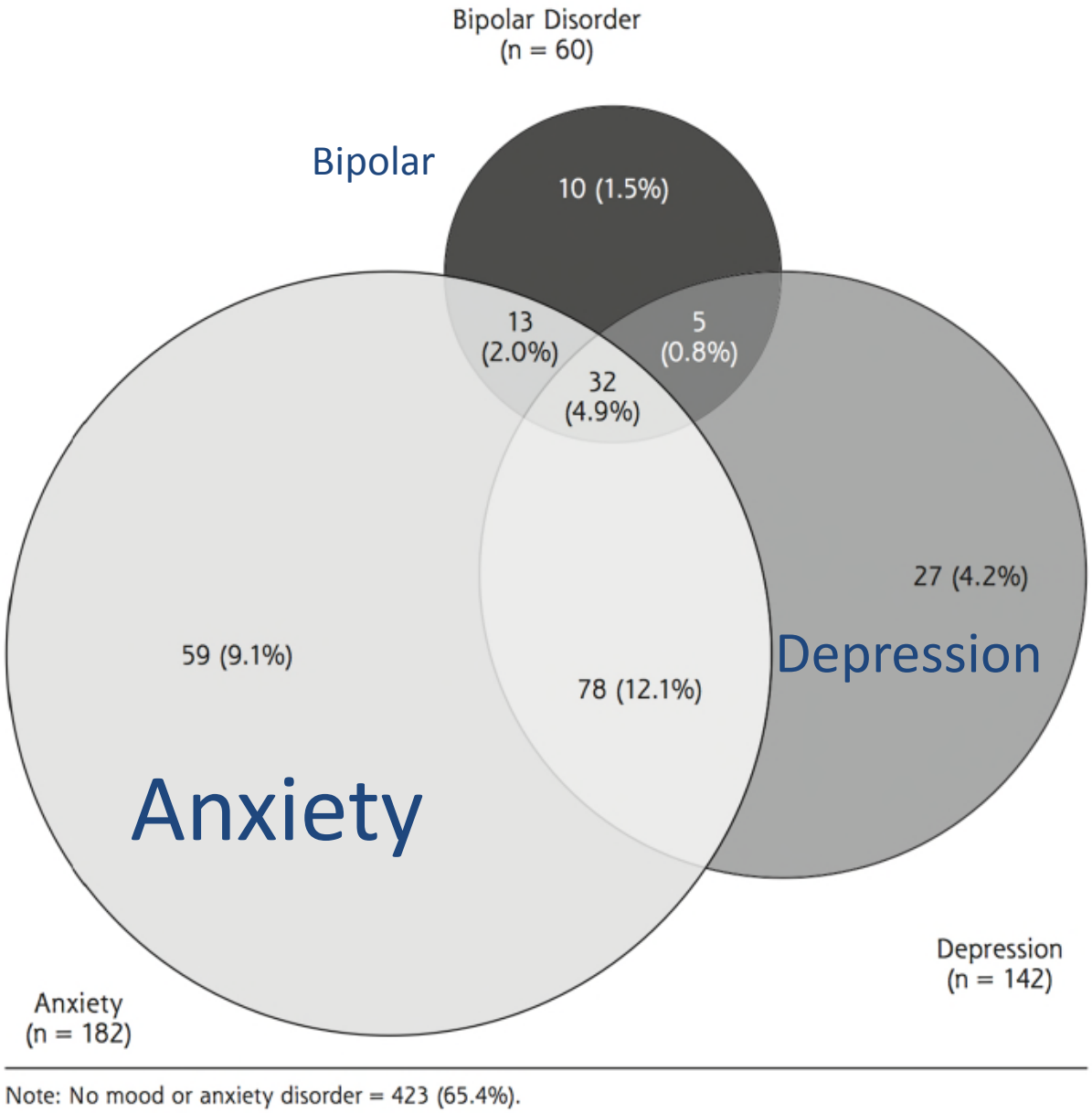
Unützer et al., *Am J Managed Care 2008*.

Reference

Collaborative Care Model



Source: Unutzer, UW

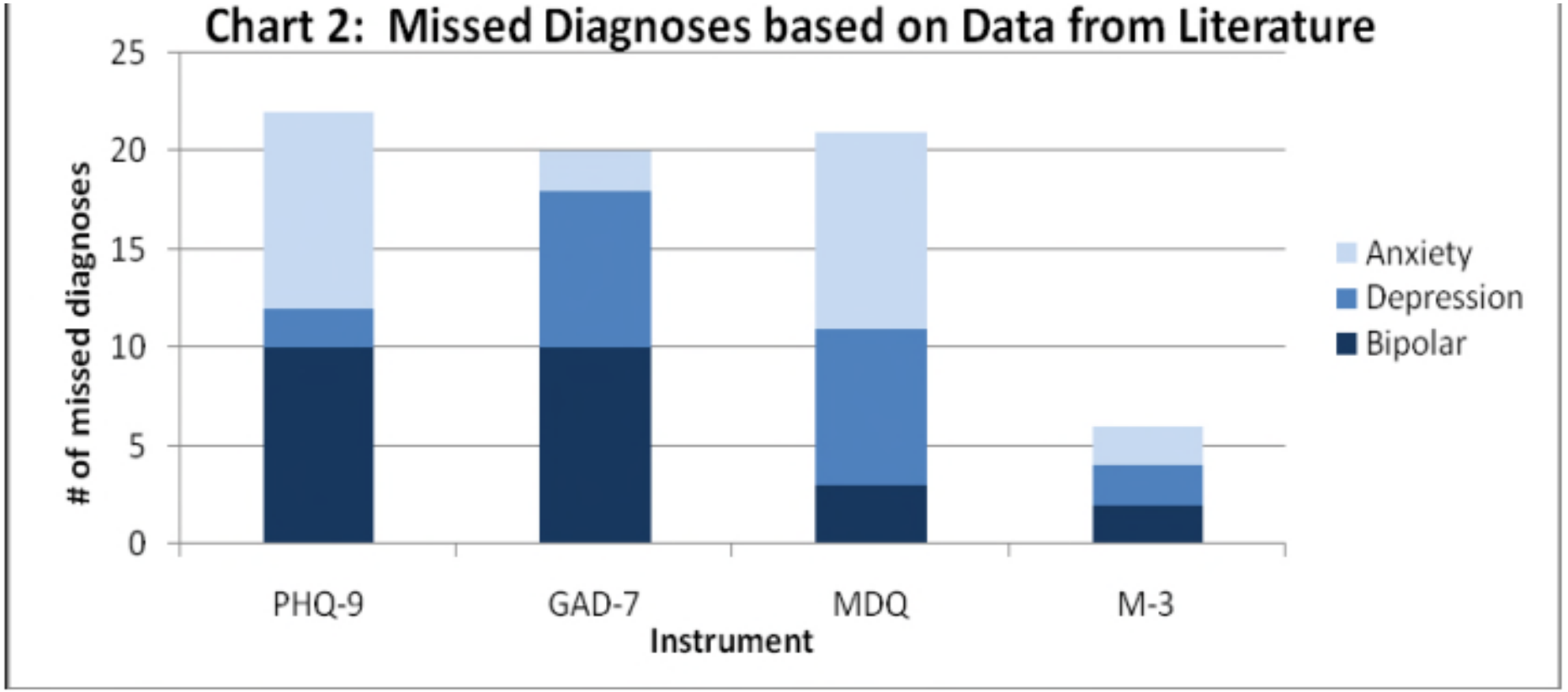


Anxiety disorders are twice as common as depression in primary care.

Gaynes et al, Ann Fam Med 2010

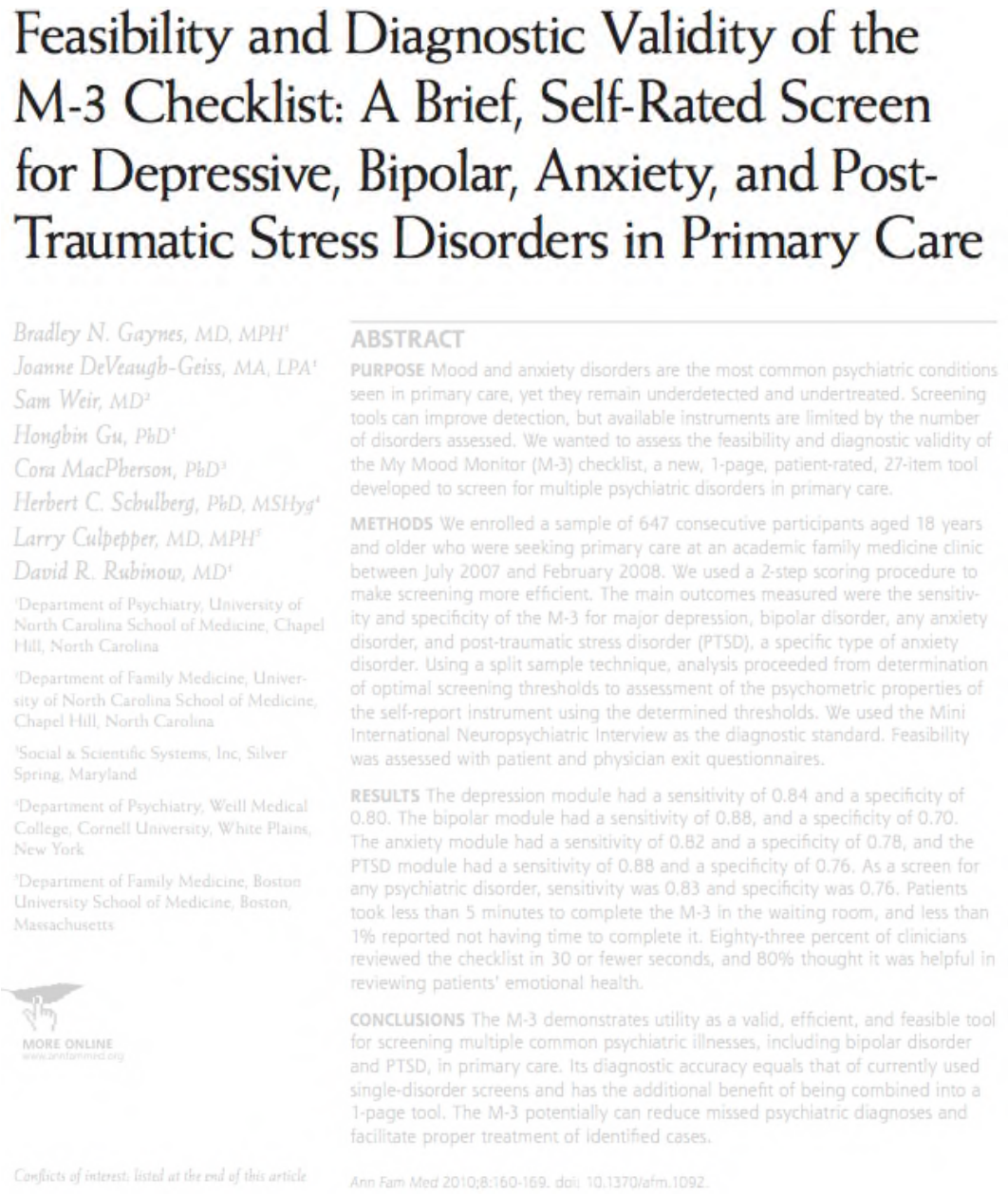
Risks of not addressing multidimensional behavioral health:

misdiagnosis – mistreatment - cost - safety



2. Kroenke, 2007Anxiety disorders in primary care
5. Das, 2005 Screening for Bipolar Disorder in a Primary Care Practice
6. Depression guideline panel. Depression in primary care: Volume 1, 1993

- M3 Checklist validated in 2009 UNC study
- Published in March 2010 Annals of Family Medicine
- n=647 adults in an academic family medicine clinic
- 29 items
- validated against the MINI
- overall sensitivity & specificity = 0.83 & 0.76
  -Depr = 0.84 & 0.80
  -Bip = 0.88 & 0.70
  -Anx = 0.82 & 0.78
  -PTSD = 0.88 & 0.76
- 3-5 minutes to complete



Feasibility and Diagnostic Validity of the M-3 Checklist: A Brief, Self-Rated Screen for Depressive, Bipolar, Anxiety, and Post-Traumatic Stress Disorders in Primary Care

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MORE ONLINE

Conflicts of interest: listed at the end of this article

ABSTRACT

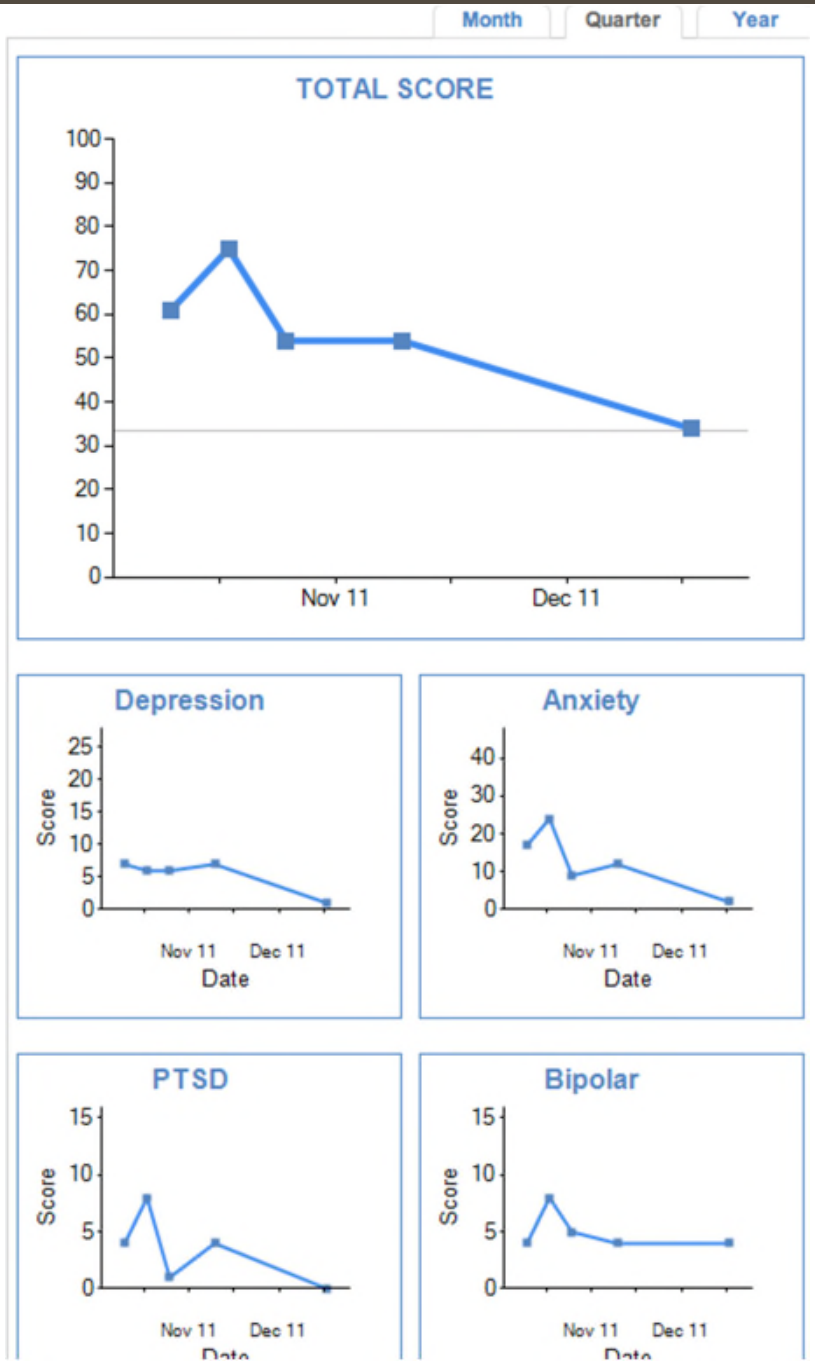
PURPOSE Mood and anxiety disorders are the most common psychiatric conditions seen in primary care, yet they remain underdetected and undertreated. Screening tools can improve detection, but available instruments are limited by the number of disorders assessed. We wanted to assess the feasibility and diagnostic validity of the My Mood Monitor (M-3) checklist, a new, 1-page, patient-rated, 27-item tool developed to screen for multiple psychiatric disorders in primary care.

METHODS We enrolled a sample of 647 consecutive participants aged 18 years and older who were seeking primary care at an academic family medicine clinic between July 2007 and February 2008. We used a 2-step scoring procedure to make screening more efficient. The main outcomes measured were the sensitivity and specificity of the M-3 for major depression, bipolar disorder, any anxiety disorder, and post-traumatic stress disorder (PTSD), a specific type of anxiety disorder. Using a split sample technique, analysis proceeded from determination of optimal screening thresholds to assessment of the psychometric properties of the self-report instrument using the determined thresholds. We used the Mini International Neuropsychiatric Interview as the diagnostic standard. Feasibility was assessed with patient and physician exit questionnaires.

RESULTS The depression module had a sensitivity of 0.84 and a specificity of 0.80. The bipolar module had a sensitivity of 0.88, and a specificity of 0.70. The anxiety module had a sensitivity of 0.82 and a specificity of 0.78, and the PTSD module had a sensitivity of 0.88 and a specificity of 0.76. As a screen for any psychiatric disorder, sensitivity was 0.83 and specificity was 0.76. Patients took less than 5 minutes to complete the M-3 in the waiting room, and less than 1% reported not having time to complete it. Eighty-three percent of clinicians reviewed the checklist in 30 or fewer seconds, and 80% thought it was helpful in reviewing patients' emotional health.

CONCLUSIONS The M-3 demonstrates utility as a valid, efficient, and feasible tool for screening multiple common psychiatric illnesses, including bipolar disorder and PTSD, in primary care. Its diagnostic accuracy equals that of currently used single-disorder screens and has the additional benefit of being combined into a 1-page tool. The M-3 potentially can reduce missed psychiatric diagnoses and facilitate proper treatment of identified cases.

Ann Fam Med 2010;8:160-169. doi: 10.1370/afm.1092.

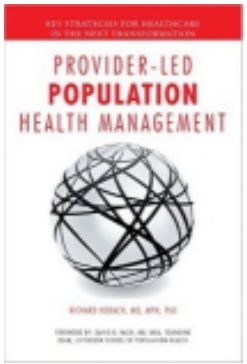


M3 Clinician Report

- measured care
- monitor trend
- fit in workflow
- patient engagement
- aids communication
- team-based care

Leveraging Integrated Clinical & Behavioral / Mental Health Data for Improved Population Health Strategies

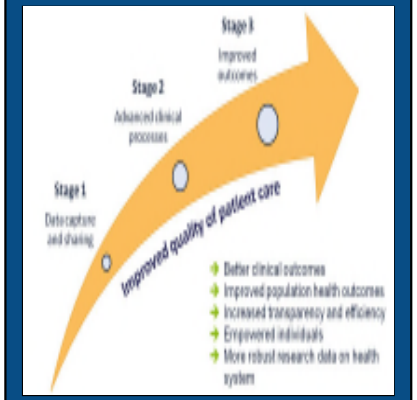
- Begins with access to expanded structured and unstructured data and data sets from a variety of sources
- Requires data aggregation, semantic interoperability / integration and an HIE using a data model that includes mental health
- Provides meeting Meaningful Use requirements for PCPs
- Supports implementing Population Health Management and 360-Care Coordination emanating from Primary Care
- Enables finding, understanding, engaging and improving treatment and therapy for high-risk populations while lowering costs through
  - sophisticated analytics and patient risk/similarity algorithms
  - new patient engagement tools and mobile apps
  - integrated care plans (clinical / behavioral / social / mental health)
  - evidence-based, proactive interventions using predictive models
  - enhanced care coordination to improve outcomes and lower costs



US Industry Drivers Behind Emerging Healthcare Solutions 2015-2017

HIMSS-7

Meaningful Use 1,2,3



Agency for Healthcare Research & Quality

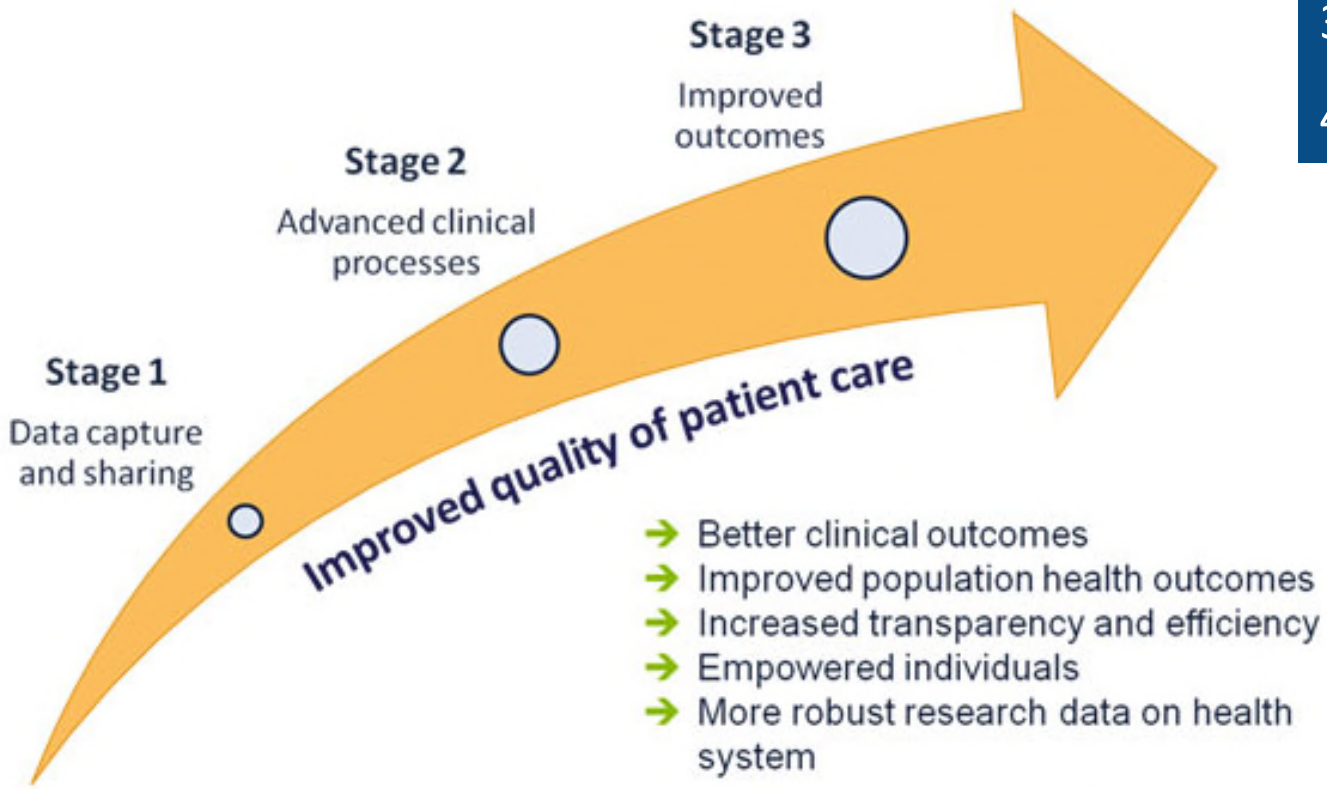
AHRQ Advancing Excellence in Health Care

Clinical Guidelines

Triple Aim

Quality/Safety
Access
Cost

Meaningful Use 2015-2017



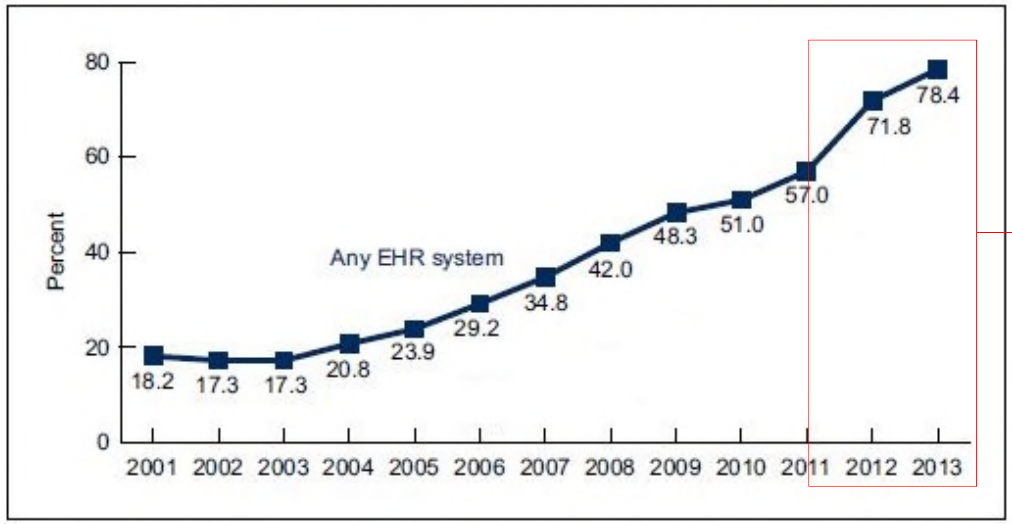
2016 Guidelines

1. Pop Health Mgt
2. Care Coordination
3. Patient Engagement
4. Clinical Decision Support

The Big Game Changer . . . Great U.S. EHR Expansion

Adoption of basic EHR systems by office-based physicians

Figure 1. Percentage of office-based physicians with EHR systems: United States, 2001–2013

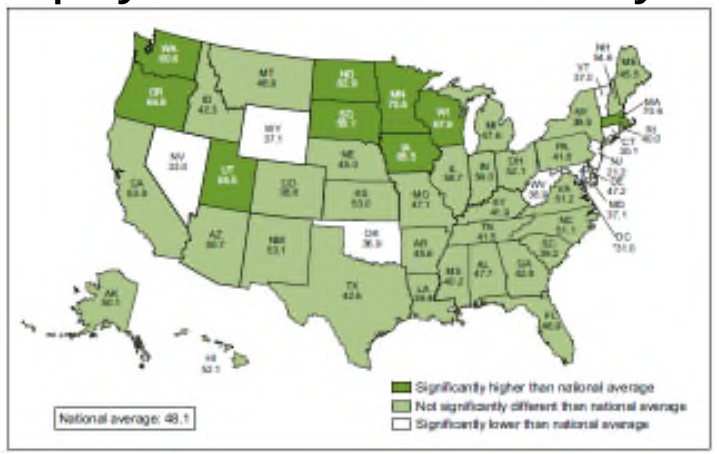


Actually, we'll be 90% the end of this year

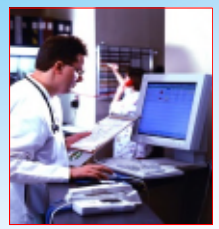
Rapid Growth
in the past two years. Current leading estimates report an 86% rate of adoption.

Source: CDC NCHS Data Brief #143, Jan 2014

Percentage of physicians with EHR system, 2013



Downstream Effects of EHR Use



EHR Use

EHR Database

Analytics Platform

Population Health/Clinical Quality Reporting

31	HF: BB Therapy for Left Ventricular Systolic Dysfunction	**Numerator:** Patients prescribed beta-blocker therapy within a 12 month period when seen as an outpatient or at hospital discharge	ORDER_MED, CLARITY_EMP, CLARITY_NDC_CODES, ALLERGY
		Denominator: Patients >= 18 with dx of HF with current or prior LVEF < 40%	PATIENT, PATIENT_ENC, PAT_ENC_DX, PROBLEM_LIST, MEDICAL_HX

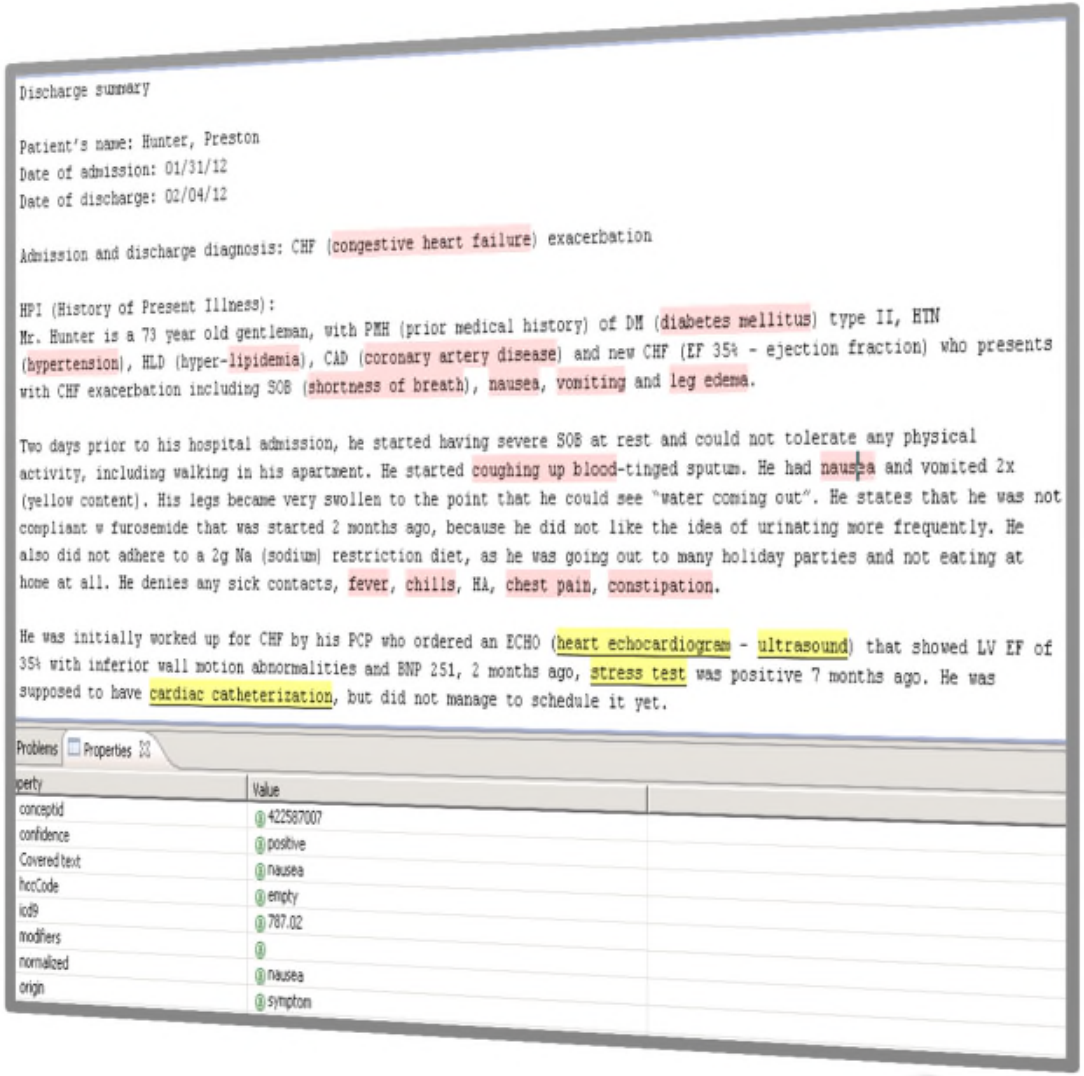
Meaningful Use Compliance

	EP	EH	MEANINGFUL USE 42 CFR 495.6(j)-(m) Stage 2 Objective	MEANINGFUL USE 42 CFR 495.6(j)-(m) Stage 2 Measure	2014 Edition EHR CERTIFICATION CRITERIA 45 CFR 170.314
CORE	EP	EH	Use CPOE for medication, laboratory and radiology orders directly entered by any licensed healthcare professional who can enter orders into the medical record per State, local and professional guidelines.	More than 60% of medication, 30% of laboratory, and 30% of radiology orders created by the EP or authorized providers of the EH's or CAH's inpatient or emergency department (POS 21 or 23) during the EHR reporting period are recorded using CPOE. *Exclusions apply: see CMS rule for details	§170.314(a)(1) Computerized provider order entry. Enable a user to electronically record, change, and access the following order types, at a minimum: (i) Medications; (ii) Laboratory; and (iii) Radiology/imaging.

Business Intelligence/Key Performance Indicators

IBM Watson Healthcare Content Analytics: Configurable Healthcare Accelerators provide comprehensive NLP

- Content Analytics Healthcare Accelerators drive overall time to value through the following:
  - Annotators focused on extracting medical terms
  - Approximately 800 pre-built rules developed in IBM Content Analytics Studio
  - Extracted concepts, including diagnoses, procedures, labs, and population health measures
  - The transformation of unstructured data to CPT, ICD-9, and SNOMED-CT codes
  - The detection of negations
  - The identification, coding and uploading of family histories



IBM Watson Healthcare Content Analytics:
Enhancing EHR usability through advanced natural language processing (NLP)

Admission History and Physical

CHIEF COMPLAINT: Fever and shortness of breath

HISTORY OF PRESENT ILLNESS: This is a 66-year-old female patient with known CHF and chronic atrial fibrillation came in for an urgent care visit today with the above chief complaints. She is well known in my practice and has been stable for the past year. The patient was seen by Dr. O'Connor at the Family Practice Center who immediately transferred the patient to the ED for management of CHF deterioration with possible pneumonia.

PAST MEDICAL HISTORY:
1. Congestive Heart Failure
2. Chronic Atrial Fibrillation
3. Hyperlipidemia
4. Essential Hypertension
5. Osteoarthritis

SOCIAL HISTORY: Patient is a current smoker: 1ppd x 25 years. Alcohol: 1 glass of wine daily. Patient is a retired insurance agent living at home with normal ADLs.

FAMILY HISTORY: Father died of lung cancer age 76. Mother died of heart attack age 81. Siblings: Sister age 61 with breast cancer diagnosed 3 years ago. Brother with known coronary artery disease status post PTCA with stents.

Unstructured Free Text

Watson Content Analytics

Structured EHR Data

Until now structured EHR data has required manual entry. IBM software changes this. It analyzes doctors' notes, extracting structured clinical findings for upload into patient records, automatically adding industry standard diagnoses, clinical observations, and treatment codes. This will significantly simplify administrative processes and improve patient outcomes.

Meaningful Use Compliance

Enhanced Clinical Reporting

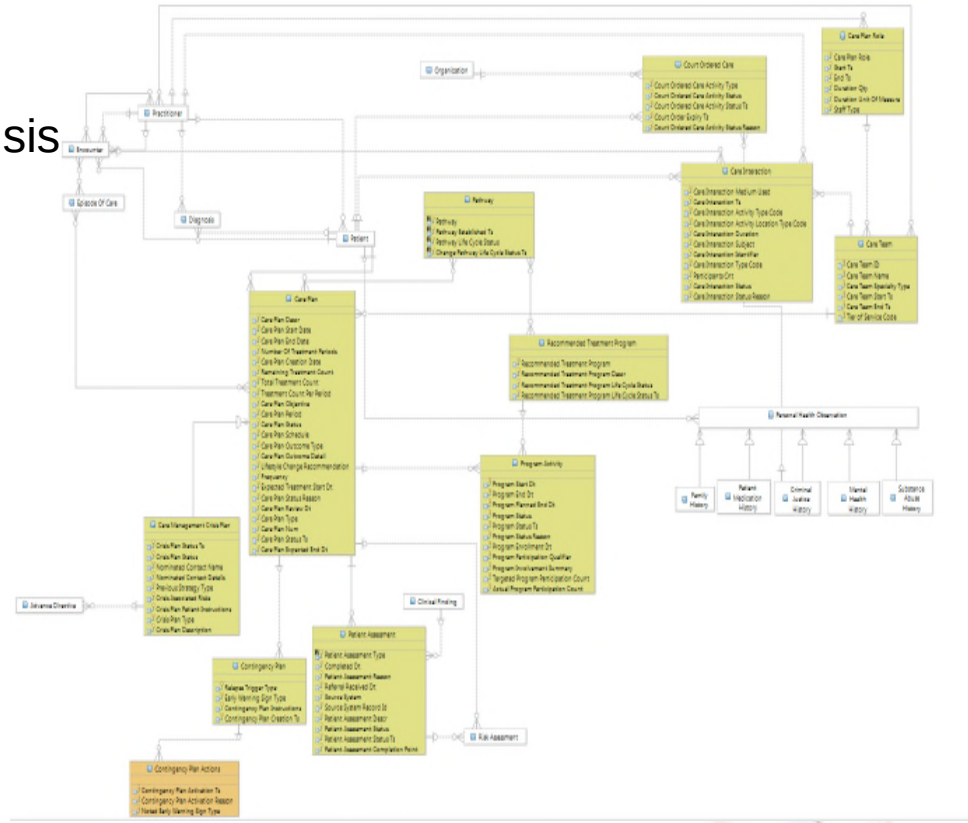
Accurate Business Intelligence

IBM Unified Data Model includes Mental Health

Healthcare Data Models are often used as foundational prerequisite frameworks for accessing, integrating, staging and managing comprehensive healthcare-related data across the spectrum of care to include mental health disorders and substance abuse.

Content that describes mental health has been added to UDMH to cover:

- Clinical Patient History
- Mental Health History
- Substance Abuse History
- Criminal Justice History
- Socioeconomic History
- Program Activity
- Care Interaction
- Care Management Crisis Plan
- Contingency Plan and Actions
- Court Ordered Care



Updates to the existing model content have been made under:

- Care Plan
- Care Team
- Discharge
- Episode of Care
- Risk Assessment

Utilizing Data Models and Registries for Promoting Insightful, Integrated Care

By integrating MENTAL HEALTH / BEHAVIORIAL HEALTH data with clinical, social, genomic and cost-of-care and outcomes data, a much more comprehensive "picture" of the correlation **and causal relationships among these data sets** can be used to more precisely and efficiently diagnose and treat individuals and populations with mental health disorders and chronic diseases.

CCD – New Behavioral Health

The Continuity of Care Document (CCD) specification is an XML-based markup standard intended to specify the encoding, structure, and semantics of a patient summary clinical document for exchange.

It provides a snapshot in time containing the pertinent clinical, demographic, and administrative data for a specific patient. This standard helps to promote interoperability between participating systems/organizations such as Personal Health Record Systems (PHRs), Electronic Health Record Systems (EHRs), Practice Management Application, Criminal Justice System, Education System.

The CCD Behavioral Health uses all of the subjects plus other subjects which are important in behavioral health such as substance of abuse, criminal justice, homelessness, income etc.

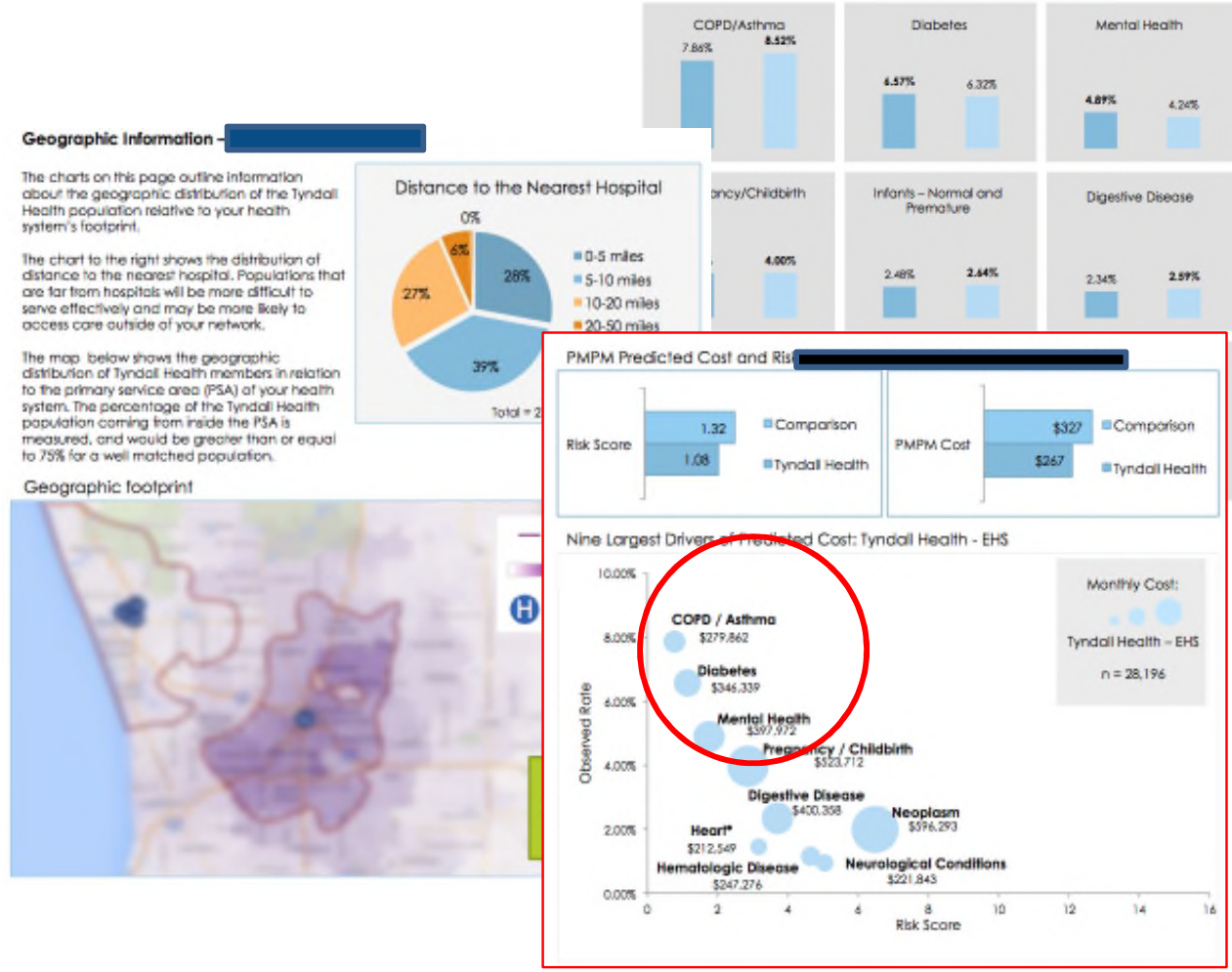
A new supportive content package called **Continuity of Care Document (CCD) – Behavioral Health** has been added to IGC with mappings to IBM UDMH content.

Population Health Assessment
IBM Explorys Program Framework

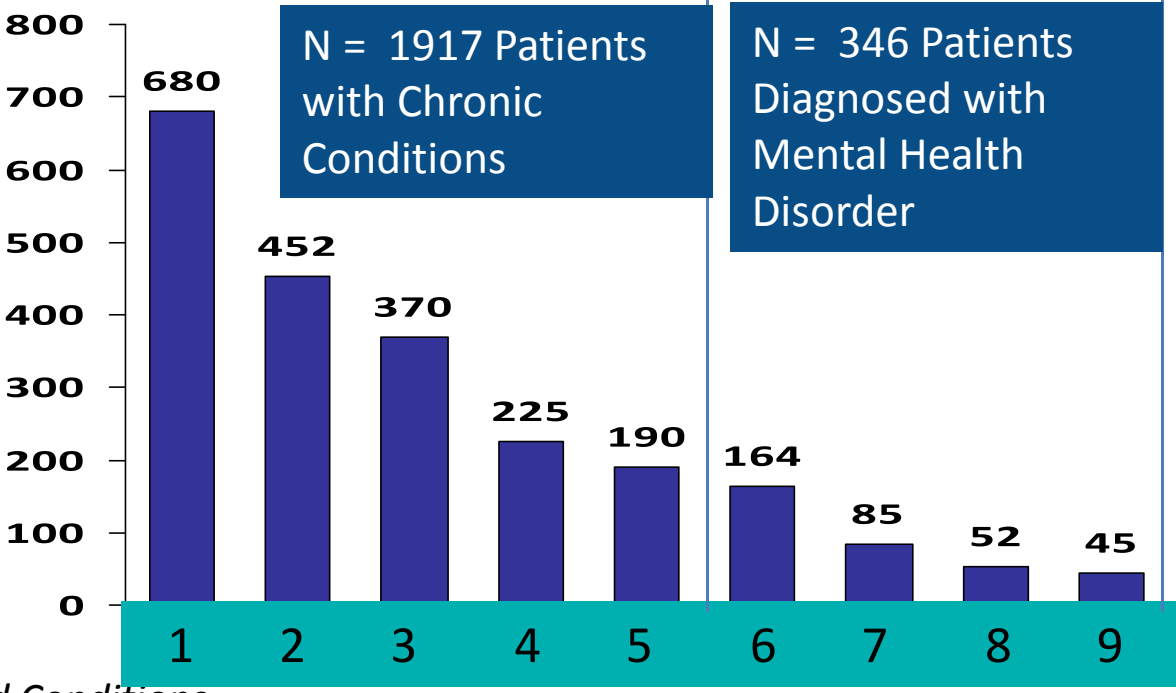
Population Assessment

Know their past and future utilization, their risks, and which are can be mitigated given your network's capabilities.

- **Population Assessment**
  - Demographics & health status
  - Geographic coverage
  - Share of chart
- **Historical Utilization**
  - By service line
  - By health status
- **Risk and Projected Utilization**
  - PMPM by condition and type
- **Identify the Best Opportunities**
  - To eliminate waste
  - To reduce variation
  - To close care gaps
  - To improve outcomes



Representative Output of At-Risk Populations with Co-Morbidities and Identified Mental Health Disorders



N = 1917 Patients with Chronic Conditions

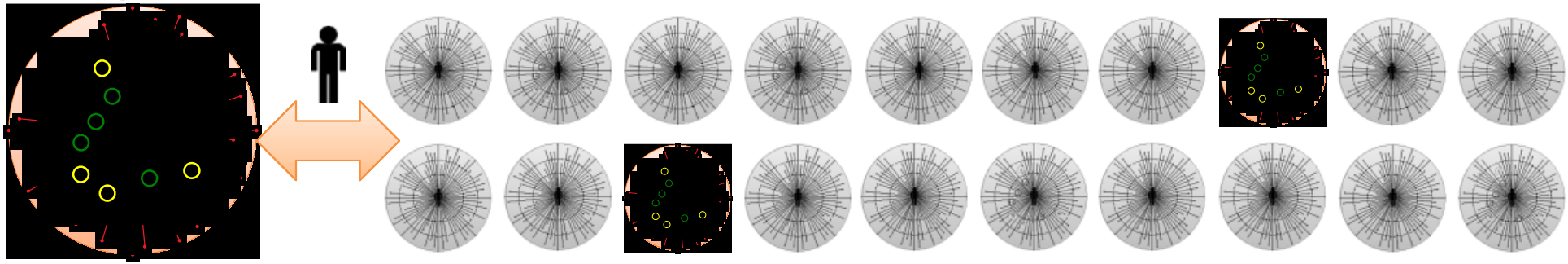
N = 346 Patients Diagnosed with Mental Health Disorder

18% of this Patient Population has co-morbidities that include one or more diagnosed mental illnesses. How many remain undiagnosed? How will we know?

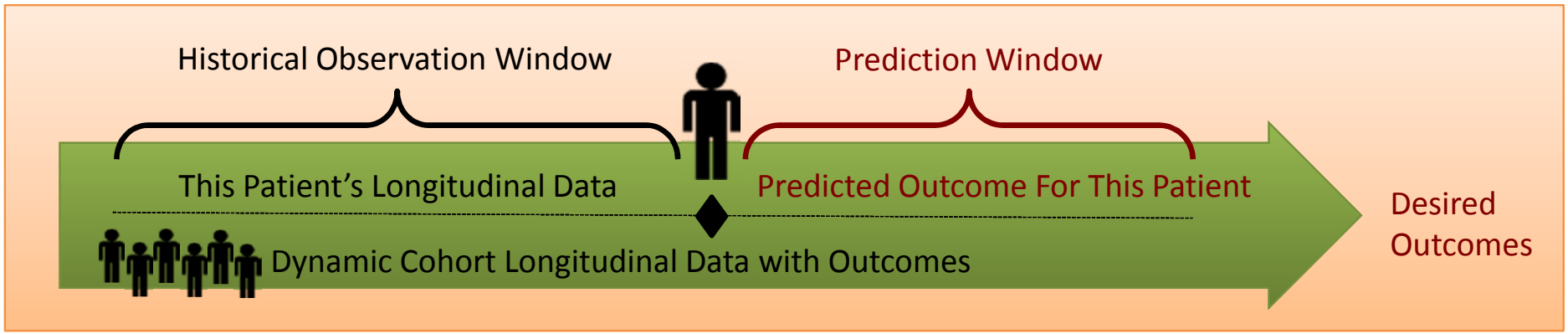
Selected Conditions

1.Diabetes Mellitus Type 2 & Unspec Type Maintenance
2.Hypertension
3.Cancer
4.Congestive Heart Failure
5.COPD
6.Depression
7.Anxiety
8.Bi Polar Disorder
9.PTSD

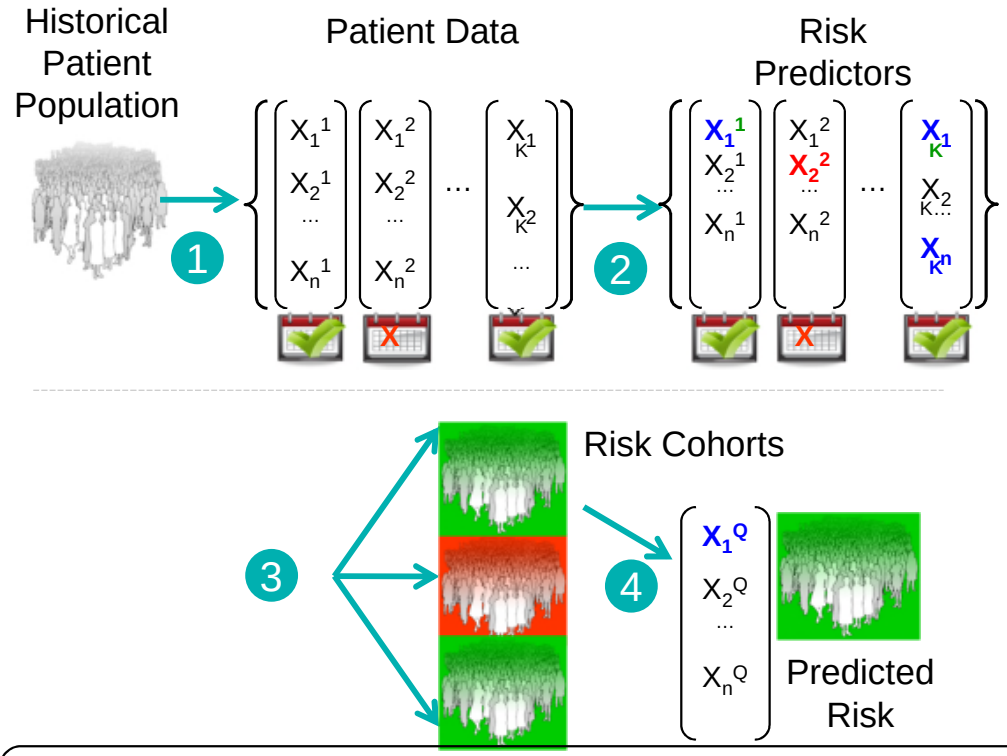
Summary View of How Similarity and At-Risk Analytics Work



- Based on this patient's personalized profile …
- Find the **most** similar patients (or **dynamic cohort**) from entire population
- Analyze what happened with the cohort and reasons why (30,000+ dimensions)
- Predict the probability of the desired outcome for this patient
- Create personalized care plan based on unique needs of this patient



Patient Risk Stratification: As a part of delivering customized care, each patient is assigned to a risk group within the Care Coordination Solution



1. The Care Coordination Solution has data from medical records and patient profiles of thousands of previous patients with similar diagnoses.
2. Regression, data mining and text mining tools are used to identify risk factors from the accumulated data that are predictive of patient outcome, and construct risk prediction models to predict overall risk level of a patient.
3. Clustering techniques are used to stratify patients into different risk groups based on risk factors and level.
4. When a patient is discharged, medical records and patient profile data is collected, and analyzed against the risk prediction and stratification models to assign patient to appropriate risk group.

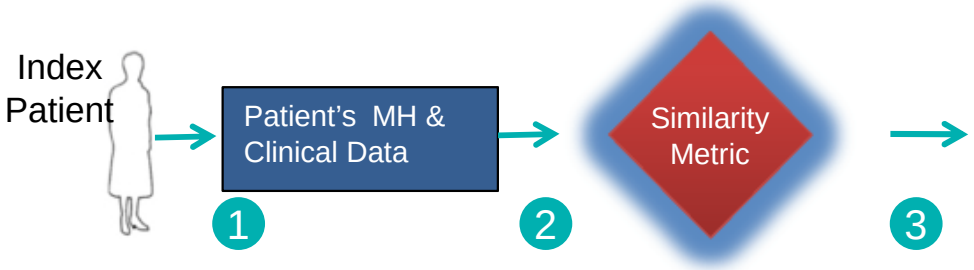
Patient Similarity and Risk Indices

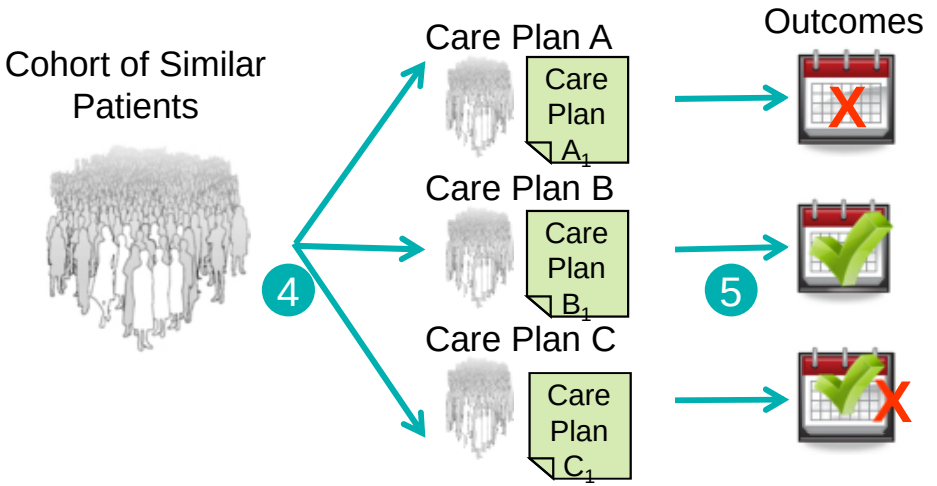
Based on patient data derived from historical sources (EMR, EMR-captured data, age/gender/lifestyle demo-graphics, diagnoses, procedures, labs, vitals, medications, disease registries, unstructured notes and observations), patient similarity cohorts are constructed to match with the current patient's past history and current diseases.

Actions

Based on historical data of likeness among related cohorts of patients, risk grouping algorithms ("**groupers**") are applied to the individual patients across a panel of similar patients extracted from the historical LPR data and applied to the selection of the most successful (historical) care plan.

Care Plan Creation & Selection: Similar characteristics of a risk group drive the selection of a specific care plan for the patient





Patient Data such as longitudinal patient medical records for similar patients and the index patient and medical records with sufficient history to be able to assess patient trajectories.

1. The Care Coordination Solution collects EMR and other relevant patient data from provider notes/ inputs/ outcomes.
2. This data is combined into a single Similarity Metric that is used to compare the discharged patient against the overall population of past patients in the system.
3. A Cohort of similar historical patients based on the Similarity Metric is identified.
4. The outcome of Care Plans that have been assigned to those historical patients is evaluated.
5. Finally a care plan is recommended that has proven to be the most likely to lead to a positive outcome for patients in that risk group.

Action

Based on changes in patient's vitals and responses to therapies, patient's risk profile is dynamically updated and the deviation from care plan calibrations are reflected in alerts to the care coordination team for interventions. Recommendations may also be generated as part of a DSS created by a library of evidence-based outcome indicators.

Population Health Management

IBM Explorys Program Framework

Population Assessment

Know their past and future utilization, their risks, and which are can be mitigated given your network's capabilities.

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  - Geographic coverage
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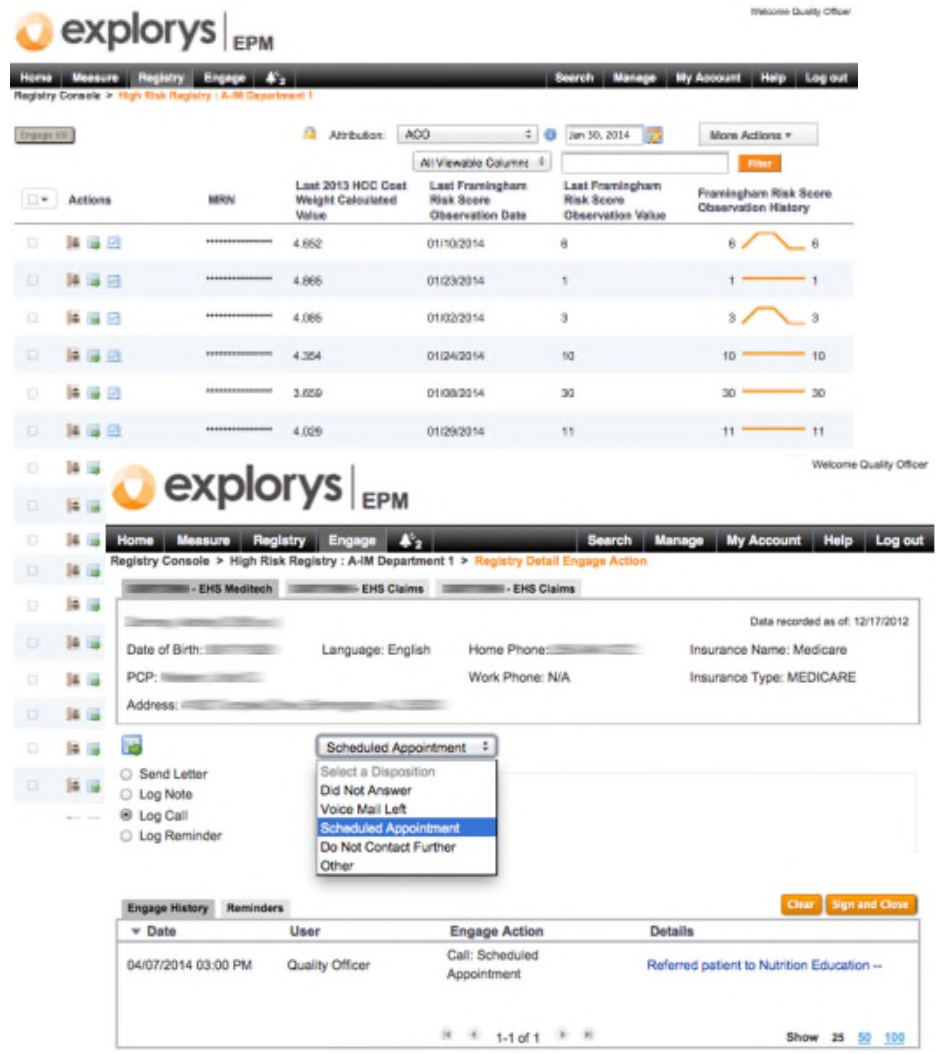
  - PMPM by condition and type
- **Identify the Best Opportunities**
  - To eliminate waste
  - To reduce variation
  - To close care gaps
  - To improve outcomes

Population Management

Provide targeted information and directives for care coordinators, providers, and patients to drive performance.

- **Registries & Work Lists to…**
  - Mitigate time-sensitive risks of unnecessary utilization and poor outcomes
  - Proactively manage diseases
  - Meet performance goals and objectives of programs
- **Workflow**
  - Integrated into the daily process of care coordinators and providers
  - Automated assignment, alerts, notes, and reminders
- **Engagement**
  - Communicate via integrated 3rd party portal, telephone, and letters.



PCMH Role-Based Population Health Management Patient Engagement Platform

PHYTEL
An IBM Company

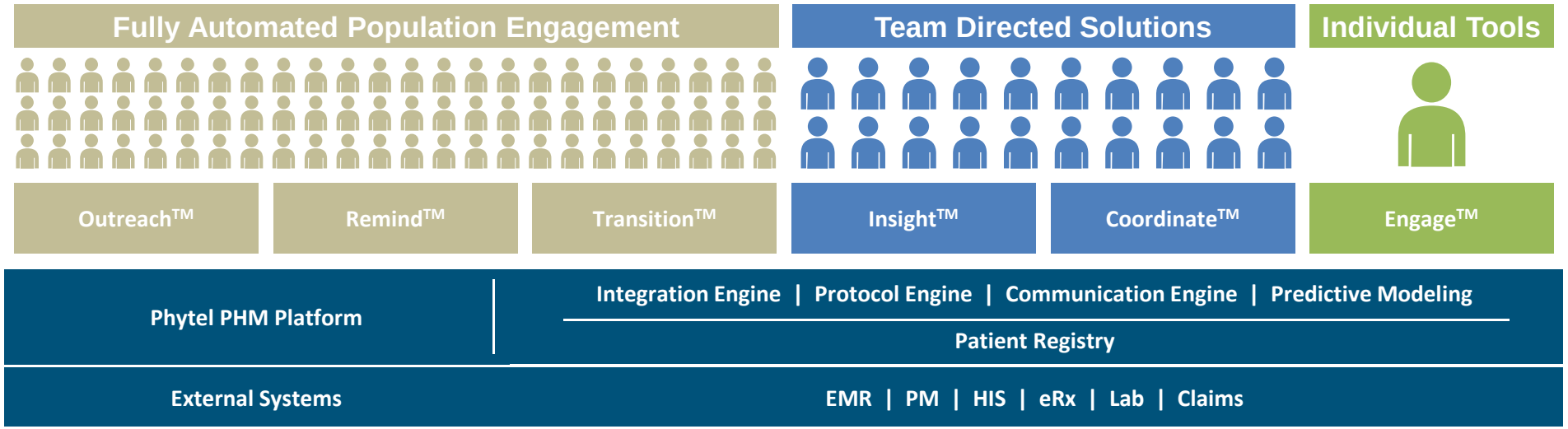
Patient Service Representative

Vice President Quality

Physician

Care Manager

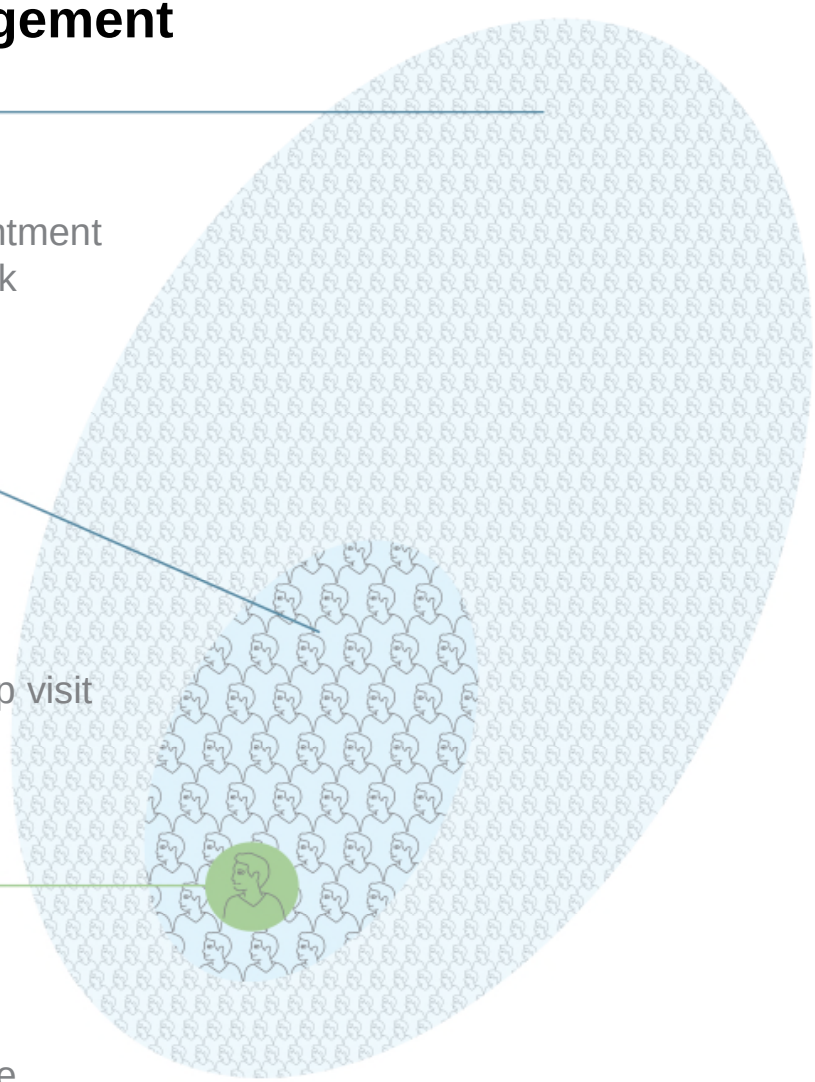
Case Manager



Fully Automated Population Engagement

Outreach, Remind, Transition

Phytel will identify and communicate with...
- all the patients who need to book an appointment
- all the patients with appointments next week
- all the patients discharged yesterday



Team Directed Tools

Coordinate, Insight

I want to find...
- all the patients that meet a quality objective
- all the patients that need to come to a group visit
- all the patients coming in tomorrow

Individual Engagement

Engage

I am working with Jane Doe to help her achieve her health goals and lower her health risks (costs)

PHYTEL
An IBM Company

Poor Care Coordination Costs 12 Billion!

Poor coordination of care cost an estimated $25 billion to $45 billion dollars per year (Donald M. Berwick, 2012). At least $12 billion of that total is considered avoidable (Health Affairs, 2012)

Moreover, poor care coordination often result in reduced client outcomes. The most common adverse effects associated with poor transitions are injuries due to medication errors, complications from procedures, infections and falls. These poor transitions often occur due to lack of information sharing. (Health Affairs, 2012):

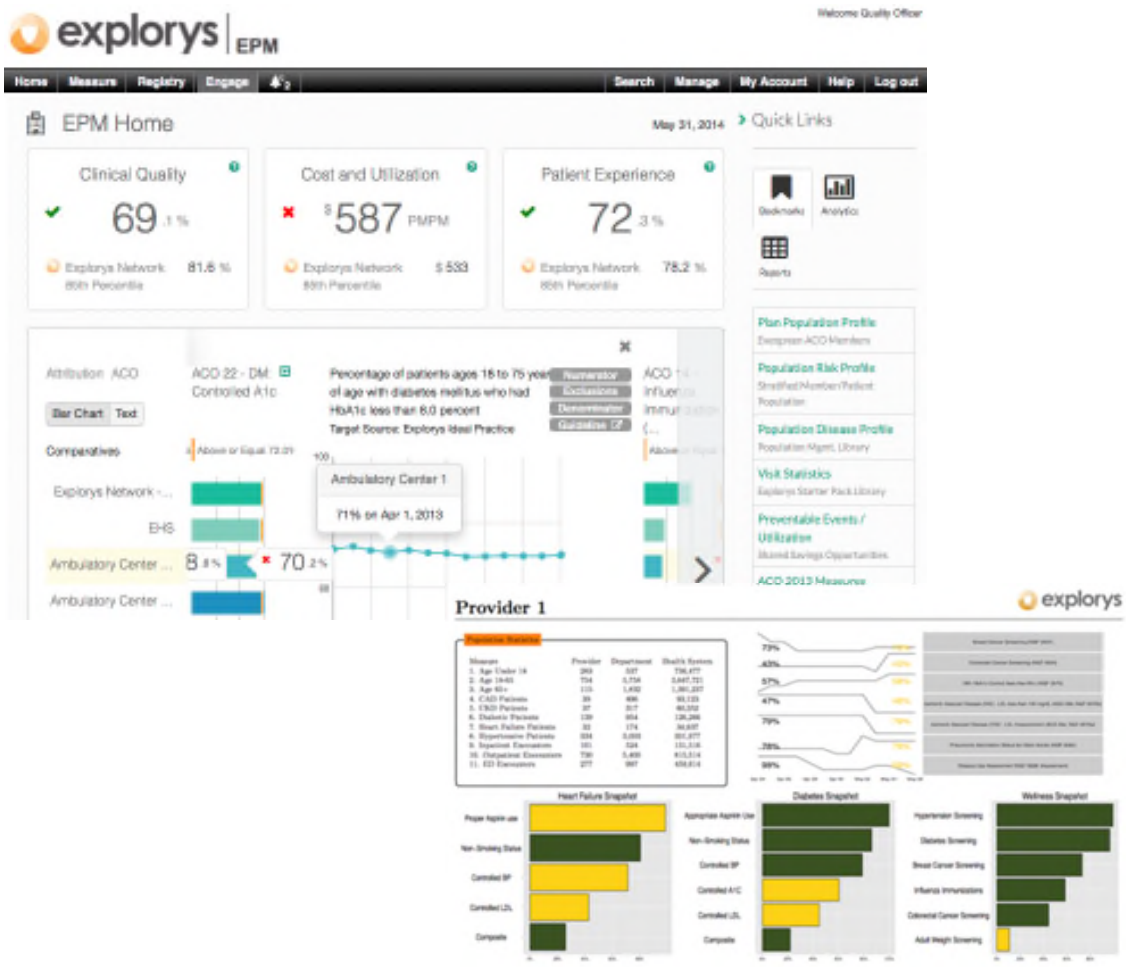
MOST LIKELY TO BE READMITTED
#2 BEHAVIORAL HEALTH DISCHARGES
#5 ALCOHOL/SUBSTANCE ABUSE

Key reasons for behavioral health readmissions following:

- Medication non-adherence
- Lack of engagement in outpatient services
- Substance abuse

Population Health Program Measurement

IBM Explorys Program Framework



Performance Measurement

Up-to-date network-wide reporting and measures relative to performance targets, program return-on-investment, and pinpointed opportunities for continued improvement.

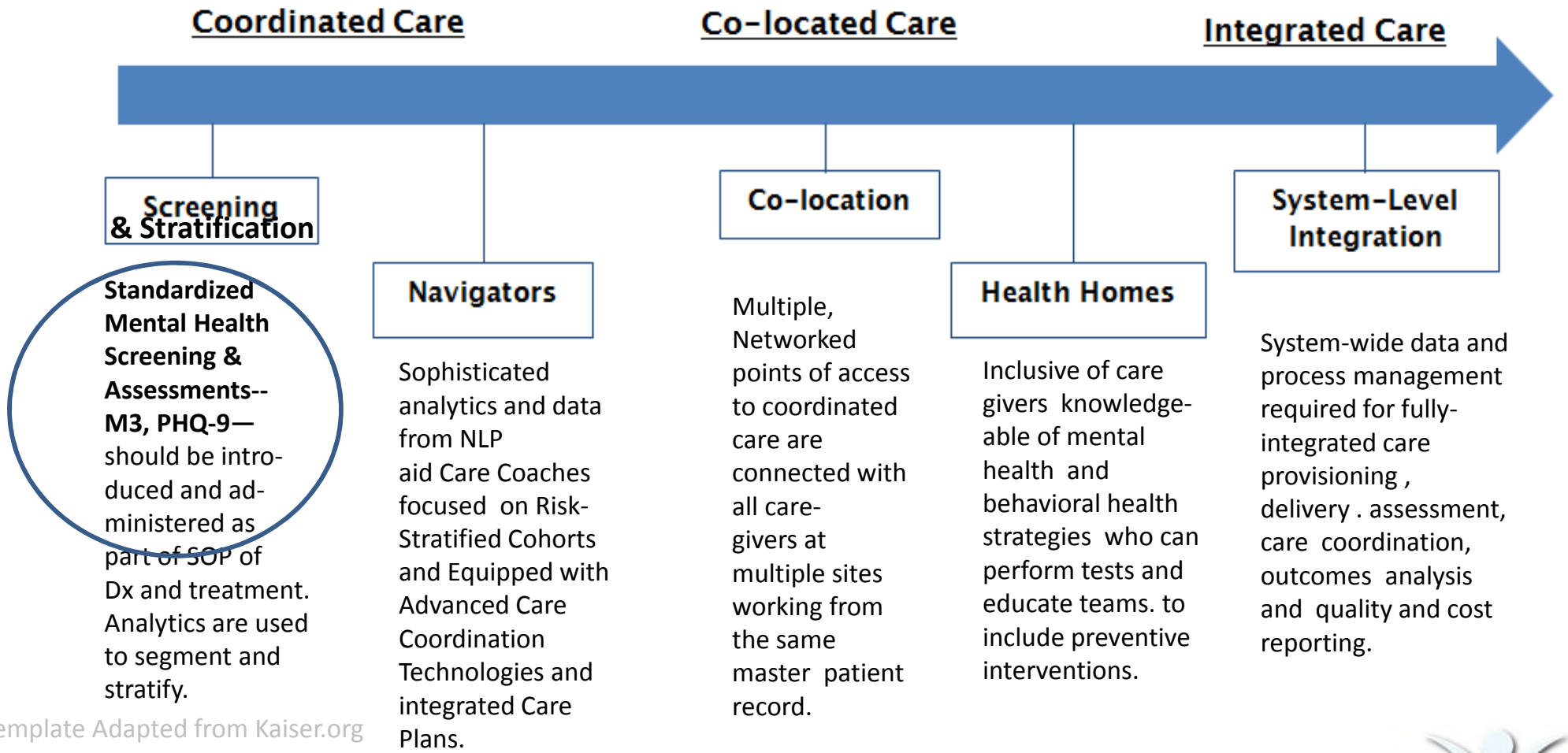
- Role Specific Dashboards for…
  - Leadership
  - Care coordinators
  - Providers
- Program Specific Measure Libraries
  - ACO (commercial and Medicare)
  - Medicare Advantage
  - Direct-to-Employer
  - Provider-based HEDIS
  - Inpatient quality and efficiency
  - Optimized utilization
- Pre-built Reports & Data Marts
  - Payer/plan submission
  - Provider scorecards and performance plans
  - HCC and proper coding opportunities
  - Contract performance

Our Rewards for Implementing Integrated Care . . .

- **Citizens, Family Members and Concerned Care Givers**—have a path to their PCP who can screen and treat family members exhibiting early signs of mental illnesses
- **Taxpayer's**—money more efficiently used to treat the whole person—physical AND mental health—thereby saving BILLIONS in undiagnosed mental conditions, mismatched therapies, and ineffective and conflicting treatments
- **Criminal Justice**—by diagnosing those non-violent prisoners with harmless mental disorders and putting them into community-based treatment programs at far less cost to tax payers and far better outcomes for individuals.
- **CMS & All Payers**—Reduced payouts for prolonged, ineffective clinical care– by integrating mental health into the clinical diagnoses and treatment for those with chronic conditions—is money well saved
- **Providers**—are enabled and empowered to treat the entire patient
- **Patients**—Better care is delivered when care is inclusive of behavioral and mental health considerations
- **Employers & GDP**—even the economy gets happier and healthier with fewer employee missed days, sick leave, hospitalizations, incarcerations, suicides, shootings and legal entanglements

Continuum of Physical and Behavioral Health Care Integration

Solving the Problem Requires Integrated Care—Clinical, Physical, Social, and Mental



Template Adapted from Kaiser.org

Integrating Mental/ Behavioral Health into Primary Care: Data and Technology Summary

- Integration of clinical (physical) data and mental health (behavioral) data is an imperative for identifying those most-at-risk members and patients with multiple chronic diseases and mental health disorders.

- Implementing new provider-based data models that are inclusive of mental health and behavioral health "markers" is the most expedient way to aggregate and organize both structured and unstructured data for creating personalized care plans and managing complex cases.

- Incorporating simple mental health tests and screening tools into regularly scheduled "check ups" provides practitioners and care teams with actionable insights into the causal relationships between physical health and mental health. Mental health screening tests such as M3 can be self-administered and serve as a means to keep the patient engaged in his/her wellbeing.

- Primary Care Physicians working in a collaborative PCMH environment that includes mental health can serve many more patients more effectively at less cost using new care management technologies and advanced decision support tools such as Watson Advisor.

Rewards from new information technology

- Technology
  - Implementation
  - Data model
  - Workflow
  - Public Health – managing populations
  - Real-time clinical decision support
  - Predictive analytics
  - Risk stratification
- Triple Aim
  - improved quality, better health, longer lives
  - lower costs, better resource use
  - patient engagement, whole person

Long road to bridge the mind-body gap

- **Social**: Cartesian dualism, stigma, discrimination
- **Legal**: mental health records, consent, HIPAA, 42CFR Part 2, federal/state laws, privacy
- **Clinical**: primary/specialist care, settings, whole person, multidimensional BH
- **Technical**: EHR, HIE, DS4P, C2S, data rights, breach, analytics, real-time clinical decision support
- **Financial**: MCO/MBHO, payers, claims, dx, shared savings, dx, outcomes*

Questions?

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Upcoming Webinars!

We hope you join us for our upcoming webinars.

For additional details, to register, or to watch the recordings of previous sessions, visit www.ebgadvisors.com!

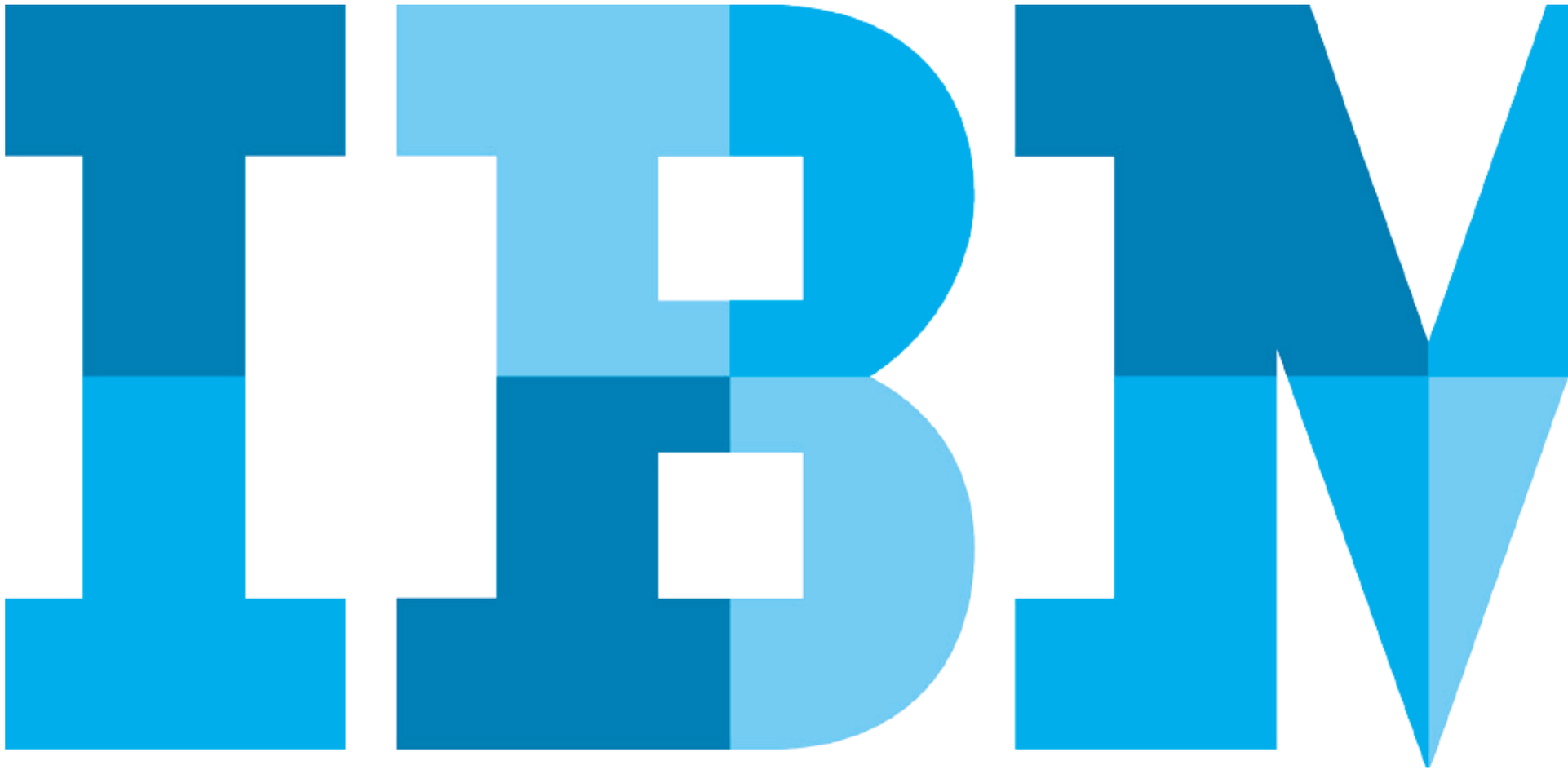
Additional Resources

IBM Software
White paper

IBM Analytics

IBM Unified Data Model for Healthcare

Using Data to Deliver Mental Healthcare in the Community



IBM

Mental Health

Mental health problems are prevalent in modern society and appear to be on the increase. This can be partly due to greater awareness of their existence and a growing ability and willingness to discuss what was often stigmatized in the past.

According to the National Institute of Mental Health (NIMH) 18.5% of the adult civilian population of the US has some mental health problem with 4.2% of the population having a serious mental illness[1]. These 2013 figures, while stark, probably mask the true levels as they exclude a number of high risk cohorts such as military personnel, the homeless, and people already institutionalized or incarcerated. Similar statistical analysis from the UK for 2007 shows a similar picture with 17.6% of 16-64 year olds meeting at least one of the common mental health criteria[2].

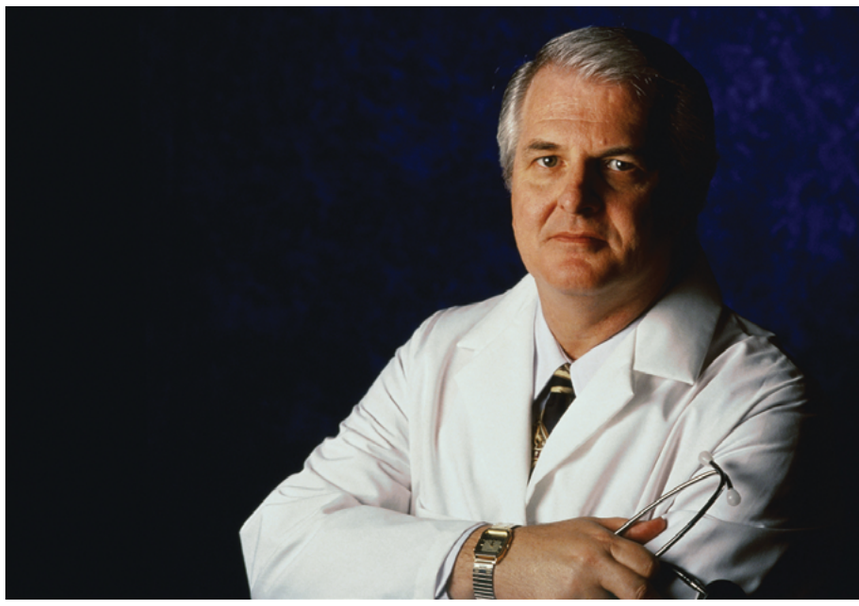
When adding the incidence of mental health among children and adolescents the picture does not improve.

What does it cost?

The NIMH estimated conservatively that the total cost of serious mental illness in 2002 was in excess of $300bn when both direct treatment costs and indirect cost such as disability benefit payments and loss of earnings are taken into account. Other analysis shows that mental illness is the third most costly disease category in the US after heart conditions and trauma-related disorders, it is tied in third place with cancer.

These figures suggest a need for better mental health management services for people in need. It would be impossible to manage such a large population or patients, 43.8 million adults in the US alone, with inpatient led care. Some patients do require hospital admission from time to time while others require long-term inpatient care or permanent institutionalization. But many others would benefit more from day-to-day care management strategies to help keep them well, in their communities.

Community-base care is not only more cost effective, it is also recognized to be better for the patient in the vast majority of circumstances. But to maximize the benefits of community-based care and minimize the incidence of crises that require emergency admissions, it is important that the patient has a well-defined care plan that is delivered by a well informed and coordinated care team.



The Care Team

A community-based care plan for a patient requires a multidisciplinary care team that will usually include the patient's regular family doctor, pharmacist, counselors, psychologists, psychiatrists, a hospital liaison, hospital consultants and usually at least one family member or close friend.

This will provide the patient with a support structure ranging from a friend to talk to about any concerns through various levels of community-based primary care to help them identify any issues before they manifest themselves in some type of crisis. This approach should minimize the incidence of emergency admissions to inpatient care.

Empowering the Patient and the Care Team

When considering the nature of mental health and associated problems, it is not something episodic like the occasional bout of influenza that anybody might be subject to. It is a condition that a person who experiences mental health difficulties lives with every day. A problem might not be visible or obvious and it might not be causing any concern at a particular point in time but it always has the capacity to do so.

To enable the patient to maximize their quality of life and minimize the impact of any mental health condition, they need to have the information to help them identify potential issues before they become a problem. Their care team also need comprehensive information on the patient's health status and any environmental or other influencing factors that might indicate a potential risk.

In many ways, the patient might themselves be considered the most important member of their own care team as an ability to trust team members and a willingness to openly discuss any concerns can avoid an exacerbation of a problem.

Information is the key to this but it isn't just the patient's clinical records that are relevant. Many factors influence the potential for a person to experience a mental health problem or develop a serious mental illness. These same factors represent risks for a diagnosed mental health patient and need to be monitored to reduce the chances of a problem developing or worsening. Early intervention is better for the patient and faster and less expensive to deliver.

IBM Unified Data Model for Healthcare

IBM Unified Data Model for Healthcare (UDMH) provides a blueprint for comprehensive data warehouse business intelligence applications, such as mental health. It is a robust set of business and technical data models that can be extended and scaled to fit a healthcare organization's unique environment, and offers significant competitive advantage.

It offers the ability to create an analytical data store that connects to all of a healthcare organizations critical data, across disparate systems and formats, across diverse departments and other data healthcare organizations.

It helps build a dynamic analytics environment where data collected internally and externally is used to determine how to arrange, align, deploy and improve care to patients.

It forms the foundation of a true information management infrastructure where trusted, relevant information is available to the people who need it, when they need it, so that they can make better and timelier decisions.

A Typical Mental Health Patient

Is there such a thing as a typical mental health patient? In the past, mental health patients might have been thought of only as people who were permanently institutionalized. But today the reality is different.

Today, a person with a mental health condition might be working in any type of job or profession and living a normal life for the vast majority of the time. There might be simple things, however, that plunge them into, for example, a serious state of depression that can incapacitate them and make it difficult or impossible to function normally. A few of the obvious triggers are:

Bereavement
The loss of a loved one such as a spouse, a parent, a child, a sibling, or a lifelong friend is difficult for anyone to cope with but can act as a trigger to an exacerbation of an existing mental health problem.

Medication
Many mental health patients are prescribed long-term medication to maintain their lifestyle free from the symptoms of their condition. One of the regular problems here is that when a patient is symptom free for an extended period, they might decide to stop taking their medication and trigger a relapse.

Change in Circumstances
A major change in circumstances such as loss of employment or a significant financial loss might trigger a relapse.

Relationships
A marital breakup or the breakup of a long-term relationship is often the cause of a mental health crisis. Of course the patient's condition might have been contributory to the breakup. It is sometimes difficult to establish which factor was the cause and which the result.

Predicting and Preventing

Imagine for a moment that the patient's primary care provider or family doctor, who is a member of the care team, has all of the patient's medical records and is aware of the patient's medication schedule. Knowing that the patient did not pick up their monthly repeat prescription from the pharmacist would alert the doctor to a possible break in compliance with the patient's medication plan and allow an intervention before this becomes a problem. This of course requires coordination between the doctor and the patient's pharmacist, two members of the care team.

Being community-based the same family doctor would hear of any bereavement and a simple phone call to the patient might allow them to assess whether there is a potential problem and if intervention by a counselor would be justified.

A friend, partner, or another care team member would be aware of changes in the patient's circumstances and again could make the contact, be the shoulder to cry on, or suggest the patient consults a professional. The same could apply to a worsening of a relationship.

Not Just a Mental Health Problem

It is easy to fall into the trap of identifying or classifying people who have a mental health condition by their primary diagnosis. "Joe is a bipolar" or "Mary is schizophrenic". This is not something done so often with physical health conditions. This is because we all experience general health problems and expect to collect a few of them as we go through life. But the same applies to mental health.

While mental illnesses are often chronic, long lasting conditions, a person does not acquire one of these and live with it in isolation. There is a well established high prevalence of comorbitities among mental health patients where, for example, somebody with clinical depression might also be subject to anxiety or panic attacks. And this is not limited to mental health conditions.

There is also a high prevalence of mental health patients with comorbid physical health conditions. There is an added risk that one condition negatively affects the patient's ability to properly manage the other.

For example, in their HEDIS Effectiveness of Care Behavioral Health measures, the National Committee for Quality Assurance include[3]:

- Cardiovascular Monitoring for People with Cardiovascular Disease and Schizophrenia (SMC)
- Diabetes Monitoring for People with Diabetes and Schizophrenia (SMD)
- Diabetes Screening for People with Schizophrenia or Bipolar Disorder who are using Antipsychotic Medications (SSD)

This recognizes the added challenges of effective management of chronic conditions in a cohort of patients with mental health conditions.

UDMH allows for the capture of all patient data including chronic conditions, comorbidities, and assessments of functional status.

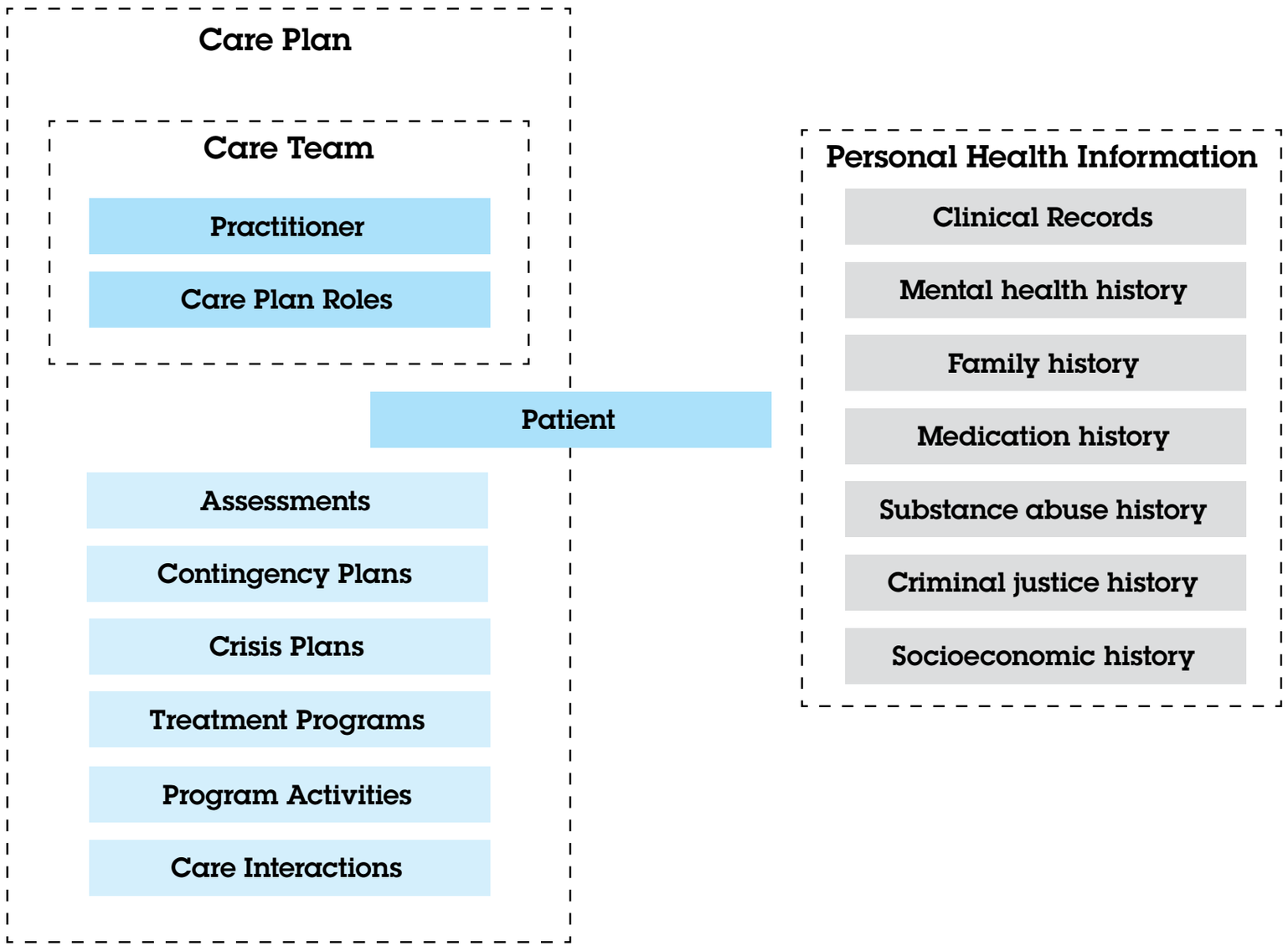


Figure 1. Examples of mental health data structures supported by IBM UDMH

Environmental and Social Risk Factors

A UK-based statistical analysis identified a number of interesting correlations between the prevalence of mental health problems and various environmental and social factors.

Homelessness
70% of those accessing homelessness services had mental health problems and 64 % had an Alcohol or Other Drug (AOD) dependency.

Unemployment
Only 8.9% of adults in contact with secondary mental health services were in paid employment.

Low Income
There is a strong correlation between low household income and mental health problems.

Incarceration
A survey of newly sentenced prisoners identified 16% with signs of psychosis and 50% with symptoms of anxiety or depression.

Smoking
Interestingly it was estimated that 42% of cigarettes smoked in England were smoked by people with a mental health problem (17.6% of the population). Which is cause and which is effect?

These statistics, among others, clearly illustrate that mental health is not just about a clinical diagnosis with a single isolated treatment pathway. Delivering effective care is about understanding the patient as a person, knowing their physical and mental health histories, having up-to-date knowledge of their living circumstances, employment, and income.

Patient Information

The provision of effective mental healthcare for most patients is best done in a community setting, with backup available from in hospital services only when required. A multi-disciplinary team is required to address the varied needs of the patient ranging from a calm conversation through professional counseling to occasional admissions.

To support this effort the team, with the permission and cooperation of the patient, need comprehensive and up-to-date information and they need to be able to effectively access this information when the need arises. What information does the care team need?

Mental Health History
Current and previous diagnoses, treatments and outcomes, known triggers for and extent of exacerbations.

Physical Health History
Current and previous diagnoses of episodic and chronic conditions, treatments, and outcomes.

Medication History
The patient's current medication schedule as well as a history of medication and changes to their prescriptions including reasons for change. It is important to avoid represcribing a drug that was previously shown to affect the patient's mental health. Details of the patient's compliance with medication is also key to understanding how well the patient can manage their own health with or without intervention.

Employment Details
In all healthcare scenarios, knowledge of a person's employment is relevant as it might influence their wellbeing, for example are they working with hazardous substances that might harm their respiratory system over time? Are they in a sedentary office job that means they get little physical exercise during the day?

For mental health, it is even more important as the patient's employment can expose them to harmful stress, it can leave them feeling demotivated, and the loss of employment immediately exposes them to one of the high risk factors for a mental health episode.

Housing Details
Where is the patient living? Do they own their dwelling or is it rented? Are they secure in their accommodation for the foreseeable future? Homelessness or the threat of homelessness might trigger a mental health problem.

Social History
Does the patient have a healthy social life, circle of friends? Do they participate in sports, hobbies pastimes? Do they have a balanced diet and do they get sufficient physical exercise? Does the patient smoke and if so, are they interested in quitting? Are they smoking more or less than they used to? Do they drink alcohol and, if so, how much? Are they drinking more or less than they used to?

Substance Abuse
The patient currently taking any illicit substances, by what method and how much, how often? Have they taken such substances in the past? Are they taking prescription medications other than those prescribed for them by their care team? Are they taking over the counter OTC medications, which ones, how often and how much?

Law Enforcement Details
Does the patient have any current interactions with law enforcement including the police, the courts, community service orders? Have they had any such interactions in the past including any custodial terms?

Some of the information above can only be provided by the patient themselves or members of their families in a counseling environment, so a great deal of trust is required between the patient and the care team to build a comprehensive picture.

UDMH allows for the capture of patient demographics data including social, housing, employment and details of any issues relating to substance abuse or law enforcement interactions.

Data Protection and Privacy

Clearly every member of the team does not need access to every piece of information and a secure data protection regime is necessary to protect the patient's right to privacy while ensuring effective care. However it is by having a comprehensive view of all relevant data that the team can help the individual to manage their condition, effect early interventions where necessary, and avoid crises that might otherwise result in costly and invasive admissions.

Unstructured Data

Much of this information will be in the form of written notes and documents and might not be structured in the traditional sense but by using modern natural language processing techniques it is possible to identify relevant content in such documents and to store them in such a way as to be easily retrieved when a team member needs to review the original note.

Depending on the infrastructure within a healthcare facility, within a family doctor's practice, or in a counselor's office, practitioners might have to capture their patient's information in an electronic health record (EHR), as electronic forms or unstructured electronic notes or as a paper record. EHRs are known as structured data sources and paper health records are known as unstructured data sources. The electronic notes fall somewhere in between but are mainly considered unstructured.

For example, a practitioner might be able to enter information about the patient's diagnosis and treatment only in the electronic health record and the remaining information might be captured by using typed notes, which are added to the patient's paper chart.

Paper health records might include clinical notes which contain concerns that are raised by the patient such as "difficulty sleeping" or "loss of appetite", which the doctor will use in reaching a diagnosis. They might also record other negative and positive type clinical observations such as, "problems at work" or "no problems at work" which can help to form the diagnosis.

The same might apply to discussions about family members' health or changes in diet or exercise. Unstructured data sources have known associated accessibility issues, the simple logistics of being able to physically access a paper medical record or doctor's note is just one example.

Accessing the all important data from an unstructured source poses many challenges and this is where Natural Language Processing (NLP) tools can play a huge role in resolving some of these problems.

If the information that is embedded in these unstructured sources can be unlocked, it can greatly increase the care team's knowledge of the patient. To this end, many healthcare organizations are now able to use NLP tools to intelligently browse free format text and even handwritten notes to extract key words and phrases in context that can indicate a problem or concern or a change in habit. Similar techniques can be applied to audio recordings of telephone consultations.

Extracting meaningful insights from unstructured data sources in this manner allows a patient's EHR to be updated with the identified data and the source of the new information shown so that practitioners are aware of the distinction between EHR updates consciously entered by a health professional and those that have been inferred from an unstructured source.

But it is not just a case of extracting a few nuggets of wisdom from doctor's notes to increment the EHR content. The ability to store the original material, electronic documents, scanned images of paper documents, clinical images such as x-rays, and voice recordings adds even more patient knowledge.

Now a practitioner reviewing a patient's details might notice an earlier reference to a patient concern that was picked up by natural language processing of clinical notes. They can then access the full document from which the information was extracted to better understand the circumstances of the particular patient encounter on which the notes were based.

This type of information can help care team members, not only treat the patient's primary condition or current concern better, but identify early indicators of another developing conditions or risk.

UDMH supports the capture of the data interpretations that are extracted from these sources as well as an assessment of the level of confidence in the interpretation. It also includes links to the source document image so that the original can be reviewed.

UDMH Components

Business Data Model
The Business Data Model is a logical entity relationship model that represents the essential entities and relationships of the healthcare industry. It includes common design constructs that can be transformed into separate models for dedicated purposes such as an operational data store, data warehouses, data marts and data lakes.

Atomic Warehouse Model
The Atomic Warehouse Model is a logical, specialized model derived from the Business Data Model. It is optimized as a data repository which can hold long-term history, usually across the entire enterprise.

Dimensional Warehouse Model
The Dimensional Warehouse Model is a logical model derived from the Business Data Model and is an optimized data repository for supporting analytical queries.

Business Terms
Business terms define industry concepts in plain business language, with no modeling or abstraction involved. Business terms have a set of properties and are organized by business category. Clearly defined business terms help standardization and communication within an organization.

Supportive Content
Supportive Content represents data elements in the language of the source requirement. For example, requirements such as Health Level 7 (HL7), which is the standard series of predefined data formats for packaging and exchanging health care data in the form of messages transmitted between disparate IT systems, or HIPAA (Health Insurance Portability and Accountability Act.) The benefit of Supportive Content is in logically organizing the data requirements into cohesive groupings, and in translating requirement data needs into their support in the data warehouse model.

Analytical Requirements
Analytical Requirements enable rapid scoping and prototyping of data marts, which provide a subject-specific analytical layer in a data warehouse solution. With data warehouse modeling software, business users and analysts can use Business Solution Templates to quickly gather the reporting and analysis requirements of their organization.

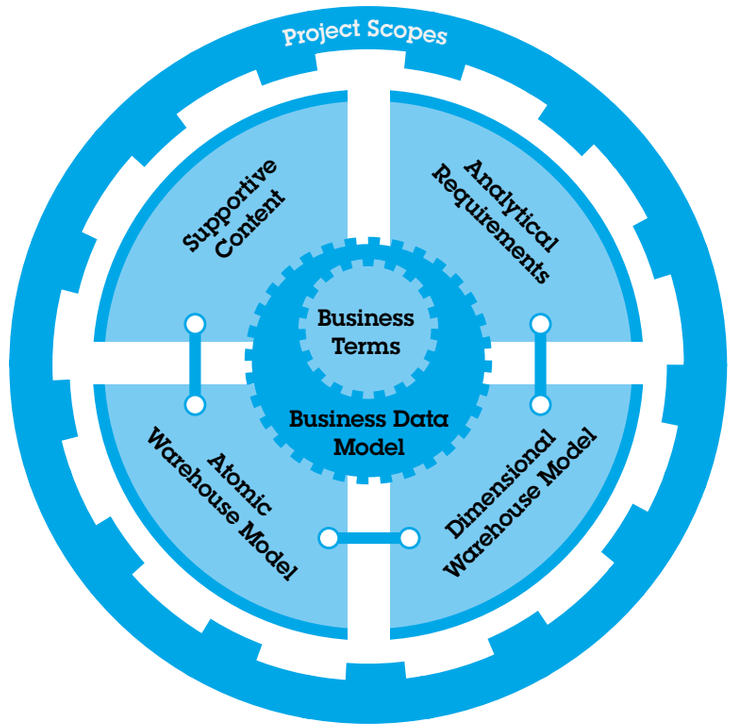


Figure 2. IBM UDMH components

Implementation

A data warehouse is a central repository of summarized data from disparate internal operational systems and external sources. Operational and external source data is extracted, integrated, summarized and stored in a data warehouse that can be accessed by users in a consistent and subject-oriented format. Data organized around business entities is more useful for analysis than data committed to applications that support vertical functions of the business.

The data warehouse is a single source of consolidated data that provides an enterprise-wide view of the business that becomes the main source of information for reporting and analyzing data marts that are usually departmental, line-of-business-oriented or business-function-oriented. The data warehouse overcomes limitations of older style decision-support systems.

UDMH can be deployed on many software platforms but has been designed for use with IBM Software products.

The data warehouse holds data about the business that can be used as the basis for supporting a detailed analysis of the areas of most concern to organizations today.

This allows organizations to exploit the potential of information previously locked in legacy systems inaccessible to the business user.

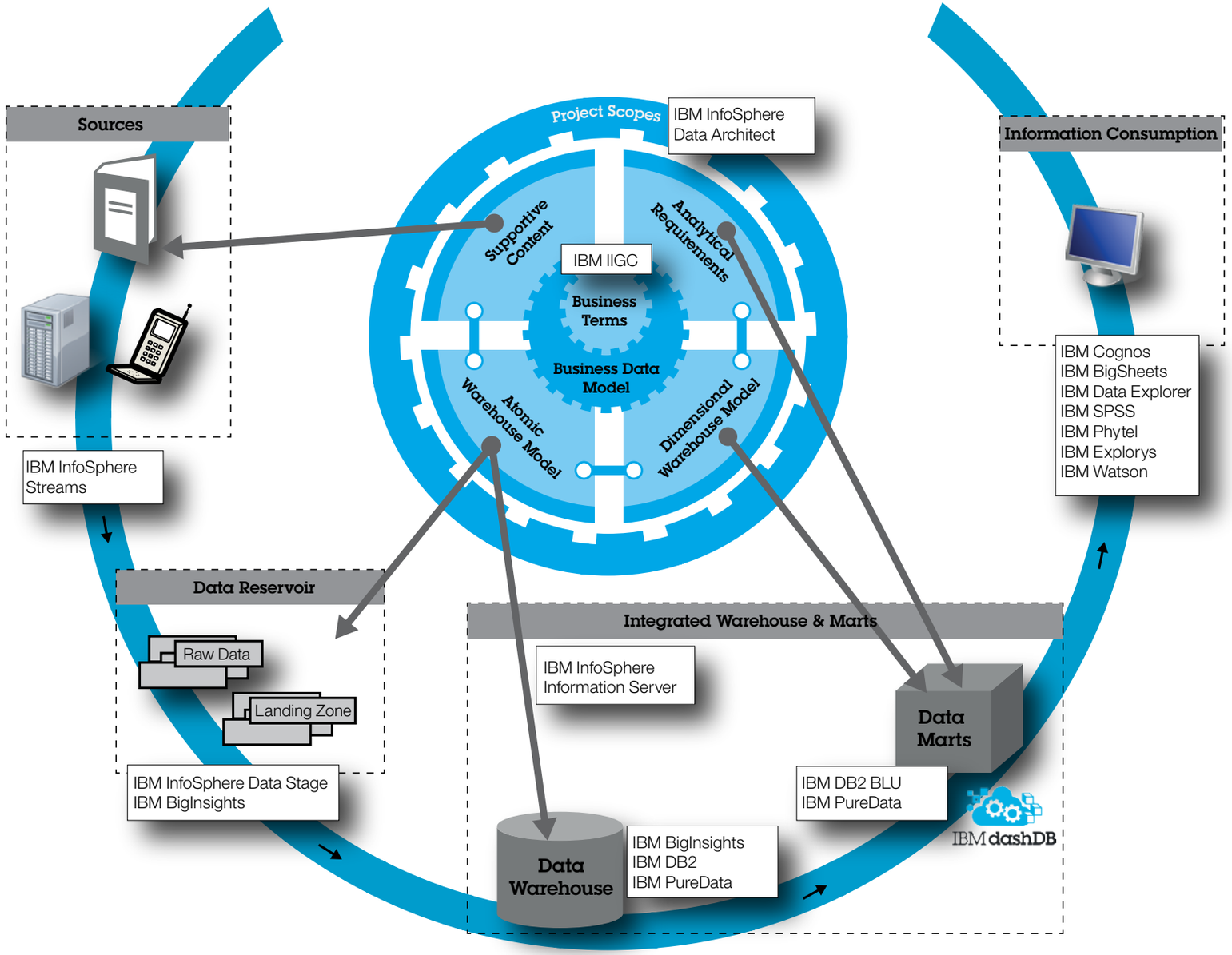


Figure 3. Typical IBM UDMH implementation architecture

Conclusion

With mental healthcare requirements increasing through a growing number of patients being detected but with funding not keeping pace, we must use all of the resources available to deliver efficient and effective care. Capturing and retaining all data that is related to a patient including unstructured data and its interpretation enables healthcare professionals to have insight into the person as a whole and in the context of their living arrangements.

This leads to more informed and more accurate diagnoses and better health management at a lower total cost. Managing the patient and their conditions in the community is better for the patient, their family, and society. Mental health admissions to inpatient care are costly and while in some cases they are inevitable and necessary, it is better to keep the patient in a familiar community setting. The benefits are widespread:

The **Healthcare Provider** sees better utilization of resources and the ability to treat more patients. The care team have more information to effectively monitor their patients and they can plan a greater portion of their treatment as proactive care rather than reacting to exacerbations and crises.

The **Payer**, whether public or private sees reduced total cost of care per person allowing more of the population to avail of care without increasing public funding or private premiums.

The **Patient** sees an improvement in their health, better quality of life and they experience support in a familiar environment that helps them deal with their mental and physical health issues. They spend less time overall in healthcare settings because they invest in maintaining their mental health rather than waiting for a problem to become a crisis and reacting to it.

The patient's **Family** and friends will see a more relaxed individual who can share their concerns more openly and reduce the tensions that sometimes prevail around a person with mental health issues.

UDMH is designed exclusively for the healthcare industry and has support for many areas including mental health. It provides a glossary of requirements, terms and concepts that can be clearly understood and communicated by both business and IT professionals, thereby helping to accelerate project scoping, appropriate reporting, data quality and data requirements, and identifying sources of data.

Ultimately, it acts as a blueprint by defining the structures necessary to build effective data warehouse structures for mental health analytics and provides healthcare managers with critical prebuilt reporting templates that offer a wide and deep view of their business through key performance indicators (KPIs) and other measures.

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September 2015

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IMW14851-USEN-00

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Lessons From Medicaid's Divergent Paths On Mental Health And Addiction Services

DOI: 10.1377/hlthaff.2015.0151
HEALTH AFFAIRS 34,
NO. 7 (2015): 1131–1138

ABSTRACT Over the past fifty years Medicaid has taken divergent paths in financing mental health and addiction treatment. In mental health, Medicaid became the dominant source of funding and had a profound impact on the organization and delivery of services. But it played a much more modest role in addiction treatment. This is poised to change, as the Affordable Care Act is expected to dramatically expand Medicaid's role in financing addiction services. In this article we consider the different paths these two treatment systems have taken since 1965 and identify strategic lessons that the addiction treatment system might take from mental health's experience under Medicaid. These lessons include leveraging optional coverage categories to tailor Medicaid to the unique needs of the addiction treatment system, providing incentives to addiction treatment programs to create and deliver high-quality alternatives to inpatient treatment, and using targeted Medicaid licensure standards to increase the quality of addiction services.

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Medicaid has played an important role during the past fifty years for low-income Americans needing mental health or addiction treatment. The mental health care and addiction treatment systems rely on Medicaid as a crucial financier of care. Nevertheless, Medicaid's coverage for treatment of mental health and addictive disorders has diverged in important ways. Whereas Medicaid began as a small player in financing services for both types of disorders, it eventually grew to become the dominant source of funding for mental health treatment but has yet to reach that dominance in addiction treatment.[1]

Much has been written about Medicaid's growing role in financing mental health treatment. Less considered is the broader effect of these financing changes on the organization and quality of the mental health treatment system for low-income people in the United States.[2] Stakeholders in mental health treatment have been deliberate not only in using Medicaid to leverage new funds for treatment but also in using the program to increase the comprehensiveness of mental health services, elevate standards for mental health providers, and create meaningful alternatives to inpatient treatment.

The Affordable Care Act (ACA) gives states the option to expand Medicaid eligibility to people younger than age sixty-five whose family incomes are at or below 138 percent of the federal poverty level. In doing so, it creates an opportunity for the addiction treatment system to improve service access and quality. As a result of the ACA's Medicaid eligibility expansion, along with the law's mandate to provide addiction treatment coverage for newly eligible enrollees, Medicaid is expected to soon become the largest payer of addiction treatment.[1] As such, Medicaid will obtain principal market power over major segments of the addiction treatment system in the United States and, therefore, have the ability to influence addiction treatment practices on a

broader scale than ever before.

In this article we provide a brief history of financing for mental health and addiction treatment, and we highlight Medicaid's contrasting role in paying for these services. We then show how Medicaid influenced reforms in the mental health delivery system, and we draw strategic lessons for addiction treatment in three main areas: leveraging optional coverage categories to tailor Medicaid to the unique needs of the addiction treatment system, providing incentives for addiction treatment programs to create and deliver high-quality alternatives to inpatient treatment, and using targeted Medicaid licensure standards to increase the quality of addiction services. These three strategies are consistent with the broader goal of integration of behavioral health services with mainstream medical care in the United States.

A Tale Of Two Systems

Medicaid has played a very different role in financing mental health versus addiction treatment for low-income individuals over the past thirty years. Both systems initially received little revenue from Medicaid.[1] However, Medicaid's role in financing mental health treatment has grown dramatically, while its role in financing addiction treatment has been more modest and constrained (Exhibit 1).

Before 1965 the vast majority of mental health treatment services were paid for by states and administered under the authority of state mental health agencies. Medicaid changed this arrangement.[3] In 1981 Medicaid represented only 16 percent of revenues received by state mental health agencies, the major providers of mental health treatment to low-income individuals. The vast majority of funding—73 percent—came from state general revenue and special funds. By 2010 Medicaid accounted for half of state mental health agency–controlled revenues and was responsible for nearly two-thirds of all new state mental health agency spending between 2001 and 2010.[4] Medicaid is now the largest purchaser of mental health treatment, accounting for nearly half of all public dollars and more than a quarter of all mental health spending (public and private combined).[5]

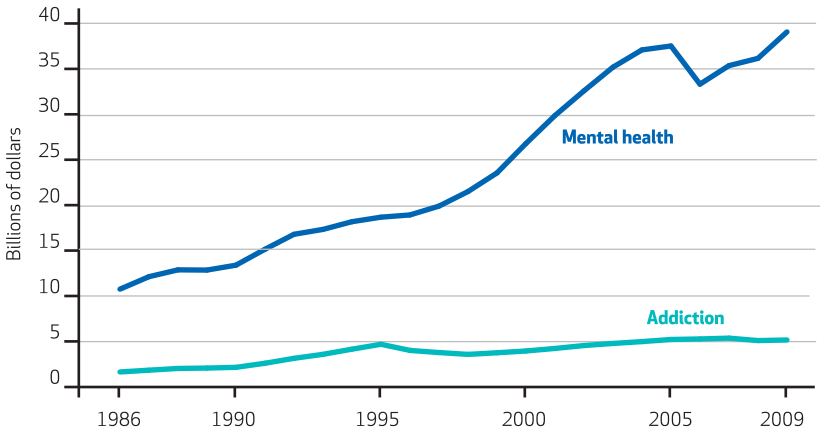
A principal driver of this growth has been expanded eligibility for people with mental health disorders. The creation of the Supplemental Security Income (SSI) program in 1972 and its linkage with Medicaid eligibility resulted in a major change in Medicaid's role in covering people with mental health disorders severe enough to qualify as a disabling condition. Since the late 1980s mental health disorders have represented one of the fastest-growing categories of SSI eligibility. In 2009, 41 percent of all SSI beneficiaries younger than age sixty-five qualified because of a mental disorder.[6]

A significant expansion in the scope of mental health treatment services covered by Medicaid has also increased its role. The addition of targeted case management in 1986 and the expansion of psychosocial rehabilitation under Medicaid's rehabilitation option in the early 1990s gave states important new options for providing intensive community-based supports to people with serious mental health disorders. Currently, almost all states have adopted these options. By 2005 targeted case management accounted for $2.9 billion in Medicaid expenditures, while services provided under the rehabilitative services option accounted for another $6.4 billion.[7] People with mental health disorders constitute close to three-quarters of service recipients under the rehabilitative services option and account for almost 80 percent of expenditures.[8] These options have enabled states to provide evidence-based practices such as assertive community treatment, medication management, and family psychoeducation.[7]

Medicaid has traditionally played a more modest role in financing addiction treatment. National spending for addiction treatment increased by roughly $15 billion between 1986 and 2009, representing an average annual rate of growth in nominal dollars of 4.4 percent.[9] Medicaid spending on addiction treatment services also grew substantially during this period, from less than $1 billion to $5 billion. However,

EXHIBIT 1

Medicaid Expenditures For Mental Health And Addiction Treatment Services For Selected Populations, 1986–2009



SOURCE Substance Abuse and Mental Health Services Administration. National expenditures for mental health services and substance abuse treatment, 1986–2009 (see Note 5 in text). **NOTE** Estimates are inflation-adjusted (2009).

Medicaid's coverage for treatment of mental health and addictive disorders has diverged in important ways.

because other funding sources for addiction treatment also increased during this time, Medicaid's share of spending remained steady at approximately 20 percent of total addiction outlays. In contrast, state and local government funds for addiction treatment increased from $2.5 billion in 1986 to $7.5 billion in 2009 and continued to increase, albeit modestly, as a percentage of overall spending.[9] Unlike the financing of mental health treatment, these state and local funds have remained the backbone of the publicly funded addiction treatment system.

Before 1996 it seemed likely that Medicaid's financing of addiction treatment would follow the same path that the program has taken in funding for mental health. Between 1990 and 1995 the number of people qualifying for SSI through an addiction-related disability increased by more than 500 percent. However, concerns emerged about rapid growth in the number of people enrolling in Medicaid as a result of addiction-related disability, which were rooted in a longer-standing controversy as to whether addiction should even be characterized as a disabling condition for the purpose of receiving public aid.[10]

These concerns were embodied in the Contract with America Advancement Act of 1996, under which addiction became disallowed as a qualifying condition for federal disability programs. Consequently, the number of people with addiction disorders who qualified for Medicaid was greatly circumscribed. Although only about 200,000 recipients were immediately affected by this policy, because the new law restricted states' ability to use Medicaid as a vehicle to cover and treat the majority of people with addiction disorders, its significance was, of course, much broader over time. When the ACA passed in 2010, for example, only about 20 percent of patients entering publically funded addiction treatment programs were covered by Medicaid.[11]

Moreover, coverage for addiction treatment within state Medicaid programs has been less comprehensive than mental health coverage. As recently as 2013 several states did not provide any coverage for addiction treatment, apart from federally mandated detoxification and short-term inpatient treatment. States can use the same options for addiction treatment that were used to establish expanded coverage for mental health treatment, including the rehabilitative services, case management, and the community-based services options. However, states' take-up of optional coverage for addiction services has been highly variable. In 2003, the most recent year in which state Medicaid coverage for addiction was systematically reviewed, thirty states covered outpatient group counseling for substance abuse.[12] Twenty-five states covered methadone maintenance. Twenty covered day treatment, and only seventeen covered buprenorphine and naltrexone—evidence-based treatments for opioid addiction.

The ACA And Addiction Treatment

The ACA is expected to dramatically change the historic contrast between Medicaid's role in financing mental health and in financing addiction treatment for low-income Americans.[1,13,14] The law mandates Medicaid coverage for addiction treatment and prohibits limits on the provision of addiction treatment services that is more restrictive than those for other medical services. The ACA also enables states to expand eligibility to all citizens with incomes at or below 138 percent of the federal poverty level. It therefore removes categorical federal restrictions on eligibility that have historically limited Medicaid enrollment to children, parents, elderly, and individuals with disabilities. Millions of low-income Americans who experience either of these disorders have become Medicaid-eligible in states that have embraced this eligibility expansion, and more are expected to do so in the years ahead.[15] Now active in twenty-nine states and the District of Columbia, the Medicaid expansion will increase enrollment by 10.7 million people.[15] Medicaid spending for addiction treatment is projected to double from $5 billion to $12 billion by 2020, quickly making Medicaid the largest payer of addiction treatment in the country.[1]

Lessons For Medicaid's Future In Addiction Treatment

Because Medicaid has been the dominant funder in mental health treatment, reforms to the program have had wide-reaching implications for the entire system of mental health care. Below we discuss three broad lessons that the addiction

treatment system can learn from the successes and challenges of the mental health treatment system's expansion within Medicaid. We do not mean to suggest that the mental health treatment system is without challenges or that the challenges facing the addiction treatment system are the same as those facing mental health treatment. Instead, we seek to point out strategies and successes of the mental health treatment system that may inform efforts to improve access and quality in addiction treatment, particularly for low-income individuals, who make up the majority of Medicaid enrollees.

REGULATORY FLEXIBILITY The first lesson from the experience of the mental health treatment system highlights the importance of regulatory flexibility around Medicaid's optional coverage categories. Since the 1980s, stakeholders in the mental health treatment system have skillfully crafted more responsive systems of care for mental health disorders. As noted, Medicaid's optional benefits—targeted case management and rehabilitation—allow states to use Medicaid to finance a variety of community support programs for people with serious mental health disorders, including intensive case management, crisis intervention, family psychosocial education, life skills training and social supports, assertive community treatment, community residential services, education and employment-related supports, and peer services.[16,17] This flexibility was enormously important for expanding access to a range of services,[18,19] and states' take-up grew substantially over time. In 1988 only nine states covered psychosocial rehabilitation or targeted case management for people with mental health disorders; today nearly every state has adopted these options.

More recently, states have sought to expand options for mental health treatment under Medicaid's 1915(c) home and community-based services (HCBS) waiver program. In the past, the HCBS waiver program was constrained in its ability to rebalance institutional care for people with severe mental illnesses toward more home and community-based models by Medicaid's Institutions for Mental Disease (IMD) exclusion. This exclusion prohibits Medicaid coverage of working-age adults in IMDs, defined as nursing homes, hospitals, or other institutions of more than sixteen beds that are primarily engaged in the treatment of mental disorders.

The IMD exclusion made it difficult for states to meet the cost-neutrality requirements of the HCBS waiver program for adults with severe mental illnesses. However, recent policy clarifications have expanded this option. Four states—Colorado, Connecticut, Montana, and Wisconsin—currently have HCBS waivers for adults with severe mental illnesses. Demonstration projects, such as the Money Follows the Person Rebalancing Demonstration, have also played an important role in expanding Medicaid's role in mental health care, as have new options for home and community-based services authorized under the Deficit Reduction Act of 2005 and the ACA.[7,20,21]

A growing body of evidence suggests that inpatient addiction treatment is no more effective than outpatient treatment for many patients.

In the contrasting case of addiction disorders, some states have made great progress toward using Medicaid options to expand coverage for these disorders. However, the overall national impact of these efforts has been limited. A minority of states have actively pursued this strategy, in part because the largest group of people receiving addiction treatment in the United States prior to 2014 were uninsured. Yet many of the existing options within Medicaid can be used to expand addiction coverage, including the rehabilitative services, case management, and HCBS options, and the 1115 waiver, which enables states to implement five-year demonstration projects that incorporate coverage and eligibility expansions or service delivery model innovations.

Learning from the experience of mental health coverage, stakeholders in addiction treatment can leverage the flexibility built into Medicaid's optional benefit policies to advocate for coverage across the service continuum—from intensive outpatient treatment and crisis management to recovery-oriented services—to effectively manage addiction as a chronic illness. Moreover, a substantial body of research supports the efficacy and cost-effectiveness of medication-assisted addiction treatments.[22,23] Especially since current adoption of such programs is sparse,[24] Medicaid coverage flexibility should include room for them. Relatedly, most states do not provide re-

6

States

In 2012 only six states required addiction treatment providers to possess a bachelor's degree, and only one required a master's degree.

The mental health and addiction treatment systems now face a common challenge to integrate with each other.

imbursement for wraparound services associated with opioid treatment programs such as initial assessments, brief counseling, and follow-up with patients who are receiving these drugs.

ALTERNATIVES TO INPATIENT TREATMENT The second lesson to be drawn from the mental health system relates to Medicaid's capacity to promote broad-scale delivery system changes, particularly in spurring the creation of a high-quality alternative to treatment in inpatient and other institutionalized settings. Medicaid's role in promoting community-based services for mental health was initially inadvertent. Medicaid's IMD exclusion strengthened incentives for states to shift patient care (and costs) from state-financed mental hospitals into Medicaid-reimbursable settings—such as nursing homes, community mental health centers, and general hospitals. Between 1955 and 1980 the resident census in state mental hospitals dropped by 75 percent. This early history played a critical role in making Medicaid the primary driver of mental health systems change.[19]

Medicaid also played a complementary role in helping states comply with a series of court decisions requiring greater emphasis on home and community-based services. Medicaid's support for efforts such as Money Follows the Person and Balanced Incentives Program—policies expanded and supported by the ACA—is an important tool for many states seeking to meet their legal responsibilities to expand or improve their alternatives to institution-based care.[25,26] Programs such as assertive community treatment, covered by a number of state Medicaid programs, provide intensive supports for people with severe mental illnesses, to enable them to manage their illnesses while remaining in the community.[27]

In crafting Medicaid addiction treatment coverage, states should consider how coverage design can be used to promote high-quality, community-based alternatives to inpatient addiction treatment for people with more severe addictive disorders. There will always be a need for inpatient addiction treatment services for people who require medically risky detoxification, are in crisis, or are experiencing severe symptoms. However, a growing body of evidence suggests that inpatient addiction treatment is no more effective than outpatient treatment for many patients. Also, inpatient treatment is more costly, restrictive, and stigmatized than community-based addiction treatment.[28] Nonetheless, despite this evidence, a large proportion of people receive addiction treatment in inpatient settings. In 2013 roughly 45 percent of people who received addiction treatment reported receiving it in a residential or inpatient setting.[29]

EXPANDING TREATMENT OPTIONS The third lesson concerns the power of public purchasers, namely Medicaid, to expand the supply of qualified treatment providers, and consequently, elevate the quality of services provided. As late as 1970 staffing in state mental hospitals consisted of a small number of professional mental health workers and a large number of less skilled custodial workers.[3] However, as more institutional forms entered the mental health market, professional staffing ratios increased.[30] As community mental health centers emerged in response to deinstitutionalization and Medicaid dollars funded care in such centers, a whole new cadre of mental health professionals responded to this supply. These growing mental health professions exerted political pressure on politicians to establish state licensing laws. By 1990 forty-two states had passed such laws, and eventually most states passed mandates that required insurers to cover mental health services provided by these professionals.[3]

Medicaid regulations for staff providing mental health treatment have also increased substantially. Under the rehabilitative services option, for example, the Centers for Medicare and Medicaid Services requires that mental health treatment services be authorized by "licensed practitioners of the healing arts." Most state Medicaid programs define *licensed practitioners of the healing arts* as a licensed psychiatrist, psychologist, clinical social worker, or registered or advanced practice nurse. States also define the qualifications of service providers under Medicaid, and most require that mental health providers possess state board licensure as well as a master's or doctoral degree from an accredited university in a relevant area of practice. States that cover paraprofessionals have also established minimal qualifications for this role.[31]

The evolution of licensing standards in the mental health treatment system differs markedly from that governing addiction treatment. Many

commentators and researchers express concerns about the overall quality of addiction treatment providers in the United States.[13,14] While the number and type of addiction treatment providers have similarly increased, fewer than half of addiction treatment providers have professional degrees and any formal training or credentialing in addiction treatment.[32] Most states have no or low licensure standards for addiction treatment providers. In 2012 only six states required addiction treatment providers to possess a bachelor's degree, and only one state required a master's degree.[33] Fourteen states had no educational attainment requirements for licensure whatsoever.

As Medicaid's role in addiction treatment expands in the years ahead, there is an important opportunity to use the program to improve quality. Medicaid can require formal training and licensure standards for staff who provide addiction treatment as a condition of Medicaid certification. Because Medicaid is poised to become the largest payer of addiction treatment, most addiction treatment programs will need to remain or become Medicaid certified to access this increasingly important revenue source.[34]

Such requirements could also help speed implementation of evidence-based addiction therapies, given evidence that licensed professionals are more likely than nonlicensed providers to endorse and use such therapies.[33] For this strategy to be effective, many existing addiction treatment providers will need technical assistance and, ideally, additional financial resources to meet new Medicaid staffing requirements.

The Common Challenge Of Integration

The mental health and addiction treatment systems have evolved into two different and largely separate systems over the past fifty years. These systems now face a common challenge to integrate with each other. Stakeholders across both systems recognize the high prevalence of co-occurring mental health and addiction disorders. The field has advanced treatment strategies that address both disorders in tandem. Unfortunately, funding regulations often conflict with integrated delivery approaches and have played a major role in hindering their proliferation.[35] As Medicaid plays a greater role in financing addiction treatment, there will be new opportunities to improve access to integrated treatment for people who are newly eligible for Medicaid, as well as Medicaid enrollees in states that have expanded coverage for addiction treatment.

Medicaid health homes provide a major new option with the potential to address long-standing problems of segmentation in physical and behavioral health—including mental health and addiction treatment. At an enhanced federal matching rate for the first two years, state Medicaid programs have the option to create health homes, which deliver coordinated care to enrollees with multiple chronic health conditions, including mental health and addiction disorders. The health home model has the potential to significantly improve coordination and integration of care and may become the primary model of treatment for people who have mental health or addiction treatment needs but require less intensive services.[36]

Medicaid agencies must develop strategies to support a continuum of care that responds to people with diverse addiction-related needs.

Both systems also face the challenge to integrate their services within primary care settings, where the vast majority of health care services to people with mental health or addiction use disorders will actually be provided or initiated. Integrating mental health and addiction treatment into primary care can improve quality and reduce overall health care costs.[37–39] Primary care providers have made greater strides in integrating mental health treatment into their repertoire of services. General physicians provide an increasing share of mental health services.[3] By the 1990s, 34 percent of mental health diagnoses came from general physicians, and prescribing of psychotropic medications in primary care has increased substantially. Assessment and treatment of addiction treatment has been less well integrated into primary care, in part as a result of restrictions on prescribing of addiction medications.[40]

Conclusion

Under the ACA Medicaid expansion, Medicaid agencies will become increasingly important

purchasers of addiction treatment services. As such, they will now play a regulatory role analogous to the one they have played with the mental health treatment system.

While Medicaid agencies consider how to optimally allocate resources for addiction treatment, differences in the severity of need, as illustrated in mental health, will complicate these financing and regulatory decisions. Medicaid agencies must develop strategies to support a continuum of care that effectively responds to people with diverse addiction-related needs. State Medicaid programs will need to create regulatory policies that set clear rules to improve quality while remaining flexible and nimble to adjust to different patient needs.

Any major purchaser such as Medicaid will be able to create important incentives to develop new innovative delivery model reforms. It is hoped that states will consider the power of this leverage prospectively to provide efficient, high-quality addiction treatment services instead of responding retrospectively to unintended problems that so often arise with the infusion of new funding. ■

The authors acknowledge support from the National Institute on Drug Abuse (Grant No. R01 DA034634-01) for its project, "The impact of health reform on outpatient substance abuse treatment programs," although the recommendations and responsibility for any errors rest solely with the authors. The authors also acknowledge helpful feedback from the editors of *Health Affairs* and two anonymous reviewers.

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DOI: 10.1377/hlthaff.2015.0791
HEALTH AFFAIRS 34,
NO. 9 (2015): 1498–1505

Integrating Mental Health In Care For Noncommunicable Diseases: An Imperative For Person-Centered Care

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ABSTRACT Mental disorders such as depression and alcohol use disorders often co-occur with other common noncommunicable diseases such as diabetes and heart disease. Furthermore, noncommunicable diseases are frequently encountered in patients with severe mental disorders such as schizophrenia. The pathways underlying the comorbidity of mental disorders and noncommunicable diseases are complex. For example, mental and physical noncommunicable diseases may have common environmental risk factors such as unhealthy lifestyles, and treatments for one condition may have side effects that increase the risk of another condition. Building on the robust evidence base for effective treatments for a range of mental disorders, there is now a growing evidence base for how such treatments can be integrated into the care of people with noncommunicable diseases. The best-established delivery model is a team approach that features a nonspecialist case manager who coordinates care with primary care physicians and specialists. This approach maximizes efficiencies in person-centered care, which are essential for achieving universal health coverage for both noncommunicable diseases and mental disorders. A number of research gaps remain, but there is sufficient evidence for policy makers to immediately implement measures to integrate mental health and noncommunicable disease care in primary care platforms.

The aging of populations around the world has been accompanied by marked increases in the burden of chronic noncommunicable diseases such as cardiovascular disease, chronic respiratory conditions, cancer, diabetes, and musculoskeletal disease.[1] With effective interventions, mortality associated with many of these conditions has continued to fall. However, the interventions do not reach everyone and may not be universally affordable. Several studies from around the world reveal that up to half of the global population has at least one chronic condition and that nearly a quarter has more than one coexisting chronic condition.[2]

Alongside these daunting global health challenges are those posed by the mounting burden of mental disorders, a heterogeneous group that includes some conditions—notably, depression and alcohol use disorders—that have exhibited some of the largest proportionate increases in global burden in the past two decades.[1] Not surprisingly, given the high prevalence of both noncommunicable diseases and mental disorders, comorbidity of these two groups of health conditions also occurs frequently.[3] Estimates from the United States indicate that almost 30 percent of those living with a noncommunicable disease report a concurrent mental disorder.[4]

The prevalence of a mental disorder is elevated

in people who live with noncommunicable diseases—especially those with multiple chronic conditions—compared to those without noncommunicable disease. Conversely, more than two-thirds of people with a mental disorder have been shown to have at least one other chronic noncommunicable disease. The comorbidity between noncommunicable diseases and mental disorders is particularly associated with a strong social gradient and is more common in those living in deprived areas than in residents of areas with more resources.[5]

The relationships between mental disorders and other noncommunicable diseases are complex and bidirectional[3] (Exhibit 1). Poor mental health exacerbates a number of noncommunicable disease risk factors, including poor lifestyle choices leading to obesity, inactivity, and tobacco use; poor health literacy; poor access to health promotion activities; and symptoms such as lack of motivation and energy. Heavy alcohol use, besides being frequently associated with a range of mental disorders, is also a major risk factor for cancer, cardiovascular disease, stroke, and liver disease and can compromise immune and cognitive functions—which in turn could further complicate the delivery of and adherence to complex treatment regimens for comorbid conditions. The adverse cardiometabolic reactions to drug treatments given for some mental disorders, notably schizophrenia, that lead to weight gain, hyperglycemia, and dyslipidemia could help explain the higher burden of noncommunicable diseases in these patients.[6]

Living with a chronic, painful, or disabling noncommunicable disease can, unsurprisingly, lead to increased stress and mental disorders. Noncommunicable diseases and mental disorders may have similar risk factors such as genetic determinants that increase susceptibility to cytokine-mediated inflammatory responses, along with adverse social and environmental determinants of both groups of conditions, such as childhood adversity and poverty.

The Impact Of Comorbidity

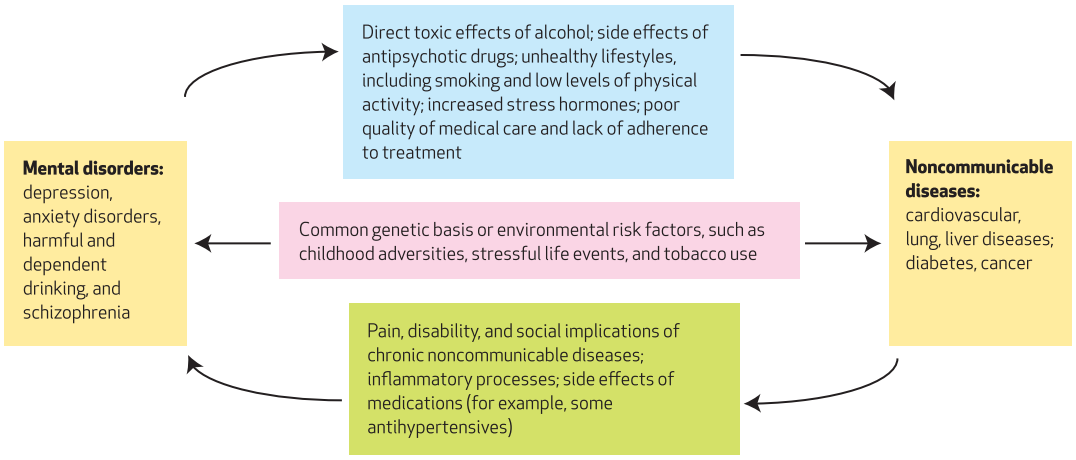
Among people living with noncommunicable diseases, comorbidity with a mental disorder often has profound and detrimental impacts on health, including poorer glycemic control among people with diabetes and inadequate blood pressure control among people with hypertension, compared to people without comorbidity. Such impacts are often due to a lack of compliance with treatment regimens that may be complex and necessitate lifestyle changes.[6]

Conditions such as panic attacks increase the risk of future cardiovascular events. Comorbid mental disorders lead to significant worsening of disability among those with noncommunicable diseases. Such comorbidity may have a synergistic deleterious effect, as the odds of severe disability and resulting work absences among those with a mental disorder and a noncommunicable disease are greater than the sum of the odds for each of the single conditions.[7] The burden of a mental disorder may also reduce a person's ability to adapt to symptoms of noncommunicable diseases.

In addition to disability, poor mental health is also associated with higher mortality in people with noncommunicable diseases such as cardiovascular disorders, stroke, and rheumatoid ar-

EXHIBIT 1

The Mechanisms Of Comorbidity Of Mental Disorders With Other Noncommunicable Diseases



SOURCE Authors' analysis.

thritis, compared to that of people without comorbid mental disorders. Recent analyses have shown that mortality is significantly higher among people with mental disorders than among the general population, and that about two-thirds of mortality is due to natural causes that can primarily be attributed to noncommunicable diseases, notably cardiovascular disease.[8]

These impacts are well illustrated in the multinational Study on Global Ageing and Adult Health (SAGE) of the World Health Organization (WHO),[9] which is one of the few primary data sources pertaining to health in low- and middle-income countries. The study shows that compared with a number of noncommunicable diseases, depression has a worse impact on overall health status (measured as a composite of the capacity to function in multiple domains of daily activities) (Exhibit 2). It also shows that when depression is comorbid with other noncommunicable diseases, it further worsens health significantly—especially for people with diabetes, chronic obstructive pulmonary disease, and stroke—even after age, sex, education, household wealth, and place of residence are controlled for in a multivariable regression analysis.

Patients with comorbid mental disorders and noncommunicable diseases experience more complicated treatments and poorer treatment outcomes than do patients with isolated conditions. This is partly because those with comorbidities have depressed motivation and impaired memory, which interfere with their adherence to treatment. Another reason is the stigma associated with the mental disorder, which limits access to timely, appropriate, and patient-centered care. Consequently, patients with such comorbidities have higher rates of health care utilization but poorer overall quality of care, and they are more likely to use emergency care, compared to those who have noncommunicable diseases without a comorbid mental disorder.

Increased health care utilization and poorer quality of care have consequences for health care spending, potentially increasing both a patient's costs and the likelihood of subsequent impoverishment. As one example, data from the US Medical Expenditure Panel Survey observed that among obese adults, comorbidity with mental disorders was associated with higher total, outpatient, and pharmaceutical expenditures, compared to expenditures for those without such comorbidity.[10]

In the SAGE study, 23.6 percent of people diagnosed with depression and hypertension had poorly controlled hypertension despite receiving treatment, compared to 16.8 percent of people with hypertension but no depression. This study also showed that depression, when comorbid with noncommunicable diseases, significantly increased the odds of contact with outpatient and inpatient services for people with diabetes, arthritis, angina, stroke, or chronic obstructive pulmonary disease and for those with multiple chronic conditions.

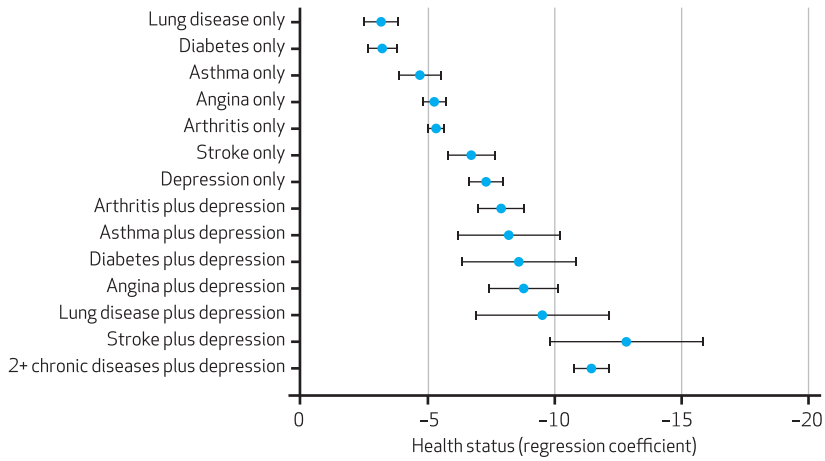
Patients with severe mental disorders often have cardiovascular disease and diabetes that go unrecognized because of their difficulties in accessing appropriate health care and effectively communicating with their health care providers. Even when these conditions are recognized, patients often receive treatment that is not concordant with guidelines, in part because of a fragmented and specialist-dominated health care system.

In short, comorbidities lead to poorer quality of care, higher health care costs, and poorer outcomes for both the mental disorder and the noncommunicable disease. In low- and middle-income countries, these relationships are likely to be further complicated by the existence of chronic infectious diseases, notably HIV and AIDS, and by health systems that may not be equipped to deal with noncommunicable diseases or mental disorders because of low investments in the health care delivery sector, limited human resource capacity, and low political will.[11]

It is also important to note that the impact of mental disorders and noncommunicable diseases extends beyond the people who are directly

EXHIBIT 2

The Impact Of Noncommunicable Diseases, Depression, And Comorbidity On Health Status



SOURCE Authors' analysis of data from World Health Organization, Health statistics and information systems: WHO Study on global AGEing and adult health (SAGE) (Note 9 in text). **NOTES** Health status is measured as a composite of the capacity to function in multiple domains of daily activities. Higher negative values of the coefficient reflect worsening health. The whiskers indicate 95% confidence intervals.

Comorbidities lead to poorer quality of care, higher health care costs, and poorer outcomes for both the mental disorder and the noncommunicable disease.

affected: There are also adverse impacts on the health of their caregivers. Caring for a person with a chronic, disabling noncommunicable disease or mental disorder, such as cancer or dementia, is stressful and associated with an increased risk of chronic health problems, including depression, hypertension, sleeping problems, and fatigue; increased use of psychotropic drugs; and premature mortality.[12] The indirect costs of such uncompensated caregiving are also considerable. These impacts on caregivers, who are often members of the patient's household, can lead to the clustering of noncommunicable diseases and mental disorders within households, creating sick households.

Addressing Comorbidities: The Evidence

There is a robust evidence base testifying to the effectiveness and cost-effectiveness of a range of mental disorder interventions, including medicines, psychological treatments, and social interventions.[13] This evidence also demonstrates the effectiveness of the delivery of psychosocial interventions by nonspecialist health workers in routine primary care platforms in low- and middle-income countries, and the effectiveness of collaborative care models in these countries. In this delivery model, front-line care, consisting of tasks such as screening, case management, and the provision of psychosocial interventions, is delivered by nonspecialist health workers in partnership with primary care physicians, mental health professionals, or both.[14,15] There is a small but consistent evidence base that testifies to the cost-effectiveness of such task sharing, despite the fact that such models entail additional expenditures because they require additional human resources.[16]

DEPRESSION A separate body of evidence, almost all of which is from high-income countries, specifically evaluates the integration of effective interventions for mental disorders with the care of people with noncommunicable diseases—in particular, the management of depression that is comorbid with diabetes or coronary artery disease. Among patients with coronary artery disease, both psychological and pharmacological (selective serotonin reuptake inhibitor [SSRI] antidepressants) interventions have a modest beneficial effect on depression.[17]

Some trials of pharmacological interventions in patients with coronary artery disease have shown a reduction in rates of hospitalization and emergency department visits,[17] while some trials of psychological interventions have also shown a reduction of cardiac mortality.[18] In general, for the effective treatment of depression that is comorbid with coronary artery disease, there seems to be no difference across various types of psychological treatments or across various SSRI antidepressants.[17]

Similarly, there is a promising evidence base for the benefits of integrated care on both mental health and physical health outcomes in people with diabetes and depression. A systematic review of collaborative care for patients with these conditions provides clear evidence to support its effectiveness in improving depression outcomes and improved adherence to treatment for both depression and diabetes.[19]

Two recent trials evaluated collaborative care for multiple noncommunicable diseases (coronary artery disease, diabetes, or both) and depression and provided evidence that such care is of particular relevance to primary care practice, where multiple morbidities are common. These two trials, one from the United Kingdom[20] and one from the United States,[21] reported significantly superior health outcomes for patients in a collaborative care intervention group, compared to those in the control group.

In the US trial, carried out in fourteen primary care clinics in Washington State,[22] 214 patients who suffered from depression and from coronary artery disease, diabetes, or both worked collaboratively with nurses and primary care physicians to set individualized clinical and self-care goals. In two or three weekly structured visits by patients to primary care settings, nurses monitored the level of depression, control of the noncommunicable disease or diseases, and adherence to interventions. First-line medications included diuretics and angiotensin-converting-enzyme inhibitors for hypertension, statins for hyperlipidemia, metformin for hyperglycemia, and citalopram or bupropion for depression.

Using motivational techniques, nurses helped patients solve problems and set goals for improved adherence and self-care. Once a patient achieved targeted levels for relevant outcomes, a nurse and the patient developed a maintenance plan that included stress reduction, behavioral goals, continued use of medications, and identification of prodromal symptoms of deteriorating depression and glycemic control. The nurses then followed up with patients by telephone every four weeks to assess depression and review adherence and laboratory test results. Patients with worsening disease control were offered enhanced follow-up. Compared to patients who received only the usual care from their physician, those who received the collaborative care intervention had greater overall improvement across hemoglobin A1c levels, low-density lipoprotein cholesterol levels, systolic blood pressure, and depression scores. This model of care, called TEAMCare,[22] is now being rolled out in clinics and hospital systems in regions across the United States and Canada.

CONDITIONS OTHER THAN DEPRESSION There is less evidence on the impacts of integrating the care of mental disorders besides depression with noncommunicable disease care. However, there is a small evidence base to support integrating the prevention of noncommunicable disease risk factors, such as weight gain, in the management of people with serious mental disorders such as schizophrenia. Recent reviews[23,24] have reported modest evidence of the effectiveness of lifestyle interventions such as changes in diet and physical activity and of switching from certain antipsychotic medications to drugs such as aripiprazole that pose less risk of weight gain and other adverse effects.

Few studies have evaluated interventions to address other cardiovascular disease risk factors in patients with serious mental disorders or interventions for people with noncommunicable diseases and comorbid alcohol use disorders. There have also been few studies that evaluated interventions with agents known to be effective in populations other than people with serious mental disorders, such as behavioral or pharmacological interventions for tobacco cessation. Thus, integrating mental health care with noncommunicable disease care should be viewed not only from the perspective of general medical care, but also in the context of psychiatric care, where many people with serious mental and substance use disorders would expect to have their conditions managed.

ONGOING TRIALS TO ADDRESS KNOWLEDGE GAPS Two key research questions remain to be addressed. First, the existing evidence clearly points to the need to improve the effectiveness of interventions, both by improving the quality of available interventions and by identifying new interventions to enhance the modest effects observed in trials to date. Second, there is a need to evaluate approaches to the integration of mental health care and noncommunicable disease care in more diverse contexts, particularly in low- and middle-income countries, and to integrate with noncommunicable disease care the care of other mental disorders that have strong associations with noncommunicable diseases—notably, alcohol use disorders. Several ongoing trials in low- and middle-income countries promise to generate evidence to address some of these knowledge gaps in the coming years.

The m-WELLCARE program in India, supported by the Wellcome Trust, is using a mobile health app for decision support and continuing care for people with diabetes or hypertension. It integrates the management of a range of comorbidities, including depression and alcohol use disorders, into routine primary health care. The intervention is being evaluated in a cluster randomized controlled trial in two Indian states.

South Africa's Department of Health is piloting the integration of noncommunicable disease care into routine primary health care in ten national health insurance districts, one in each of the country's provinces, with the goal of eventually scaling the integration up to all districts. The screening and management tool used by nurses in the program is Primary Care 101, which is a symptom-based clinical management guideline that uses algorithms for management of multiple common noncommunicable diseases. The Programme for Improving Mental Health Care (PRIME) program,[25] supported by UK Aid, is specifically piloting the strengthening of the mental health component of this training for the management of multiple morbidities and has begun a pragmatic cluster randomized controlled trial in twenty public-sector primary care clinics in one district to assess mental and physical health outcomes for depressed adults receiving treatment for hypertension.

The Integrating Depression and Diabetes Treatment (INDEPENDENT) project in India, supported by the US National Institute of Mental Health, is evaluating a version of the TEAMCare collaborative care intervention to address comorbid depression and diabetes or cardiovascular disease in India.[21] In this study of patients with diabetes, comorbid depressive symptoms, and poor control of their cardiovascular risk, researchers are comparing standard noncommunicable disease care with a multifaceted intervention that uses nonphysician care coordinators who activate patients and encourage better self-care. The coordinators use a "smart"

The integration of the care of mental and physical comorbidities is relevant to many important global policy instruments.

electronic health record (EHR) that uses built-in decision algorithms to prompt physicians to provide guideline-based care. Two monthly offline specialist supervision meetings each month are used to guide population health management and oversee care.

The potential impacts of trials such as these include the opportunity to leverage patients' existing point of contact with the health system to simultaneously treat depressive symptoms and improve noncommunicable disease care. The trials also present an opportunity to identify ways to cost-effectively integrate the combined care delivery approach into health settings in the challenging health care milieu of low- and middle-income countries.

Implications For Policy Makers

There is consistent, if modest, evidence[17,18] of the effectiveness of SSRI antidepressant and structured psychological interventions in reducing depressive and anxiety symptoms in people with coronary artery disease, diabetes, or both and comorbid depression, but less consistent evidence on the interventions' impact in improving the noncommunicable disease outcomes. There is modest evidence[23] of the health benefits of integrating noncommunicable disease care with care for serious mental disorders. Also, there is growing evidence[21] that demonstrates how the care for these diverse conditions could be integrated into the same health care delivery setting.

Such efficiencies point to the probability that integrated care is likely to be more cost-effective than vertical care models for specific disorders. However, beyond the beneficial effects of integrated care on economic or biomedical outcomes is the impact on improving patient satisfaction and quality of life, and thereby achieving the goals of patient-centered health care.[26]

In most countries—both those in the low- and middle-income group and those in the high-income group—the management of mental disorders and noncommunicable diseases largely ignores the existence of multiple morbidities, in a single patient and in household members. This leads to poorer quality of care and higher levels of patient dissatisfaction and costs of care, resulting from fragmented disease-specific specialist care.[27] Patients are required to consult multiple specialists for each condition or, more commonly, are denied care for one or more of the coexisting conditions because physicians ignore those conditions that are outside their specialties.

The principles underlying effective integration of care are consistent with the recommendations for the management of any chronic condition, which we call the 4C model. In this model, care is *collaborative*—that is, it involves a partnership among the patient, a nonspecialist case manager who delivers psychosocial interventions, a primary care physician, and providers of specialist services, and it emphasizes shared decision making and seamless communication; *coordinated* across health care delivery platforms, with integrated EHRs and liaison between health care providers, multidisciplinary guidelines, and clearly defined care pathways; *continuing*, with an emphasis on proactive monitoring of health outcomes and regular reviews with specialists regarding patients who do not show clinical improvement; and *centered* on the patient, with an emphasis on promoting self-management and prioritizing patient-defined outcomes and delivery expectations.[14]

However, for successful integration to take place, policy makers and health programs will need to address a number of potential barriers and lessons learned from recent efforts.[28] Truly integrated care involves more than locating health workers with diverse specialties in the same building. It also requires a systems approach to implementation. Primary health workers—in particular, case managers, who are the critical human resources in integrated care—need competency-based training and supervision.

Additionally, the major risks posed by integration need to be explicitly addressed. These risks include primary health worker burnout and the possibility that with integrated care, the quality of care for mental disorders would be lower than that of care for other conditions.[29]

Above all, health workers at all levels need access to timely, useful data about patients in the form of integrated clinical information systems that can track individual patients across sectors of the health care system. New technologies—such as decision support algorithms enabled by mobile health, cloud-based

EHRs that can be accessed and updated by any provider, automated medication and appointment reminders, and telemedicine-based supervision by specialists—offer unique opportunities to address these barriers.[30]

Successful integration also requires attention to possible resistance from vested interests—in particular, medical specialists and the health care industry—seeking to promote a predominantly biomedical and hospital-centric approach to care.

Integration needs to happen across the entire spectrum of interventions, from prevention to management of disorders, and across all levels of care, from primary to tertiary. Such seamless integration would take into account the need for continuity of care, the fact that some people need long-term care, and communities' legitimate expectations for person-centered care. Finally, integration takes time and typically involves a series of developments spanning several years, with continuous loops of monitoring, evaluation, feedback, and service improvements.

In September 2015 the United Nations is to convene an international meeting to finalize the Sustainable Development Goals, which collectively will represent a global consensus on the major challenges facing the planet.[31] The draft proposals for the health goal call for the promotion of mental health and well-being and the prevention and treatment of substance abuse. Additionally, there is growing advocacy for including mental disorders in the noncommunicable disease targets.[32] The UN General Assembly unanimously adopted a resolution endorsing universal health coverage as a global priority for sustainable development in 2012. Thus, it is likely that universal health coverage will be included as a specific target within the broader health related Sustainable Development Goals.[31] In 2013 the World Health Assembly unanimously approved the WHO's Comprehensive Mental Health Action Plan.[33] The integration of the care of mental and physical comorbidities is relevant to all of these important global policy instruments.

Not only does integrated care provide a way to effectively address both noncommunicable diseases and mental disorders, but it also has the potential to produce efficiencies in health care delivery—for example, by providing care for multiple conditions using the same human resources and a common primary care platform. Such efficiencies would increase the probability that interventions for both mental disorders and noncommunicable diseases will be scaled up within universal health coverage.

Conclusion

Efficiencies arising from integrated primary care are essential both in high-income countries, where the costs of care for noncommunicable diseases and mental disorders are already very high and spiraling upward, and in low- and middle-income countries, where large proportions of people with these conditions do not receive adequate care. Integration is key to improving the access to appropriate interventions for people with comorbid conditions, reducing the fragmented manner in which care is delivered, and delivering care that is responsive to patients' needs and expectations. Such an approach is consistent with the need for a person-centered approach to health care, which is particularly relevant in the area of chronic diseases in all countries.[34] ■

The views expressed in this article are those of the authors and do not necessarily represent the views or policies of the World Health Organization. Vikram Patel is supported by a Wellcome Trust Senior Research Fellowship (Grant No. 091834A) and is an investigator on the m-WELLCARE and the Programme for Improving Mental Health Care (PRIME) projects. The Study on Global Ageing and Adult Health (SAGE) is supported by the World Health Organization (WHO) and the US National Institute on Aging through interagency agreements (Nos. OGHA 04034785, YA1323-08-CN-0020, and Y1-AG-1005-01) with the WHO and through a research grant (Grant No. R01-AG034479). The authors acknowledge the contributions of Nicole Bergen and Emese Verdes to the preparation of this article.

NOTES

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