Psychiatrists Summit:

Bidirectional Integration: A 360-degree View
Sunday, April 15, 2012, 10:15 am – 5:00 pm

Primary Care Updates for Psychiatrists
Monday, April 16, 2012, 8:00 am – 12:00 pm

Room: Lake Ontario, Eighth Floor

Bidirectional Integration: A 360-degree View:

Benjamin Druss, MD, MPH, Rosalynn Carter Chair in Mental Health, Department of Health Policy and Management, Rollins School of Public Health, Emory University

John Kern, MD, Chief Medical Officer, Regional Mental Health Center

Lori Raney, MD, Medical Director, Axis Health System

George Rust, MD, MPH, Professor of Family Medicine, Director, National Center for Primary Care, Morehouse School of Medicine

Primary Care Updates for Psychiatrists:

Laurie Carrier, MD, Family Physician and Psychiatrist, Heartland International Health Center, Clinical Instructor, Northwestern Feinberg School of Medicine

John Kern, MD, Chief Medical Officer, Regional Mental Health Center

Lori Raney, MD, Medical Director, Axis Health System

Raymond Rion, MD, Medical Director, Packard Health

NATIONAL COUNCIL
FOR COMMUNITY BEHAVIORAL HEALTHCARE

AGENDA – PSYCHIATRISTS' AND MEDICAL DIRECTORS' SUMMIT

IMPROVING LIVES AND LIFESPANS: THE COMMUNITY PSYCHIATRISTS' ROLE

SUNDAY, APRIL 15, 2012

10:15	**Welcome and Introductions – Lori Raney, MD, Medical Director, Axis Health System, Chair APA Workgroup on Integrated Care**
11:00	**Jurgen Unutzer, MD, Vice Chair, Department of Psychiatry, University of Washington**
11:25	**Ben Druss, MD, Rosslyn Carter Chair in Mental Health, Emory University**
11:50	**Break**
12:00	**George Rust, MD, Director, National Center for Primary Care, Morehouse School of Medicine**
12:25	**Lori Raney, MD, APA Workgroup on Integrated Care**
12:50	**Lunch/Networking – Lunch provided by National Council**
2:00	**Break- out Group #1 (choose either Druss, Unutzer or Kern/Rust)**
2:45	**Break and move to next group**
3:00	**Break – out Group #2 (choose either Druss, Unutzer, Kern/Rust)**
3:45	**Wrap-Up, Discussion**
5:00	**Summit Concludes**

Evidence base for Mental health in Primary Care

Closing the gap between what we know and what we do.

Jürgen Unützer, MD, MPH, MD

unutzer@uw.edu

http://uwaims.org

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Building on 25 years of Research and Practice in Integrated Mental Health Care

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Most mental health services are provided in primary care.

National Comorbidity Survey Replication
Provision of Behavioral Health Care: Setting of Service

No Treatment
59%

41%
Receiving
Care

General Medical
56%

MH Professional
44%
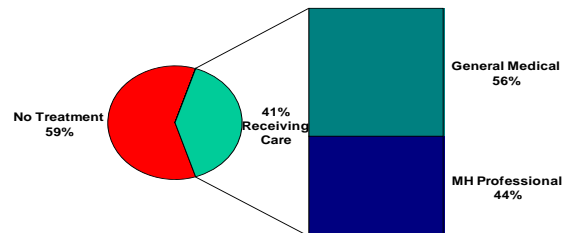
Wang P et al., Twelve-Month Use of Mental Health Services
in the United States, *Arch Gen Psychiatry*, 62, June 2005

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"We couldn't get a psychiatrist, but perhaps you'd like to talk about your skin. Dr. Perry here is a dermatologist."

66% of PCPs Report Poor Access to Mental Health Care for Their Patients

Cunningham PJ, *Health Affairs* 2009;28(3)490-501

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Behavioral Health Problems are Rarely the Only Health Problem

Chronic Physical Pain 25-50%

Cancer 10-20%

Neurologic Disorders 10-20%

Smoking, Obesity, Physical Inactivity 40-70%

Mental Health / Substance Abuse

Heart Disease 10-30%

Diabetes 10-30%

Patient-centered care?
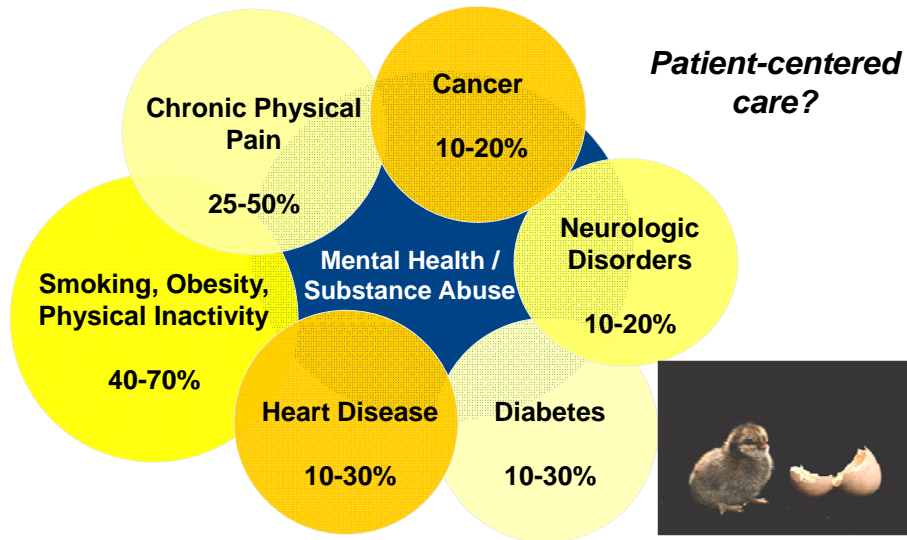
Services are Poorly Coordinated

"Don't you guys talk to each other?"

Primary Care

Community Mental Health Centers

Alcohol & Substance Abuse Treatment

Social Services

Vocational Rehab

Other Community Based Social Services

Limits of our Current System - I

Few clients with behavioral health problems receive effective treatment.

~ 25%	~ 25 %	~ 25 %
Not recognized or effectively engaged in care	Drop out of treatment too early	Stay on ineffective treatments for too long

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CMS: Driving Healthcare System Transformation

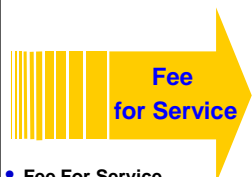| Un-managed	Coordinated Care	Patient Centered

Fee for Service

Accountable Care

Integrated Health

- **Fee For Service**
  - Inpatient focus
  - O/P clinic care
  - Low Reimbursement
  - Poor Access and Quality
  - Little oversight
- **No organized networks**
- **Focus on paying claims**
- **Little Medical Management**

- **Organized care delivery**
  - Aligned incentives
  - Linked by HIT
- **Integrated Provider Networks**
- **Focus on cost avoidance and quality performance**
  - PC Medical Home
  - Care management
  - Transparent Performance Management

- **Patient Care Centered**
  - Personalized Health Care
  - Productive and informed interactions between Patient and Provider
  - Cost and Quality Transparency
  - Accessible Health Care Choices
  - Aligned Incentives for wellness
- **Multiple integrated network and community resources**
- **Aligned reimbursement/care management outcomes**
- **Rapid deployment of best practices**
- **Patient and provider interaction**
  - Information focus
  - Aligned self care management
  - E-health capable

Paul McGann, MD. Acting CMO; CMS. 2/25/2011

8

Working Together:
Patient-centered care

Site of Care Delivery

Substance
Abuse
Treatment

Primary
Care

Mental
Health

Coordinated
Patient-centered
care
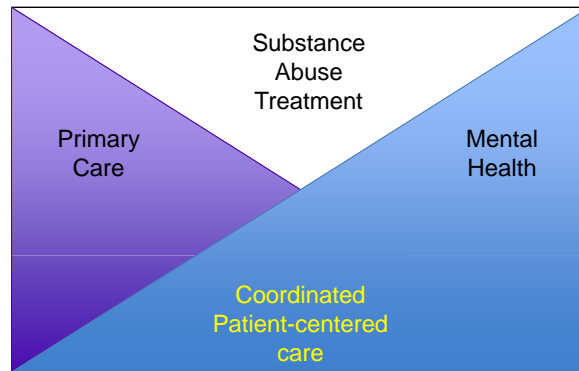
How do we close the gap?

1.
Robust models of
care coordination
Standard operating practices / key elements and functions.

2.
Effective program implementation and support

Example: IMPACT Team Care Model

Primary Care Practice with Mental Health Care Manager

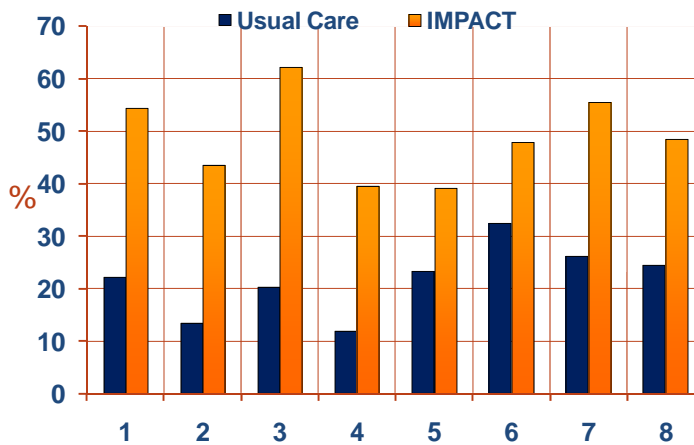| Outcome Measures | Treatment Protocols | Population Registry | Psychiatric Consultation |

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IMPACT doubles effectiveness of care for depression

50 % or greater improvement in depression at 12 months

■ Usual Care   ■ IMPACT

%

Participating Organizations
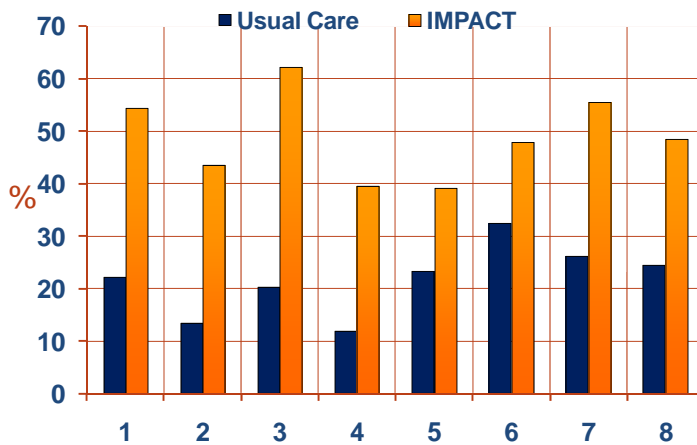
Unützer et al., Psych Clin NA 2004

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Improved Satisfaction with Depression Care

(% Excellent, Very Good)

Legend: ■ Usual Care ■ IMPACT

Chart axis: 0, 50, 100 (vertical); 0, 3, 12 month (horizontal)

Unützer et al., *JAMA* 2002; 288:2836-2845

IMPACT Doubles Effectiveness of Care for Depression

50 % or greater improvement in depression at 12 months

Legend: ■ Usual Care ■ IMPACT

Y axis: % — 0, 10, 20, 30, 40, 50, 60, 70

X axis: 1, 2, 3, 4, 5, 6, 7, 8 — Participating Organizations

Unützer et al., Psych Clin NA 2004

Better Physical Function

SF-12 Physical Function Component Summary Score (PCS-12)
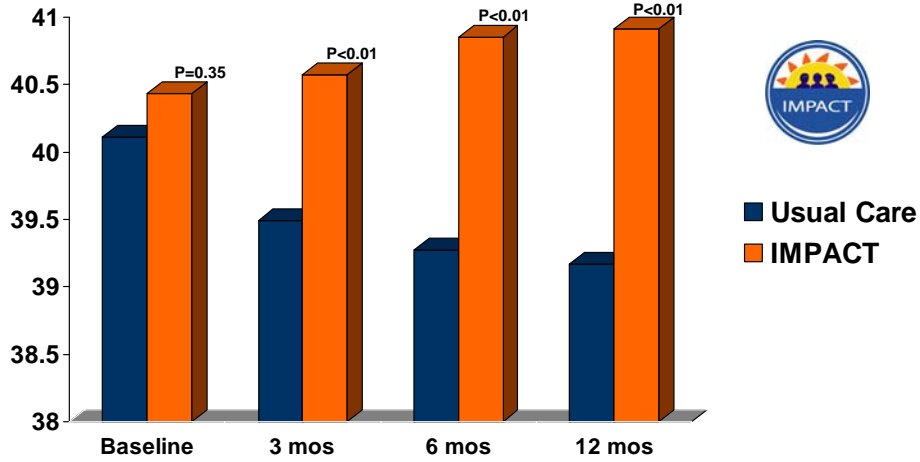
Callahan et al., *JAGS* 2005; 53:367-373

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Long-Term Cost Savings

Cost Category	4-year costs in $	Intervention group cost in $	Usual care group cost in $	Difference in $
IMPACT program cost		522	0	522
Outpatient mental health costs	661	558	767	-210
Pharmacy costs	7,284	6,942	7,636	-694
Other outpatient costs	14,306	14,160	14,456	-296
Inpatient medical costs	8,452	7,179	9,757	-2578
Inpatient mental health / substance abuse costs	114	61	169	-108
Total health care cost	**31,082**	29,422	32,785	**-$3363**

Savings

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

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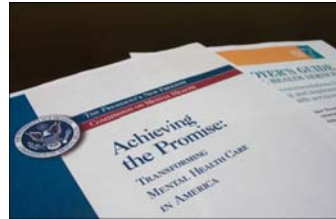
Endorsements

- IOM Report
- Presidents New Freedom Commission on Mental Health
- National Business Group on Health
- AHRQ Report
- CDC Consensus Panel
- SAMHSA
  - National Registry of Evidence-Based Programs & Practices (NREPP)

IMPACT Replication Studies

Patient Population (Study Name)	Target Clinical Conditions	Reference
Adult primary care patients (Pathways)	Diabetes and depression	Katon et al., 2004
Adult patients in safety net clinics (Project Dulce; Latinos)	Diabetes and depression	Gilmer et al., 2008
Adult patients in safety net clinics (Latino patients)	Diabetes and depression	Ell et al., 2010
Public sector oncology clinic (Latino patients)	Cancer and depression	Dwight-Johnson et al., 2005 Ell et al., 2008
HMO patients	Depression in primary care	Grypma et al., 2006
Adolescents in primary care	Adolescent depression	Richardson et al., 2009
Older adults	Arthritis and depression	Unützer et al., 2008
Acute coronary syndrome patients (COPES)	Coronary events and depression	Davidson et al., 2010

INTEGRATED CARE

Implementation Experience

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Over 5,000 Providers Trained in IMPACT Care

Over 600 clinics

Clinicians Trained

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MHIP for Behavioral Health
Mental Health Integration Program

Collaborative Care

Primary Care Provider supported by Behavioral Health Care Coordinator

Practice Support

Informed, Active Patient

Outcome Measurement

Caseload-focused psychiatric consultation
Referral to and coordination with specialty behavioral health care

Provider Training and Support

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MHIP for Behavioral Health
Mental Health Integration Program
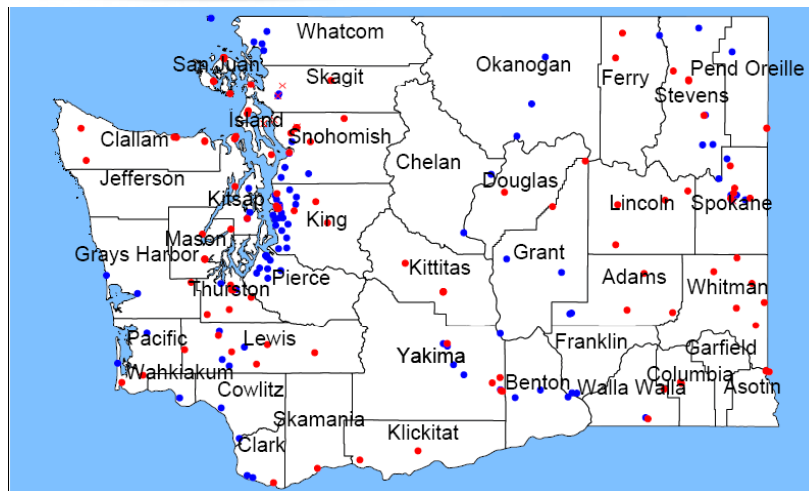
25,000 safety net patients served over 100 Community Health Centers.

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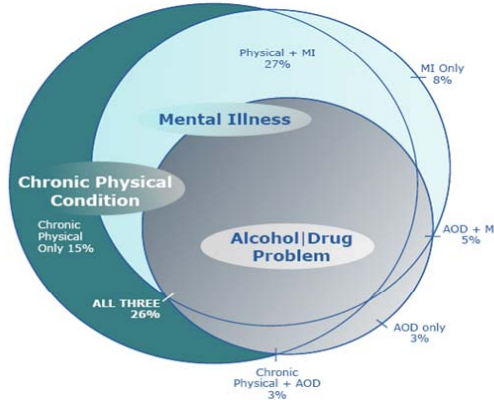
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Washington State Senate Ways and Means, January 31, 2011

Mental health diagnoses in primary care

Diagnoses	%
Depression	71 %
Anxiety (GAD, Panic)	48 %
Posttraumatic Stress Disorder (PTSD)	17 %
Alcohol / Substance Abuse	38 %
Bipolar Disorder	15 %
Thoughts of Suicide	45%

… plus acute and chronic medical problems, chronic pain, substance use, prescription narcotic misuse, homelessness, unemployment, poverty, ….

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Sample Community Health Center
(6 clinics; over 2,000 clients served)

Population	Mean baseline PHQ-9 depression score (0-27)	Follow-up (%)	Mean number of care coordina-tor contacts	% with psych consultation	% with significant clinical improvement
Disabled	16.7	92 %	8	69%	43 %
Uninsured	15.8	83 %	8	59%	50 %
Older Adults	15.3	92 %	8	55%	43 %
Veterans & Family	15 .5	92%	7	54%	53%
High risk Mothers	15 .4	81%	7	50 %	60%

Data from Care Management Tracking System (CMTS); http://uwaims.org.

MHIP:
Systematic Quality Improvement

- **Team building and implementation support**
- **Provider training and ongoing support**
- **Weekly caseload-based psychiatric review**
- **Outcomes-based Feedback and QI**
- **Pay-for-performance program (P4P)**
  - **Initiated in 2009**
  - **25 % of payment depends on meeting quality indicators**

Pay-for-performance-based quality improvement cuts median time to depression treatment response in half.
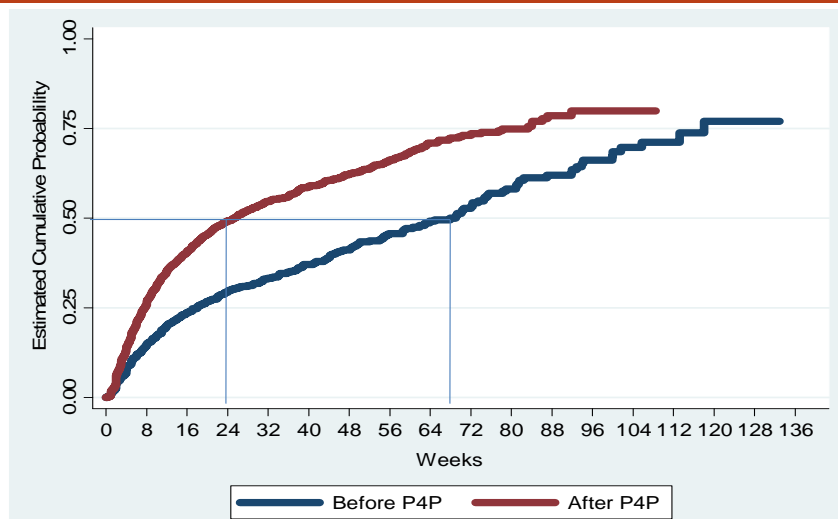
Lower increases in homelessness in clients receiving MHIP during difficult economic times.

CHAMMP; Jan 27, 2011; http://www.chammp.org/Program-Evaluation/Reports-and-Publications.aspx

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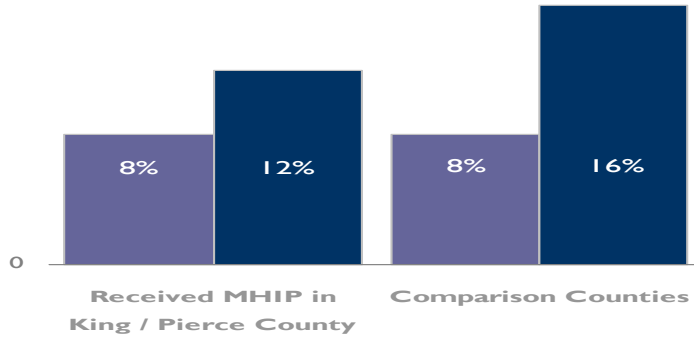
Reduced arrest rates*
In clients receiving MHIP

CHAMMP; Jan 27, 2011; http://www.chammp.org/Program-Evaluation/Reports-and-Publications.asp
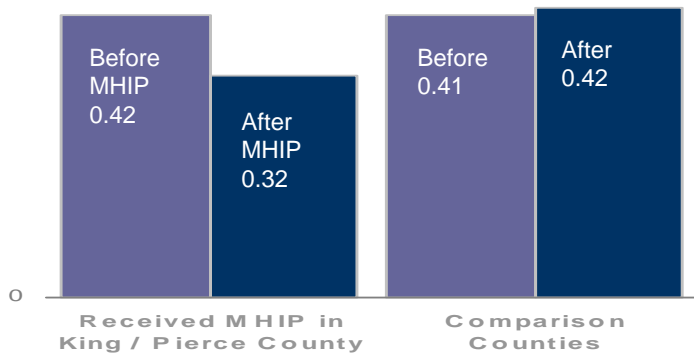
* Arrests / 1,000 member months

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Principles of Effective Integrated Mental Health Care

Patient-Centered Team Care
- Team members collaborate / share tasks effectively.

Population-Based Care
- Patients are tracked in a registry: no one 'falls through the cracks'.

Measurement-Based Treatment to Target
- Treatments are actively changed until the clinical goals are achieved.

Evidence-Based Care
- Treatments are 'evidence-based'.

Accountable Care
- Providers are accountable for quality and outcomes of care.

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Thank You

http://uwaims.org

Improving Medical Outcomes in Specialty Mental Health Settings: What is Psychiatry's Role?

Benjamin Druss MD, MPH

april 15-17, 2012 | chicago

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mentalhealthandaddictions

CONFERENCE

www.TheNationalCouncil.org/Conference

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Overview

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CONFERENCE

> Defining the problem
> What can psychiatrists to do to help address medical problems?
> What do you want <u>your</u> role to be?

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Defining the Problem: Risk factors for Morbidity/Mortality in Persons with SMI[1]

> Behavioral Risk factors: smoking, physical inactivity, diet
> Poor quality of medical care
> Social and enviornmental factors
> Iatrogenic effects of medications

1. Med Care. 2011 Jun;49(6):599-604

Psychiatrists' Role in Addressing Medical Morbidity and Mortality

> Minimizing metabolic effects of psychotropic medications
> Screening for cardiometabolic risk factors
> Counseling for lifestyle issues
> Leading teams in behavioral health homes
> Treating common medical conditions

First, do no Harm

> Many medications can cause increased weight and metabolic abnormalities.

> Atypical antipsychotics in particular may lead to weight gain, hyperglycemia and elevated cholesterol due to reversal of leptin and neuroreceptor effects, increased appetite, and decreased physical activity[1]

1.   *Molecular Psychiatry.* 2008; 13: 27-35 2.

Choosing the right antipsychotic

> Prescribe to minimize metabolic risk
> * Greatest risk with olanzapine, clozapine: dose-response relationship
> * Moderate risk with risperidone, quetiapine
> * Lowest risk with aripiprazole, ziprasidone

> Switching to lower risk medication may improve metabolic parameters[1]

1. Am J Psychiatry. 2011 Sep;168(9):947-56

Screening for patients on atypical antipsychotics: ADA/APA guidelines[1]

> Fasting glucose (or hemoglobin A1c), at baseline, 12 weeks, then annually

> Blood pressure at baseline, 12 weeks, then annually

> Fasting lipids at baseline, 12 weeks, then every five years

> Waist circumference at baseline, then annually

> Weight, monthly for the first three months, then quarterly

1. Diabetes Care. 2004; 27 (2): 596-601.

Screening for diabetes mellitus

> Fasting glucose ≥ 126 mg/dl

> Hemoglobin A1c ≥ 6.5% (less sensitive, more specific)

> Random glucose ≥ 200 mg/dl with symptoms

> Patients with fasting glucose 100-125 or A1c 5.7 – 6.4% are at increased risk for diabetes.

Dyslipidemia

> Low HDL
> High LDL
> High triglycerides
> Treatment goals depend on risk factors.

Hypertension

> Hypertension: blood pressure ≥ 140/90
> Pre-hypertension: blood pressure 120-139/80-89

Addressing lifestyle issues

> Counseling for diet, physical activity, smoking –don't nag, persuade. Use motivational interviewing to identify ambivalence and promote change.
> Use dieticians and physical therapy staff if available

Exercise

> 20-30 min/day of moderate exercise (e.g. walking)
> If no contraindication, resistance training twice weekly
> For patients with diabetes, exercise increases insulin sensitivity even in the absence of weight loss

Smoking

> In general populations, most drugs approximately double the odds of abstinence[1]

> Buproprion+nicotine replacement may promote abstinence in smokers with SMI.[2]

1. New England Journal of Medicine. 2011; 365(13): 1222-31 2. Biol Psychiatry. 2008 Jun 1;63(11):1092-6. Epub 2007 Dec 21.

Building a Behavioral Health Home

> Buy: Hire midlevel medical providers through your organization
> Refer: Hire or repurpose care managers to link patients to medical care in the community
> Rent: Subcontract through partnership with a medical organization
> • Most common approach being used among the 64 SAMHSA/HRSA PBHCI grantees

Leading Behavioral Health Homes

> Psychiatrists are well-positioned to be leaders in behavioral health homes
> Meshing two organizations requires skills in information technology; finance; and close working relationships across two organizations.

Pushing the envelope: Treating Common Metabolic conditions

> Hypertension
> Dyslipidemia
> Diabetes

Have you written one or more prescription to treat a metabolic condition in the past year?

Dyslipidemia treatment goals

> LDL is the main target of therapy
> For high risk individuals, including patients with diabetes and no other risk factors, the goal is LDL < 100
> For patients very high risk including known CV disease, the goal is LDL < 70

Diabetes treatment goals

- Glucose control
- Blood pressure control
- Treatment of dyslipidemia
- Antiplatelet therapy if at increased risk
- Screen for nephropathy, neuropathy, retinopathy
- Foot care

Hypertension goals

> BP Control
> Weight loss if overweight or obese
> DASH diet (**D**ietary **A**pproaches to **S**top **H**ypertension).
> Exercise
> Limit alcohol
> Limit salt intake

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C O N F E R E N C E

Integration of Behavioral Health & Primary Care, 2.0.12

George Rust, MD, MPH, FAAFP, FACPM
Father of Dan & Christina, Husband of Cindy,
Professor of Family Medicine and
Director, National Center for Primary Care
Morehouse School of Medicine

Partnerships on Behavioral Health in Primary Care

Federal Partners Senior Workgroup

Satcher Health Leadership Institute
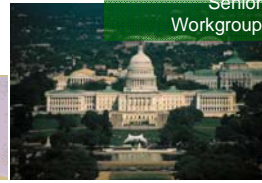
National Center for Primary Care

Carter Center

Rollins School of Public Health

Southeast Regional Clinicians' Network

Why Bring Behavioral Health into Primary Care?

Prevalence of Depression in Chronic Disease

Obstacles to Mental Health Services for Uninsured CHC Patients
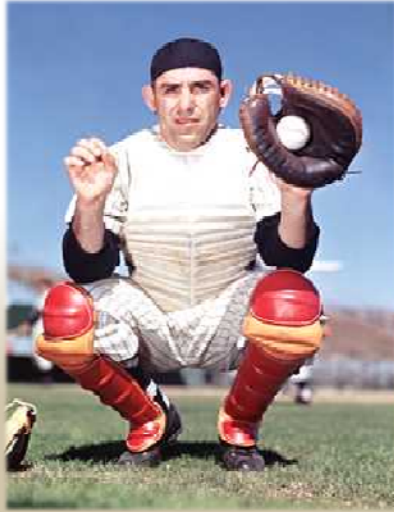
Access to Mental Health Services for the Uninsured in CHCs
-- JAMA
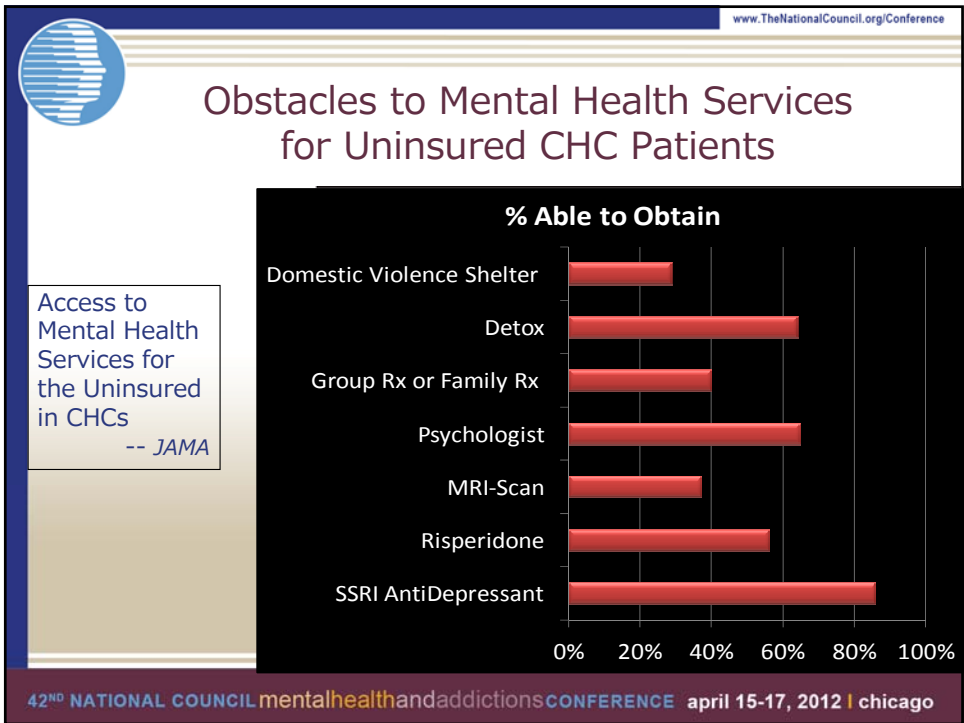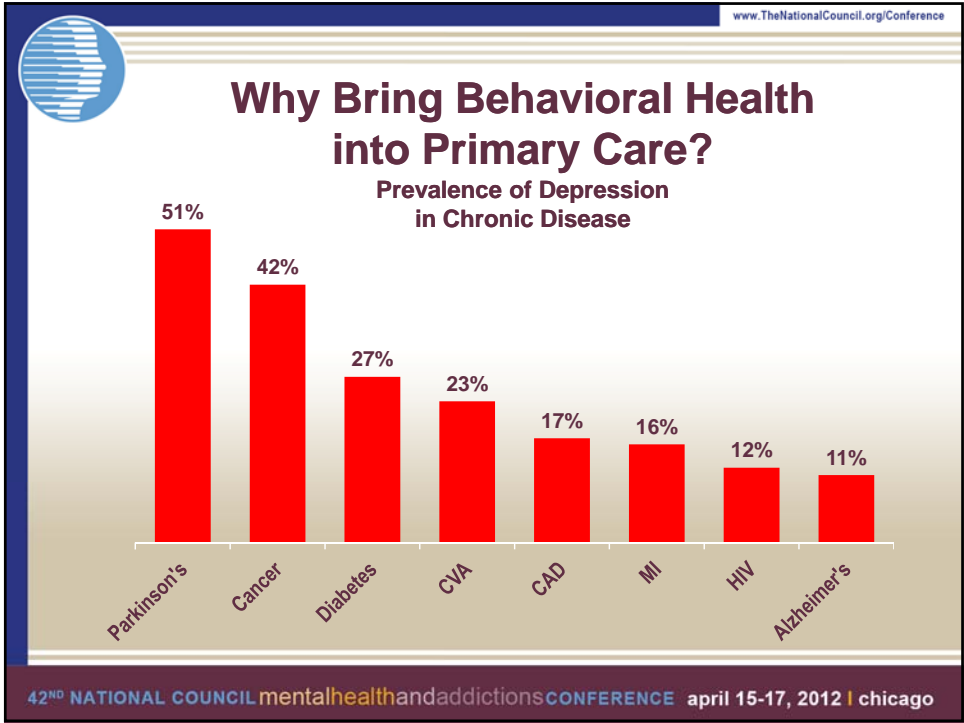
Choices Real People Make

Diabetic Patient with Depression	Agree to Accept Referral and then Don't Go	Accept Referral to Psychiatry Practice	Deal with Mental Health Problem in Primary Care Setting Only
Get Help	X	☑	☑
Avoid Stigma	☑	X	☑
Get Optimal Treatment	X	☑	X
Coordinate Psych & Medical Rx	X	?	☑

Why Bring Primary Care into Specialty Mental Health Care?

- 25-year survival deficit -- Schizophrenia Excess Mortality
  - 28% due to ↑ suicide
  - 12% due to ↑ accidents
  - **60% due to ↑ everything else**

> **S Brown. Excess mortality of schizophrenia. A meta-analysis**
> *The British Journal of Psychiatry* 171: 502-508 (1997)

Schizophrenia --Medical Mortality

SMR mortality ratio

(bar chart: 1970's ≈1.8, 1980's ≈3, 1990's ≈3.2)

Legend: SMR mortality ratio
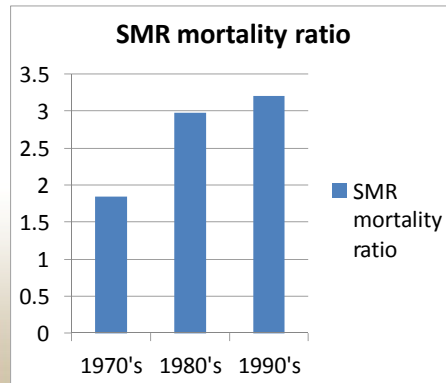
Median Standard Mortality Ratios:

> Infectious Dz   = 4.29
> Nervous System = 4.22
> Genitourinary   = 3.70
> Respiratory Dz = 3.19
> Cardiovascular = 1.79
> Endocrine Dz   = 2.63

Saha, S, Chant, D, Welham, J and McGrath, J. **A systematic review of mortality in individuals with schizophrenia: preliminary results.** A systematic review of mortality in individuals with schizophrenia: preliminary results. *Australian And New Zealand Journal of Psychiatry*, 2006; *40* : A134-A134.

Primary Care for Patients with SPMI – ABC's of Cardiometabolic Risk

> Check A1c
(Screen/Monitor Diabetes)

> Check Blood pressure

> Check Cholesterol
(Manage Lipid profile)

> Support Smoking Cessation
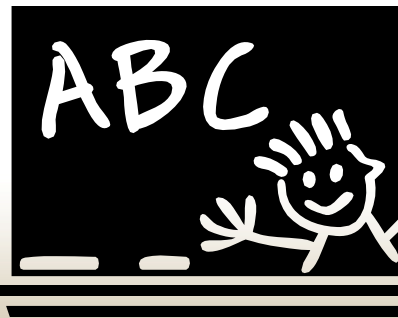
• Offer Aspirin *(Low-Dose)*

Primary Care for SPMI Patients –
Beyond Cardiometabolic Risks

> Standing Order flu shots &
Pneumonia Vaccine

> Cancer Screening *(Pap,
mammogram, PSA, & Colon)*

> Universal HIV-Screening
(Opt-out Protocol)

Continuum of Integration

Separate | Referral | Coordinated | Collaborative | Integrated

Separate ➡ Co-Located ➡ Common
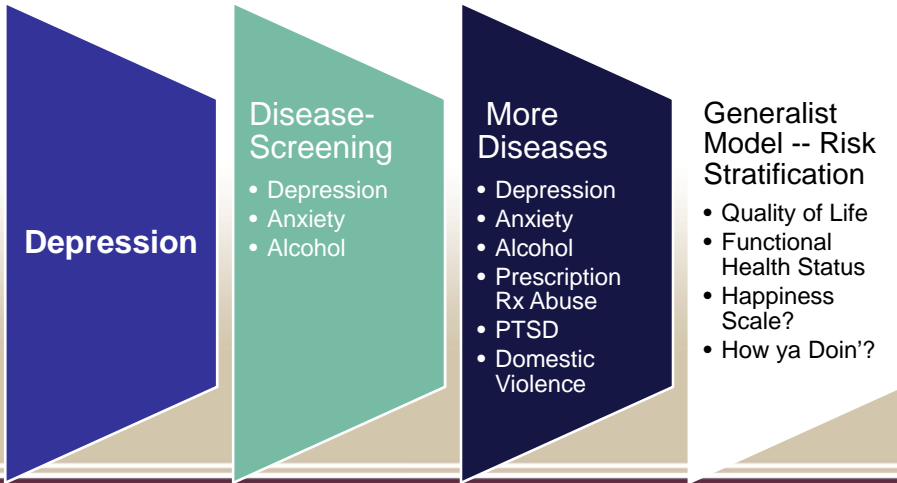
Primary Care Roles in Substance Use Disorders

> SBIRT
  - Screening
  - Brief Intervention
  - Referral
  - Treatment

> Motivational Interviewing

> Medication Assisted Recovery

> Recovery Oriented Systems of Care

> Medical Care of SUD Patients

Tweak #3: EHR Integration
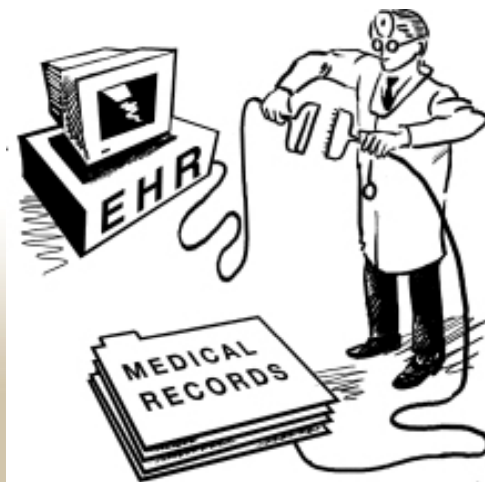
Uncoordinated Care – When We Just Don't Talk

> Jane Doe -- 37 y/o F w/ Bipolar Disorder
  • Lithium (Lithobid®)
  • Aripiprazole (Abilify®)
  • Divalproex Sodium (Depakote®)

• Jane Doe – 37 y/o fertile female smoker with HTN & two-weeks of productive cough
  – Azithromycin (Zithromax Z-Pack®)
  – ACE + HCTZ (Vaseretic®)
  – OCP's (Yaz®)
  – Bupropion (Zyban® or Wellbutrin®)

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Coordinated Care

> Tracking & Confirmation of Referrals & Follow-up

> Sharing of Medical Records

> Sharing of Prescribing Changes & Medication Lists

> Inter-Operable Electronic Health Records

> Mutual Participation in Effective Health Information Exchange

Would friendship be too much to ask?

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Collaborative Care

> All of the Above **_plus_** . . .

> Team-Based Case Conferences

> Frequent Interaction on Therapeutic Strategy

> Patient-Centered, Shared Decision-Making

> Shared Care Management

> Joint Decision-Making on Medication Changes

> Frequent, secure communication by phone, e-mail, & videoconferencing

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Health Information Technologies

Individual Level:

- **Flags or triggers to promote compliance at each visit and to decrease missed opportunities**

- **Evidence-based guideline alerts**

• Practice Level:

- **Average A1c level in all diabetics**

- **% of Patients with A1c > 8**

- **Lists of patients with A1c > 8 for outreach / action**

Strategic Issue #1: Managing Population Health Outcomes

> Accountable Care Organizations

> Business Model & Incentives Based on Population Health Outcomes

> Whole-Person Quality / Outcomes Mgt

> Integrated Delivery Systems

> Shared Risk / Shared Reward

Mental Health Co-Morbidities in the Disabled Medicaid Population

Disease Diagnosis (Dx)	n	Prevalence of this Diagnosis in adult, non-pregnant ABD Population	% among Pop with this Dx who also have at least 3 Other Co-Morbid Diseases	% among Pop with this Dx who also have any Mental Health Dx*	% among Pop with this Dx who also have any Substance Abuse	% among Pop wth this Dx who also have either Mental Health or Substance Abuse (or both)
Diseases Associated with High Co-Morbidity Rates (≥ 50% with ≥3 comorbidities)
Hypertension	10,545	30.0%	60.2%	26.7%	17.6%	36.5%
Musculoskeletal	8,683	24.7%	54.6%	33.1%	19.8%	42.4%
Lipid / Metabolic	7,6					39.4%
Diabetes	5,1					32.9%
Substance Abuse	3,7					100.0%
COPD	2,9					56.1%
Heart (not CHF/CAD)	2,5					41.9%
Vascular	2,3					44.1%
Coronary Dz (CAD)	2,1					44.0%
Blood (not hemophilia)	2,0					47.1%
Cancer	1,996	5.7%	61.0%	25.6%	22.5%	38.5%
Asthma	1,798	5.1%	52.5%	35.7%	28.0%	49.0%

- 73% of patients with SUD have at least 3 other co-morbid diseases
- 36% of asthma and COPD patients have a mental health diagnosis
- 33% of diabetics have either a mental health or substance use diagnosis

Substance Abuse Complicates Everything!

He's just one patient, how bad could it be???
- Diabetes
- Arthritis
- COPD
- CHF
- Stroke
- Pneumonia
- Cancer
- Depression
- Alcohol / substance abuse
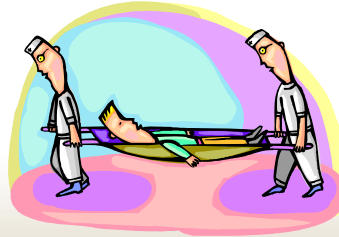
* 21 ER Visits   * 143 hospital bed-days

Cohesive, Comprehensive, Integrated Local Health Systems

Hospitals

Faith Communities

Mental Health

Substance Use Treatment
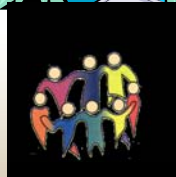
Public Health

Emergency Room

Business & Community Leaders
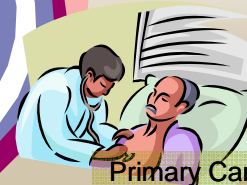
Primary Care
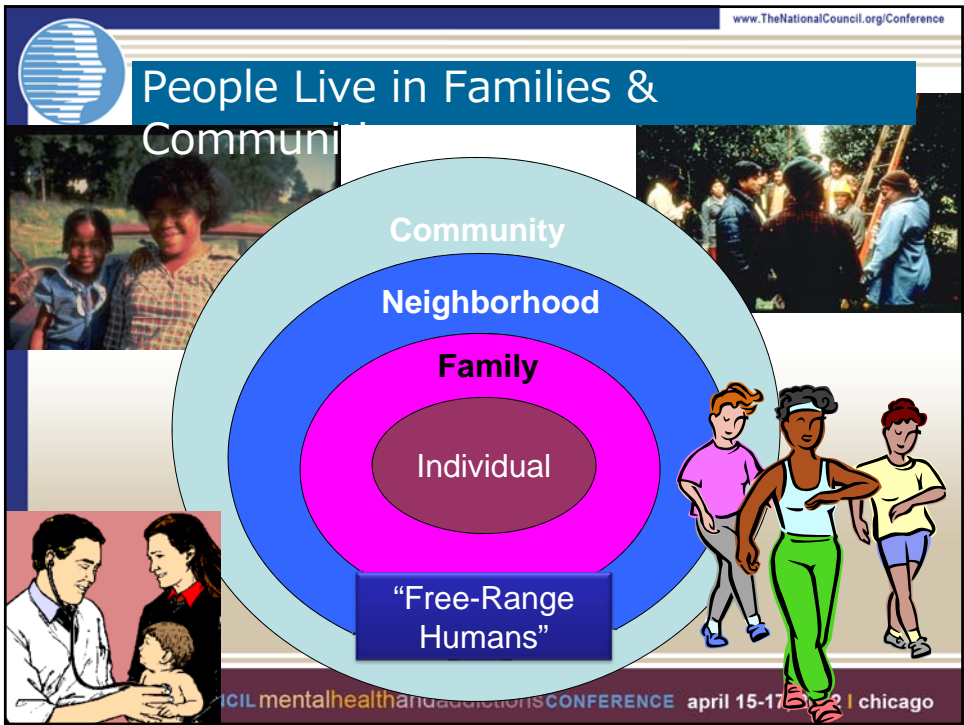
Strategic Issue #2: Community–Level Integration

Free-Range Humans *(when patients escape from the exam room!)*

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www.TheNationalCouncil.org/Conference

People Live in Families & Communities

Community

Neighborhood

Family

Individual

"Free-Range Humans"

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Cultural Relevance / Cultural Ownership

South Central Foundation – Anchorage, Alaska

Community-Based Team

- Community Health Workers
- Promotores de Salud
- Peer Counselors
- Navigators
- Care Coordinators

Community-Level Teamwork –
A Real *System* of Care

Faith Communities

Mental Health

Substance Abuse Treatment

Behavioral Health

Primary Care

Inpatient Programs

Patient-Centered, Recovery-Oriented Systems of Care

> No one can whistle a symphony.

It takes a whole orchestra to play it.

-- *H.E. Luccock*

Can We Build Recovery-Nurturing Healthy Communities?

Healthy Community	Positive Health Factors	Negative Health Factors	Unhealthy Community
• People Out & About • Safety • Sense of "Community" • Resiliency • Hope	• Produce Markets • Parks • Sidewalks • Worship Centers • Primary Care Health Homes	• Unhealthy Fast-Food • No Safe Place to Walk or Play • Liquor Stores • Mini-Marts • Crime • Joblessness	• Unsafe, Insecure • Fragmented • Economically-Depressed • Drug-Infested • Despairing

The Continuum of Community Health

Embracing One Another, Soaring Together

"We are all as angels,
    with only one wing;

We can only fly
    when we embrace each other.

-- Luciano de Crescenzo

april 15-17, 2012 | chicago

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C O N F E R E N C E

Comprehensive Collaborative Care in Rural Colorado

Lori Raney, MD
Medical Director, Axis Health System
Chair, APA Workgroup on Integrated Care

Colorado CMHCs
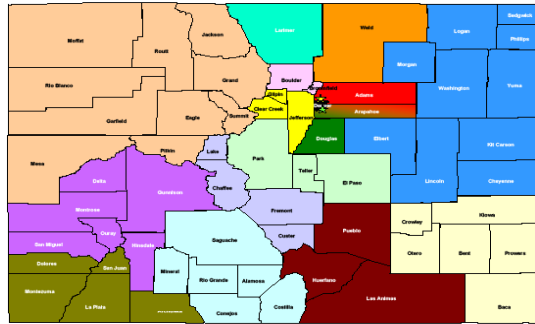
CBHC Collaborative Care Mapping Project

GREEN = Collaboration with Federally Qualified Health Center

RED = School Based Health Center

YELLOW = Collaboration with Private Practice

BLUE = Collaboration with Local Health Department or Social Services

PURPLE = Collaboration with Hospital/Medical Center

PINK = Collaboration with Community Non-profit Organization

> http://www.cbhc.org/integration/map/
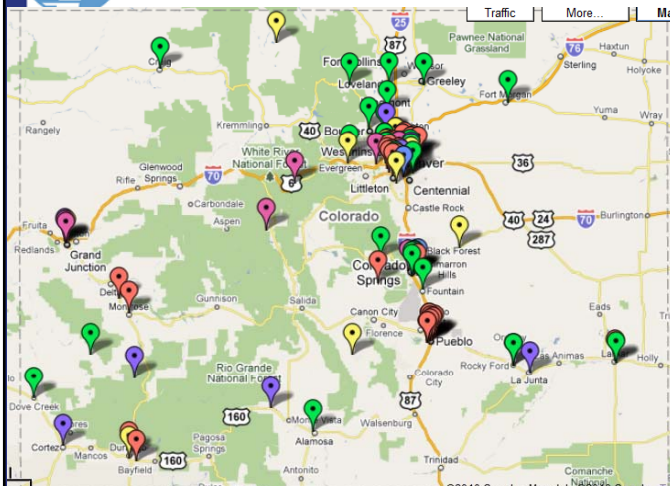
Southwest Colorado Integration Projects

> **Location**: Rural and Frontier Areas of Colorado
>   Rural: 1000 or fewer per square mile
>   Frontier: 6 or fewer per square mile
>   **Denominator: 125,000*
> **Practice Settings**:
> * Cortez Integrated Health Care Facility – onsite PCPs
> * FQHC – Federally Qualified Health Center – expansion grant
> * RHC – Rural Health Center – Hospital owned
> * SBHC – School Based Health Centers – alternative, high school and elementary school – Colorado Health Foundation
> * Private pediatric practice – Medicaid Cap
> * **IHS – Indian Health Service – Co-located only - contract
> **Team**:
> * PCP – Family Practice, Internal Medicine, PA, NP and Pediatrician
> * BHP – LCSW, PhD
> * Psychiatrist - Adult Trained, Child Willing

Principles of Integrated Care

Find Patients:

Screening, identification and determination of medical diagnoses

Track Patients:

Systematic follow-up and use of registry

Treat Patients:

- Evidence based treatment of medical and mental health conditions

- Heath behavior change

- Timely treatment adjustment

Program Oversight and Quality Improvement:

Regularly review outcomes and make adjustments to program

Collaborative Team Approach

PCP

Patient

BHP/Care Manager

New Roles

Consulting Psychiatrist

Core Program

Other Behavioral Health Clinicians

Additional Clinic Resources

Substance Treatment, Vocational Rehabilitation, CMHC, Other Community Resources

Outside Resources
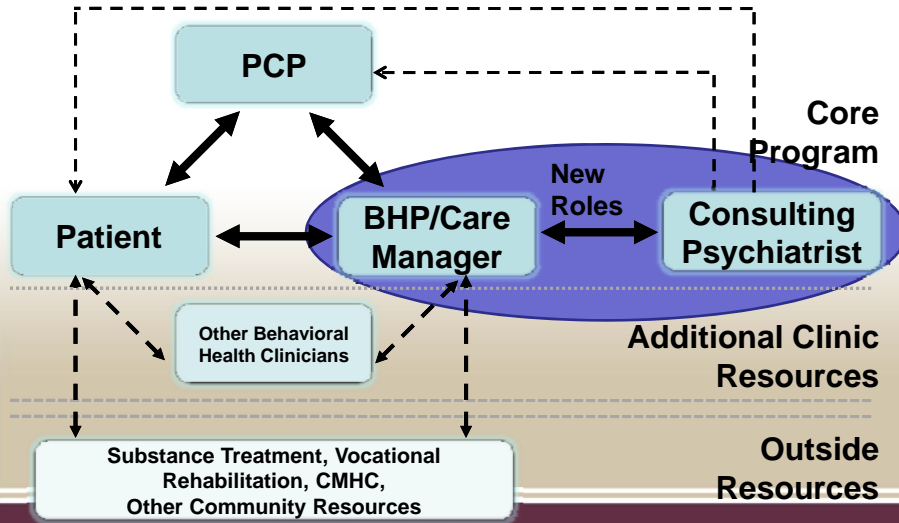
Communication: The Prius, the Palm Pilot, the Polycom

Psychiatric Consultant Daily Tasks

> Clinical consultation and supervision of BHPs
> Telephonic/e-mail/text consultation to PCPs and BHPs "curbsides"
> Track and oversee panels and clinical outcomes
> Suggest treatment plan changes – "intensification of treatment" in real time, treat to target
> Refer to higher level of care if needed
> Consultation notes based on discussion with BHP, chart review, direct evaluation
> On site clinic visits – scheduled or prn
> Co-visits with PCPs and BHPs
> Education

Dove Creek FQHC

> FQHC – frontier, smallest FQ in lower 48
> Staffing:
> • <u>One</u> FTE PCP (half MD, half PA)
> • <u>One</u> half FTE BHP - LCSW
> • <u>One</u> hour Psychiatrist per week
> All screened PHQ-9 with Audit - C on bottom, secondary screens as needed (GAD-7, MDQ, etc)
> Cell phone back-up to BHP and PCP – "I've Got Your Back"
> Review of BHP caseload
> Monthly team meeting/breakfast visit/Stump the Chump – Psychopharm and Diagnostics Mainly
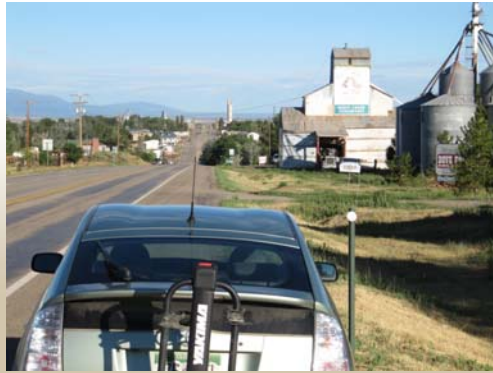
DHS School-Based Health Center

- **50% mental illness has onset by age 14, 75% by age 24**

> 1 FTE Pediatrician/Child NP/FP – share 40 hours
> On Site BHP 4 days each week
> Psychiatric Consultation - 4 hours per month
> Monthly Team Meeting
> Phone, e-mail back-up as needed – "speed dial"
> Antidepressant Prescribing Protocols
> Medical Lead

Comprehensive, Person-Centered Collaborative Care

> One parking lot, one waiting room, one reception, one mission, one board, one CEO, one check-out, one care plan that is comprehensive, "no wrong door", perfect "cylinder of excellence"
> Patient care areas designed around "cadence of care"
> All clinical staff in "huddle" in central location
> Deploy out to offices based on patient need at that appointment
> "Patient Tools" in waiting room for routine screening
> All staff trained in person's total health needs – to at least recognize there may be something else that needs to be addressed at the visit
> Cortez Integrated Health Care

Working Together: Floor plan of the future

Cortez Integrated Healthcare

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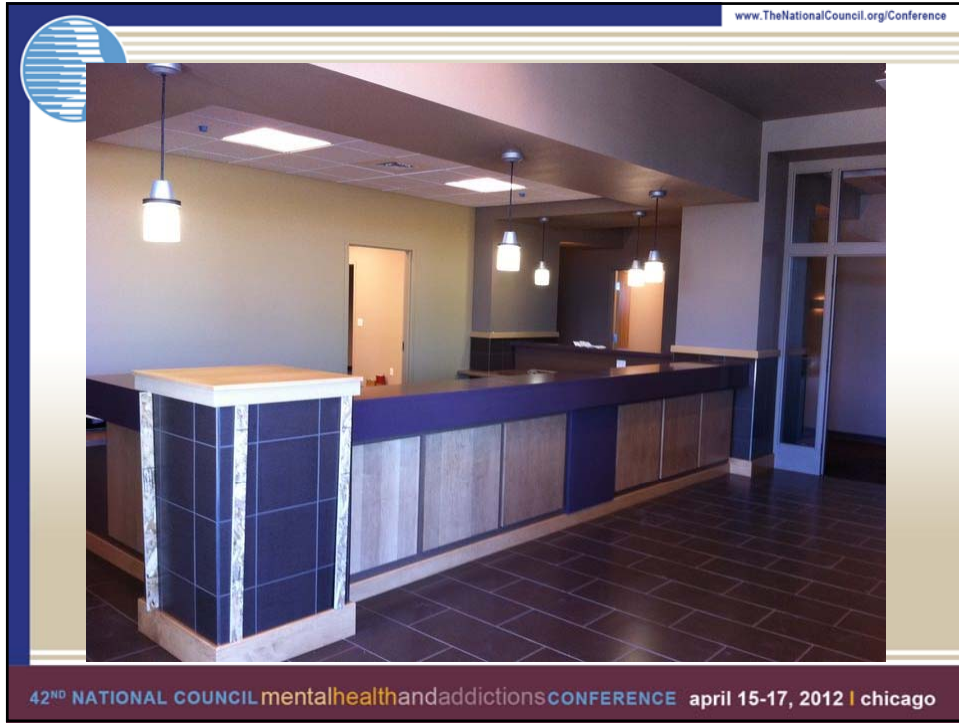
Protocols

> Existing BH, No Primary Care
> Existing BH, Have Primary Care
> New Primary Care, No BH
> New Primary Care, Have BH
> Patient Tools in Lobby:
  • PHQ, GAD-7, Audit-c, DAST, PC-PTSD
  • Adolescent PHQ-9, CRAFFT, ASQ, SDQ
> Primary Care Indicators to follow
  • HbA1c
  • BP
  • Lipids
  • BMI

TeamCare Summary Report

Initial	Clinic	Enroll Date	PHQ		BP		HbA$_{1c}$		LDL	
			BL	Now	BL	Now	BL	Now	BL	Now
	NSH	5/19/08	19	19	141/69	127/77	7.3	6.8	168	138
	NSH	1/9/08	15	2	118/80	130/80	9.2	8.3	138	124
	EVM	11/12/07	14	9	160/98	150/85	6.4	6.8	108	67
	EVM	10/30/07	13	2	209/119	126/76	7.3	7.7	119	103
	LYN	8/23/07	14	3	149/71	111/58	8.1	7.7	85	82

> …however, 2 EMRs….

Patient Info

Name:	**John Doe**
DOB:	**6/1/1971**
Address:	**123 Anystreet**
City, State:	**Durango, CO**
Zip:	**81301**
Marital:	**Married**
Race:	**Hispanic**
Language:	**English**
Occupation:	**Construction**
Emp Status:	**FT**
Payer:	**Medicaid**

Appointments

	Provider
Last: 7/23/11	Raney
Missed: 3/24/11	Chimileski
Next: 8/25/11	Seymour
Last Lab: 7/18/09	

Guardian

Children currently with mother / wife

Health Goals

Quit Smoking
Exercise More
Loose Weight
Less Stress
Lower BP
Lower Cholesterol
Other
Other
Other

Your Health Care Team

Primary Care
Provider: Dr. Jay Ciotti
Practice: Cottonwood Holistic
Last Visit: 7/23/11

Psychiatrist
Provider: Dr. Lori Raney
Practice: Axis Health
Last Visit: 6/5/11

Dentist
Provider: Dr. Brian Olsen
Practice: Cortez Dental Care
Last Visit: 12/15/10

Behavioral Health Provider
Provider: Tom Seymour
Practice: Axis Health
Last Visit: 6/11/11

Other
Provider: Dr. William Rainer
Practice: Animas Ear & Sens
Last Visit: 5/7/05

Patient Info

Name: **John Doe**   Age: **41**

Diagnosis / Problem List
Chronic disease, COPD, PTSD Axis 3 dual disorder, Diabetes, CHPD, Stroke '02, amputee

Health Maintenance

	Date
Well Visit	10/4/2011
Mammogram	
Colonoscopy	
PAP	
PSA	7/25/11
Dental Visit	
Immunizations	4/15/11

Allergies
Penicillin, dust

Physical

	Initial	Current	Range	Target
Height	5' 10 ''			
Weight	195	170	140 – 165	165
Temp	98.6	101.2	98.6	98.6

Growth Charts (m) (f)

MH Screen- Adult

	Initial	Current	Annual Chg
Audit:	2	4	5
GAD7	19	11	
Stages	15	0	
Other			
Other			
Tobacco	Y	N	

MH Screen - Pediatric

	Initial	Current
ASQ	-5	5
Adolescent PHQ9	25	+1
CRAFFT	0	
Edinburgh	-1	
Strengths & Difficulties	103	-5
Other		
Tobacco		

Trends

	Initial	Current	Range	Target
BP	110/60	140/85	90-110/55-70	110/60
BMI	27.3	25.0	18.5 – 24.9	23.0
HBA1C	8.2	8.7	<7%	9
Cholesterol	215	210	110 -350	200
PHQ-9	15	14	0-27	11
Other	x	x	x	x

Medications

	Date
⊕ Prozac 20mg	10/14/11
⊕ Prozac 30mg	6/3/11
⊕	

Personal Health Profile
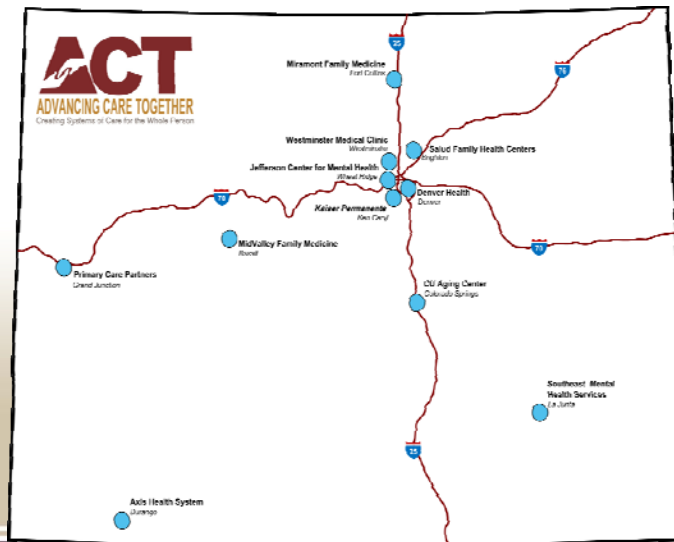
## Psychiatric Consultant Daily Tasks

> Clinical consultation and supervision of BHPs
> Telephonic/e-mail/text consultation to PCPs and BHPs "curbsides"
> Track and oversee panels and clinical outcomes
> Suggest treatment plan changes – "intensification of treatment" in real time, treat to target
> Refer to higher level of care if needed
> Consultation notes based on discussion with BHP, chart review, direct evaluation
> On site clinic visits – scheduled or prn
> Co-visits with PCPs and BHPs
> Education
> **Huddle with care team in morning**
> **Joint treatment planning, meetings**

Who's Best Suited for This?

> Flexible
> Adaptable
> Self confident
> Outgoing
> Appreciate different cadence of care
> Available
> Willingness to tolerate interruptions
> Like to work as team member
> Manage anxiety about liability concerns
> Willingness to consult across life span
> This is some of what you do – not all

Psychiatrists Summit: Primary Care Updates for Psychiatrists

Monday, April 16, 2012, 8:00 am – 12:00 pm
Room: Lake Ontario, Eighth Floor

Laurie Carrier, MD, Family Physician and Psychiatrist, Heartland International Health Center, Clinical Instructor, Northwestern Feinberg School of Medicine

John Kern, MD, Chief Medical Officer, Regional Mental Health Center

Lori Raney, MD, Medical Director, Axis Health System

Raymond Rion, MD, Medical Director, Packard Health

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FOR COMMUNITY BEHAVIORAL HEALTHCARE

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C O N F E R E N C E

Preventative Medicine: A Role in Psychiatry?

Laurie Carrier, MD
Psychiatry and Family Medicine
Heartland International Health Centers, Chicago, IL
Northwestern University, Department of Family and
Community Medicine

Hyperlipidemia

> Objectives
  - Definition
  - Health Concerns
  - Screening Guidelines
  - Risk Factors
  - Treatment Guidelines
  - Treatment Options

GLASBERGEN   Copyright 2008 by Randy Glasbergen.
www.glasbergen.com

"I'd like a large pizza with double cheese,
sausage, pepperoni, meatballs, bacon,
Lipitor, Zetia, Vytorin and Zocor."
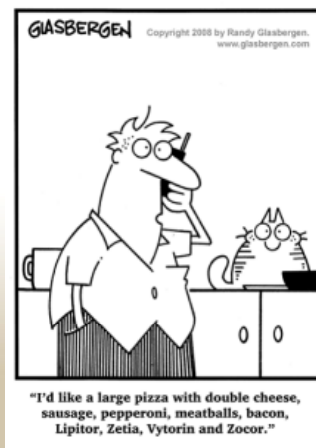
Hyperlipidemia… What is It?

> Increased levels of lipids in the blood, including cholesterol and triglycerides

> High levels cause atherosclerosis, or plaque formation, hardening & narrowing arteries, eventually reducing blood flow

> HLD itself does not cause symptoms

Hyperlipidemia… Why Care?
Communicating with Patients

> Elevations significantly increase risk of developing vascular disease

> Atherlosclerosis causes thickened/ hardened arteries in the myocardium, which can lead to a heart attack, and in distal

arteries, leading to stroke & peripheral vascular disease

> Heart disease is the leading cause of death for both men and women
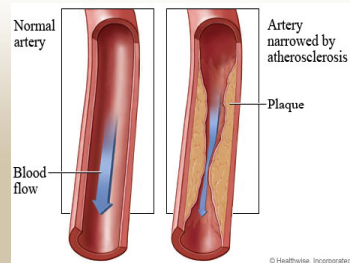
Contributors to Hyperlipidemia

> Lifestyle habits
  - Obesity (particularly Central Obesity)
  - Sedentary lifestyle
  - Smoking
  - High Cholesterol Diet
> Kidney Disease
> Diabetes
> Underactive Thyroid
> Genetics

Hyperlipidemia w/ Atypicals

> In 2006, Olfsen, M et al published study in Am J Psychiatry estimating rel. risk of developing HLD after tx with antipsychotics in relation to no antipsychotic tx
> Conclusion: Most commonly prescribed antipsychotic medications increase the risk of developing hyperlipidemia in patients with schizophrenia or mood disorders

Olfson M. "Hyperlipidemia Following Treatment with Antipsychotic Medications." Am J Psychiatry. 2006; 163: 1821-1825.
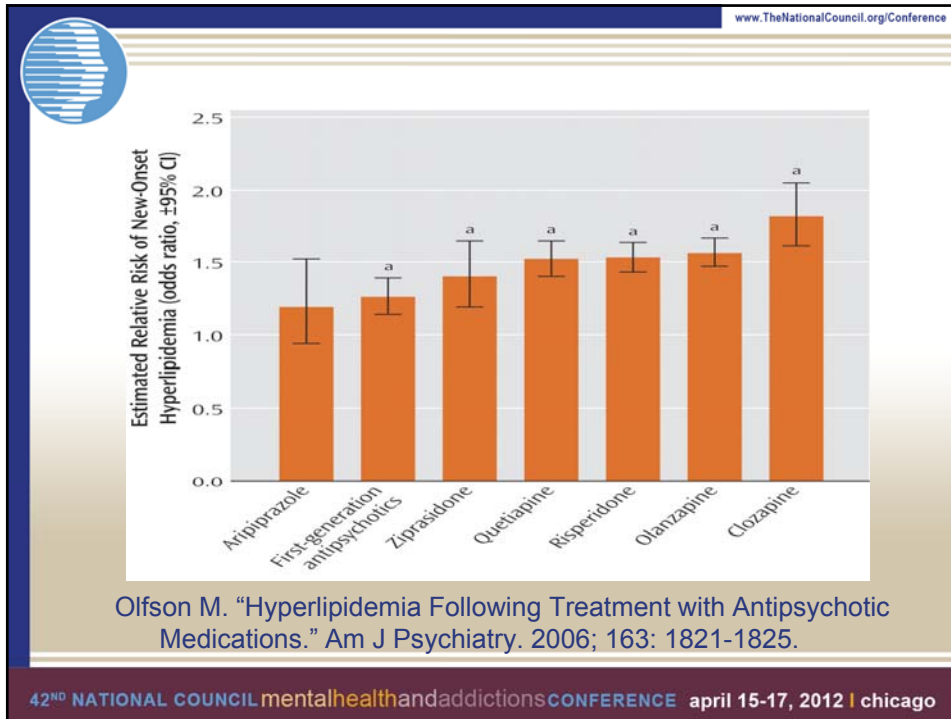
USPSTF Lipid Screening Recommendations

> Men >35yo (A)

> Women > 45yo (A)

> Men aged 20 to 35 if they have increased risk factors for coronary artery disease (B)

> Women aged 20-45 if at increased risk for CAD (B)

> Screening Interval: No strict guidelines

• q five years, shorter for people w/ borderline values, longer for low risk

ADA Screening Measures for Patients Initiating Atypical Antipsychotic Medications

	Baseline	4 Weeks	8 Weeks	12 Weeks	Quarterly	Annually	Every 5 Years
Personal & family history	X					X	
Weight (BMI)	X	X	X	X	X	X	
Waist circumference	X					X	
Blood pressure	X			X		X	
Fasting plasma glucose	X			X		X	
Fasting lipid profile	X			X			X

ADA = American Diabetes Association; BMI = body mass index
American Diabetes Association, et al. *Diabetes Care.* 2004;27:596.

Suggested Treatment Guidelines

> Adult Treatment Panel III, or ATP III
  - The Third Report of the Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults from the National Cholesterol Education Program (NCEP)
  - First out in 2002, with update in 2008
> ATP III Guidelines At-A-Glance Quick Desk Reference :
  - www.nhlbi.nih.gov/guidelines/cholesterol/atglance.pdf

ATP III outlined five major steps in risk stratification

1) Obtain a fasting lipid profile

2) ID the presence of CHD or equivalents

3) ID the presence of other major CHD risk factors

4) If two + risk factors exist w/ elevated LDL in a patient w/o CHD or equivalent, the ATP III modified Framingham Score is used to assess the 10-year risk of CHD

5) Determine the risk category that establishes the LDL goal, when to initiate therapeutic lifestyle changes, and when to consider drug therapy

---

Step I: Check a Fasting Lipid Profile

> Total Cholesterol – Normal < 200mg/dL

> LDL (low density lipoprotein or "bad" cholesterol)
  - <100　　　　　Optimal
  - 100-129　　　Near optimal
  - 130-159　　　Borderline High
  - 160-189　　　High
  - >190　　　　　Very High

> HDL (high density lipoprotein or "good" cholesterol)
  - <40　　　　　Low
  - >60　　　　　High

> Triglycerides (normal <150, very elevated >500)

Step II: ID High Risk Factors For Coronary Heart Disease

> Clinical CHD

> Symptomatic Carotid Artery Disease

> Peripheral Arterial Disease

> Abdominal Aortic Aneurysm

> Diabetes

Step III: Determine Presence of Major Risk Factors (other than LDL)

> Cigarette Smoking

> HTN (BP>140/90mmHg) or on HTN medicine

> Low HDL (<40mg/dl)

> Family Hx of premature CHD (<55 in 1st degree male or <65 in 1st degree female)

> HDL Cholesterol>60 counts as a "negative" risk factor, its presence removes one from count

Step IV: If 2+ Risk Factors are Present w/o CHD, assess 10-year (short-term) CHD Risk w/ the Framingham Risk Score

Available at: http://hp2010.nhlbihin.net/atpiii/calculator.asp?usertype=prof

NATIONAL CHOLESTEROL EDUCATION PROGRAM
Third Report of the Expert Panel on
Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)

Risk Assessment Tool for Estimating 10-year Risk of Developing Hard CHD (Myocardial Infarction and Coronary Death)

The risk assessment tool below uses recent data from the Framingham Heart Study to estimate 10-year risk for "hard" coronary heart disease outcomes (myocardial infarction and coronary death). This tool is designed to estimate risk in adults aged 20 and older who do not have heart disease or diabetes. Use the calculator below to estimate 10-year risk.

Age:	years
Gender:	○ Female ○ Male
Total Cholesterol	mg/dL
HDL Cholesterol	mg/dL
Smoker	○ No ○ Yes
Systolic Blood Pressure	mm/Hg
Currently on any medication to treat high blood pressure.	○ No ○ Yes

Calculate 10-Year Risk

Risk

Low	< 10% (ideally, < 5%)
Intermediate	10% to 20%
High	> 20%

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Step IV: If 2+ Risk Factors are Present w/o CHD, assess 10-year (short-term) CHD Risk w/ Framingham

Example Risk Score of a Female Patient:

NCEP ATP III / Framingham Risk Score

• Age 55 years	8 points
• Total cholesterol 240–279	4 points
• HDL-C < 40	2 points
• Systolic BP 140–159 (no Rx)	3 points
Total Points	**17**
10 year risk of MI or CHD death =	**5%**

Note:
If smoking, total points = 21
    10 year risk = 14%

hp2010.nhlbihin.net/atpiii/calculator.asp

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Step V: Determine Risk Category

> Establish LDL Goal of Therapy
> Determine Need for Lifestyle Changes
> Determine Level for Drug Consideration

Step V: Determine Risk Category

NCEP ATP III
LDL-C Goals of Therapy

Risk Category	LDL-C Level (mg/dL)		
	Goal	TLC Initiated	Drug Therapy Considered
High: CHD or CHD risk equivalents (10-year risk >20%)	<100 Optional goal <70	≥100	≥100 (<100: consider drug therapy)
Moderately high: 2+ risk factors (10-year risk 10%-20%)	<130 Optional goal <100	≥130	≥130 (100-129: consider drug therapy)
Moderate: 2+ risk factors (10-year risk <10%)	<130	≥130	≥160
Lower: 0-1 risk factor	<160	≥160	≥190 (160-189: drug optional)

*See APOLLO slide kit: Cardiovascular Risk: The Impact of Established and Emerging Markers for Framingham scoring.

TLC = therapeutic lifestyle change(s).

NCEP ATP III. Circulation. 2002;106:3143-3421.
Grundy SM, et al. Circulation 2004;110:227-239.

Step V: Determine Risk Category

Risk Category	LDL-C Levels (when drug therapy is considered)	LDL-C Goal
0 to 1 risk factor	190 mg/dL or higher	160 mg/dL or lower
2 or more risk factors	160 mg/dL or higher	130 mg/dL or lower
People with heart disease, diabetes, or similar conditions	130 mg/dL or higher	100 mg/dL or lower

---

Step 6: Initiate Therapeutic Lifestyle Changes if LDL is Above Goal

> Diet
- Saturated Fat <7% of Calories
- Cholesterol <200mg/day
- Increase Fiber (10-25g/day) and plant stanols/sterols (2g/day) to enhance LDL lowering

> Weight Management
> Increased Physical Activity

Step 7: Consider drug therapy if LDL exceeds goal:

> Consider drug simultaneously w/ lifestyle changes for CHD and CHD equivalents

> Consider adding drug to TLC after 3 months for other risk categories

"We found a bunch of these clogging your arteries. They're cholesterol pills."

Medication Class	Medication Examples	Effects on Blood Cholesterol
Statins (HMG-CoA reductase)	Pravachol, Mevacor, Lipitor, Lescol, Crestor, Zocor	• Most effective in lowering LDL • Mildly effective in increasing HDL • Mildly effective in lowering triglycerides
Niacin (nicotinic acid)	Niacin, Niaspan, Slo-Niacin	• Most effective in increasing HDL • Effective in lowering triglycerides • Mildly to modestly effective in lowering LDL
Fibrates (fibric acid)	Tricor, Lopid	• Most effective in lowering triglycerides • Effective in increasing HDL • Minimally effective in lowering LDL
Resins (bile acid sequestrants)	Questran, Welchol, Colestid	• Mildly to modestly effective in lowering LDL • No effect on HDL and triglycerides
Cholesterol Absorption Inhibitors	Zetia	• Mildly to modestly effective in lowering LDL • No effect on HDL and triglycerides
Combining nicotinic acid with statin	Advicor (Mevacor + Niaspan)	• Effective in lowering LDL and triglycerides and increasing HDL
Combining statin with an absorption inhibitor	Vytorin (Zocor + Zetia)	• Synergistic in lowering LDL and effective in lowering LDL with low doses of each ingredient

Statins

> HMG CoA reductase (hydroxymethylglutaryl CoA reductase) inhibitors, the rate-limiting step in cholesterol biosynthesis
> Beneficial in pts with dyslipidemias prevention of CHD
> Mechanism of action is unclear
  - Regression of athersclerosis in minority of pts
  - Clinical benefits seen in 6 mo b/f regression of athersclerosis possible
  - plaque stabilization, reversal of endothelial dysfunction, and decreased thrombogenicity

Statin Choices

> Simvastatin (Zocor) 5-40mg (80mg restricted dose as of 6/11), generic, Start 20mg
> Atorvastatin (Lipitor) 10-80mg, generic 11/11
> Pravastatin (Pravachol) 10-80mg, generic
> Lovastatin (Mevacor, Altoprev) 10-20mg, generic
> Rosuvatatin (Crestor) 5-40mg, $$
> Fluvastin (Lescol) 20-80mg, bid >80mg, $$
> Start at night, can adjust q4wk-3mo

Statins

> Most powerful for lowering LDL-cholesterol
> Reductions in the range of 30 - 63 %
> Less side effects than with other classes of lipid lowering agents
> Low rates of statin side effects leading to discontinuation
> Rec checking LFTs and TSH before initiation
> 0.5 to 3 % LFT elevation occurs in 1st 3 mo of therapy and is dose-dependent

Statin Side Effects

> Common Reactions:
> • Abdominal Pain, Constipation, URI sx, Flatulence, Diarrhea, Asthenia, Myalgia, AST/ALT elevation

> Serious Reactions
> • Myopathy, Rahabdomyolosis, Acute Renal Failure, Hepatotoxicity, Pancreatitis, Blood Dyscrasias

Concern for Muscle Injury w/ Statins

> Muscle injury frequency
  - 2 to 11 percent for myalgias
  - 0.5 percent for myositis
  - < 0.1 percent for rhabdomyolysis

> Often no CK elevation

> Symptoms begin w/i wks to mos after use

> Symptoms resolve over days to weeks after drug discontinuation

---

Psychiatric Concerns w/ Statins

> Concerns were raised about increased suicidal ideation and depression in patients treated with lipid lowering drugs

> In 2003, Yang et al performed a nested case-control study to evaluate the effect of lipid-lowering drugs on depression and suicidal behavior

Psychiatric Concerns w/ Statins

> Conclusions:
- Use of statins & other lipid-lowering drugs is not a/w increased risk of depression or suicide
- On the contrary, pts w/ statin use had a lower risk of developing depression, an effect that may be explained by improved quality of life due to decreased risk of CV events or more health awareness

Psychiatric Concerns w/ Statins

> Concerns raised in media about cognitive dysfunction & memory loss a/w statin use
> Analysis of adverse event reports does not show that statins cause memory loss but suggests biologic effect
> Physicians can consider whether statin therapy was recently initiated in pts w/ new memory loss
> Other studies have suggested statins may have a role in the prevention of dementia

Treatment of low HDL (<40mg/dL)

> First reach LDL goal, then:

> Intensify weight management, increase physical activity and encourage smoking cessation

> Trials where therapy was used to raise HDL failed to show benefit on CV risk

> At this time drug therapy is not directly recommended to raise HDL (2006 AHA/ACC update)

> Of note, some meds lower HDL levels including beta blockers and benzodiazepines

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Triglycerides

> For all levels of elevated triglycerides, lifestyle changes should be part of the treatment

> If >500, actively work to lower triglycerides:
  - Very low-fat diet (<15% of calories from fat), Add in Omega-3 Fatty Acids
  - Weight management and physical activity
  - Fibrate or Nicotinic Acid
    - Gemfibrozil 600mg bid most affordable option
  - When trigs< 500mg/dL, focus on reaching LDL therapy goals

Summary for Hyperlipidemia

> The main indication for therapy is reduction of cardiovascular risk

> For all patients w/ elevated lipids, lifestyle interventions should be encouraged

> For pts w/ elevated LDL & trigs <500 where pharmacological tx indicated or lifestyle changes have not been successful, a statin should be considered

> For pts w/ trigs >500, start a fibrate followed by a statin once the trig level is down

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Weight Management

"I stopped taking the medicine because I prefer the original disease to the side effects."
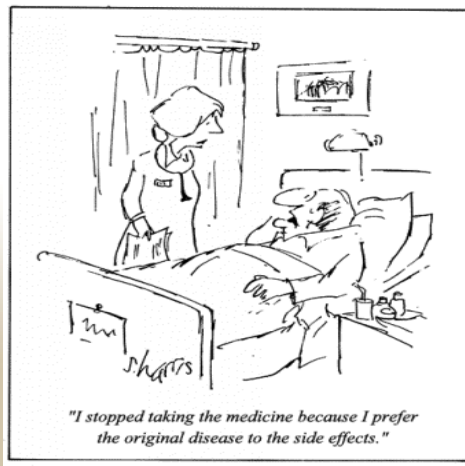
Weight Management Objectives

> General Statistics
> Initial Interventions
> Dietary Education
> Exercise encouragement
> Pharmacological Considerations

Obesity Statistics

> Prevalence of obesity has grown dramatically over the last 2 decades
> Increased risk for Type II DM, HTN, HLD, cardiovascular disease and certain cancers
> Pts w/ mental illness are at increased risk for obesity from both the illness itself and pharmacological treatment
> Obese mentally ill patients die up to 3 decades earlier
> Up to 60% of pts w SCZ and bipolar are clinically obese

Risk Factors for Obesity in Mentally Ill

> Medications
  - Antipsychotics, anticonvulsants, antidepressants
  - Unhealthy Lifestyle Choices
  - Comorbid Substance Abuse (inverse as well)
  - Binge Eating and Other Eating Disorders
  - Genetics

> Weight gain has negative impact on treatment adherence

Making Patients Aware

> Weight and abdominal circumference should be considered vital signs at each OV

> Many pts don't have scales and may not be aware of their own weight gain

> Addressing the increase or commending the decrease can be helpful to keep importance of weight control on the pt's radar

Nonpharmocologic Treatment Options

> Follow medication screening guidelines (monitoring BMI, abdo circ, lipids, glucose)

> Behavioral Weight Management
- Encouraged decreased caloric intake
- Encourage increased physical activity
- Share CBT strategies to reinforce positive changes in dietary habits and activities

Incorporating Life Style Changes

> Health Education (1:1, groups)
> Case managers assisting with grocery choices
> Healthy cooking demonstrations
> Exercise
- Prescriptions for exercise and weight loss
  - Eg. Prescribing 15 minute walk w/ 15mg of Zyprexa
- Many fitness centers accept prescriptions for short term free membership (BMI>26)

Pharmacological Considerations

> Ideally, choosing a weight neutral medication when applicable
> Reevaluate need for medications that are contributing to weight gain frequently
> Common culprits:
- AD: Amitriptyline, Paroxetine, Mirtazipine
- MS: Valproate, Lithium, Gabapentin, Carbamazepine
- AP: Clozapine, Olanzapine, Quetiapine, Risperidone, Thioridazine, Chlorpromazine

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Psychiatric medications that can contribute to weight loss:

- Fluoxetine
- Buproprion
- Topiramate

> Weight Neutral Options
- Consider Atypicals w/ lower metabolic side effects when appropriate
  - Ziprasidone, Aripiprazole
- Mood Stabilizers
  - Lamotrigine

Use of Metformin in Atypical Antipsychotic Mediated Weight Gain

> Tx w/ atypicals can cause rapid weight gain w/i the 1st few months of starting

> Weight may continue to increase for >1 year

> After 10 weeks of therapy, average increase in weight ranges from 0.5-5kg

> Some patients do not experience a plateau in weight gain

> CATIE Trial: Mean Weight Gain (lb/mo) w/ Olanzapine (+9.4), Risperidone (0.8), Quetiapine (1.1), Ziprasidone (-1.6)

Weight Gain w/ Atypicals

TABLE 1. Relative Incidence of Weight Gain of Second-generation Antipsychotics[1,4,8]

Generic (Trade Name)	Weight Gain
Clozapine (Clozaril)	++++
Olanzapine (Zyprexa)	++++
Risperidone (Risperdal)	++
Quetiapine (Seroquel)	++
Aripiprazole (Abilify)	+
Ziprasidone (Geodon)	+
Paliperidone (Invega)*	+
Asenapine (Saphris)*	+ / ++
Iloperidone (Fanapt)*	+ / ++

Relative weight-gain risk: +, low; ++, moderate; +++, moderately high; ++++, high.
Relative risk based on doses within the recommended therapeutic range.
Risk varies based on individual patient-specific factors.
*Weight-gain profile based on information from the package insert because of limited trial data for these agents.

Use of Metformin in Atypical Antipsychotic Mediated Weight Gain

> Metformin: Biguanide for DM Type II
> - reduces hepatic glucose production
> - reduces intestinal glucose absorption
> - increases insulin sensitivity
> - does NOT increase insulin secretion
>
> Several studies have shown a benefit in weight gain when added to treatment or started w/ an atypical antipsychotic, particularly olanzapine

Use of Metformin in Atypical Antipsychotic Mediated Weight Gain

> Wu R, et al. Am J Psychiatry 2008
> - Purpose: Assess efficacy of Metformin in Preventing Olanzapine-induced weight gain
> - found increase in weight and BMI significantly less in the OLZ +Met grp as compared to OLZ + placebo
>
> Baptista T, et al. Can J Psychiatry 2006
> - Assess prevention of body weight gain and metabolic dysfunction in SCZ pts tx'd w/ OLZ
> - While metformin did not prevent weight gain it displayed positive metabolic effects (lipids, glucose)

Use of Metformin in Atypical Antipsychotic Mediated Weight Gain

> Klein DJ, et al. Am J Psychiatry 2006 evaluated effectiveness of metformin in managing weight gain in children and adolescents who had experienced weight gain w/ atypicals

> Weight stabilization was a/w Metformin

> Decreased weight accretion & insulin resistance

> Well tolerated in children and adolescents

Use of Metformin in Atypical Antipsychotic Mediated Weight Gain

> Baptista T, et al. Schizophrenia Research 2007 assessed whether metformin prevents or reverses body weight in pts w/ SCZ or BAD prescribed OLZ

> Small but not significant weight loss w/ Metformin (1.4kg+/-3.2kg) vs placebo (0.18+/- 2.8kg)

> Significant BMI reduction w/ metformin group

Use of Metformin in Atypical Antipsychotic Mediated Weight Gain

> Wu R, et al. JAMA 2008 RCT tested efficacy of lifestyle intervention (LSI) & metformin alone and in combo for antipsychotic-induced weight gain and insulin sensitivity

> LSI +metformin was significantly superior to metformin alone, LSI + placebo and placebo alone on weight, BMI and waist circumference

> Metformin alone was significantly better than LSI + placebo and placebo alone on weight, BMI and waist circumference

Metformin Side Effects

> >10% w/ gastrointestinal effects: diarrhea, (10-53%) N/V (7-26%), flatulence (12%)

> 1-10% Flushing, palpitations, headache, rash, milder GI side effects such as indigestion, bloating, mylagias, decreased Vit B12 levels, diaphoresis

> <1% Lactic Acidois
  • Check Cr at baseline and yearly
  • Not recommended w/ serum Cr ≥1.5 mg/dL in males, or ≥1.4 mg/dL in females

> Contraindicated in decompensated CHF

Suggested Treatment Algorithm

> Discuss risks of atypicals including weight gain and metabolic abnormalities
> Provide nutritional and physical activity counseling for all patients at baseline
> If a pt gains >5% of their initial body weight during therapy, then consider change to alternative agent w/ less metabolic risk
> In situations where an alternative agent is not an option, consider starting Metformin 500mg, titrating up as needed

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Smoking Cessation in the Mentally Ill
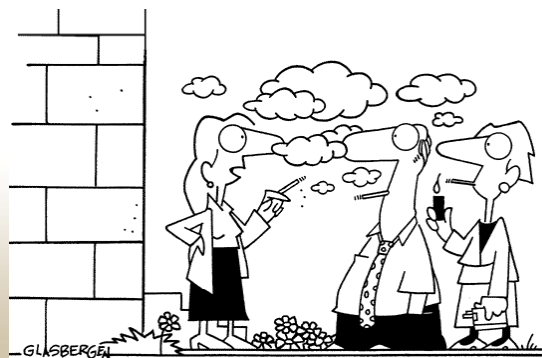
"That's what I like best about smoking—it gets me out in the fresh air a couple times a day."

Objectives for Smoking Cessation

> Public Health Concern
> Issues Particular to the Mentally Ill Population
> Barriers to Treatment
> Interventions
> Treatment Options
  - Behavioral
  - Pharmacotherapy Options

Nicotine Dependence

> #1 public health problem in the United States
> Most preventable cause of morbidity and mortality
> Causes more deaths each year than alcohol, motor vehicle accidents, suicide, AIDS, homicide, illicit drugs and fires combined
> Proven risk factor for heart disease, malignant neoplasms and stroke

Smoking Statistics

> 44 million Americans are current smokers (30% of patients smokers)
> 70% of smokers say they are "interested" in quitting
> 32% consult a healthcare provider about quitting
> Just over 1/3 of smokers seeking assistance are offered pharmacotherapy
> 15% are offered materials/counseling
> Self-quitters have a success rate of 4 to 6%

Mentally Ill Smokers

> By diagnosis:
>   • Major depression   45-50 %
>   • Bipolar mood disorder 50-70 %
>   • Schizophrenia   70-90%
> Represent an estimated 44.3 percent of the tobacco market
> Nicotine dependent at rates that are 2-3 times higher than the general population
> Suffer greater smoking-related medical illnesses and mortality

People w/ Mental Illness…

> Want to quit smoking and want information on cessation services and resources. (Morris et al., 2006)
> Can successfully quit using tobacco. (Evins et al., 2005; George et al., 2002)
> Have smoking quit rates that are not significantly lower than the general population. (el-Guebaly et al., 2002)
> Are less likely to succeed at cessation attempts

Why are smoking rates so high in the Mentally Ill?

> Biological predisposition
> Psychological reasons
>   • Relieves tension/anxiety, daily routine develops
> Social reasons
> Stigma
>   • providers often think smoking cessation is low priority given disease
>   • symptom management takes precedence over preventative health measures

Reasons Providers Do Not Encourage Cessation

75% of health providers think it is a good idea to ask but only 10% routinely do it for a variety of reasons:

> not confident about subject

> questionable goals

> afraid of negative reaction from patient

> feel patient might be offended

> not enough reimbursement

> not enough time

Does smoking cessation worsen psychiatric symptoms?

> In 2009, Brian Hitsman, PhD, a tobacco addiction specialist from Northwestern

  • Looked at 13 RCTs that measured psychiatric symptoms during smoking cessation tx

  • 7 studies showed that psych symptoms actually improved during treatment, six showed no changes and no studies showed worsening of symptoms

  • He found that the mentally ill receive tobacco treatment at 12 percent of their visits to a psychiatrist and 38 percent of their visits to a primary care physician

Initial Assessment

> Readiness to Quit: Nicotine dependence is a chronic, relapsing d/o w/ most smokers requiring five to seven attempts before they finally quit for good

> Stages of Change
- Precontemplation
- Contemplation
- Preparation
- Action
- Maintenance

The 5 A's:

> The *U.S. Public Health Service Clinical Practice Guideline: Treating Tobacco Use and Dependence*
1. *Ask about tobacco status (make it another vital)*
2. *Advise to quit*
3. *Assess willingness to quit*
4. *Assist in the effort*
5. *Arrange follow-up to assess quit attempt*

Treatment Options

> The most successful treatments combine:
- Nicotine Replacement +/- Pharmacotherapy
- Cognitive Behavioral Therapy
  - Most successful groups have 8-10 pts meeting q1 week x 7-10 weeks
  - Medical provider can deliver messages about health risks and benefits & deliver pharmacotherapy
  - Behavioral health clinicians can deliver psychosocial or behavioral interventions like CBT

Key Elements of a Counseling Intervention

> Provide an empathic environment
> Set a quit date, ideally w/i 2-3 wks
- Encourage them to tell others & ask for support
> Review past quit experience
- ID what helped & what hurt in previous quit attempts
> Anticipate triggers or challenges in upcoming attempt
- Problem solve how pt can avoid them or cope
> Be culturally appropriate reflecting racial/ethnic groups' cultural values
> If not ready to quit help the pt w/ "smoking-reduction" goal

Counseling Smokers

> Individual or group counseling may be used
> Anonymous quit line numbers should be made available, often provide free NRT
  • 1-800-QUIT-NOW
> Refer to on-line resources where pts can track progress
  • www.smokefree.gov & women.smokefree.gov
> Provide written info
  • Tangible info is a regular reminder
  • eg Forever Free available at www.smokefree.gov

Nicotine Dependence Pharmacotherapy

Nicotine Replacement Therapy

> Nicotine transdermal patch (Nicoderm CQ)
> Nicotine gum (Nicorette)
> Nicotine lozenge (Nicorette)
> Nicotine inhaler (Nicotrol)
> Nicotine Nasal (Nicotrol NS)

Pharmacotherapy

> Bupropion SR (Wellbutrin, Zyban)
> Varenicline (Chantix)
> All approximately double the rate of cessation when compared to placebo

Slide 1

Nicotine Patch

> Once daily transdermal patch
> Achieves sufficient saturation of nicotine receptors
> Patch dosing
  - 6-10 cig/d   14mg patch qd
  - >10 cig/day   21mg patch qd
  - Use x 6 weeks, then step down
> SE: skin irritation

Slide 2

Nicotine Lozenge

> Lozenge used for rapid relief of breakthrough symptoms
> Take 20-30min to dissolve
> Multiple flavors
> Dosing based on 1st cigarette use
  - 1st cig <30 min upon waking 4mg q1-2h
  - 1st cig >30min upon waking 2mg q1-2h
  - Titrate q6wk
> SE: Nausea, local Irritation, Hiccups, GERD

Nicotine Gum

> Fastest delivery of nicotine for quick relief
  - Chewed briefly and then placed b/t cheek & gum
> Dosing
  - <25 cig/day 2mg q1-2 h
  - >25cig/day 4mg po q1-2h
> Cons: Inappropriate for people w/ dental problems or TMJ
> Don't drink anything for at least 15 min b/f and nothing while using gum or lozenge, so mouth can absorb the nicotine

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Nicotine Inhaler

> Plastic cylinder containing a cartridge that delivers nicotine when puffed
> Mimics the hand-to mouth behavior of smoking
> Flexible dosing (4mg del/cartridge)
  - 6-16 cartridges/day
  - Use frequent continuous puffing x 20 minutes
  - 80 deep inhalations release 4mg nicotine of which 2mg is absorbed
  - Taper dose over 6 weeks

Nicotine Nasal Inhaler

> Aerosolized nicotine delivered nasally
> Prescription only
> Dose is one spray in each nostril
> Can use 1-2 times/hr
> Can use up to 40x/day
> Side Effects: nasal and throat irritation, diarrhea, palpitations
> Dependency is greater than w/ oral NRT

Combination NRT

> Start with one slow-release NRT form (i.e. patch) and combine ad lib short-acting (e.g. gum/inhaler/lozenge) for break-through cravings
> Achieve sustained levels of nicotine w/ rapid adjustment for acute needs for withdrawal symptoms
> Recipients report greater levels of comfort
> May be more efficacious than single NRT

NRT in the Current Smoker

> Fiore M C et al. "Treating Smokers in the Health Care Setting." N Engl J Med 2011; 365:1222-31.

> Encourage unwilling smokers to substantially reduce their daily smoking "as much as possible", while they are receiving NRT

> Meta- analysis of seven RCTs w/ 2767 smokers initially unwilling to quit showed abstinence rate 6 months after initiation of treatment was significantly higher among those randomly assigned to NRT (gum, inhaler, or patch) while trying to reduce their smoking than among those in the control group (9% vs. 5%)

NRT in the Current Smoker

> Another study involving 1154 smokers who were initially unwilling to quit, showed a benefit a/w the use of gum or patches for 2 months (abstinence rate at 6-month follow-up, 17%, vs. 10% in the control group)

> Several studies showed that about 1/5 of smokers who did not quit reduced their smoking by 50% or more with NRT

> One reassuring finding of the meta-analysis was the absence of any increase in serious adverse events with this combination

> Only adverse event more common in the NRT group than in the placebo group was nausea (8.7% vs. 5.3%)

Notes on NRT

> NRT use in a current smoker does not constitute clinically relevant excess cardiovascular risk
> Some users report difficulty reducing or abstaining from NRT (lesser of 2 evils?)
> Smokeless tobacco is not recommended as a NRT for treatment of dependence
  - NRT can be used to help quit smokeless tobacco
> Not enough data available on electronic cigarettes to discuss true utility in smoking cessation

Buproprion HCl (Wellbutrin/Zyban)

> Reduces interest in smoking & decreases cravings
> Prescription needed
> Insurance will cover
> Sustained release formulation approved (not XL)
> Consider use in a smoker who is interested in quitting when also appropriate clinically
> Can use in conjunction w/ NRT and CBT
> Can be used in conjunction with Varenicline
> Can help w/ smoking cessation related weight gain

Varenicline (Chantix)

> Oral tablet that works by blocking the pleasant effects of nicotine on the brain

> Agonizes and blocks alpha-4-beta-2 nicotinic acetycholine receptors

> Prescription needed (many insurances cover)

> Start 1 wk b/f quit date, or up to 35 days after starting (may result in higher abstinence rates)

> Starter pack for tapering, then 1mg bid x 11wk

> If quit at 12 wks, may continue for 12 more to help maintain success

---

Varenicline (Chantix)

> Generally well tolerated

> May combine with NRT and/or Buproprion

> No known drug interactions

> FDA concern: RCT of 700 smokers w/ CV disease showed CV events were reported more frequently in pts taking varenicline than in pts on placebo, meta-analysis being conducted now
> • angina pectoris (13 vs 7), MI (4 vs 1), need for coronary revascularization (7 vs 2)

> Other SE: insomnia (18%), nausea (15%), headache (15%)

Varenicline Cont.

> Williams J et al, Expert Opin. Pharmacology, Expert Opinion on Varenicline
> Only monotherapy that consistently achieves more than a doubling of long term quit rates
> Dual action
  - It reduces the severity of nicotine withdrawal symptoms and cravings
  - It reduces the rewarding effects of the cigarette
> Smokers should be encouraged to continue varenicline & to strive for abstinence from tobacco, even if they continue to have occasional lapses

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But what about Chantix causing Suicidal Ideation?

> Data from cohort studies including patients with co-occurring mental health problems indicate that varenicline, combined with close monitoring, can be used safely and effectively
> Evidence from systematic studies comparing smokers using varenicline and those quitting by other means DO NOT provide evidence supporting the view that varenicline causes neuropsychiatric side effects other than sleep disturbance and vivid dreams

US Boxed Warning: Neuropsychiatric Events

> Serious neuropsychiatric events (including depression, suicidal thoughts, and suicide) have been reported with use; some cases may have been complicated by symptoms of nicotine withdrawal following smoking cessation.

> Inform patients to discontinue treatment and contact their healthcare provider immediately if they experience any behavioral and/or mood changes.

Success Rates

> Without aids: 5% succeed or are smoke-free at 1y
> With individual NRT
  - At 12 weeks 23%, at 1 year 15%
> With combo of long and short acting NRT
  - At 12 weeks 42%, at 1 year 19.5%
> Buproprion:
  - At 12 weeks 36%, at 1 year 30%
> Bupropion w/ NRT
  - At 12 weeks 39%, at 1 year 35.5%
> Varenicline:
  - At 12 weeks 50%, at 1 year 25%

Cost of Treatment

> American Lung Association has state by state tobacco cessation coverage listed
  - http://lungusa2.org/cessation2/
> Specifically discusses which NRT, pharmacotherapy and counseling options are covered
  - Medicaid coverage
  - State employee health plan coverage
  - Private insurance resources
  - What NRT 1-800-QUIT-NOW can dispense
> Offers state specific resources

In summary, consider…

> Asking every patient about their smoking status at EVERY encounter
> Asking if they have considered quitting and documenting their stage of change
> Offering information, referrals and pharmacotherapy to assist patient in attempt
> Using a combination of pharmacotherapy
  - NRT (long and short acting) +/- Buproprion (if clinically appropriate) +/- Varenicline (if no current depression/SI and close monitoring available)

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> The Trilogy Integrated Healthcare Clinic, Chicago, IL
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> Chad Morris, PhD and team w/ The Tobacco Cessation Toolkit for Mental Health Providers as developed by Colorado Department of Public Health and the Environment

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C O N F E R E N C E

Outpatient Management of Hypertension

Raymond Rion MD
Packard Health
Ann Arbor, Michigan

Hypertension or How much can I do without a stethoscope?

> Be careful as you expand your scope of practice
> Beware of the Dunning Kruger effect
> It's what you don't know, that you don't know that will cause problems

Hypertension treatment - Why change scope of practice?

> Hypertension is extraordinarily common, particularly as we age. A normotensive 55 YO has a 90% lifetime risk for developing HTN

> Carries risk for early death/disability from CAD and CVD

> CAD and CVD are major contributors to shortened life expectancy in those who have SPMI.

Hypertension and Primary Care

> One of the most common problems seen in primary care

> Much of primary care work is now in those who are not ill but have a modifiable risk factor for an illness e.g. hypertension, hyperlipidemia, smoking.

> Other chronic diseases interact with these to further increase risk, e.g. diabetes, CKD

Hypertension and Cardiovascular Risk

> Treatment of hypertension is targeted at reducing risk of stroke, coronary artery disease, peripheral vascular disease, CHF, and renal failure
> Cardiovascular disease is a leading cause of morbidity and mortality in the United States
> 2 million Americans have MI or CVA per year, with 800,000 deaths
> Of these, coronary artery disease is the leading cause of death. Most patients who have had a CVA succumb to CAD.

Treatment overall goals

> Prevention of symptoms (rarely applies)
> Prevention of early death/disability
> Has been very successful
> 50% reduction in age-adjusted mortality rate for CAD since 1970
> 60% reduction in age-adjusted mortality for stroke since 1970

Cardiovascular risk

> This is the main target of hypertension treatment

> A fundamental principle of risk reduction is that the benefit derived is directly related to baseline risk.

Benefits of Lowering BP

> In Stage 1, hypertension and additional CVD risk factors achieving a sustained 12mmHg reduction in SBP over 10 years will prevent 1 death for every 11 patients treated

Benefits of Lowering BP

	Average % Reduction
> Stroke	35-40%
> Myocardial Infarction	20-25%
> Heart Failure	50%

Cardiovascular Risk

> Absolute risk reduction is the reduction in the treatment group vs. the control group

> Relative risk reduction - absolute risk reduction divided by control event rate

> Number needed to treat (NNT) is the inverse of absolute risk reduction, tells how many people you have to treat to prevent 1 event

Cardiovascular Risk

> An example: 55 year old hypertensive male with a 20% absolute10 year risk of CAD. Relative risk reduction of intervention (BP control) is 25% for myocardial infarction.

> Treat 100 patients like him for 10 years, 15% will have an MI, 5% will have had an MI prevented

> NNT to prevent 1 MI in 10 years is **20**

Cardiovascular Risk

> Next example: a 45 YO woman with hypertension and a 1% 10 year risk of CAD. Relative risk reduction for MI is still 25%

> Treatment for 10 years will prevent 2.5 myocardial infarctions for **1000** patients treated.

> NNT for one event is 400, or I treat 400 patients for 10 years to prevent one MI

> The benefit of risk reduction is directly related to baseline risk

Risk Reduction

> Starting at 115/75 mmHg, CVD risk doubles with each increment of 20/10 throughout the blood pressure range.

> The blood pressure relationship to CVD is continuous – there is no magic number

> Greatest benefit is for those that go from severely uncontrolled to moderate control

Cardiovascular Risk Reduction

> The single most important number you need to know about your patient is NOT their blood pressure – it is their overall cardiovascular risk

> If the risk is 1 in a million and you prevent 50%, what have you accomplished?

> Happily there are now convenient means to calculate that

Cardiac Risk Calculation

> The Framingham heart study risk calculator
> Predictive factors are age, gender, smoking, blood pressure, total cholesterol, and HDL cholesterol
> Available online at:

http://hp2010.nhlbihin.net/atpiii/calculator.asp

ABCS of Cardiovascular Prevention

> **A**spirin 81 mg in high risk patients, men over 45 years of age, with >5% coronary risk in 10 years, women over 50 with 3% risk of stroke in 10 years
> **B**lood pressure control
> **C**holesterol management
> **S**moking Cessation

Blood Pressure Measurement

> Use auscultatory method with a calibrated and properly sized cuff

> Requires a stethoscope

> Sizing is marked on most cuffs

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Blood Pressure Measurement

> Patient should be seated quietly for 5 minutes, in a chair, feet on the floor, and arms supported at heart level.

> If elevated, confirm in opposite arm.

> To make the diagnosis, need 2 blood pressures from separate occasions in the office

Blood Pressure Classification   JNC 7

> Normal	<120	<80
> Prehypertension	120-139	80-89
> Stage 1 Hypertension	140-159	90-99
> Stage 2 Hypertension	>160	>100

Blood Pressure Follow up by Classification

> Normal (<120, <80) recheck in 2 years
> Prehypertension (120-139/80-89) recheck in 1 years
> Stage 1 (140-159/90-99) recheck within 2 months
> Stage 2 (>160/>100) Evaluate, follow up within 1 week to 1 month

Patient Evaluation

> Assess lifestyle and identify other CV risk factors

> Find identifiable causes of hypertension

> Assess the presence or absence of target organ damage and cardiovascular disease

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Cardiovascular Risk Factors

> HTN
> Smoking
> Obesity BMI >30
> Physical inactivity
> Dyslipidemia

> Diabetes
> Microalbuminuria
> eGFR <60 ml.min
> Age
> Family history of premature CVD

Identifiable causes of Hypertension

> Sleep apnea
> Drug induced
> Chronic kidney disease
> Primary aldosteronism
> Renovascular disease

> Chronic steroid therapy or Cushings
> Pheochromocytoma
> Coarctation of the aorta
> Thyroid or parathyroid disease

Target Organ Damage

> Heart LVH, angina or prior MI, previous coronary revascularization, heart failure
> Brain CVA or TIA
> Chronic Kidney Disease
> Peripheral Artery Disease
> Retinopathy

Initial Laboratory Evaluation

> Electrocardiogram
> Urinalysis
> Comp panel, glucose, electrolytes, creatinine, eGFR, calcium
> CBC
> Lipid panel
> Urine microalbumin

Goals of Therapy

> Reduce CVD and renal morbidity and mortality
> Treat to BP <140/90
> Achieve SBP goal especially in person $\geq$50 years of age. SBP is more important than DBP.

Lifestyle Modification Effects

> Weight loss   > 5-20 mmHg/10Kg
> DASH diet   > 8-14 mmHg
> Diet sodium reduction   > 2-8 mmHg
> Physical Activity   > 4-9 mmHg
> Moderation of alcohol   > 2-4 mmHG

DASH Diet

> **D**ietary **A**pproaches to **S**top **H**ypertension
> 8-10 fruits and vegetables a day, whole grains, unsalted nuts, legumes
> 2-3 servings of low fat or fat free dairy
> Small servings of meat, fish, or poultry
> High in potassium, magnesium, and calcium, low in sodium
> http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/dash_inbrief.htm

Hypertension in Older Persons

> More than 2/3 of patients over 65 have HTN
> This population has the lowest rates of BP control
> Treatment guided by the same principles
> Lower initial doses may be indicated to avoid side effects; standard doses and multiple medications will be needed to reach target

Causes of Resistant Hypertension

> Improper BP measurement
> Excess sodium
> Noncompliance with medication
> Inadequate doses of medication
> Drug interactions
> Excess alcohol
> Untreated or undiagnosed sleep apnea

Treatment Options – Thiazides

> Two main agents hydrocholothiazide (more commonly used) and chlorthalidone
> Low cost, effective,
> Can precipitate or worsen gout
> Can cause electrolyte abnormalities at higher doses
> Initially came on the market in late 1950s
> Recommended as initial treatment by JNC 7

Thiazides – chlorthalidone

> Should be **the** initial drug in most patients with hypertension
> Study drug in the SHEP trial, found superior in ALLHAT
> Hydrochlorthiazide has more mixed record in clinical trials head to head vs. other agents
> Chlorthalidone is roughly twice as potent a blood pressure reducer as HCTZ
> ½ life 50 hours vs 10 hours for HCTZ

Thiazide dosing

> Flat dose response curve
> Chlorthalidone is available as 15mg and 25mg, I use a maximum of 25mg/day
> HCTZ 12.5mg and 25mg available, maximum 50 mg per day, I also stop at 25 mg/day except in large patients.

ACE Inhibitors

> Excellent agents, low cost, proven effective.
> Are first choice for hypertension treatment in patients with CHF, diabetes, chronic kidney disease.
> Agents included lisinopril and enalapril
> Doses are 5-40mg day, full dose considered 20+ mg per day
> Once daily dosing
> Can cause a dry cough, elevated creatinine, angioedema
> Contraindicated in pregnancy or women likely to become pregnant

ACE Inhibitors -Lisinopril

> Excellent choice to add to chlorthalidone as a second agent.
> Start at 5-10 mg/day, can titrate up to 40 mg/day
> After 8-10 weeks on an ACEI check an electrolyte panel with BUN, creatinine.

Calcium Channel Blockers

> Also excellent agents, amlodipine and long acting nifedipine are very potent blood pressure reducers.
> Can cause peripheral edema
> If a third agent is needed or a patient is intolerant to chlorthalidone or lisinopril consider amlodipine 2.5mg-10 mg per day,

Beta Blockers

> Are a fourth line drug
> Recent Cochran review questions effectiveness in end point (death, stroke, MI) reduction
> JNC 8 to be published this year and where beta blockers are recommend will be interesting.
> Use only if patient has known CAD or if intolerant to first three drugs.
> Metoprolol Succinate (not tartrate) is once daily doses 25-100mg qd, can go up to 200mg . Monitor pulse rate, do not go below 55 resting pulse.

Follow-up and Monitoring

> Return to adjust meds usually minimum 2 weeks for changes to stabilize
> Monitor Serum K+, creatinine, electrolytes, fasting lipids, U/A at least annually
> Once at goal and stable, follow up every 3-6 months
> Co-morbidities e.g. CHF, DM, influence frequency of follow up

Summary

> Hypertension SBP>140, DBP>90
> If lifestyle modification does not work start chlorthalidone 25 mg qd.
> BP goal under 140/90, 139 and 89 are fine for all patients.
> Add lisinopril 10-40 mg qd as needed for second drug
> If third drug needed amlodipine 2.5-10 mg

Summary

> Treat other cardiovascular risk factors
> Aspirin 81 mg qd if high risk*
> Moderate dose statin if 10 year risk is over 10%
> Smoking cessation, exercise

> *men>45 with >5% 10 year risk, women >50 with >3% 10 yr risk of stroke

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mentalhealthandaddictions
C O N F E R E N C E

Outpatient Management of Diabetes

Raymond Rion MD
Packard Health
Ann Arbor, Michigan

Diabetes Management?

> Why change your scope of practice?
> Very common
> Serious
> Treatable
> And in your patients

The Diabetes Epidemic –US Data

> Due to obesity rates, diabetes has become far more common

> 25.8 million Americans have diabetes — 8.3 percent of the U.S. population. Of these, 7 million do not know they have the disease.

> The number of people diagnosed with diabetes has risen from 1.5 million in 1958 to 18.8 million in 2010.

The Diabetes Epidemic in the US

> **Age ≥20 years**   **25.6 million or 11.3%**
> **Age ≥65 years**   **10.9 million or 26.9%**
> **Men**   **13.0 million or 11.8%**
> **Women**   **12.6 million or 10.8%**
> **Whites**   **15.7 million or 10.2%**

The Diabetes Epidemic

> It is estimated that 79 million adults aged 20 and older have abnormal glucose metabolism short of diabetes

> About 1.9 million people aged 20 years or older were newly diagnosed with diabetes in 2010 (5205 per day, 216/hour, 3.6/min)

Diabetes and Schizophrenia
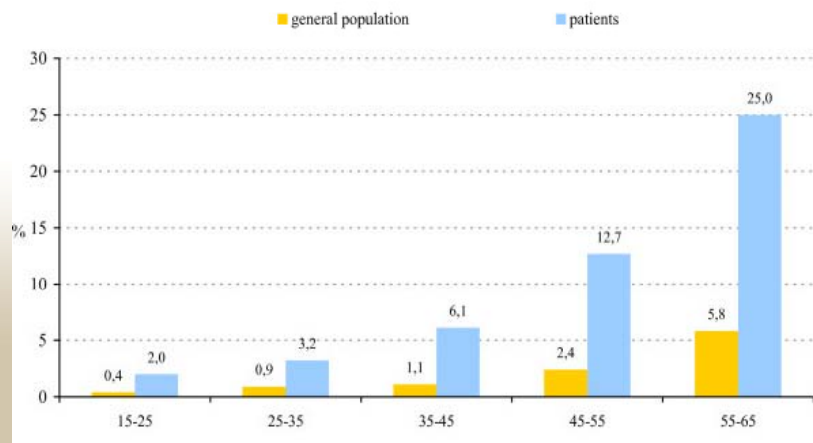
2012 HEDIS Measures

> Diabetes screening- percentage of patients with schizophrenia or bipolar DO screened in the year

> Diabetes monitoring- percentage of patients with schizophrenia or bipolar DO who have received an LDL-C and hemoglobin A1C test during the year

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Diabetes and Fellow Horsemen
Death HTN Dyslipidemia Diabetes

Death from Diabetes

> In 2004, heart disease was noted on 68% of diabetes-related death certificates among people aged 65 years or older.

> Adults with diabetes have heart disease death rates about 2 to 4 times higher than adults without diabetes.

> The risk for stroke is 2 to 4 times higher among people with diabetes.

Diabetes and Hypertension

> Commonly co-exist - "the evil twins"

> In 2005–2008, 67% of diabetics had blood pressure greater than or equal to 140/90 millimeters of mercury (mmHg) or used prescription medications for hypertension.

Diabetes and Dyslipidemia

> Triglycerides increased
> HDL-cholesterol levels decreased
> LDL-cholesterol values are average
> LDL particles are smaller, denser and more atherogenic.

Diabetes Complications

Blindness and eye problems

> Diabetes is the leading cause of new cases of blindness among adults aged 20–74 years

Kidney disease

> Diabetes is the leading cause of kidney failure, accounting for 44% of all new cases of kidney failure in 2008.

Diabetes Complications

Nervous system disease
> About 60% to 70% of people with diabetes have mild to severe forms of nervous system damage.

Amputations
> More than 60% of nontraumatic lower-limb amputations occur in people with diabetes.
> In 2006, about 65,700 nontraumatic lower-limb amputations were performed in people with diabetes

Diabetes Complications

Dental disease
> Periodontal (gum) disease is more common in people with diabetes

Complications of pregnancy
> Poorly controlled diabetes during the second and third trimesters of pregnancy can result in excessively large babies, posing a risk to both mother and child

Depression
> People with diabetes are twice as likely to have depression

Diabetes and Cardiovascular Risk

> Cardiovascular disease is the leading cause of death among people with diabetes — about 68 percent die of heart disease or stroke.

> The overall risk for death among people with diabetes is about double that of people without diabetes.

ABCS of Cardiovascular Prevention

> **A**spirin 81 mg in high risk patients, men over 45 years of age, with >5% coronary risk in 10 years, women over 50 with 3% risk of stroke in 10 years

> **B**lood pressure control

> **C**holesterol management

> **S**moking Cessation

Diabetes Treatment Success

> Aspirin, a statin, and the targeted lowering of blood pressure are each associated with substantial reductions in cardiovascular risk in patients with diabetes

> Blood pressure control reduces the risk of heart disease or stroke among people with diabetes by 33% to 50%, and the risk of microvascular complications by approximately 33%.

Diabetes and Hypertension

> In general, for every 10 mmHg reduction in systolic blood pressure, the risk for any complication related to diabetes is reduced by 12%.

> No benefit of reducing systolic blood pressure below 140 mmHg has been demonstrated in randomized clinical trials.

Diabetes and Lipids

> Improved control of LDL cholesterol can reduce cardiovascular complications by 20% to 50%.

> Studies using the statins have clearly shown that rigorous LDL-cholesterol reduction therapy can reduce the risk of CVD in people with diabetes. Current guidelines recommend LDL <100 mg/dl in patients with diabetes, (regardless of baseline risk).

Diabetes and Cardiovascular Risk

> So should every diabetic regardless of age and medical background be treated the same in terms of cardiovascular prevention?

  • No, despite the current monolithic guideline

> The most important number in your diabetic patient is not their blood sugar; it is their cardiovascular risk.

> This will guide intensity of macrovascular risk reduction which saves lives

UKPDS Risk Engine

> The landmark UK Prospective Diabetes Study has developed a tool that will give you an accurate guide to your patients' actual risk

> Not every diabetic benefits from a statin or aspirin; it all depends on their baseline risk

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UKPDS Risk Engine

> Uses age, gender, duration of diabetes, ethnicity, smoking, atrial fibrillation, hemoglobin A1C, systolic blood pressure, total cholesterol and HDL cholesterol to calculate a 10 year risk of CHD, fatal CHD, stroke and fatal stroke.

> http://www.dtu.ox.ac.uk/riskengine/index.php

Diabetes Treatment- Hyperglycemia

> Epidemiological analyses of DCCT and UKPDS demonstrate a curvilinear relationship between A1C and microvascular complications

> On a population level, the greatest number of complications will be averted by taking patients from very poor control to fair or good control.

> These analyses also suggest that further lowering of A1C from 7 to 6% is associated with further reduction in the risk of microvascular complications, the absolute risk reductions become much smaller.

Risk Factors for Developing Diabetes

> **Overweight adult**: Body Mass Index ≥25 kg/m2 (≥3 if Asian American or ≥6 if Pacific Islander) with one or more of the following:

- **Family history:** have a first-degree relative with diabetes
- **Race/Ethnicity:**African American , Hispanic/Latino , American Indian and Alaska Native , Asian American or Pacific Islander
- **History of gestational diabetes** or gave birth to a baby weighing > 9 lbs
- **Hypertension:** blood pressure >140/90

Risk Factors for Developing Diabetes

- **Abnormal lipid levels:** HDL cholesterol level <35mg/dl; triglyceride level >250 mg/dl
- **IGT or IFG:** on previous testing
- **Signs of insulin resistance:** such as acanthosis nigrans or polycystic ovarian syndrome (PCOS)
- **History of vascular disease:** diagnosed by physical exam and testing
- **Inactive lifestyle:** being physically active less than three times a week
> **If none of above**, age over 45

Diabetes and Ethnicity
> 2007–2009 national survey data for people aged 20 years or older

- 7.1% of whites were diabetic
- 8.4% of Asian Americans were diabetic
- 11.8% of Hispanics were diabetic
- 12.6% of blacks were diabetic

> Hispanics – diabetes rates were 7.6% for Cubans and Central and South Americans, 13.3% for Mexican Americans, and 13.8% for Puerto Ricans.

> Native Americans – 5.5% Alaskans to 31% of the Pima Indians are diabetic

Diagnosis of Diabetes

> Fasting blood sugar ≥126
> Random glucose >200 with symptoms polyuria, polydipsia, polyphagia, weight loss
> 2hr glucose >200 after a 75g glucose challenge
> Hemoglobin A1C ≥ 6.5

Hemoglobin A1C

> Normal 60 -120 day lifespan of the RBC, glucose molecules react with hemoglobin, forming glycosolated hemoglobin.
> Once a hemoglobin molecule is glycosolated, it remains that way. HbA1c level is affected by blood sugar levels over a 3 month period. However, it is heavily weighted to levels over the past 45-60 days.
> Hemoglobin A1C measures longer term control and is used in all recent studies of the effect of diabetic control on clinical outcomes

In Office A1C Device

In Office A1C Machine

Now you have a diabetic – Now what?

> Refer out

> If they will not go, standard medical history with emphasis on macrovascular risk factors smoking, blood pressure, lipids

> Physical exam – At least vital signs with a weight on every visit

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Diabetes laboratory evaluation

> Hemoglobin A1C

> Fasting lipids

> Comp panel (creatinine, LFTS, electrolytes)

> Urine microalbumin, U/A

> TSH

> Repeat annually

Referrals

> Ophthalmologist
> Registered dietician for medical nutritional therapy (MNT)
> Diabetes self-management education
> Podiatrist

Diabetes testing

> Patient should begin self-monitoring blood sugar (give them a glucometer prescription as well as for test strips)
> Frequency will vary. For stable type 2 diabetics, a fasting glucose daily is often sufficient; may increase up to 4/day if on insulin
> Hemoglobin A1C at least every 6 months, every 3 if actively changing treatment plan

Diabetes Care Targets

> Treat hyperglycemia - Hemoglobin A1C under 8%
> Blood pressure under 140/90
> Decrease risk of cardiovascular event

Treatment of Hyperglycemia – Metformin

> At the time of diagnosis start metformin, titrate up to a dose of 1000mg bid.
> Contraindications are allergy and renal impairment, rare risk of lactic acidosis
> No weight gain or hypoglycemia
> Reduction in CV events and death in UKPDS
> Lots of GI side effects, nausea, diarrhea

Treatment of Hyperglycemia – Beyond Metformin – Sulfonyureas

> Several - Glipizide, glyburide, glimepiride
> Stimulate insulin secretion
> Proven effective in UKPDS
> Well tolerated
> Low cost
> Causes hypoglycemia, weight gain

Diabetes Hypertension Treatment

> In general, start with an Ace inhibitor e.g. lisinopril or enalapril
> Low cost
> Effective
> Preserve renal function
> Can causes a dry cough, angioedema, and can effect creatinine and electrolytes

Hypertension Treatment in diabetes after Ace

> If necessary add a diuretic; most patients will need 2 agents.

> Default diuretic is chlorthalidone 25 mg qd

> If elderly or frail or nearly to target HCTZ 12.5-25 mg

Dyslipidemia in Diabetes

> Calculate 10 year risk of CAD with the UKPDS risk engine. If >10%, start a moderate dose statin

> Simvastatin, lovastatin, pravastatin 40 mg, atorvastatin 20mg.

> Don't obsess about hitting an LDL target; with the above you have gained most of the benefit in risk reduction

> Muscle aches/myopathy most common side effect, dose related

Dyslipidemia in Diabetes

> Ignore the HDL other than encouraging exercise and smoking cessation

> Unless triglycerides present a risk for pancreatitis, treat them with dietary interventions

> To cause pancreatitis, triglyceride levels usually >1000; current guidelines recommend drug therapy over 500, usually with fenofibrate. This rarely interacts with statins.

Prevent Cardiovascular Events

> Aspirin 81 mg in high risk patients, men over 45 years of age with >5% coronary risk in 10 years, women over 50 with 3% risk of stroke in 10 years

> Will include most men over 50

> Benefit in women for prevention of first MI is unproven; aspirin does decrease stroke risk

Treatment summary

> Hyperglycemia – metformin then sulfonyurea (eg glipizide); target A1C under 8%
> Hypertension – ACE (lisinopril) then diuretic (chlorthalidone); target under140/90
> Lipids – moderate dose statin; if >10% 10 year risk, lovastatin 40
> Aspirin 81mg when meet criteria

Thanks   Questions?

References

Consultation psychiatry in the medical home and accountable care organizations: achieving the triple aim

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We are in a time of increasing concern about unsustainable increases in health care costs to Medicare, Medicaid, employers and individuals. At the same time, more than half of patients with mental health needs do not receive care in any given year [1], and untreated mental disorders can be important drivers of high health care costs. As in the rest of health care, we are challenged with achieving the "triple aim" of improving access to care while at the same time improving quality and outcomes of care and reducing total health care costs [2]. To achieve this triple aim, psychiatrists of the future will have to shift professional roles. In addition to traditional consultation liaison activities focused on individual patients in outpatient clinics or hospital settings, psychiatrists should have important roles in monitoring behavioral health needs, treatments and treatment outcomes for defined populations of patients and providing supervision and guidance to interdisciplinary teams of primary care and behavioral health providers caring for a defined panel of patients.

Two important concepts that are being advocated to improve patients' experience and satisfaction with care as well as the quality and cost-effectiveness of medical care are primary care-based patient-centered medical homes and accountable care organizations (ACOs). The principles of the medical home are aimed at enhancing the potential benefits of primary care by emphasizing access to care, long-term relationships with health care providers, and coordination and comprehensiveness of care [3]. These principles also emphasize the importance of health care teams using evidence-based approaches and effective quality improvement methods [1]. Payment systems are being developed to provide financial incentives for primary care practices to transform their practices into medical homes and to make "meaningful use" of electronic medical record systems and other health information technology to improve coordination, quality and outcomes of care. The National Committee for Quality Assurance (NCQA) has established criteria for levels of adaptation of practices to the medical home concept, with increasing payments for higher levels of development [4]. These criteria include the capacity to care for patients with behavioral health conditions. Federal and state payers are also developing criteria for quality of care including behavioral health care for populations that will gain insurance coverage under health care reform [5].

Accountable care organizations are built on the concept of physicians, nurses and other allied health professionals working as a team to provide the most efficient and cost-effective care of patients across different care settings [6]. The concept of ACOs assumes that primary and specialty care systems and hospitals will work closely together, often as single governing units [6]. Electronic records will integrate outpatient and inpatient systems and other information technologies such as patient registries are seen as key tools in improving the continuity and effectiveness of practice. ACOs will share with the federal government financial savings the organization may produce in medical costs to the population they are responsible for [7].

Given the changes in health care systems and the emphasis on improving quality of care and decreasing costs, what are the potential roles of consultation psychiatrists in enhancing the aims of medical homes and ACOs?

The prevalence of common mental disorders in primary care populations is approximately 20% to 25% in employed populations [8] and up to 50% in uninsured or Medicaid

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populations [9]. Under the Affordable Care Act, the "low income expansion" of Medicaid is scheduled to more than double the number of working age adults receiving Medicaid by 2014. Given that mental illnesses are an important driver of disability and associated unemployment and poverty [10], we can expect high rates of mental health and substance abuse disorders in this expansion population, and cost-effective integrated behavioral health care will be a high opportunity intervention area for Medicaid.

After controlling for socioeconomic factors and medical comorbidity, primary care patients with anxiety and depressive disorders have been shown to have up to twofold greater medical costs compared with patients without mental health disorders [11,12]. Patients with anxiety and depressive disorders have also been shown to present to primary care approximately 70% of the time with physical rather than mental health complaints [13]. Those presenting with physical complaints are more likely to have delay in mental health diagnosis or misdiagnosis [14]. Patients with anxiety and depressive disorders have also been found to have two- to threefold more physical symptoms on medical review of systems even after controlling for medical comorbidity [14], which may explain the large increases in medical costs these patients have.

Because of the economic incentives, many primary care clinics will be reorganizing staff and systems of care to qualify for meeting criteria for a medical home. The 2011 NCQA criteria for becoming a level 2 medical home will require primary care clinics to demonstrate population-based approaches for quality improvement for three chronic illnesses, one of which must be a behavioral disorder such as major depression [4]. Consultation psychiatrists can utilize the knowledge developed from over 20 years of research and 40 randomized controlled trials on collaborative care for depression [15] to aid primary care systems in developing interdisciplinary teams, which improve the cost-effectiveness of care provided for depression and other common mental disorders. Such programs include an allied health professional (also called behavioral health care manager or a behavioral health professional) in primary care who supports behavioral health treatments initiated by primary care providers. Health care managers are trained to provide patient education about common mental disorders, proactively track clinical symptoms using rating scales such as the Patient Health Questionnaire-9 [16] for depression and the Generalized Anxiety Disorder-7 [17] for anxiety, support adherence to medications and provide brief, evidence-based forms of counseling such as behavioral activation or problem-solving treatment. Each collaborative care team also includes a consulting psychiatrist who provides caseload-focused consultation and supervision for a panel of patients treated in primary care. The psychiatrist advises primary care providers about diagnostic and therapeutic questions such as changes in medication management if patients are not improving as expected. The psychiatrist may also see selected patients who provide particular diagnostic or therapeutic challenges in

consultation either in person or via televideo technology. Such collaborative depression care programs have been shown to improve quality of depression care and depression outcomes [15], social and physical functioning [15] and satisfaction with care for patients and primary care providers [18]. Collaborative depression care has been shown to be cost-effective compared with usual primary care because for a small increment in cost, there is a marked improvement in depression and other health outcomes [19]. Collaborative depression care has been shown to be effective over the entire age span, including adolescents [20], adults [15] and older adults with a range of comorbid medical problems [21,22].

Given the very high prevalence of mental disorders and alcohol and substance abuse in Medicaid and uninsured populations [9,23], Federally Qualified Health Centers and many other primary care clinics serving safety net populations have added mental health professionals including psychiatrists to their staffs [24]. The Veteran's administration and several statewide health insurance programs fund integrated collaborative care teams in primary care that include behavioral health care managers and psychiatric consultation that focuses on a panel of patients and may not involve direct patient contact. These programs include the DIAMOND (Depression Improvement across Minnesota: a New Direction) program in which six large commercial payors in the state of Minnesota provide case rate payments for evidence-based collaborative care for depression in over 80 primary care clinics in the state of Minnesota [25]. Over 6000 clients have been served by this program to date, and early outcomes suggest similar rates of depression improvement as in randomized controlled trials of collaborative care [25]. A similar statewide program is the Mental Health Integration Program sponsored by State of Washington and Public Health of Seattle and King County in collaboration with the Community Health Plan of Washington [26]. In this program, behavioral health care coordinators work in over 100 community health centers throughout the state working with primary care providers to care for safety net patients with both medical and behavioral health needs. A group of 20 consulting psychiatrists provide regular (weekly) consultation to behavioral health care coordinators and primary care providers in the participating community health centers. Treatment for patients who require more intensive behavioral health care is coordinated with 1 of 30 partnering community mental health centers. Over 18,000 individuals have received integrated behavioral health care in this program, and an early program evaluation shows beneficial effects on homelessness and arrest rates in addition to high rates of engagement and improved patient outcomes [26].

In some populations, collaborative care has been also shown not only to be cost-effective but also to have a high likelihood of savings in total medical costs while improving outcomes. In the Epidemiologic Catchment Area Study, the community respondents with panic disorder had the highest risk compared with community respondents without psychiatric disorders of being high utilizers of medical services

[27]. Patients with panic often present with frightening cardiologic, gastrointestinal and neurologic symptoms that precipitate expensive medical workups [28]. Two studies that compared collaborative care approaches to usual primary care in treatment of panic disorder have shown a high likelihood of savings in total medical costs and improved anxiety and quality of life outcomes [29,30]. In one of these trials, the addition of two to three psychiatric visits aimed at improving psychopharmacologic management of panic disorder significantly improved outcomes compared with usual care [29]. In the second trial, the psychiatrist acted as a supervisor of an anxiety care manager and recommended changes in medication that the case manager brought to the primary care physicians [30].

Another subgroup of patients that have extremely high medical utilization and costs are those with chronic somatization. These patient have often experienced high rates of childhood adversity, have many adverse health behaviors (such as smoking, poor diet and obesity, sedentary lifestyle and substance abuse), often prematurely develop diseases of aging such as diabetes and heart disease, and present to physicians with many physical symptoms that cannot be explained by medical workups [31,32]. They often experience both chronic emotional and physical pain and are at high risk for iatrogenic harm due to unnecessary procedures, surgeries and overuse of prescription medications, particularly opiates and benzodiazepines. In many states, Medicaid pharmacy budgets have been stressed because of the widespread use of expensive prescription opiates for chronic benign pain. There is also increasing concern about adverse selection — the use of these medications by primary care physicians for high-risk populations with extensive psychiatric histories and/or prior histories of drug and alcohol abuse [33]. Psychiatrists can help by developing guidelines for screening populations for high risk for overuse of those medications, developing comprehensive management plans that include addressing functional impairment and untreated mental disorders and helping primary care practices implement safe limits on dosage and prescription refills.

Consultation with a psychiatrist can also play an important role in patients with chronic somatization in providing an accurate diagnosis and developing treatment plans that help minimize risk of addiction to prescription medications and overly aggressive medical and surgical interventions. Development of behavior contracts such as pain contracts can be very helpful in reducing prescription drug abuse and adverse outcomes. Recent studies have also demonstrated the effectiveness of collaborative care approaches coupled with Suboxone treatments for primary care patients who often had overlapping opiate addiction and pain problems [34]. Alcohol and substance abuse screening and brief intervention programs in primary care have been shown to be effective and associated with a high likelihood of cost savings [35]. Psychiatrists with addiction training could play a role in supervising care managers for these patient populations. On the extreme end of patients with somatiza-

tion are those with somatization disorder, whose medical costs may be 5- to 10-fold higher than primary care controls [36]. Several trials that focused on providing practitioners with more accurate diagnosis and recommend management plans based on a psychiatric consultation for patients with somatization disorder or subclinical somatization disorder have shown a high likelihood of cost savings [36,37].

1. Comorbid medical and psychiatric illness

With the aging of the US population, more and more Americans are living with one or more chronic medical illnesses, and rates of major depression have been found to be two- to threefold higher in patients with chronic medical illness [38]. Depression is also more persistent in aging populations with chronic medical illnesses, with the mean duration of an episode of 18 months [39]. Comorbid depression has been found to be associated with poor self-care (i.e., adherence to diet, exercise and taking medications as prescribed), higher medical symptom burden, greater functional impairment and higher risk of complications and mortality [40]. Comorbid depression in patients with chronic medical illness also has been shown to be associated with 50% to 70% greater costs [41]. Given the high level of baseline costs due to medical illness, this increase in costs is magnified. For instance, in a large health maintenance organization, the total annual medical cost of a middle-aged patient without significant medical illness is about US$1500, the cost of a middle-aged patient with depression without comorbid medical illness is about US$3000, the cost of a middle-aged patient with diabetes is about US$6,000 and the cost of a middle-aged patient with diabetes and comorbid depression is over US$9000 [11,12,41].

Three trials of collaborative depression care versus usual primary care in patients with diabetes and comorbid depression have shown that collaborative care was more effective in improving quality of depression care and depression outcomes over a 2-year period [42–44]. The Improving Mood-Promoting Access to Collaborative Treatment trial randomized 1801 aging patients with depression and a mean of four other chronic illnesses to collaborative versus usual care and also showed improved depression outcomes and functioning in the intervention verses usual care group over a 2-year period [45]. All four trials provided an intervention with a care manager, who encouraged a choice of starting with antidepressant medication or an evidence-based psychotherapy. A psychiatrist conducted weekly supervision on the entire caseload of the care manager, focusing on patients who provide diagnostic or therapeutic challenges or who are not improving as expected. The psychiatric consultant recommended initial medication choices, changes in medications if patients were not improving, or other diagnostic or therapeutic suggestions that care managers then would communicate to the primary care physician. All four trials have shown a high likelihood that the increased mental health costs associated

with collaborative care were offset by savings in total medical costs over a 2-year period [42–45]. Two of these examined long-term costs and showed continued cost savings associated with collaborative care for up to 5 years [46,47].

Although quality improvement trials have shown that care management approaches aimed at improving care of single illnesses such as depression, diabetes and coronary heart disease can improve outcomes, many patients have multiple chronic illnesses, and these patients have the most problems with quality of care and adverse outcomes and are very costly to medical systems [48]. For instance, among Medicare beneficiaries with diabetes, depression or congestive heart failure, approximately 60% to 70% have three or more other chronic medical conditions [48]. Patients with three or more chronic conditions have been found to account for approximately 40% of Medicare costs [48,49]. A new multicondition collaborative care intervention program, termed TEAMcare, has been shown to improve depression, glucose, blood pressure and low-density lipoprotein cholesterol outcomes compared with usual care in patients with poorly controlled diabetes and/or coronary heart disease and comorbid depression [50]. This program trained diabetes nurses to enhance treatment of diabetes, coronary heart disease and depression and provided weekly supervision of nurses by both a psychiatrist and primary care physician. The TEAMcare intervention can be used by primary care systems to meet the 2011 NCQA criteria for a level 2 medical home that will require quality improvement efforts for two chronic medical diseases and one behavioral condition [4]. Preliminary data from this study suggest a high likelihood of total outpatient cost savings over a 2-year period.

2. Inpatient medical/surgical readmission

A major focus of the health reform will be to attempt to decrease hospital readmissions among chronically ill patients [51]. Several models have been developed to improve continuity between inpatient admission and outpatient medical care to decrease readmissions [52,53]. These models have, however, not focused attention on the high rates of depression, post-traumatic stress disorder and cognitive impairment that have been documented in patients with a serious medical/surgical admission [54–56]. Prior epidemiologic data have shown that comorbid depression and other psychiatric illnesses are risk factors for readmission in these populations [55]. Psychiatrists can help with implementing effective screening and treatment for psychiatric problems such as depression and delirium in the context of these emerging health service models.

3. Conclusion

Evidence-based collaborative care programs effectively "leverage" the specialty expertise of a consulting psychiatrist

who takes responsibility for an entire panel of patients cared for by an integrated behavioral health care team in a medical home or an ACO. Consulting psychiatrists regularly discuss a panel of patients with case managers and primary care physicians, and they may perform brief, focused evaluations of patients where there are diagnostic questions (e.g., clarification of a diagnosis of bipolar disorder) in person or via telemedicine, but they limit traditional complete face-to-face evaluations to patients who are not improving as expected. This approach can improve access to behavioral health care for large populations served in primary care and focuses the specialty expertise of consultants on the patients who are the most challenging. These population-focused collaborative care approaches can help health care systems achieve the triple aim of improving access to evidence-based behavioral health care, improving patient and provider satisfaction, improving health outcomes and reducing health care costs.

Acknowledgments

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Budget Impact and Sustainability of Medical Care Management for Persons With Serious Mental Illnesses

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Objective: The authors assessed the 2-year outcomes, costs, and financial sustainability of a medical care management intervention for community mental health settings.

Method: A total of 407 psychiatric outpatients with serious mental illnesses were randomly assigned to usual care or to a medical care manager who provided care coordination and education. Two-year follow-up chart reviews and interviews assessed quality and outcomes of care, as well as costs from both the health system and managerial perspectives.

Results: Sustained improvements were observed in the intervention group in quality of primary care preventive services, quality of cardiometabolic care, and mental health-related quality of life. From a health system perspective, by year 2, the mean per-patient total costs for the intervention group were $932 (95% CI=−1,973 to 102) less than for the usual care group, with a 92.3% probability that the program was associated with lower costs than usual care. From the community mental health center perspective, the program would break even (i.e., revenues would cover setup costs) if 58% or more of clients had Medicaid or another form of insurance. Given that only 40.5% of clients in this study had Medicaid, the program was not sustainable after grant funding ended.

Conclusions: The positive long-term outcomes and favorable cost profile provide evidence of the potential value of this model. However, the discrepancy between health system and managerial cost perspectives limited the program's financial sustainability. With anticipated insurance expansions under health reform, there is likely to be a stronger business case for safety net organizations considering implementing evidence-based interventions such as the one examined in this study.

An extensive literature has documented an elevated risk of medical morbidity and early mortality among individuals with mental illnesses (1, 2). Although this problem was first described nearly a century ago (3), it has only recently become a major focus of mental health advocacy and policy efforts (4).

For many patients with serious mental disorders, the primary point of contact with the health care system is through public-sector mental health programs rather than primary medical care. There has been a growing interest in developing "specialty care medical homes" for managing medical care for this population in community mental health settings (5). Care management, in which staff provide education, advocacy, and linkages to community-based medical services, is a potentially promising approach to delivering care to this population, given its flexibility and its relatively low cost (5). However, there are currently few evidence-based models for delivering that care (6, 7).

The Primary Care Access, Referral, and Evaluation (PCARE) study is a randomized trial of a medical care management intervention for persons with serious mental illnesses treated in community mental health settings. Our group previously reported (8) that the intervention improved the quality and outcomes of primary medical care at 1 year.

In this article, we report on costs for each year and 2-year outcomes of this intervention. Costs are presented from two vantage points: a health system perspective (which is most relevant to policy makers) and a managerial perspective (which is most relevant to clinic directors considering implementing medical care management for persons with mental illnesses). The goals of the study were to assess clinical sustainability (whether 1-year improvements were maintained) and financial sustainability (whether the intervention provided value from a health system perspective and was sustainable under routine funding conditions).

Method

Details of the PCARE study design and intervention have been described previously (8). They are briefly outlined here to provide context for the 2-year outcome and cost data.

Study Setting

The study was conducted in an urban community mental health center (CMHC) in Atlanta. The target population was individuals age 18 and older from the area who were economically disadvantaged and who had serious and persistent mental illness with or without comorbid substance use disorders. With the exception of the study intervention, the clinic did not provide any formal medical or mental health care case management or any on-site medical care.

Recruitment

The sample was assembled through flyers posted at the CMHC, waiting room recruitment, and provider referrals; about one-third of potential participants were identified through each of the three approaches. To be eligible, individuals had to be on the active patient roster at the CMHC, have a severe mental illness (9), and have the capacity to provide informed consent. Inclusion criteria were kept broad to optimize generalizability to community mental health settings.

Randomization and Follow-Up

A computerized algorithm was used to randomize assignment of patients to the intervention or usual care group. After randomization, interviews were conducted every 6 months throughout the course of the study. Interviewers were blinded to participants' group assignment. Annual chart reviews were used to gather data for calculation of quality measures.

Intervention

Two full-time registered nurses provided care management activities combining patient education and activation and logistical support in obtaining access to ongoing comprehensive primary care services. Each care manager had a caseload of approximately 75 patients at any given time, each of whom had an initial intake visit followed by monthly follow-up visits.

Care managers enhanced activation using motivational interviewing techniques (10) and action plans (11), which set and tracked short-term achievable goals for medical care or lifestyle change. Coaching was provided to patients to help them interact more effectively with their providers. With the participant's permission, providers were notified about changes in the patient's medication regimen and medical status. The care manager worked to helped clients overcome barriers to attending medical appointments.

Usual Care

Participants assigned to the usual care condition were given a list with contact information for local primary care medical clinics that accept uninsured and Medicaid clients. Participants in the usual care condition were not restricted in the medical care or other services that they sought.

Measures

An interview battery administered at baseline and then every 6 months throughout the study was used to identify sites where patients had received medical or mental health services as well as to collect clinical data. Reviews of all medical and mental health charts from these sites at baseline, 12 months, and 24 months assessed quality of preventive and cardiometabolic care and health service use.

Quality of primary care was assessed at baseline and 12 months using 23 indicators drawn from the U.S. Preventive Services Task Force guidelines (12). For patients with a cardiometabolic condition (diabetes, hypertension, hypercholesterolemia, or coronary artery disease), quality indicators were drawn from chart reviews using the RAND Community Quality Index study (13). For both of these sets of quality indicators, an aggregate indicator was created that represented the proportion of services the patient actually received from among those for which he or she was eligible.

Health-related quality of life was assessed using the 36-item Short-Form Health Survey developed for the Medical Outcomes Study (14, 15). Physical component summary and mental component summary scores can be constructed from the survey, ranging from 0 (poor health) to 100 (perfect health) (16). The oblique method, which is the preferred approach when examining persons with comorbid physical and mental conditions (17, 18), was selected a priori as the approach for calculating the summary scores. Individual subscales were also calculated to provide context for these summary scores (19).

For patients with available fasting laboratory values, the Framingham cardiovascular risk index was used to estimate the 10-year risk of developing cardiovascular disease.

Intervention Costs

Staff costs for the nurse care managers were calculated using data from the Bureau of Labor Statistics on median salaries for registered nurses (20). A mean fringe rate of 29% for benefits was included based on national averages for nurses employed in public-sector facilities (20). Training costs were calculated based on daily salaries and fringe rates for the senior staff providing training.

Equipment costs were divided into one-time setup costs (e.g., examination table, sphygmomanometer, scale) and recurring expenses (e.g., gloves, bandages). All prices were drawn from the national medical supply company where the products were purchased.

A rate of 15% was applied to all intervention expenses to account for clinic space and administrative support (21).

Costs From the Health System Perspective

A cost analysis was calculated from the health system perspective using standard approaches from the cost-effectiveness literature (22–24). The quantity of each type of health service (mental and medical outpatient, emergency, and inpatient) was drawn from chart review data from each site where participants obtained services. Unit costs were assigned to each service type based on median national expenditures for each type of service from the 2007 Medical Expenditure Panel Survey (25). This survey is well suited for assessing unit costs from a health system perspective because it uses direct payments, not charges, and captures costs across all insurance groups. All expenditures for each type of service were inflated to 2010 dollars.

Given initial expenditures in setting up a new program, costs were examined separately for each of the 2 years of the study. Costs for each intervention visit were calculated by applying the hourly intervention cost, based on staff salaries, fringe benefits, equipment, and overhead, to each visit.

Costs From a Managerial Perspective: Budget Impact Analysis

A budget impact analysis involves a careful accounting of the costs of implementing a new program, coupled with the expected returns (26, 27). The methods we used followed the approach proposed by the International Society for Pharmacoeconomics and Outcomes Research Task Force on Good Research Practices (28). In contrast to cost-effectiveness analyses, budget impact analyses adopt a managerial rather than societal perspective and have a shorter-term horizon.

For the budget impact analysis, only services provided at the CMHC were considered. Medicaid reimbursement rates were calculated based on 2010 payment rates for clinical nurse visits from Georgia's Medicaid program. As with the health system-level analysis, intervention expenditures were treated as positive costs. However, individual visit reimbursements were treated as negative expenditures (i.e., revenues).

TABLE 1. Demographic and Clinical Characteristics of Patients With Serious and Persistent Mental Illnesses Receiving a Medical Care Management Intervention or Usual Care[a]

Characteristic	Intervention Group (N=205)		Usual Care Group (N=202)	
	Mean	SD	Mean	SD
Age (years)	47.0	8.1	46.3	8.1
Education[b] (years)	11.9	2.3	11.9	2.4
Monthly income[c] ($)	356.03	367.93	547.37	2,128.51
	N	%	N	%
Female	105	51.2	92	45.5
Race/ethnicity				
African American	156	76.5	159	78.7
Hispanic or Latino	4	2.0	2	1.0
Insurance				
Medicaid	77	37.9	85	42.1
Uninsured	123	60.3	117	57.9
Private	3	1.5	0	0.0
Single, never married	102	50.3	96	47.5
Unemployed	180	87.8	179	88.6
Primary psychiatric diagnosis				
Schizophrenia/schizoaffective disorder	75	36.6	69	34.2
Bipolar disorder	22	10.7	30	14.9
Posttraumatic stress disorder	11	5.4	9	4.5
Depression	94	45.9	85	42.1
Other	0	0.0	1	0.5
Comorbid substance use disorder	50	24.4	53	26.2

[a] There were no significant differences between groups on any measure.
[b] The median for years of education was 12 (25th–75th percentiles, 11–13) for both groups.
[c] The median monthly income was $209.50 (25th–75th percentiles, 0.00–603.00) for the intervention group and $374.00 (25th–75th percentiles, 80.00–623.00) for the usual care group.

As is typical of CMHCs (29), nearly all clients at the study site either had Medicaid or were uninsured. Costs for uninsured clients were covered by capitated annual state block grants provided to the clinics. Medicaid services were reimbursed on a fee-for-service basis for each visit. Under varying case-mix scenarios, we calculated a break-even point where the total reimbursement offset the costs of funding the care management service during the first year.

Statistical Analysis

All analyses were conducted using the intent-to-treat approach. Two-year clinical outcome analyses were conducted using random regression to calculate the relative difference in change over time. For each outcome measure, the model assessed the outcome as a function of randomization group, time since randomization, and group-by-time interaction. The group-by-time interaction, which reflects the relative difference in change in the parameters over time, was the primary measure of statistical significance.

To mitigate the potential impact of missing data from interviews, we performed multiple imputation by a Monte Carlo Markov Chain approach to impute missing scores for interview data. The covariates used in multiple imputation were age, gender, race, psychiatric diagnosis, medical comorbidity, and SF-36 scores for the eight domains at baseline, 6 months, 12 months, 18 months, and 24 months.

We used bootstrap analysis to generate 95% confidence intervals (CIs) and to estimate the probability that total health care costs were lower in the intervention group than in the usual care group (i.e., a "cost offset") for each cost category. Bootstrap analysis was conducted by constructing 1,000 samples from the study data set and, for each one, computing the difference in mean costs (defined as the mean for participants in the intervention group minus the mean for participants in the usual care group). The 95%

confidence interval was then derived from the resulting distribution of differences in mean costs across the 1,000 bootstrap samples. The probability of a cost offset was estimated by dividing the number of bootstrap samples in which the intervention group had lower health care costs than the usual care group by 1,000.

Initial analyses indicated that cost data were highly non-normally distributed. Removing extreme outliers (the 3% of the sample beyond three standard deviations above or below the mean) substantially improved the normality of the distribution. Confidence intervals and probability of cost offset were computed both with and without inclusion of these extreme outliers.

Results

A total of 407 patients provided informed consent and underwent randomized assignment to either the medical care management intervention or usual care. Of those assigned, 68.1% completed interviews at 12 months and 55.8% completed interviews at 24 months. Complete 12-month chart review data were available for 89.2% of the sample, and complete 24-month chart review data for 79.1% (see Figure S1 in the data supplement that accompanies the online edition of this article).

Baseline Characteristics

Table 1 summarizes participants' demographic and clinical characteristics. The sample was predominantly African American (77.9%) and poor (median annual income, $3,400). A total of 40% had Medicaid coverage, 59% were uninsured, and 1% had private insurance. The most common psychiatric diagnoses were schizophrenia (42.8%),

TABLE 2. Quality and Outcomes of Clinical Care at 1 and 2 Years for Patients With Serious and Persistent Mental Illnesses Receiving a Medical Care Management Intervention or Usual Care

Measure	Intervention Group (N=205)		Usual Care Group (N=202)			p (Group-by-Time Interaction)
	Mean	SD	Mean	SD	p	
Quality measures						
Prevention Quality Index						<0.001
Baseline (N=391)	19.9	16.8	19.7	17.4	0.620	
1 year (N=376)	56.1	23.5	20.3	16.2	<0.001	
2 years (N=345)	56.2	27.7	17.4	15.7	<0.001	
Cardiometabolic Quality Index						<0.001
Baseline (N=170)	28.2	33.4	31.5	29.3	0.300	
1 year (N=180)	34.8	38.5	30.3	30.2	0.780	
2 years (N=178)	43.5	39.5	27.8	30.1	0.018	
Outcome measures						
36-item Short-Form Health Survey						
Mental component summary (N=407)						<0.001
Baseline	36.4	10.1	36.0	10.3	0.298	
6 months	37.4	9.9	37.0	10.7	0.368	
1 year	39.0	10.2	36.5	10.6	<0.001	
18 months	39.6	10.0	37.4	10.2	<0.001	
2 years	40.5	10.3	39.0	10.8	0.001	
Physical component summary (N=407)						0.470
Baseline	36.4	11.7	35.7	11.4	0.174	
6 months	37.0	11.6	35.9	12.2	0.038	
1 year	36.9	12.0	35.7	12.3	0.023	
18 months	37.6	12.2	36.3	12.2	0.015	
2 years	38.4	12.7	37.0	12.9	0.010	
Framingham cardiovascular risk index						0.390
Baseline (N=121)	7.9	5.4	8.5	6.3	0.833	
1 year (N=183)	7.1	5.3	9.5	7.4	0.032	
2 years (N=146)	7.6	6.3	10.0	7.8	0.014	

depression (32.7%), and bipolar disorder (17.2%). A total of 25.3% of the sample had a comorbid substance use disorder. The most common medical comorbidities were hypertension (45.6%), arthritis (36.6%), tooth/gum disease (25.6%), asthma (20.1%), and diabetes (17.9%). There were no significant differences between the groups in any of the demographic or diagnostic characteristics at baseline.

Two-Year Clinical Outcomes

Table 2 summarizes results of the quality and outcome measures during the first 2 years. Overall, the gains in quality and outcomes of care at 1 year persisted at 2 years. The total proportion of preventive services for which a client was eligible that were received by the client (primary outcome measure) more than doubled between baseline and year 1 and remained highly significant by year 2 (56.2% compared with 17.4%, p<0.001 for group-by-time interaction). Among the subset of individuals with cardiometabolic diagnoses (diabetes, hypertension, high cholesterol, heart disease), the proportion receiving guideline-concordant cardiometabolic care increased in the intervention group from 28.2% to 43.5%, while declining slightly in the usual care group (31.5% to 27.8%), resulting in a significant group-by-time interaction (p<0.001).

Over the 2-year follow-up period, there was a significantly greater improvement in the mental component summary of the 36-item Short-Form Health Survey for the intervention group than for the usual care group (4.1 points compared with 3 points, p<0.001 for the group-by-time interaction). The relative improvement on the physical component summary of the Short-Form Health Survey was smaller and not statistically significant (2 points compared with 1.3 points). Significant improvements, as reflected in significant group-by-time interactions, were seen in the physical functioning, pain, role-emotional, social functioning, general health, and mental health subscales (all p values <0.001) (see Table S1 in the data supplement that accompanies the online edition of this article).

Among patients for whom fasting blood tests were available (N=121), the Framingham cardiovascular risk index, which represents the risk of developing cardiovascular disease in 10 years, was significantly lower at 2 years in the intervention group than in the usual care group (7.6% compared with 10%, p=0.01), although the group-by-time interaction for the relative change over time was not significant.

Costs: Health System Perspective

The mean annual costs of implementing the intervention, including staff salaries, fringe benefits, supplies and equipment, and overhead, were estimated at $973 per patient for the first year and $915 per patient for the sec-

TABLE 3. Costs of Care for Patients With Serious and Persistent Mental Illnesses Receiving a Medical Care Management Intervention or Usual Care at 1 and 2 Years

| Variable and Wave | Group and Costs ($) | | | | Cost Difference ($) Between Groups (Intervention – Usual Care) | | Probability of Cost Offset (%) |
| | Intervention Group (N=205) | | Usual Care Group (N=202) | | | | |
	Mean	95% CI	Mean	95% CI	Mean	95% CI	
Medical outpatient visit							
Year 1	1,855	1,644–2,090	1,589	1,388–1,801	265	–38 to 573	7.6
Year 2	1,338	1,160–1,525	1,358	1,151–1,577	–20	–323 to 260	53.1
Medical emergency visit							
Year 1	779	601–971	1,038	838–1,250	–259	–564 to 23	93.3
Year 2	580	435–743	668	506–860	–88	–328 to 141	71.1
Medical hospitalization							
Year 1	1,170	698–1,723	1,194	730–1,726	–23	–721 to 670	52.6
Year 2	626	331–991	683	369–1,064	–57	–535 to 426	58.5
Mental health outpatient visit							
Year 1	4,086	3,721–4,464	4,346	3,921–4,812	–260	–858 to 289	76.2
Year 2	2,864	2,495–3,259	3,451	3,040–3,862	–587	–1,149 to –11	95.7
Psychiatric emergency visit							
Year 1	224	164–289	241	172–311	–17	–110 to 76	62.6
Year 2	176	126–233	242	158–335	–66	–173 to 40	87.0
Psychiatric hospitalization							
Year 1	420	120–802	308	130–495	112	–263 to 538	33.5
Year 2	78	0–186	438	158–768	–360	–704 to –73	97.8
Total cost							
Year 1	8,934	8,042–9,868	8,715	7,784–9,777	218	–1,190 to 1,585	38.4
Year 2	5,908	5,181–6,620	6,840	6,096–7,629	–932	–1,973 to 102	92.3

ond year, which did not include one-time equipment and training costs. Table 3 lists the costs for various types of care and total costs of care for the two groups, as well as the difference between groups, at 1 and 2 years. Figure 1 illustrates total costs for the two groups at 1 and 2 years.

In the health system perspective analysis at 1 year, with all study participants included, the mean total costs per patient were $218 higher for the intervention group than for the usual care group (95% CI=–1,190 to 1,585), which reflected a 38.4% probability of a cost offset. With extreme outliers (3% of participants) excluded, the mean total costs at 1 year were $93 higher for patients in the intervention group than for those in the usual care group (95% CI=–871 to 1,012), which reflected a 44.2% probability of a cost offset.

For the second year, the mean costs for patients in the intervention group were $932 less than for those in the usual care group, reflecting a 92.3% probability of a cost offset (95% CI=–1,973 to 102). With extreme outliers (3% of participants) excluded, the mean costs for patients in the intervention group were $920 less than for those in the usual care group, reflecting a 96.1% probability of a cost offset (95% CI=–1,718 to 54).

Costs: Managerial Perspective

Revenues were calculated based on the typical patient flow patterns seen for the nurses in the study (one new patient and five follow-up visits each day). Once caseloads were full, maximum revenue that could be achieved for

FIGURE 1. Total Costs at 1 and 2 Years for Patients With Serious and Persistent Mental Illnesses Receiving a Medical Care Management Intervention or Usual Care
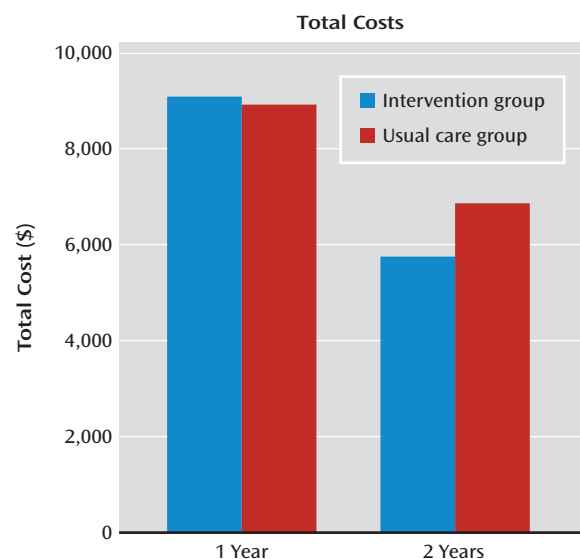
the program using two nurse care managers working at full capacity, with all clients covered by Medicaid or other insurance, would be $360,840. Assuming minimal or no out-of-pocket payments by uninsured clients (which was the case for this clinic and is typical of CMHCs generally) (30), the program would break even financially—i.e., rev-

enues would equal or exceed expenditures—if at least 58% of clients had Medicaid coverage or some other health insurance coverage. Because only 40.5% of clients in the study clinic had Medicaid coverage, the program was not financially sustainable under existing conditions. Largely because of challenges in financing, the program closed after the grant was completed.

Discussion

From a clinical perspective, improvements observed at 1 year (8) in the quality of primary care in the PCARE study persisted at 2 years. From a health system perspective, the cost profile was highly favorable and led to a trend toward a cost offset by the second year, suggesting a good value. However, from a managerial perspective, the program was not financially sustainable under current reimbursement conditions; with a greater proportion of insured clients, it could have been supported. These results, in particular the differences between societal and managerial cost perspectives, shed light on barriers to implementing these and other evidence-based practices in routine settings and on how expansion of insurance under health reform might help resolve such obstacles.

The intervention led to sustained improvement in the quality and outcomes of primary care. The majority of gains in quality and outcomes were seen during the first year, with continuing but smaller improvements during the second year. This asymptotic pattern is similar to that described in other quality improvement interventions, which typically have the greatest relative impact in the first 6–12 months as the greatest deficiencies in care are addressed, with subsequent efforts focused on maintaining those improvements (31, 32).

For physical health outcomes, even a 2-year horizon may be a relatively brief window to reverse the cumulative effects of the socioeconomic deprivation, adverse health behaviors, and poor quality of medical care that lead to compromised health in this population (33). Particularly for patients with high levels of medical morbidity, more aggressive programs that include medication management hold potential for substantial improvements in medical outcomes (34). Nonetheless, in this study we observed significant improvements in a majority of 36-item Short-Form Health Survey subscales related to physical health (general health, physical functioning, and pain), and the intervention group had a significantly better cardiovascular risk profile at 2-year follow-up. Stepped-care models may be able to combine these two approaches, using care management for general mental health clinic populations, with more intensive treatment protocols for patients with preexisting cardiovascular risk factors or other illnesses.

From the health system perspective, there was a strong trend toward cost savings by the second year, with a 92.3% chance of a cost offset. This result is consistent with re-

search on treating depression in primary care, which has found that these savings may become evident over the long term, particularly for the costliest and most complex patients (35, 36). Given the relatively modest costs of establishing care management programs, and the ability of such programs to steer patients from inappropriate to more appropriate forms of care, these approaches may represent a particularly good value for society.

However, from a managerial perspective, assessing the business case for the intervention was more complex. Because of the high rate of uninsured clients (59%), revenues would not have covered the costs of running the program in the absence of grant funding. And despite data supporting the intervention's effectiveness and high levels of satisfaction by providers and patients, clinic management was unable to continue the program after the grant was completed. Challenges in achieving financial sustainability are not unique to medical care management programs; they apply to any new clinical programs in public-sector mental health systems with large numbers of uninsured clients. More generally, the mismatch between societal and managerial perspectives, coupled with a lack of a clear locus of accountability for improving quality, may underlie the failure of many cost-effective interventions to be effectively disseminated in routine clinical settings (26, 37).

Several limitations of this study should be noted. The intervention was tested at a single site; care management approaches might need to differ in other types of settings (e.g., in rural areas without nearby medical providers). Similarly, the business case for these programs could differ in sites with lower numbers of eligible patients or in states with different mechanisms for paying for Medicaid patients or for the uninsured. Nonetheless, the characteristics of the site and payment approaches in the study clinic are typical of urban community health centers nationwide (38). Also, 2-year follow-up interview rates were relatively low; however, because cost data, which were the primary outcomes examined in this study, were derived from patient charts, follow-up interviews were less of a concern for these analyses.

Expansion of Medicaid under the Patient Protection and Affordable Care Act is likely to disproportionately improve rates of insurance for persons with mental illness who are currently uninsured (39). This could help improve the business case for implementing evidence-based programs like the one described here in community settings. Other new financing strategies to be tested under new models of care, such as bundled payments that include coverage for care managers, could also help reduce the barriers to implementation of these and other evidence-based quality improvement strategies for persons treated in safety net settings (40). Finally, for persons with serious and persistent mental illnesses, new health home models will include the development of specialty care medical homes that provide primary care services through community mental health providers (5). These new initiatives hold the

potential to begin to better align financial incentives for improving physical health care in this vulnerable population and, more broadly, for disseminating evidence-based practices in community mental health settings.

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Mental disorders and medical comorbidity

See companion Policy Brief available at *www.policysynthesis.org*

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THE SYNTHESIS PROJECT (Synthesis) is an initiative of the Robert Wood Johnson Foundation to produce relevant, concise, and thought-provoking briefs and reports on today's important health policy issues. By synthesizing what is known, while weighing the strength of findings and exposing gaps in knowledge, Synthesis products give decision-makers reliable information and new insights to inform complex policy decisions. For more information about the Synthesis Project, visit the Synthesis Project's Web site at *www.policysynthesis.org*. For additional copies of Synthesis products, please go to the Project's Web site or send an e-mail request to *pubsrequest@rwjf.org*.

SYNTHESIS DEVELOPMENT PROCESS

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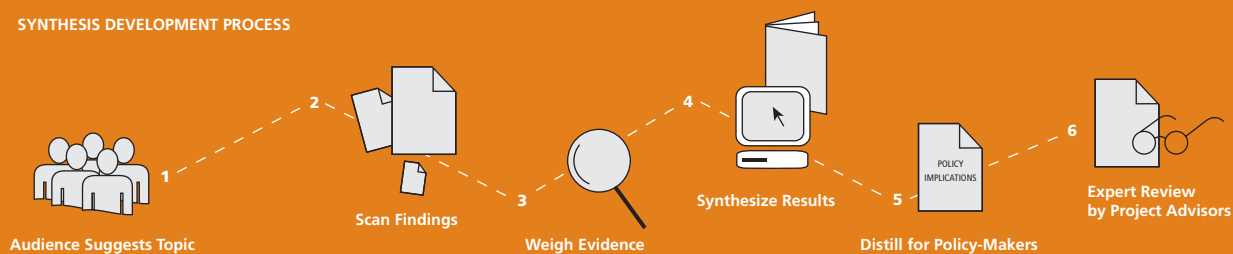
Introduction

In the wake of the passage of national health reform, the nation is focusing its efforts on how to improve quality and efficiency within the health care system. However, expenditures and gaps in care delivery are not evenly distributed throughout the population; only 5 percent of the population account for half of all health care spending (138) and there is considerable variation in quality of care across different conditions and settings (106). Therefore, achieving the goals of improved quality and efficiency will require focusing specifically on subgroups most at risk for high costs and poor quality of care (113).

This synthesis presents evidence that persons with comorbid mental and medical conditions represent just such a population. Based on epidemiological data from the 2001–2003 National Comorbidity Survey Replication, 34 million American adults, or 17 percent of the adult population, had comorbid mental and medical conditions within a 12-month period (3, 146). The high prevalence of this comorbidity, the complex causal connections linking medical and mental health conditions, and system fragmentation lead to problems in quality and costs related to comorbidity that are commonly even more complicated and burdensome than the problems related to the individual conditions themselves. While evidence-based treatments exist for improving care for this population, they typically are not used in routine settings. Under health reform, millions of uninsured persons with mental disorders will move into the formal health system, in particular the Medicaid program, making efforts to improve quality and efficiency of care for this population an even higher priority.

This synthesis provides an overview of medical and mental comorbidity, with an eye towards current federal health reform efforts. It addresses the following questions:

1. What is the rate of comorbidity between medical and mental conditions and why is it so common?

2. What are the associated mortality, quality of care, and cost burdens of comorbidity?

3. What are the current evidence-based approaches for addressing comorbidity?

Methodology

A literature review and analysis was conducted using standardized approaches for systematic reviews of the peer-reviewed literature (69). Quality of evidence was assessed based on internal validity (e.g., study design) as well as external validity (e.g., the degree to which the findings can be broadly applied). Review articles and meta-analyses received particular attention. We assumed that epidemiological associations and mechanisms linking mental and medical disorders would be relatively stable over time, and therefore included older studies in these sections; cost and service use data were considered to be more time-sensitive, and therefore these sections focused on more recent data.

Given the limitations of peer-reviewed data for policy syntheses (97) (e.g., lack of timeliness, bias towards positive findings), grey literature including commissioned reports, white papers and legislation also were reviewed. Data were supplemented with discussions with key administrators and policy-makers.

For the purposes of this report, comorbidity is defined broadly as the co-occurrence of mental and physical disorders in the same person, regardless of the chronological order in which they occurred or the causal pathway linking them (52, 147, 148). Mental disorders include a spectrum of conditions, such as depression, anxiety disorders, schizophrenia and bipolar disorder. This review focuses on adults; there are differences in treatments, providers and systems where children with comorbid mental and medical conditions receive their care.

> **Comorbidity** – the co-occurrence of mental and physical disorders in the same person, regardless of the chronological order in which they occurred or the causal pathway linking them.

Mental disorders cannot be diagnosed with biological tests, unlike many medical conditions, and thus case definition relies on diagnostic criteria. In the research literature, mental disorders are often measured through self-report, health utilization data, symptom- or criteria-based scales, or clinical interviews (see Text Box below). Self-report and claims-based analyses generally capture those individuals who have been treated for a particular disorder, whereas symptom-based studies identify individuals who meet criteria for a mental disorder regardless of whether they have been treated. Given the fact that fewer than one-third of individuals meeting criteria for a mental disorder receive treatment (86), this distinction is particularly important for this group of conditions. Additionally, prevalence estimates of mental disorders will differ depending on the time frame used (e.g., current, 12-month, or lifetime) because of recall bias and the likelihood that longer time frames will yield larger numbers of mental disorders (55).

Methodology

In addition to the issue of case definition for mental disorders, different study designs are used to evaluate and examine the epidemiology, health services correlates and treatments for comorbid mental disorders, including epidemiological surveys, analysis of claims-based data, clinical trials, and systematic reviews and meta-analyses (see Table 1). Each type of study provides useful information, but needs to be evaluated in terms of its potential strengths and weaknesses.

Table 1: Types of studies used to examine treatment for mental disorders

Type of Study	Example	Description	Measurement Strategies	Strengths	Weaknesses
Epidemiological	National Comorbidity Survey (NCS) (87)	Large sample surveys used to determine prevalence and correlates of mental disorders in the overall population.	• Structured lay interviews • Self-report	• Capture people with and without a diagnosis • Typically use a representative sample	• Expensive to conduct • Difficult to get timely data • Provide less information on cost and services
Claims-based	Faces of Medicaid (96)	Analysis of databases that include diagnostic codes and other health information.	• Health utilization data	• Timely data • Good for assessing cost	• Only capture people treated for a diagnosis
Clinical Trials	IMPACT study (144)	Randomized controlled trials test the efficacy of a treatment or intervention.	• Symptom-based outcome measures • Clinical interviews	• Rigorous methods for determining program effectiveness	• Examine a specific population and setting
Systematic Review and Meta-analysis	Collaborative care for depression: A cumulative meta-analysis and review of longer-term outcomes (56)	Literature is comprehensively searched for primary studies that fit eligibility criteria. Results are synthesized and, for meta-analyses, quantified.	• Variety of methods depending on articles identified in literature search	• Synthesize results of multiple studies • Meta-analyses provide overall effect sizes	• Results may be influenced by publishing bias (studies with significant results are more likely to be published)

What is the rate of comorbidity between mental and medical conditions and why is it so common?

Comorbidity between medical and mental conditions is the rule rather than the exception. In the 2001–2003 National Comorbidity Survey Replication (NCS-R), a nationally representative epidemiological survey, more than 68 percent of adults with a mental disorder (diagnosed with a structured clinical interview) reported having at least one general medical disorder, and 29 percent of those with a medical disorder had a comorbid mental health condition (Figure 1) (3, 83).

Figure 1: Percentages of people with mental disorders and/or medical conditions, 2001–2003

People with medical conditions:
58% of adult population

People with mental disorders:
25% of adult population

68% of adults with mental disorders have medical conditions

29% of adults with medical conditions have mental disorders
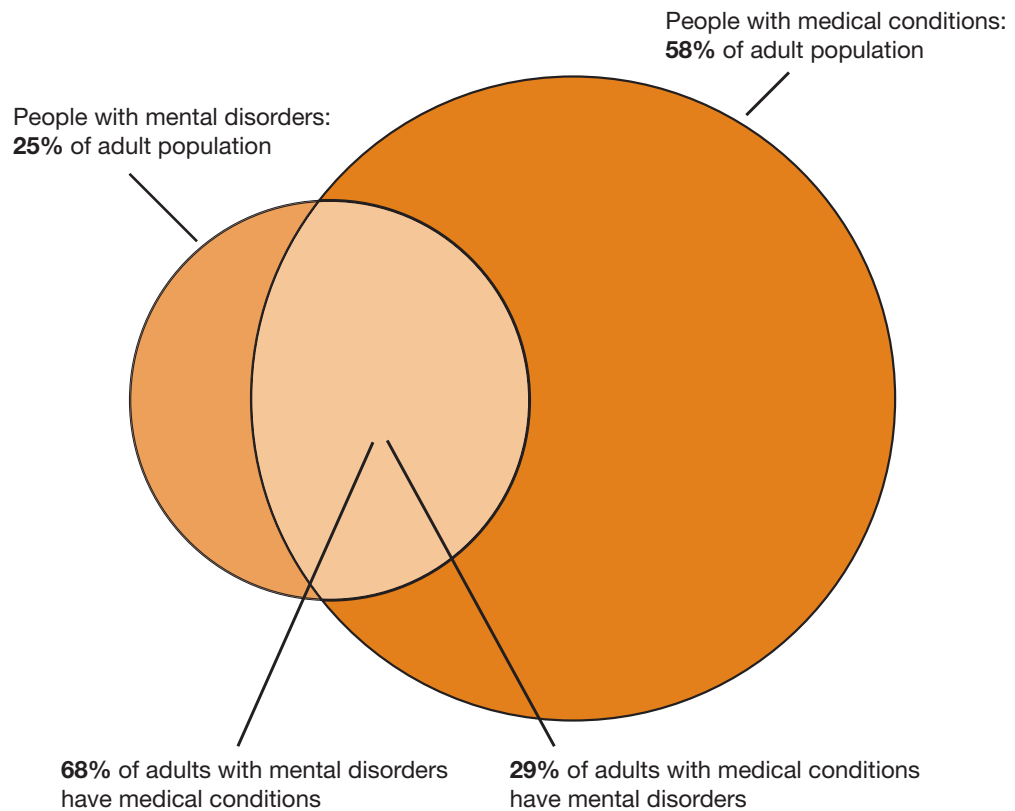
Source: Adapted from the National Comorbidity Survey Replication, 2001–2003 (3, 83)

Studies examining the association between specific medical and mental disorders in nationally representative samples have found high rates of comorbidity. For example, in the 1996 Medical Expenditure Panel Survey, the risk of self-reported depression among people reporting diabetes was two times the risk for individuals without diabetes (50). In the 2006 Behavioral Risk Factor Survey, people reporting a diagnosis of asthma were 2.3 times more likely to screen positive for current depression compared with people without asthma (141). Conversely, in the 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions, persons reporting cardiovascular disease were at 1.43 times elevated risk of having a lifetime anxiety disorder (63).

The Faces of Medicaid III report, which includes analyses of 2002 national Medicaid claims data, highlights these patterns among disabled Medicaid recipients (Figure 2) (93). In 2002, more than half of disabled Medicaid enrollees with psychiatric conditions also had claims for diabetes, cardiovascular disease (CVD) or pulmonary disease, substantially higher than rates of these illnesses among persons without psychiatric conditions. The authors conclude that the high prevalence of psychiatric diagnoses among people with chronic medical conditions should be an impetus for prioritizing the improved integration of behavioral and medical care.

Figure 2: Association of medical and psychiatric diagnoses among Medicaid-only beneficiaries with disabilities, 2002.
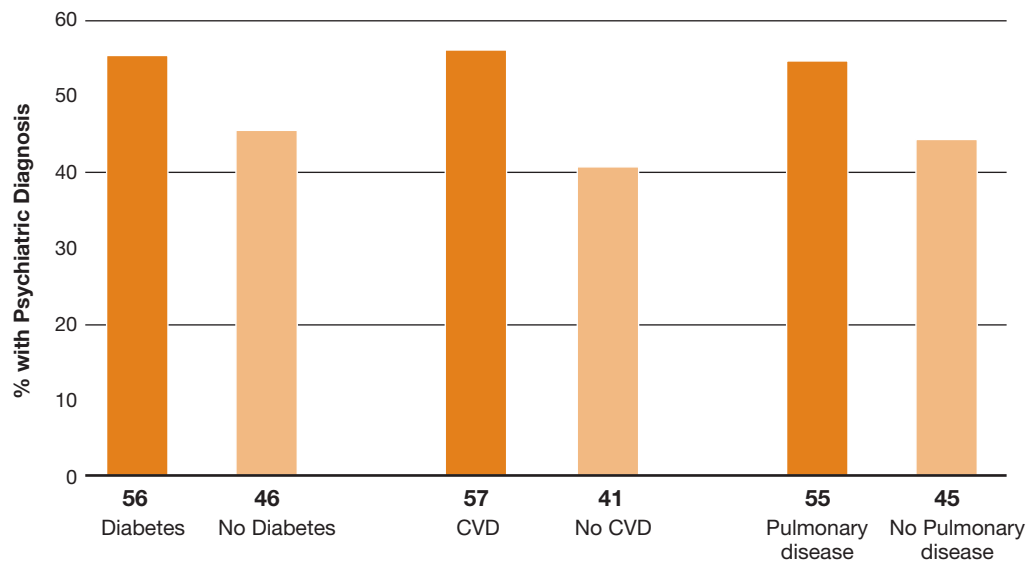
Source: Adapted from Faces of Medicaid III (93)

The investigators also looked at how conditions grouped into "triads" (i.e., common co-occurrences of three diseases together). Psychiatric disorders were among seven of the top ten most frequent diagnostic comorbidity triads in the most expensive 5 percent of Medicaid beneficiaries with disabilities. The most common triad was comorbid psychiatric conditions, cardiovascular disease, and central nervous system disorders, which affected 9.5 percent of all beneficiaries and 24 percent of the most expensive group of beneficiaries.

One of the most important drivers of the high numbers of individuals with comorbid mental and medical conditions is the high prevalence of mental disorders and chronic conditions in the United States. As previously noted, data from the 2001–2003 National Comorbidity Survey Replication, an epidemiological survey, found that approximately 25 percent of American adults meet criteria for at least one diagnosable mental disorder in any given year (85), and more than half report one or more chronic general medical conditions (70). In publicly insured populations, the proportion of clients receiving treatment for one or more chronic conditions is even higher; data from the 2001 Medical Expenditure Panel Survey indicate that more than 80 percent of Medicare recipients report being treated for one or more chronic illnesses (5); and national claims-based data from 2002 indicated that 79 percent of disabled and 56 percent of nondisabled adult Medicaid enrollees nationwide had one or more chronic conditions (1, 93).

In addition to the high prevalence of these conditions, there is also evidence that having each type of disorder is a risk factor for developing the other. For example, among respondents to the 1999 National Health Interview Survey, a nationally representative epidemiological survey, the likelihood of having major depression diagnosed via a screening instrument increases with each additional reported comorbid chronic medical disorder. The 12-month prevalence of major depression is about 5 percent in people without chronic medical conditions, compared with almost 8 percent in people with one condition, 10 percent in people with two conditions, and 12 percent in people with three or more medical conditions (49). Two claims-based studies of a privately insured population found that people treated for schizophrenia or bipolar disorder were up to three times more likely to have claims for three or more chronic conditions compared with people without claims for mental disorders (17, 18).

The pathways leading to comorbidity of mental and medical disorders are complex and bidirectional (80). Medical disorders may lead to mental disorders, mental conditions may place a person at risk for medical disorders, and mental and medical disorders may share common risk factors. Epidemiological studies have been important in examining these pathways. For instance, medical conditions that are accompanied by a high symptom burden, such as migraine headaches or back pain, can lead to depression (116). At the same time, major depression is a risk factor for developing medical conditions, such as cardiovascular disease, that are characterized by pain or inflammation (118). Figure 3 illustrates some of the pathways linking medical conditions and mental disorders.

Figure 3: Model of the interaction between mental disorders and medical illness
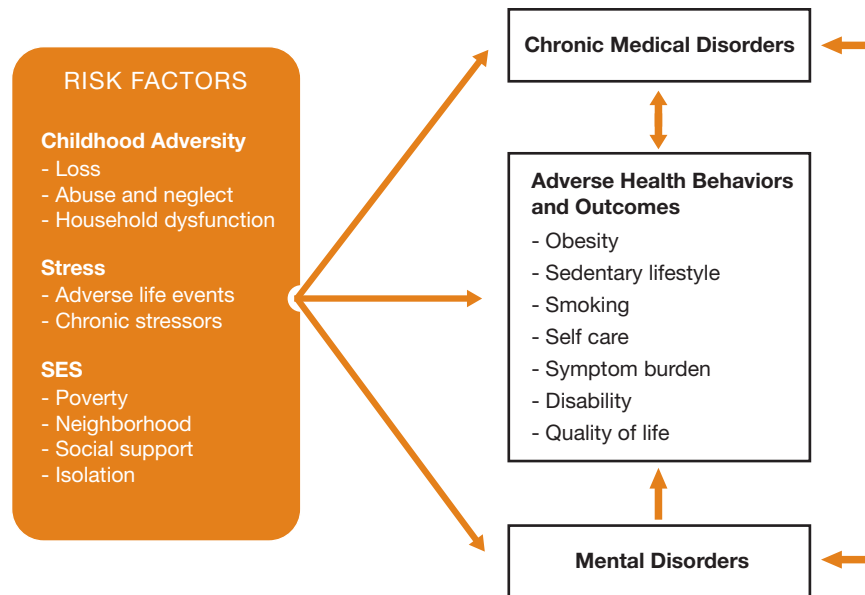
Source: Modified from Katon (80)

Exposure to early trauma and chronic stress may be a risk factor for both mental and medical disorders. Results from the Adverse Childhood Experience study (53), a survey of approximately 10,000 adults in a Health Maintenance Organization from 1995 to 1996, indicate a strong graded response between the level of exposure to childhood abuse or household dysfunction and poor health outcomes. People who experience more adverse exposures during childhood are more likely to report depression, suicide attempts and chronic medical conditions (8, 53, 72). Chronic stressors, such as lack of money for basic needs, care-giving responsibilities, conflict in relationships, or dealing with long-term medical conditions, are particularly strong predictors of depression (72).

Traumatic events throughout the lifespan, including intimate partner violence or combat exposure, can lead to post-traumatic stress disorder (PTSD). A systematic literature review estimated that combat-related PTSD afflicts between 4 percent and 17 percent of American veterans who have recently served in Iraq (125). Combat-related trauma can leave soldiers with serious and lasting injuries, which negatively affects mental health and contributes to PTSD (65, 91). In one study of 613 injured veterans, severity of PTSD and physical problems one month after injury independently predicted the severity of PTSD and depression six months later (65).

One mechanism that may underlie the relationship between stress and health conditions is that exposure to stressors is linked to a weakening of the immune system and an increase in the inflammatory response, which are risk factors for medical disorders (8, 9, 88). Mental disorders, such as depression, are linked to altered immune function including increased production of cytokines, small signaling proteins that are part of the body's inflammatory response (30, 89). The inflammatory response is critical for dealing with injury or infection, but becomes problematic when sustained over time in response to chronic stress (89). In addition, people who experience chronic stressors or negative events in childhood may also be more likely to engage in adverse health behaviors that are linked with medical conditions (53).

Socioeconomic factors, such as low income and poor educational attainment, are associated with mental disorders and medical conditions. A consistent inverse association exists between socioeconomic status (SES) and a variety of health indicators, health behaviors and mortality (66, 95, 102). For example, a meta-analysis of the literature showed that people of low socioeconomic status are 1.8 times more likely to report being depressed than people who have a higher status (102). SES may both contribute to the onset of mental disorders and be a consequence of downward "drift" resulting from a mental disorder (48). SES can also influence prevalence, morbidity and mortality of medical conditions, such as coronary heart disease and diabetes (16, 37). People of low socioeconomic status are more likely to engage in adverse health behaviors, such as eating a poor diet, smoking and not exercising, which in turn contribute to the development of chronic medical conditions (13, 94).

Low socioeconomic status reduces available resources, such as social support, and increases the chances of exposure to adverse environmental conditions (119). Individuals with low social support consistently report higher levels of depressive symptoms; this relationship can be found among the general population and among people with various chronic diseases (124, 143, 148). There is also evidence that social support may be important in the course of schizophrenia and bipolar disorder; people with low social support report poorer outcomes of these illnesses (15, 77). Low levels of social support are also negatively linked to medical conditions. For example, one review of the literature found that low social support raises the risk of developing coronary heart disease (CHD) or experiencing adverse outcomes associated with CHD by 1.5 to 2 times (101). Social support is hypothesized to directly influence mental health or indirectly affect health status by buffering the effects of stress (143).

Findings

Environmental and neighborhood conditions associated with disadvantage, such as low-quality schools and housing, limited employment prospects, and problems in access to health care services, public transportation or other resources, have a profound impact on individuals' well-being and mental health (28, 29). Neighborhood characteristics may lead to depression, for example, by increasing daily stress levels, heightening vulnerability to negative events, and disrupting social ties (29).

A 2001 systematic review concluded that neighborhood characteristics are also associated with the development of chronic medical conditions (120). For instance, people in disadvantaged communities often have limited access to healthy food options and may not be able to afford healthier choices, which contributes to high rates of obesity and diabetes (37). In a random sample of adults from a Canadian city, neighborhood deprivation was significantly associated with disability from diabetes, even when individual characteristics were taken into account (129).

Four modifiable health risk behaviors—tobacco use, excessive alcohol and illicit drug consumption, lack of physical activity, and poor nutrition—are responsible for much of the high rates of comorbidity, burden of illness, and early death related to chronic diseases (19). Persons with mental disorders are at elevated risk for each of these types of behaviors, which raises their risk of developing chronic illnesses and having poor medical outcomes once the illnesses emerge.

Using data from the 1991–1992 National Comorbidity Survey, Lasser and colleagues estimated that people with a diagnosis of a mental disorder in the past month smoke approximately 44 percent of all cigarettes in the United States and are two to three times as likely to smoke compared with those without a mental disorder (96, 58). More severe symptoms are associated with a greater likelihood of smoking; data from the 2005–2008 National Health and Nutrition Examination Survey (NHANES) found that as depression symptoms become more severe, likelihood of smoking increased (122).

A number of factors may contribute to co-occurrence of smoking and mental illness. Some have argued that smoking relieves psychiatric symptoms among some people with severe mental illness; however this "self-medication" hypothesis has not been consistently supported in the research literature (25). Other factors that may contribute to smoking rates among people with mental disorders include low socioeconomic status, social networks that include smokers, or environmental facilitators, such as residential or treatment facilities that allow smoking (25, 38, 67, 102, 111). Having a mental disorder may also make it more challenging for smokers to quit.

The factors contributing to high rates of smoking among people with mental disorders can also contribute to drug and alcohol use. Using employer-based claims data from 1996 to 2001, Carney and colleagues found that compared with people without severe mental illness, people treated for schizophrenia and bipolar disorder are 12 and 20 times more likely to be treated for alcohol abuse, and 35 and 42 times more likely to be dependent on illegal drugs, respectively (17, 18). According to a national epidemiological survey, substance use disorders are comorbid in roughly 20 percent of people with depression and 15 percent of people with anxiety (64). A review of the literature on substance abuse and PTSD found 21 percent to 43 percent of civilians with PTSD and up to 75 percent of veterans with PTSD also had a substance abuse disorder (75). Individuals may use alcohol and drugs to ameliorate negative psychiatric symptoms, to achieve a desired emotional state or to cope with stressors (26, 131).

Persons with mental conditions are more likely to have sedentary lifestyles and poor diets. The high rates of obesity among individuals with mental disorders may be attributable to poor diet and sedentary lifestyle (22, 62, 136). People with severe mental illness, including schizophrenia, bipolar disorder, or major depression, report less physical activity compared with those without mental disorders, and tend to eat foods that are high in fat and calories while avoiding fruits and vegetables (25, 31).

Many of the most common treatments for diseases may actually worsen the comorbid mental or medical problems. Most psychotropic medications, particularly antipsychotic medications, can cause weight gain, obesity and type 2 diabetes (109). At the same time, many treatments for common medical conditions may have psychological side effects that may exacerbate or complicate underlying psychiatric conditions. For example, corticosteroids are associated with mania and psychosis (92). According to two systematic literature reviews, some medications appear to contribute to mild or atypical depressive symptoms, though conflicting results about the association with depression have been found for commonly used medications such as anti-hypertensives and lipid-lowering agents (92, 117).

Many chronic medical conditions require patients to maintain a self-care regimen in order to manage symptoms and prevent further disease progression, which may be hampered by comorbid mental conditions. Self-care behaviors include taking medication as prescribed and adhering to lifestyle modifications, which may include exercise, diet and stress relief (103). Depression may decrease the motivation and energy needed to perform self-management behaviors and may also adversely impact interpersonal relationships, including collaboration with physicians (80). A meta-analysis indicated that the odds of noncompliance with medical treatment regimens are three times greater for depressed patients compared with nondepressed patients (34). An analysis of the claims-based 2001 Veterans Affairs National Psychosis Registry found that people with severe mental illness often exhibit poor adherence to both psychiatric medications and medications for medical conditions (121). Inadequate self-care can result in an exacerbation of medical symptoms and a decrease in health-related quality of life.

What are the associated mortality, quality of care, and cost burdens of comorbidity?

When mental and medical conditions co-occur, the combination is associated with elevated symptom burden, functional impairment, decreased length and quality of life, and increased costs (32, 49, 80, 139). The impact of having comorbid conditions is at least additive and at times may be synergistic, with the cumulative burden greater than the sum of the individual conditions.

Mental disorders are associated with a twofold to fourfold elevated risk of premature mortality (24, 47, 54). From a population perspective, the bulk of these deaths are due to "natural" causes such as cardiovascular disease rather than accidents and suicides (24). As lifespan in the general population has improved, persons with mental disorders have lagged behind, resulting in a widening disparity between persons with and without these disorders (127). In a multistate study of mortality data from 1997 to 2000 submitted by public mental health agencies, public mental health clients were found to die 25 years earlier than the average life expectancy for the general population (24). Based on a review of the literature, Eaton et al. calculated the relative risk of premature mortality in people with mental disorders compared with the general population (Figure 4).

Findings

Figure 4. Relative risk of all-cause premature mortality associated with mental disorders compared with the general population

Disorder	Relative Risk
Panic disorder	1.9
Major depressive disorder	1.7
Alcohol abuse/dependence	2.0
Personality disorders	4.0
Schizophrenia	2.6
Bipolar disorder	2.6
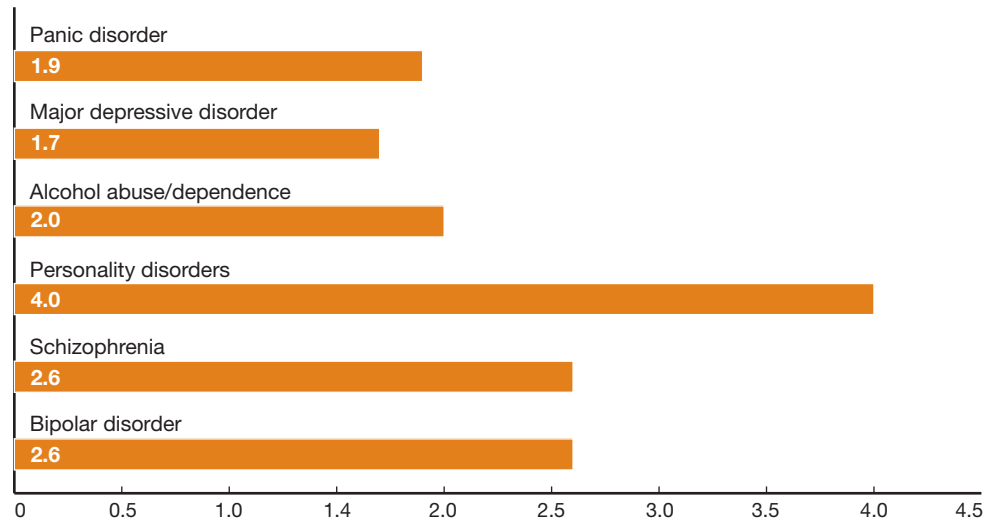
Source: Eaton et al., 2008 (47)

Excess mortality in persons with mental disorders likely represents a common final pathway of socioeconomic disadvantage, poor quality of care, problems in treatment adherence, and adverse health behaviors. However, much of this excess mortality, like the excess mortality in general populations, is due to preventable risk factors and treatable conditions. Improved access to preventive services, diet and exercise programs, and high quality of primary care could play a role in narrowing the mortality gap for persons with mental illnesses (114).

There are problems in quality of care for treatment of comorbid conditions both in primary care and specialty mental health settings. People with mental and substance use disorders are less likely than individuals in the general population to receive preventive services such as immunizations, cancer screenings, and smoking cessation counseling, and receive worse quality of care across a range of services (42, 108). In primary care, common mental comorbidities, such as depression, often go undetected and undiagnosed (27, 68, 154). Many common mental disorders, including depression and anxiety, present with somatic symptoms such as headaches, fatigue, pain or gastrointestinal problems that overlap with those of general medical disorders, making diagnosis of these conditions challenging (61, 132). Few health care sites offer systematic screening for detection of these conditions. Similarly, veterans with PTSD experience higher rates of physical symptoms compared with veterans without PTSD, though more research on the association between PTSD and specific medical conditions is needed (6, 51, 123). Among injured veterans, the emphasis of care may focus on physical rehabilitation and emotional distress may be overlooked, especially since PTSD and depression symptoms among soldiers often emerge over time (65, 91).

Once diagnosed, providers face time constraints in managing multiple conditions. Competing demands may prevent providers from being able to address psychosocial issues during brief office visits, which likely is a factor underlying poor quality of care for those conditions in primary care settings (23, 90, 158). Similar problems have been found in specialty mental health settings, such as the Veterans Affairs system, where having comorbid medical conditions predicts worse quality of care for more serious mental disorders (21).

There are analogous problems of underrecognition and undertreatment of medical problems for persons with mental conditions. For patients, symptoms of mental illness such as lack of motivation, fearfulness and distrust may reduce their ability to initiate and follow through with medical treatment. Among providers, primary care physicians may feel uncomfortable treating persons with serious mental illness. Psychiatrists and other mental health care providers may lack the knowledge or expertise to provide medical care for their patients. At a system level, fragmentation and separation between the medical and mental health care systems result in individuals with comorbid conditions receiving care from multiple uncoordinated locations (45).

Comorbid mental and medical conditions are associated with substantial individual and societal costs (39, 87). Melek and Norris analyzed the expenditures for comorbid medical conditions and mental disorders using the 2005 Medstat MarketScan national claims database (107). They looked at the medical expenditures, mental health expenditures, and total expenditures of individuals with one of ten common chronic conditions with and without comorbid depression or anxiety (Figure 5). They found that the presence of comorbid depression or anxiety significantly increased medical and mental health care expenditures, with over 80 percent of the increase occurring in medical expenditures. For example, the average total monthly expenditure for a person with a chronic disease and depression is $560 dollars more than for a person without depression; the discrepancy for people with and without comorbid anxiety is $710.

Figure 5. Comparison of monthly health care expenditures for chronic conditions and comorbid depression or anxiety, 2005
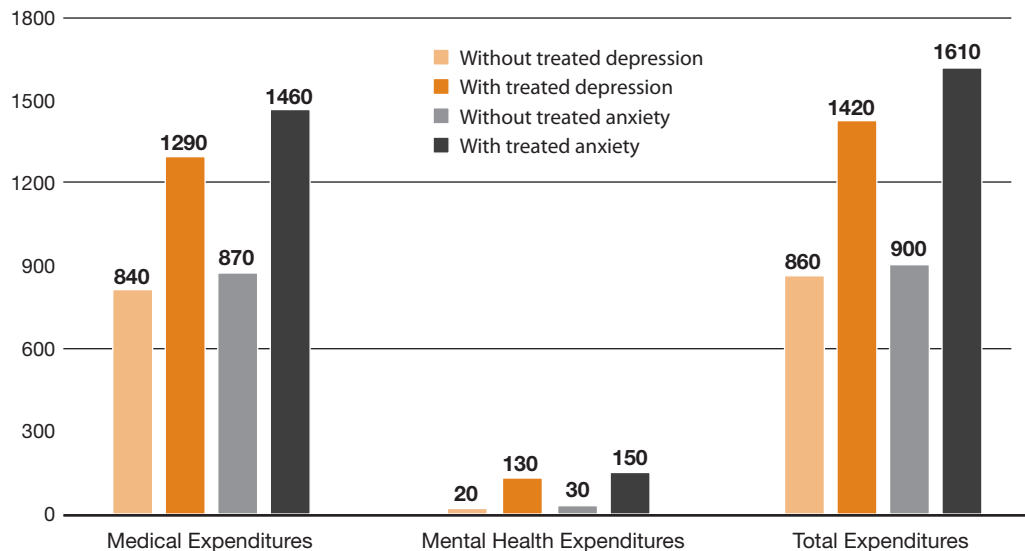
Source: Melek and Norris (107)

Other studies have found similar results across a range of medical and mental health comorbidities. For patients in a staff model HMO, a claims analysis found that general medical costs were 40 percent higher for people treated with bipolar disorder than without it (135). Another claims-based study, which surveyed over 4,000 adult health plan members with diabetes, found that costs attributable to mental health services accounted for less than 15 percent of the increase in total costs for people with comorbid diabetes and depression (134).

Mental disorders also present a high cost to employers. Because mental disorders affect higher order functioning, mental comorbidity may result in disproportionate costs for both absenteeism and presenteeism (59, 60). Depressive disorders contribute to significantly more sick days annually than any other condition. In an analysis of health claims and disability data from employees of a large corporation, persons with comorbid mental and medical conditions cost employers approximately twice as much as those with either condition alone (43).

What are the current evidence-based approaches for addressing comorbidity?

A literature dating back more than two decades has provided a clear indication of what does and does not work in care management on the primary care/ mental health interface. Early studies that sought to improve quality of care of common mental disorders in primary care through screening and provider education did not find these methods to be effective (57). "Collaborative care" approaches that use a multidisciplinary team to screen and track mental conditions in primary care settings have been the most effective in treating these conditions (16, 56, 142). These models build on the Chronic Care Model, which describes the environmental, structural and community characteristics needed for multidisciplinary teams to work with patients in improving illness management (152). Table 2 shows the key elements of the Chronic Care Model.

Table 2. Elements of the Chronic Care Model

Elements	Description
Self-management support	• Patient and provider contributions to treatment plan • Self-management education, training, support services • Goal setting
Decision support	• Guidelines for specialist referral • Flowchart of guidelines
Delivery system design	• Composition of practice team • Clear roles and allocated tasks • Management of patient contacts—e.g., appointments, follow-up
Clinical information systems	• Patient and disease registries • Electronic records • Reminder systems and feedback to physicians
Health care organization	• Support by organization leaders • Prioritization of chronic care • Reimbursement policies
Community resources	• Collaboration with community groups – e.g., peer support

Source: Adapted from Bodenheimer et al. (10), Wagner et al., 2001 (151), and Wagner et al., 1996 (152)

Findings

More than 30 randomized controlled trials have found that collaborative care interventions improve quality and outcomes of major depression as well as anxiety disorders (16, 56, 157). In the IMPACT study, the largest collaborative care program for late-life depression, the patient, care manager, and primary care physician work together to develop a treatment plan that includes antidepressant medication or brief psychotherapy (144). Treatment plans are adjusted as needed in weekly meetings with the psychiatrist. This study is now in a dissemination phase, helping health plans and state authorities to adopt this model to populations of all ages and to presenting problems common to primary care (e.g., depression, anxiety/PTSD, bipolar disorder, substance use). Care managers follow up with patients and monitor depressive symptoms using the Patient Health Questionnaire-9 (PHQ-9), a brief screening and symptom severity measure. Similarly, positive results have been found using these collaborative approaches for improving the delivery of primary medical care in specialty settings (40, 44, 128, 153, 156).

Two key "active ingredients" of these models, identified through a literature review and meta-analysis, are the use of care managers and the use of "stepped care" approaches to illness management (11). Care managers provide patient education, aide patients with treatment decision-making, monitor symptoms, provide follow-up care, and communicate with the team (11, 14, 20, 33, 56, 142, 144). Stepped care involves tracking and monitoring medical and mental outcomes, and adjusting services or moving to a higher level of intensity as needed (104).

Collaborative care approaches have been found to be highly cost-effective from a societal perspective (82, 130). Cost-effectiveness indicates a good value for society, but does not necessarily mean that cost-effective programs will save money or result in a "cost-offset" (150). However, more recent clinical trials have suggested that cost savings may be achievable over the long term, particularly among the costliest and most complex patients, such as those with comorbid diabetes and depression (81, 145).

There are challenges, however, in moving from cost-effectiveness findings to implementation and policy, given externalities in the financing of health care in the United States. For instance, if a program reduces emergency room visits or hospitalizations, the site funding such a program is not typically able to share in these savings (105). Cost-effectiveness analyses need to be supplemented with budget impact analyses that seek to understand these costs from the perspective of the organizations who implement these programs (99, 105, 112).

There is increasing interest in developing models that use a single care manager to treat a range of medical and mental health problems (79). This parallels trends seen in general medicine which are seeking to use single care managers to address multiple conditions in patients with multi-morbidities (12). These programs may ultimately be more flexible for sites to implement than the single-condition disease management programs that have historically dominated both the literature and much of the disease-management industry (10). Given high levels of comorbidity in Medicaid clients, these models may be particularly promising to disseminate for patients treated in that insurance system.

These clinical approaches to improving quality can be supported through a variety of organizational/structural relationships that can be categorized into three broad approaches: fully integrated care provided by a single organization; a partnership model in which care is shared across two different organizations; and a facilitated referral approach in which a site helps clients coordinate care occurring at multiple different clinics or sites. In contrast to the robust evidence base for clinical collaborative care models, there is little research evidence comparing the effectiveness of different organizational approaches to supporting care coordination. However, each might be expected to pose differential benefits in terms of delivering collaborative care.

In fully integrated medical, mental health, and substance use (MH/SU) health models, staff within a single organization provide primary and MH/SU health care. These models have been used primarily in large, quasi-integrated systems such as staff model HMOs and Veterans Affairs (VA), which include physical facilities that provide co-location of mental health, substance use and medical services, and an integrated electronic medical record. These systems have administrative and fiscal responsibility for both mental and medical care of a defined group of patients, providing a rationale and financial mechanism to support these relatively complex and labor-intensive models.

 A partnership model is one in which primary care staff are embedded in a community MH/SU organization and/or MH/SU staff are embedded in a primary care setting. All 16 sites that have completed the National Council for Community Behavioral Healthcare's Integration Primary Care-Behavioral Health Collaborative have been partnerships between community health centers and community MH providers (98). Each site has worked on clinical (not organizational) integration, focused on either the primary care or MH setting or bi-directionally in both settings. A number of features make this an appealing approach to integration. These partnerships provide the embedded staff member with a link to the full range of expertise at their home agency via supervision, consultation and referrals. On-site clinicians can bill under the license of their home organization, overcoming some of the financial obstacles that primary care sites face in providing MH services and vice versa. These approaches may be particularly appropriate for midsized organizations such as community mental health centers and community health centers that have the infrastructure to develop partnerships but lack the resources and economies of scale to develop fully integrated practices.

A facilitated referral model is one in which primary care staff are not physically present in the MH/SU organization but the MH/SU organization conducts physical health screenings, coordinates referrals to primary care, and shares information with primary care. Alternatively, MH/SU staff is not physically present in primary care but the primary care provider conducts MH/SU screenings and coordinates referrals to MH/SU specialty settings. Typically a care manager, a key element of the collaborative approaches described previously, ensures that patients can obtain access to, and follow-up with, care outside the organization. Randomized clinical trials have shown that these models, with care managers in place ensuring follow-up and transfer of information across the organizations, can improve quality and outcomes of depression in primary care and also primary medical care among patients with serious mental illnesses (44, 137). Given the low cost and relative flexibility of these approaches, they can be useful transitional approaches for smaller sites considering integration.

None of these organizational approaches guarantees or precludes the delivery of the evidence-based approaches outlined above. However, these elements are generally easier to support in more structured organizational models than in loosely structured referral relationships. A 2006 Institute of Medicine Report recommended that sites should "transition along a continuum of evidence-based coordination models…that best meet the needs of their patient populations, and that ensure accountability." (74)

Several projects are currently working on taking established collaborative care models to scale at a statewide level. These initiatives may provide models for organizational and financial approaches to improving care at the primary care/mental health interface. More than 90 clinics have participated in an initiative known as DIAMOND (Depression Improvement Across Minnesota, Offering a New Direction), which uses the IMPACT model of collaborative care delivery. Of 151 patients enrolled for at least six months who had been contacted,

42 percent were in remission from depression, and an additional 12 percent have seen at least a 50 percent improvement in their depressive symptoms (76). To finance this model, the DIAMOND project is applying the concept of a case rate payment for depression care. Minnesota health plans are paying a monthly per person case rate to participating clinics for a bundle of services, including a care manager and consulting psychiatrist, under a single billing code. Because the payments are being made from the health care side of the system, there is an opportunity for any cost savings to accrue to the health plans paying for the program.

In the Community Care of North Carolina (CCNC) project, Medicaid enrollees receive health care and care management through local networks made up of physicians, hospitals, social service agencies and county health departments. Preliminary evidence suggests that these programs may help improve quality of care for chronic medical illnesses and save costs (140). The CCNC project is a primary care case management model that could serve as a prototype for accountable care organizations, providing care management, measurement and quality infrastructure needed by small practices. In the last several years four CCNC networks have worked with state and regional mental health authorities to pilot a model for integrating mental health and primary care (155).

Conclusion

At its core, the problem of comorbidity is one of a mismatch between a clinical reality in which medical conditions and mental health conditions are overlapping and interrelated, and a health care system in which the providers, clinics and treatments are separated. Evidence-based treatment models for improving quality in this population are often not implemented because of barriers erected by the fragmented system. New organizational and financial models, however, are being developed to help facilitate the delivery of these services.

Policy Implications

The Patient Protection and Affordable Care Act, signed into law in March 2010, will be a major focus for health and mental health policy-makers in the coming years. Given the elevated burden and poor quality of care faced by persons with comorbid mental and medical conditions, this population merits particular attention as this new legislation is implemented. A number of features of health reform, including expanded insurance, support of information technology, new organizational and financial models of care, workforce expansion, and resources for prevention hold the opportunity to better disseminate the use of evidence-based approaches to treating comorbid conditions in routine care settings.

Expanding insurance. Given high rates of uninsurance and underinsurance among persons with mental disorders, expansion of insurance under health reform has the potential to benefit persons with comorbid conditions (41). In the context of the recent passage of mental health parity legislation, this expanded insurance will include coverage for mental health services that is on a par with services for other medical conditions.

The Medicaid system is already the most important insurer for persons with serious mental illnesses, and its importance will grow under health reform. Donahue and colleagues estimate that the proportion of persons with serious mental illness (defined as depression or severe distress) treated under Medicaid is likely to nearly double (from 12.8 percent to 24.5 percent) under this expansion (35). Given that the health status of new Medicaid enrollees is expected to be similar to current beneficiaries, the cost per person will probably not change much, but overall costs to the Medicaid system from these enrollees will increase (71).

Many services needed by individuals with mental disorders, particularly those with more serious and persistent conditions, do not have a direct equivalent on the physical health side, meaning that some individuals insured under these new insurance expansions may still face gaps in services. Defining an essential mental health benefits package that includes these services could help ensure that expansion of health coverage under health reform translates into improved access to services.

Supporting improved communication. Lack of communication between the mental health and medical systems has been an important factor underlying poor quality of care for persons with comorbid conditions (74). Health Information Exchanges (HIEs) are now being formed to develop electronic networks containing data elements essential to care coordination that can be accessed by diverse participating health care organizations in a defined geographic region. Strategies will need to be developed to allow MH/SU systems to be included in these exchanges, while preserving appropriate privacy of sensitive data. The Substance Abuse and Mental Health Services Administration recently issued a report concluding that laws protecting confidentiality of drug and alcohol abuse information permit inclusion of patients with substance use disorders in these networks so long as they provide appropriate consent (100).

Including mental health in medical homes. The Patient Protection and Affordable Care Act includes provisions for demonstration projects for patient-centered health homes within Medicare and Medicaid. In primary care settings, these patient-centered health homes will need to have the capacity to either provide mental health care directly or coordinate with mental health providers. Accrediting agencies such as NCQA should be supported in efforts to include language about care coordination between medical and mental health services in their certification process. For persons with serious and persistent mental conditions, these policies could also support the development of specialty care medical homes that provide primary care services through community mental health providers.

Policy Implications

Developing new financing models. The Patient Protection and Affordable Care Act has provisions for developing and testing new models such as Accountable Care Organizations (ACOs), collectives of providers that receive bonuses for meeting quality or cost savings standards. Membership in ACOs could provide the opportunity for mental health/substance use treatment providers to integrate vertically with other components of the health care system, and contribute to achieving cost and quality targets. They could provide more flexible funding structures to support functions, such as care management, that would be important for improving care for persons with comorbid conditions.

Building a trained workforce. There is currently a shortage of providers trained to deliver evidence-based services for comorbid conditions; this shortage could become even more pronounced with the expansion of the population using health services under health reform legislation. The Patient Protection and Affordable Care Act calls for the development of training programs that focus on interdisciplinary mental and behavioral health, primary care models such as medical homes and team management of chronic disease, and the integration of physical and mental health. Workforce development should focus on training and competencies for primary care physicians in provision of care for common mental health disorders, mental health clinicians in screening and treatment of common medical conditions, and training for each type of provider in developing skills for working as consultants in the other setting (104).

Prioritizing prevention. While improving care for comorbid conditions is critical, it will ultimately be essential to work upstream to prevent or delay their onset. Primary prevention efforts will be needed to address common risk factors for comorbid conditions, such as adverse health behaviors and substance use, in their social and environmental contexts. Secondary prevention should include screening for common mental disorders in primary care settings and for common medical health conditions in specialty medical settings.

The Need for Additional Information

In conducting this review, several gaps in the literature on mental health and medical comorbidity became evident. First, most of the existing literature on comorbidity examines the impact of particular comorbid conditions on an index medical or mental illness (e.g., diabetes and depression). While there is value in these specific, clinically-focused approaches to understanding comorbidity, patients with comorbid conditions share many common features that make them valuable to examine as a distinct population of interest. They are, in many ways, analogous to racial and ethnic disparities groups who are monitored separately and often require tailored quality improvement programs. Second, nearly all of the current evidence for this population focuses on clinical models rather than organizational or systems level approaches to implementing those models. Comparative effectiveness trials will be needed to compare organizational approaches to delivering and sustaining these evidence-based approaches to improving care for persons with comorbid conditions. Finally, health reform will include a broad range of changes in insurance coverage and care delivery that could have a disproportionate impact on persons with comorbid medical and mental conditions. Tracking the impact of this legislation on costs, burden and outcomes of care for this population could provide important information to inform future iterations of health legislation.

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ACHIEVING HEALTH EQUITY IN AMERICA

David Satcher, MD, PhD; George Rust, MD, MPH

Health disparities are both real and deadly, but disparities are not inevitable. The causes of health disparities are complex, and their elimination will require multi-dimensional interventions. We have developed a three-dimensional model for the elimination of health disparities. The foundation of public health is surveillance, which is the first dimension. We must continually measure racial-ethnic disparities in each specific disease, in its risk factors, and in outcome-relevant quality of care. The second dimension is research into the causes of disparities and potential intervention points to eliminate disparities. These causes and potential intervention points can be in the individual's biology or their behavior, or in their physical and social environment, or in the healthcare arena (quality and access). The third dimension is intervention, which requires moving from what we know to what we do. Translation must not only take knowledge from the bedside, but to the curbside and the countryside, into each community and into each home. We can achieve health equity in America, but first, we all must care enough, know enough, do enough, and persist long enough. (*Ethn Dis*. 2006;16[suppl 3]:S3-8–S3-13)

Key Words: Health Equity, Health Disparities, Health Outcomes, Race, Poverty

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INTRODUCTION

The health of our nation is a dynamic force propelled by myriad factors that change with time: the racial and ethnic composition of each generation; age distribution (eg, the aging baby boomers); and socioeconomic status levels, to name just a few. In 1980, for example, 6.4% of the American population was Hispanic or Latino; 11.5% Black; and 79.9% White. Twenty years later in 2000, the population composition had shifted to: 12.5% Hispanic or Latino; 12.2% Black; and 69.5% White.[1]

The US population is also aging, with increasingly large segments of the population in the 75 years and older age group: 2.6% in 1950; 5.9% in 2000; and 11.6% projected for 2050.[2] Poverty is also a persistent risk factor for adverse health outcomes. Adults and children in families living at or below poverty level often have poor health due to nutritional deficits, poor housing, exposure to environmental hazards, unhealthy lifestyles, and decreased access to health care. During a 22-year period (1980–2002), poverty rates for all ages in the United States rose to an all-time high of 15.1% in 1993, dropping off during 2000 to 11.3% but increasing again to 12.1% by 2002.[3]

HEALTH DETERMINANTS: INDIVIDUAL, ENVIRONMENT, AND POLICY

While demographic characteristics are a driving force for the health status of the nation as a whole, these characteristics combine with other, closely interwoven determinants to yield the overall health of an individual. Healthy People 2010 presented a more complete framework for understanding the causes and determinants of health outcomes and health disparities, as illustrated in Figure 1.[4] These include the physical and social environment, the biology and behaviors of individuals, and system-level determinants such as healthcare access, health policy, and social and economic policy.

For example, physical environmental factors clearly play a role in initiating and exacerbating disease. Poor air quality can derive from industrial pollutants, auto and truck emissions, and agricultural chemicals. These exposures, along with landfills and toxic waste sites, are more likely to be found in low-income and minority communities.[5,6] Low-income workers, and a disproportionate number of minority workers, are more likely to work in areas of exposure within any given industry. In a broader definition of environmental health, some neighborhoods are simply unsafe for walking, either because of crime or automobile traffic (inadequate pedestrian walkways).

What may be less obvious is the extent to which the social environment can influence disparities in health. For example, poverty and hopelessness among teens and young adults can drive unhealthy behaviors such as smoking or violence or risky sexual behaviors. Impoverished neighborhoods can also feed a sense of powerlessness or external locus of control that directly conflicts with efforts to achieve empowered self-management of various chronic diseases. The social environment can also foster feelings of mistrust in the healthcare system. Individuals have often experienced racism or ethnic discrimination on a daily basis, as well as having community memories of episodes of earned distrust such as the Tuskegee syphilis experiments.[7,8,9]

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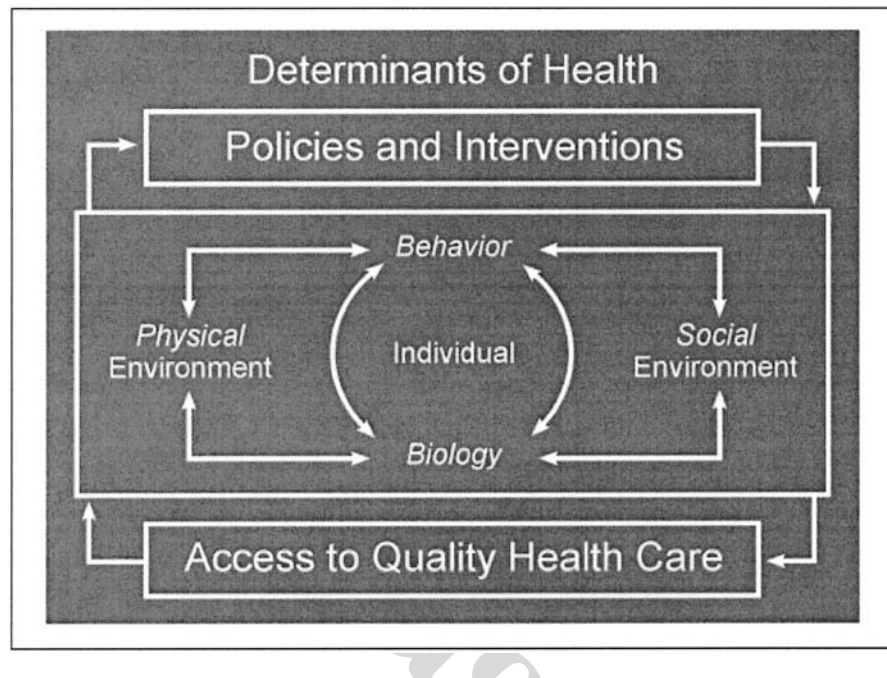**Ethnicity and Disease ethn-16-2s3-03.3d** 14/3/06 05:57:03 8

Fig 1. Healthy People 2010: Determinants of health

At the individual level, each person brings to the table his or her own genetics, biology, personality, and behaviors. Cigarette smoking is an example of a behavioral factor that also interacts with the biology of the individual. Some smokers get cancer or chronic obstructive pulmonary disease, while others do not. What personal biology or genetic factors or environmental co-factors influence these outcomes? Other risk factors include genetic and proteomic factors such as PPAR-gamma, which has been linked to cardiovascular risk. These are not inherently racial factors, since race is a social construct, but there may be differences in prevalence between racial groups, and also significant "within-group" variability. Behavioral factors not only include risk factors like smoking, but also include positive behaviors such as exercise and healthy eating, as well as self-care behaviors such as home glucose monitoring or adherence to medications to achieve optimal control of diabetes or hypertension or hyperlipidemia.

At the big-picture level, state and national health policies and changes in healthcare financing can also impact health outcomes and health disparities. Consider issues such as the Medicare prescription drug benefit—will it improve or worsen disparities in access to prescription medication? Will access to medication disparities drive increased disparities in blood pressure and diabetes control, and ultimately drive increased disparities in cardiovascular death rates?

Another driver of disparities in health care and health outcomes is healthcare access. Access is dramatically worse for the poor and uninsured, even within high-disparity racial groups. For example, our analysis of MEPS data showed that non-poor, insured, African Americans with a primary care home were four to seven times more likely to have doctor's office visits and to obtain prescription drugs than African Americans who were poor and uninsured and had no primary care home.[10] Providers serving minority and low-income patient populations face significant barriers to the provision of quality care, including access to specialty referrals, diagnostic testing, and affordable prescriptions for their patients.[11]

Health Issues Driven by Intertwining Determinants

According to *Healthy People 2010*,[12] ten leading health indicators measure how these intertwining determinants affect the health of our nation and reflect the major health issues anticipated for the 10-year period, 2000–2010. The indicators can be grouped in two categories: 1) health systems indicators (access to care, mental health, injury and violence, environmental quality, and immunization) and lifestyle indicators (physical activity, overweight and obesity, tobacco use, substance abuse, and responsible sexual behavior).

Elimination of Race/Ethnic Disparities Prioritized as National Goal

Racial and ethnic disparities persist in most measures of health care and health outcomes. Elimination of these health disparities is one of two overarching goals of *Healthy People 2010,* our public health agenda for the current decade. Cardiovascular disease and infant mortality are just two areas of health concern where vast differences in health outcomes exist. The death rates from cardiovascular disease are much higher in Black men than in any other segment of the population (Figure 2).[13] The African American community also experiences 14 infant deaths for every 1,000 live births, a number that is twice that for White or Hispanic babies.

In its report on racial and ethnic health disparities, *Unequal Treatment*, the Institute of Medicine (IOM) cited the model of Gomes and McGuire, in which three D's (differences, disparities, and discrimination) summarize the categories of unequal healthcare quality and outcomes experienced by minority and non-minority individuals. In this model, we must acknowledge that not all differences in patterns of healthcare utilization are inherently wrong (Figure 3).[14] If women in a particular racial or ethnic sub-group view birthing as a natural part of the human cycle, and
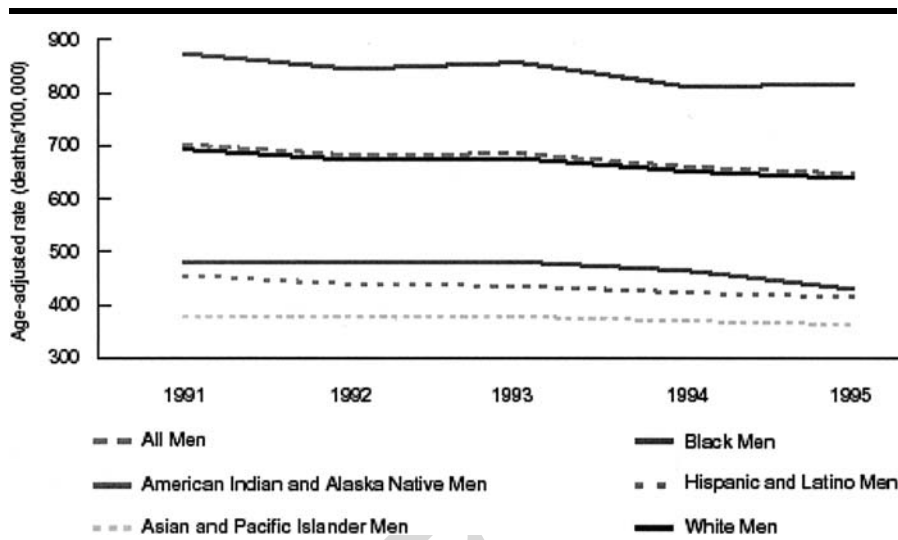
Fig 2. Trends in heart disease mortality among men 35 years of age and older, by race and ethnicity, 1991–1995

not as a medical event, then they may have less enthusiasm for invasive procedures to control pain or to monitor the progress of labor. However, there may also be systemic issues, such as the high rate of uninsurance in certain immigrant populations, or the unavailability of translators for obtaining informed consent.[15] Finally, there can be unconscious bias and prejudice, as evidenced by studies in which patients with identical symptoms and risk factors receive different treatments based on race or gender, or studies showing racial disparities in pain medication given to young people with similar leg fractures presenting to the same hospital emergency department.

While the literature provides significant evidence of disparities, there is not enough evidence-based information on interventions that will be effective in eliminating these barriers. Research is needed to explain how race and ethnicity are associated with disparities in the process, the structure, and outcomes of care. Research must provide a better understanding of the contribution of

the patient, provider, and institutional characteristics that will affect the quality of care for minorities. Through this type of in-depth research, we will be able to influence the five *Healthy People 2010* points of attack for achieving healthcare equity: access to care, improving quality of care, lifestyle enhancement, improving environmental quality, and a balanced research agenda. We can summarize these issues as seven major barriers that keep people from accessing needed primary care and preventive health services: the uninsured and underinsured, the underserved, the under-represented, the uninspired, the untrusting, and the uninformed.

WHAT IF?

In our recent study analyzing the Black-White mortality gap over four decades from 1960 to 2000, we found that an estimated 83,750 deaths each year could have been prevented in the United States, if this Black/White gap had been eliminated.[16] In addition, elimination of these disparities could have meant:

- 24,000 fewer deaths from heart disease;
- 7,000 fewer deaths from HIV/AIDS
- 4,700 fewer infant deaths;
- 22,000 fewer deaths from diabetes;
- 2,000 fewer deaths of Black women from breast cancer.

In this same study, we concluded that health disparities may be more resistant to change than other social determinants. For example, between 1960 and 2000, median income for African-American individuals rose from 65 percent to 84 percent of the median income of Whites, while Black-White high school dropout rates declined from almost 2.2 times higher in 1967 to 1.3 times higher in 1997.[17] However, there was virtually no improvement in the relative Black-White mortality gap during the same time period.
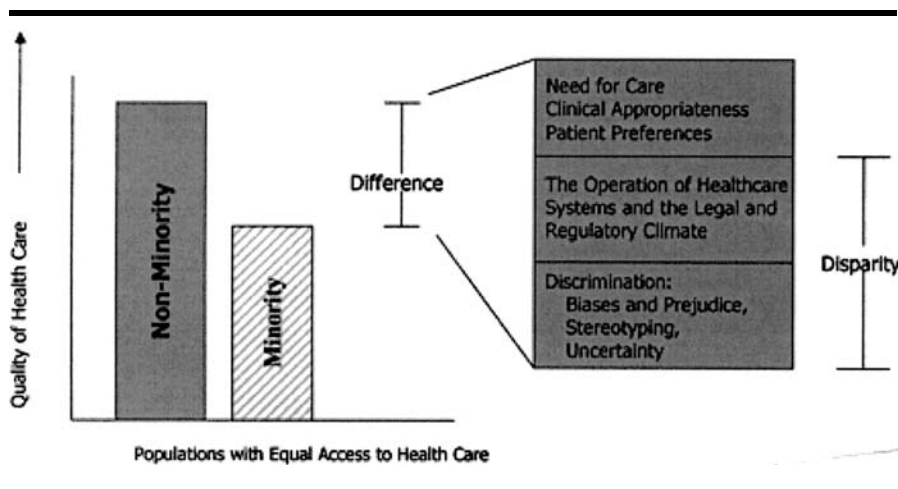

Fig 3. Differences, disparities, and discrimination

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THREE-DIMENSIONAL MODEL OF RESEARCH TO ELIMINATE HEALTH DISPARITIES

The Center of Excellence on Health Disparities at the National Center for Primary Care at Morehouse School of Medicine has designed a three-dimensional model of research to eliminate health disparities to monitor progress in eliminating health disparities in the areas of cancer, hypertension and heart disease, maternal and child health, diabetes, HIV/AIDS, and mental health.

Racial and ethnic disparities in health care and outcomes have proven to be quite resistant to simple or one-dimensional interventions. Black-White inequities in mortality rates have been remarkably persistent over the past four decades, during which we have experienced dramatic changes in clinical medicine and in healthcare delivery. Given the complex causation of health disparities, and this resistance to simple interventions, the Center of Excellence on Health Disparities at the National Center for Primary Care at Morehouse School of Medicine has developed a three-dimensional approach to research that will guide the path toward eliminating racial and ethnic health disparities in America.

The three-dimensions of our approach to eliminating disparities in health include the following dimensions, shown as three axes on the model shown in Fig. 4: (1) **surveillance/monitoring**, in which we measure and track over time rates of incidence, prevalence, morbidity, disability, and mortality related to specific risk factors (smoking, for example) and specific disease areas such as diabetes, cardiovascular disease, HIV-AIDS, maternal-child health, mental health, etc., with a special focus on racial-ethnic disparities in these rates of disease and adverse outcomes; (2) **a balanced research agenda**, in which we attempt to answer questions related to the nature and cause of
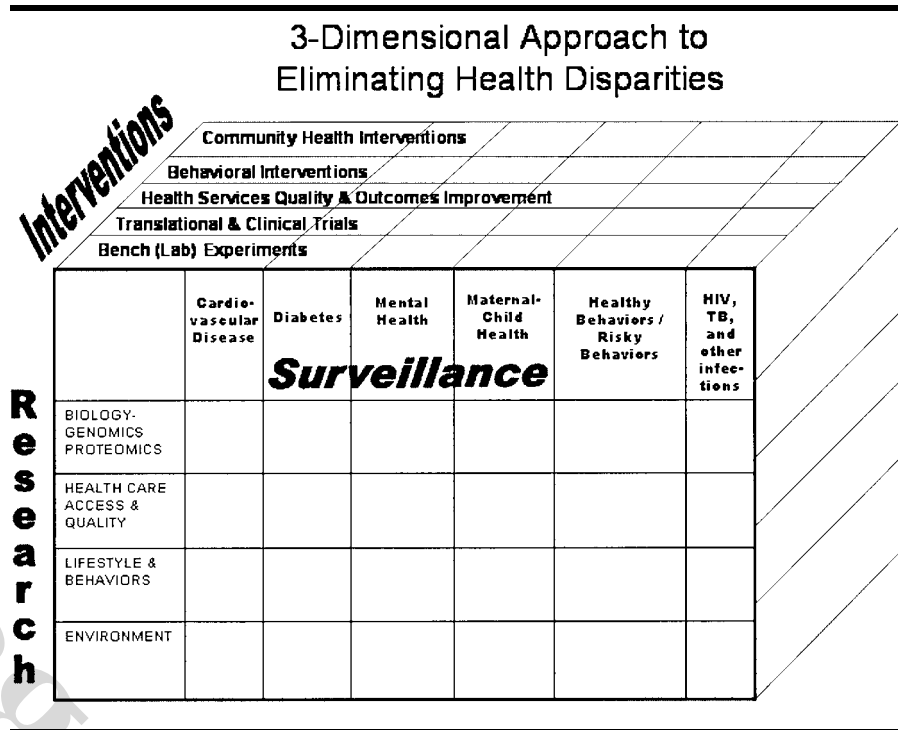
Fig 4. Three-dimensional model of research to eliminate health disparities. From the Center of Excellence on Health Disparities at the National Center for Primary Care, Morehouse School of Medicine

diseases and disparities and what works in reducing those disparities; and (3) **interventions**, in which we implement programs based on our research and evaluate the outcomes of those programs, thus feeding back to the surveillance dimension of the process.

As this process unfolds, time becomes the very important **fourth dimension**, in which we must cycle rapidly between surveillance, research, interventions, and re-assessment of outcomes based on trends in the surveillance data in order to achieve real-world improvements in health outcomes and health equity.

X-Axis: Surveillance on Disease-Specific Disparities

The first dimension (the x-axis in Figure 4) represents the surveillance required to track trends in incidence, prevalence, and adverse outcomes of specific disease conditions and risk factors that are known to have disparate outcomes. Surveillance is the founda-

tion of any population-based effort to improve health. Reducing disparities in adverse birth outcomes will require a very different set of interventions than those that will help overcome disparities in stroke deaths, but in both conditions we must have accurate, rapid-cycle data specific to each racial-ethnic sub-group in order to monitor trends over time. There are clearly documented clinical outcome disparities in each of the listed categories of disease, as well as many others, and there are interventions that could reduce disparities in each. Surveillance allows us to measure the disparities at baseline, and to assess the impact of disparities-focused interventions as well as trends in the broader healthcare and social environment.

Y-Axis: A Balanced Research Agenda on Causes of and Cures for Health Disparities

A second dimension is to focus a balanced agenda of research on the causes of and potential points of in-

tervention for health disparities: biological / genetic, environmental, and behavioral causes, as well as those related to differential access to and quality of health care. The Morehouse School of Medicine Cardiovascular Research Institute is actively engaged in assessing genetic and proteomic markers of cardiovascular risk across various populations. Health services researchers within the National Center for Primary Care are identifying sources of disparities in healthcare quality, and testing interventions in real-world practice settings to achieve better care and outcomes.[18] Our Department of Community Health and Preventive Medicine, in partnership with our Prevention Research Center, are testing behavioral research strategies to bring about change in lifestyle choices made within the individual, family, and community domains. We are currently partnering with the 100 Black Men of Atlanta to persuade more African-American males to change their lifestyle choices related to diet, exercise, and smoking.

Z-Axis: Interventions to Translate Research into Practice into Improved Outcomes

A third dimension is the spectrum of interventions we can use to translate and diffuse new knowledge and technology not only from bench to bedside, but to the curbside and to the countryside. At the bench, we have a dizzying array of new technologies and genomic discoveries to absorb, as well as new understanding of the pathophysiology and pharmacology of diseases. At the bedside, it is clear that clinical trials and new drug therapies can save lives. The most dramatic examples in the past three decades involve the robust and effective panoply of pharmacologic and technological options that we now use to improve outcomes in diabetes and cardiovascular disease, as well as in the treatment of HIV-AIDS.

Unfortunately, technology may take decades to diffuse from laboratory discovery to widespread adoption in usual practice settings. Even more troubling is that such breakthroughs may actually worsen inequalities in outcomes for high-disparity populations. The usual diffusion curve from early adopters to mainstream use can bypass entire segments of the population if dissemination only flows through mainstream channels or if there is broken trust between the medical-scientific enterprise producing the technology and segments of the community that have the greatest need for these breakthroughs.[19] For example, although both African Americans and Whites have seen lower HIV-related death rates with the advent of highly active anti-retroviral therapy, the Black-White gap in HIV-mortality has actually widened.[20]

Therefore, we need health services research, health outcomes and quality improvement research, and community-oriented primary care practice-based research to assure that advances in medicine benefit all populations equally and serve the cause of achieving health equity in America. However, we must continually push beyond the clinic walls, out into the community. This will often require non-clinical venues for community health interventions, such as barbershops, hair salons, worship centers, or even in the home of a community health worker or *promotora*.

UNDERSTANDING CULTURE IS VITAL

Culture affects patients and healthcare professionals; with patients, culture makes a difference in how they manifest and describe illnesses, how they cope with illnesses, the types of stresses they experience, and whether they are willing to seek treatment. Culture also influences the way healthcare professionals diagnose patients, the kinds of treatments we offer to patients, and how we organize service delivery. While no one individual will become an expert in another person's cultural beliefs and values, it is important for each healthcare professional to incorporate qualities of understanding into the care that we provide. In our recent book, *Multicultural Medicine and Health Disparities* (Satcher and Pamies),[21] we have sought to help healthcare students and practitioners deliver skilled and appropriate care to all patients, no matter their ethnicity, country of origin, cultural history, or access to services. The 500-page book contains practical advice and case histories to increase the sensitivity of medical professionals to the needs of minorities.

Other programs offering approaches for cultural proficiency can assist in training healthcare professionals to provide culturally-appropriate health care. One such program is the CRASH-course in Cultural Competency offered by the National Center for Primary Care. The program emphasizes these steps, using CRAASSH as a mnemonic: consider **C**ulture; Show **R**espect; **A**ssess / **A**ffirm differences; Exhibit **S**ensitivity and **S**elf Awareness; and wrap it all up in true **H**umility.

HOW TO ACHIEVE HEALTH EQUITY IN AMERICA

The road to health equity will require multi-dimensional strategies working in tandem to address the many factors, levels, and systems that affect health outcomes. Our hope is that researchers, practitioners, policymakers, individuals, and communities will accept this challenge, and work specifically toward concrete objectives such as the following:[22]

- Universal health insurance—access to health care for everyone;
- A primary "medical home" for every adult and child;
- Proportionate representation of all racial and ethnic minority groups in the health professions;
- Bias-free interventions;
- Non-violent and exercise-friendly neighborhoods;

- Nutritious food outlets;
- Educational equality;
- Career opportunities;
- Parity in income and wealth;
- Home ownership; and most importantly,
- Hope.

Disparities are both real and deadly, but disparities are not inevitable. We can achieve health equity in America, but first, we all must care enough, know enough, do enough, and persist long enough.

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Prevalence, Treatment, and Control of Depressive Symptoms in the United States: Results from the National Health and Nutrition Examination Survey (NHANES), 2005–2008

Ruth S. Shim, MD, MPH, Peter Baltrus, PhD, Jiali Ye, PhD, and George Rust, MD, MPH

Background: **Depression remains a major public health problem that is most often evaluated and treated in primary care settings. The objective of this study was to examine the prevalence, treatment, and control of depressive symptoms in a national data sample using a common primary care screening tool for depression.**

Methods: **We analyzed a sample of adults (n = 4836) from 2005 to 2008 National Health and Nutrition Examination Survey data. Depressive symptoms were assessed using the Patient Health Questionnaire (PHQ-9) to determine the overall prevalence, rates of treatment, and antidepressant control of mild, moderate, moderately severe, and severe depressive symptoms.**

Results: **Of the sample, 20.1% reported significant depressive symptoms (PHQ-9) score, ≥5), the majority of whom had mild depressive symptoms (PHQ-9) score, 5–9). Even among individuals with severe depressive symptoms, a large percentage (36.9%) received no treatment from a mental health professional or with antidepressant medication. Of those taking antidepressants, 26.4% reported mild depressive symptoms and 18.8% had moderate, moderately severe, or severe depressive symptoms.**

Conclusions: **Despite greater awareness and treatment of depression in primary care settings, the prevalence of depressive symptoms remains high, treatment levels remain low, and control of depressive symptoms are suboptimal. Primary care providers need to continue to focus their efforts on diagnosing and effectively treating this important disease. (J Am Board Fam Med 2011;24: 33–38.)**

Keywords: **Depression, NHANES, PHQ-9**

Depression continues to be major cause of illness and disability throughout the world.[1–5] The World Health Organization identified depression as the fourth leading cause of total disease burden and the leading cause of disability worldwide.[6] In the United States, recent samples estimate a lifetime depression prevalence of 16.2% and a 12-month prevalence of 6.6%.[7]

In the past, depression was often underdiagnosed and untreated by physicians in primary care settings.[8] Studies of elderly patients in primary care settings suggest that complex patients with multiple comorbidities have a higher risk of depression, which is more closely associated with their overall burden of illness than with any one specific disease.[9] Although rates of treatment are increasing, many people still do not have adequate control of depressive symptoms.[7] A recent study of a large national sample found that few Americans diagnosed with depression receive guideline-concor-

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dant treatment, with racial/ethnic minority populations receiving even less treatment than non-Hispanic whites.[10] However, management and treatment of depression in primary care settings is an important issue; previous research has shown that individuals are more likely to seek mental health treatment in primary care settings rather than in specialty mental health clinics. This is particularly true of racial and ethnic minority populations.[11]

The National Health and Nutrition Examination Survey (NHANES) has been used to assess nationwide levels of treatment and control of other chronic diseases[12] but not depression. According to Cutler et al,[13] NHANES has become "the principal means to track progress in preventing, treating, and controlling hypertension," guiding national initiatives such as the National High Blood Pressure Education program. In recent versions of the NHANES, use of the Patient Health Questionnaire (PHQ)-9 has allowed for greater accuracy in the diagnoses of mild, moderate, moderately severe, and severe depressive symptoms.[14] Gonzales et al[10] assessed treatment and control rates in a mutliethnic national sample using Collaborative Psychiatric Epidemiology Survey data, but the diagnostic instrument used, the 16-item Quick Inventory of Depressive Symptomology—Self Report is not as commonly used in primary care settings as the PHQ-9. To date, there has been no published study assessing prevalence, treatment, and control using the nationally recognized NHANES dataset and the PHQ-9 instrument, which is widely used to screen for depression and to guide ongoing treatment decisions in primary care and psychiatric settings. Therefore, we examined prevalence of depressive symptoms, rates of treatment, and overall levels of treatment response using the PHQ-9 data in 2005 to 2008 NHANES data.

Methods

Design

The NHANES is designed to assess the health and nutritional status of Americans by combining interviews and physical examinations.[15] The surveys have been conducted annually by the National Center for Health Statistics since 1999, using a complex multistage sampling design to obtain a representative sample of the civilian, noninstitutionalized population of the United States. The NHANES oversamples minorities and allows for population estimates using population totals from the Current Population Surveys. To obtain an adequate sample size for the analyses we combined the data from the 2005 to 2006 and 2007 to 2008 NHANES, for a potential total sample size of 11,791 adults aged 18 and older.

Measures

Depressive symptoms were assessed using the PHQ-9, a 9-item screening tool that asks participants to choose 1 of 4 responses about the frequency of depressive symptoms during the previous 2 weeks.[14] Those scoring ≥ 10 were characterized as having moderate, moderately severe, or severe depressive symptoms.

Antidepressant use was defined as taking at least one prescribed antidepressant medication in the past 30 days, as characterized by the Multum Lexicon Drug Database.[16] During the household interview, survey participants were asked if they had taken a medication in the past month for which they needed a prescription. Those who answered "yes" were asked to show the interviewer the medication containers of all the medications used.

Although the NHANES does not provide details on psychological counseling, we defined counseling and various types of therapy as treatment with a mental health professional, which was measured by the survey question, "During the past 12 months, have you seen or talked to a mental health professional such as a psychologist, psychiatrist, psychiatric nurse, or clinical social worker about your health?"

Because evidenced-based treatment recommendations for prescribing antidepressant medication and/or administering psychotherapy exist for individuals with PHQ-9 scores >15, we specifically examined all forms of treatment among respondents that scored >15 on the PHQ-9. Evidence-based treatment recommendations for individuals with a PHQ-9 score <10 involve a strategy of watchful waiting and reassessment for antidepressant treatment or psychotherapy after 2 months.[17]

Statistical Analysis

Frequencies, population estimates, standard errors, and 95% CIs taking into account the complex sampling design and population weights were generated by Proc Crosstabs in SAS-callable SUDAAN version 9 (Research Triangle Institute, Research

Triangle Park, NC). First, overall prevalence of depressive symptoms and prevalence of the different depressive symptom severity categories were assessed for the entire adult population. Treatment (mental health professional and/or antidepressant) use by depressive symptom severity was then assessed. Prevalence of depressive symptoms, depressive symptom severity, and treatment among different age-sex groups was also examined.

Results

Among the total sample, 10,283 adults completed the PHQ-9. Based on their scores, 2,399 had depressive symptoms, representing 42,116,283 US adults (21.6%; 95% CI, 20.1–23.3), with 14.8% endorsing mild depressive symptoms, 4.52% endorsing moderate depressive symptoms, 1.8% endorsing moderately severe depressive symptoms, and 0.6% endorsing severe depressive symptoms. Table 1 shows the percentage of the population with depressive symptoms, categorized by age and sex.

Among individuals with moderately severe and severe depressive symptoms (for which guidelines recommend treatment with an antidepressant), 17.0% (95% CI, 12.7–22.6) received treatment with an antidepressant only; 17.6% (95% CI, 12.0–25.1) had seen a mental health professional only; and 14.8% (95% CI, 10.8–19.9) received ideal treatment of antidepressant and treatment by a mental health professional. Even among adults

with the most severe depressive symptoms (PHQ-9 score >20), only 24.8% (95% CI, 12.1–44.0) had combined treatment with an antidepressant and a mental health professional, whereas a large percentage (36.9%; 95% CI, 24.8–51.0) received no form of treatment either from a mental health professional or with antidepressant medication (see Table 2).

Of the 10.4% of the US population currently taking antidepressant medications, 54.9% (95% CI, 51.2–58.5) were not currently experiencing depressive symptoms. Ongoing mild depressive symptoms continued to be reported by 26.4% (95% CI, 23.6–29.4); 11.9% (95% CI, 9.5–14.7) endorsed moderate depressive symptoms; 4.9% (95% CI, 3.8–6.3) endorsed moderately severe depressive symptoms; and 2.0% (95% CI, 1.2–3.3) endorsed severe depressive symptoms.

Discussion

This study demonstrates the significant gap between optimal depression care and population-based, real-world measures of care. Given that such a large segment of the US population (roughly 1 in 5 adults, or 42.1 million Americans) screened positive for at least mild depressive symptoms, it may be seen as a major challenge to our nation's health if such a burdensome disease is so frequently undiagnosed, untreated, or undertreated. In many ways it is analogous to the gap between prevalence of elevated blood pressure in the population and levels

Table 1. Population with Mild, Moderate, Moderately Severe, and Severe Depressive Symptoms from Patient Health Questionnaire (PHQ)-9 Scores, by Age and Sex*

	Depressive Symptoms				
	Mild (PHQ-9 score = 5–9)	Moderate (PHQ-9 score = 10–14)	Moderately Severe (PHQ-9 score = 15–19)	Severe (PHQ-9 score ≥20)	Total (Any Severity) (PHQ-9 score ≥5)
Men					
Age (yr)					
18–54	435 (13.31)	142 (3.48)	38 (1.04)	16 (0.39)	631 (18.23)
≥55	208 (10.45)	72 (3.65)	35 (1.44)	6 (0.20)	321 (15.73)
All ages	643 (12.52)	214 (3.52)	73 (1.15)	22 (0.34)	952 (17.53)
Women					
Age (yr)					
18–54	586 (16.93)	242 (6.24)	103 (2.68)	37 (0.90)	968 (26.75)
≥55	335 (17.06)	89 (3.77)	40 (1.56)	15 (0.44)	479 (22.82)
All ages	921 (16.97)	331 (5.47)	143 (2.33)	52 (0.75)	1447 (25.52)

Values provided as n (%).
*Data from the National Health and Nutrition Examination Survey, 2005 to 2008.

Table 2. Population Receiving Pharmacologic or Behavioral Depression Treatment, by Depressive Symptoms*

	Depressive Symptoms			
	Moderate (PHQ-9 score = 10–14)	Moderately Severe (PHQ-9 score = 15–19)	Severe (PHQ-9 score ≥20)	Moderately Severe and Severe (PHQ-9 score ≥ 15)
Pharmacologic treatment only	16.9 (13.1–21.5)	17.9 (13.0–24.1)	14.4 (6.5–28.9)	17.0 (12.7–22.6)
Mental health professional only	13.3 (9.3–18.9)	15.6 (9.9–23.7)	23.9 (13.9–37.9)	17.6 (12.0–25.1)
Both pharmacologic treatment and mental health professional	11.1 (7.9–15.5)	11.6 (8.1–16.4)	24.8 (12.1–44.0)	14.8 (10.8–19.9)
Neither pharmacologic treatment nor mental health professional	58.8 (51.9–60.6)	54.9 (47.3–62.2)	36.9 (24.8–51.0)	50.6 (43.8–57.4)

Values provided as % (95% CI).
*Based on Patient Health Questionnaire (PHQ)-9 scores. Data from the National Health and Nutrition Examination Survey, 2005 to 2008.

of detection, treatment, and "treat-to-target" control of hypertension. Although impressive gains have been made (for example, the proportion of hypertensive patients with at least partially controlled blood pressure, defined by blood pressure <160/95, rose from 16% in 1972 to 67% in 1991);[18] still, only 34% of patients with hypertension have blood pressure completely under control, 25% are partially treated but uncontrolled, 11% are taking no medication, and 30% are unaware that they even have high blood pressure. Eisenberg and Power[19] used the phrase "voltage drop" to describe the gap between potentially achievable outcomes and those outcomes actually achieved in real-world practice settings, and ultimately in community-based populations.

Primary care clinicians approach patients not as single disease or risk factors, but as whole persons, understanding that depression confers a direct burden of suffering but also complicates the management of various other chronic diseases or risk factors. For example, the epidemiologic evidence for an association between depression and cardiovascular risk is quite strong.[20,21] Depression prevalence is also higher among individuals with diabetes,[22] and depression is correlated with poor glycemic control. Depression and metabolic syndrome are correlated as well, and each is an independent predictor of adverse cardiac outcomes.[23]

Beyond considering depression as a risk factor, however, depression is also a disabling disease unto itself, accounting for disability, reduced quality of life, loss of work days, damage to relationships, and even suicide.[24,25] Although recognition of depression has improved, our data show that more than half of US adults with depressive symptoms are

untreated, and 3 of 4 people with severe depressive symptoms are not taking antidepressant medications. Treatment to remission significantly reduces relapse rates in depression; however, almost half of people taking antidepressants have not achieved remission of depressive symptoms.[26]

Formal screening protocols in primary care practices identify many more patients with depressive symptoms than are diagnosed in usual care models. There is an emerging body of evidence to suggest that although screening protocols do detect more cases of depression, they do not by themselves reduce the burden of disease or even improve outcomes.[27] The US Preventive Services Task Force only recommends screening adults for depression in clinical practices that have systems to ensure accurate diagnosis, effective treatment, and follow-up. However, when coupled with structured approaches to depression care management such as the 3-component model, which integrates nurse care managers and mental health professionals into the primary care practice team, improved outcomes can be achieved. The (Prevention of Suicide in Primary Care Elderly: Collaborative Trial) study showed that medical complexities and comorbid chronic disease common to general internal medicine practices affect treatment outcomes for depression in usual-care settings, but that the impact of comorbidities on depression outcomes can be eliminated with a more intensive approach to depression care.[28]

There are limitations to our study. The use of a national survey provides generalizable data we can apply to the entire noninstitutionalized US population, but it does lack the clinical specificity that might be obtained from direct review of clinical

records. The PHQ-9 is a self-administered instrument validated for screening, diagnosis, and assessment of the severity of depressive symptoms, with a sensitivity and specificity of 88% each for major depression.[14] It is more easily adapted to high-volume primary care settings than instruments such as the Zung or Hamilton Depression Rating Scales.

Using a PHQ-9 score >5 to indicate mild, moderate, moderately severe, or severe depressive symptoms, NHANES provides a higher prevalence estimate (21.6%, or more than 40 million Americans) than other recent surveys. However, combining only moderate, moderately severe, and severe depressive symptoms gives a point prevalence of 6.8%, which is more consistent with other national estimates of a prevalence over a 12-month period of 6.6%.[7] This may indicate that other instruments are not detecting mild depressive symptoms, or that the PHQ-9 threshold of 5 may be overly sensitive but not specific.

It is possible that individuals who screened positive on the NHANES PHQ-9 underreported treatment, either because of recall errors or additional factors (eg, stigma associated with mental illness and its treatment). In addition, individuals who report taking an antidepressant drug may be taking it for conditions other than depressive symptoms and therefore have low PHQ-9 scores. This would lead to an overestimate of the proportion of the population treated to remission, which is already low. We also have no repeated measures or longitudinal tracking to assess the impact of treatment on recently diagnosed individuals, or to estimate the rate of partial response to treatment (>50% reduction in PHQ-9 score).

Furthermore, individuals with bipolar depression may have elevated PHQ-9 scores, but may be prescribed mood stabilizers rather than antidepressants for treatment of depressive symptoms. Although this represents an extremely small number of individuals, it could lead to a slight underestimate of antidepressant treatment rates for individuals with moderately severe or severe depressive symptoms.

Conclusion

Despite these limitations, these nationally representative data provide a cross-sectional US population estimate of the prevalence of mild, moderate, moderately severe, and severe depressive symp-

toms. They also demonstrate that a substantial proportion of persons with symptoms of depression in the United States remain untreated or undertreated. The burden of illness represented by depression care, as well as new evidence suggesting that care and outcomes systematically can be improved, suggest important opportunities for optimizing the treatment of depression in primary care and community health settings as a means of improving overall population health.

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Sky Captain and the Psychiatrist of Tomorrow
Lori Raney, MD
February 8, 2012

The American Psychiatric Association held their annual Institute for Psychiatric Services meeting in October 2011 and towards the end of conference, a group of experts and participants met for a final Discussion Group titled "Sky Captain and the Psychiatrist of Tomorrow: Our Evolving Role in the Decade of Collaboration in Healthcare". Panel participants included Jurgen Unutzer, MD, Roger Kathol, MD, Ben Druss, MD and George Rust, MD. Moderated by Lori Raney, MD, Chair of the APA Workgroup on Integrated Care, she challenged the speakers to "peer into their crystal ball" and think of what the future might hold if the innovations this group has been working on for a decade finally come into the mainstream of medicine. What unfolded was a rich and insightful discussion of where we've been, where we want to go and recommendations on how to get there.

The first speaker was Jurgen Unutzer, MD, Vice Chair of Psychiatry at the University of Washington. His work over the past decade has focused on testing the evidence base for the IMPACT model initially and then proceeding to expand the research base into a variety of diagnosis and populations, resulting in IMPACT becoming the most widely used model in collaborative settings with primary care. He began the discussion by challenging psychiatrists to start thinking about populations of patients, suggesting the way to improve overall mental health is to begin "looking at denominators instead of numerators". He imagined a new branch of psychiatry called "public health psychiatry" that would focus on the overall mental health of a given population and then find models to leverage the limited psychiatric resources to meet those needs. He gave an example of the 4 – 5 FTE psychiatrists in Washington working in the Mental Health Integration Project (MHIP) providing over 10,000 consultations a year to FQHCs. In our existing models of billing CPT codes for face-to-face evaluations, this would have never achieved the population effect of this IMPACT-style, team-based approach.

The second presenter was Ben Druss, MD, Rosslyn Carter Chair in Mental Health at Emory University whose research and advocacy work focuses on improving health and healthcare in persons with serious mental disorders in public sector settings. He opened with the guiding principle we must "first do no harm", implying that we have a duty to screen for any complications attributable to our treatment interventions. This is particularly true in the use of the second generation antipsychotics and he stated we must either provide the appropriate treatment ourselves (treat or change intervention) or be responsible to make the appropriate referral to primary care. He stressed we must take responsibility for the medical care of our patients and screen for the illnesses shortening their lifespans.

The third presenter was Roger Kathol, MD, President of Cartesian Solutions, whose work has focused on achieving integrated medical and mental health program sustainability through payment reform changes and models for compensating psychiatrists who work in this field. He described the "sea change" that is currently underway and the role psychiatrists can play on health care teams in these new systems of care. He stressed the importance comorbid mental illnesses as a major determinant of overall healthcare costs and the need for us to assist in the treatment of these disorders in primary care. One of the keys to success is that psychiatric expertise allows the collaborative care team the ability to 'treat to target' to reach desired overall health and financial outcomes.

The last panelist was George Rust, MD, Director of the National Center for Primary Care in Atlanta.   He spoke of the "critical mass" we have reached in our collaboration efforts and the need to start addressing operational issues such as redesigning buildings, workflows, and EMRs to work more efficiently and effectively. He reminded the us the ultimate goal is "three way integration" and to ensure substance abuse is included as an equal partner with mental health and primary care. He made an observation about the rarity of the diffusion of a new life-saving innovation into poorer sections of the population first, which is what has occurred with integration efforts. He went on to suggest three strategies to consider: 1) the center of the universe is not inside our exam rooms, that we are "free range humans" and need to move the conversation about health care outside of our clinic walls to include family, community, peers, and others, 2) behavioral health and primary care need to come to the healthcare reform table together

instead of separately and 3) we need to decide who is going to train the various disciplines to work in teams.

Audience participation was invited following these opening remarks. Comments included how the separation of mental health and primary care records is an impediment to collaboration with the need for enhanced IT muscle to help form a single culture with the ability to view all records. There was a discussion about the language of collaboration and a desire to move away from existing terminology. One participant commented that perhaps by forming new partnerships with our primary care colleagues we may begin to break through some of the suspicions and assumptions about behavioral health held by others in medicine.

The "Sky Captain" discussion concluded leaving much to consider about the role of psychiatrists in the "world of tomorrow". It was clear that our future is yoked to the future of the larger healthcare arena and there is significant potential to help shape emerging systems of care. That we as psychiatrists add significant value by enabling the collaborative care team to treat-to-target intrigued and inspired the audience. Many of us left thinking of denominators, the responsibility we have to our SMI patients, free range humans and how we can leverage limited psychiatric resources to effectively treat populations. For some of us the future is now and our challenge is to design and implement systems of care that incorporate the expertise of this forward thinking panel.

PRIMARY AND BEHAVIORAL HEALTH INTEGRATION TRACK – APA 2012**

SATURDAY

Course 04: The Integration of Primary Care and Behavioral Health: Practical Skills for the Consultant Psychiatrist – Unutzer, Raney, Ratzliff, Kern 9 a.m. – 4:00 p.m, Room 121C, Level 1, Pennsylvania Convention Center				
Scope, Current Evidence, and Innovative Approaches in Managing PTSD in the Military	S2	Duffy, Engel	9:00 – noon	Room 103B, Level 1, Pennsylvania Convention Center
Financing Sustainable Interdisciplinary Care in Psychiatric and General Medical Settings	S9	Kathol, Druss, Melek, Everett,	9:00 - noon	Room 121A, Level 1, Pennsylvania Convention Center
Workshop on Integration of Primary Care, Preventive Services and ACT	W5	Vanderlip, Williams	9-10:30 a.m.	Room 109A, Level 1, Pennsylvania Convention Center
Promoting Improved Integration: The Role of Collaborative Health Care in Today's Society	W22	Martin	3:30 – 5:00 p.m.	Room 107A, Level 1, Pennsylvania Convention Center

SUNDAY

Best Financial Practices for Fiscally Solvent Delivery of Integrated Care	SM5	Kathol	8:00 a.m. – noon	Room 112B, Level 1, Pennsylvania Convention Center
Characteristics of Patients Enrolled in Collaborative Care Pilot Project for Patients with Chronic Medical Illness and Depression And/Or Problem Drinking	SCR7	Chung	8-9:30 a.m.	Room 109B, Level 1, Pennsylvania Convention Center
Current Models of Collaborative Care	S31	Brodkey, Allred Unutzer, Real	8 – 11:00 a.m	Room 121B, Level 1, Pennsylvania Convention Center
Psychiatrist Workforce Shortage: Challenges and Solutions	W32	Radke, Parks	10-11:30 a.m.	Room 101A, Level 1, Pennsylvania Convention Center
Characterization of Persons Receiving Primary Care Services in a Mental Health Clinic	SCR10	Shackelford	12:30 – 2:00 p.m.	Room 109A, Level 1, Pennsylvania Convention Center
The Future is Now: The Evolving Role of Psychiatry in the Integration of Behavioral Health and Primary Care	F3	Druss, Kathol, Katon, Unutzer, Raney	2:30 – 4:00 p.m	Room 103A, Level 1, Pennsylvania Convention Center
Integrated Psychiatry Primary Care in Houston, TX	S 40	Ostermeyer	1:00-4:00	?

 **Check Final Schedule to Verify Time and Location

MONDAY

Inventing the Neck: Connecting Body, Mind, World From The Top Down and the Bottom Up	S47	Thompson, Brenner, Lewis, Kanel, St George, King	9 - noon	Room 120 B, Level 1, Pennsylvania Convention Center
Integrating Mental Health Services Within a Primary Care Setting: Effective Strategies and Practical Tips	SM15	Kates	1-5:00 p.m	Room 112B, Level 1, Pennsylvania Convention Center
New Approaches to Integration of Mental Health and Medical Services	Presidential Symposium	Katon, Unutzer, Zatzick, Druss, Engel, Williams	2-5:00 p.m	Room 122 A/B, Level 1, Pennsylvania Convention Center
Integrating Primary Care, Mental Health, and Public Health: European and American Perspectives	S58	Sorel, Svab, deGruy, Bhurga, Aquilar-Gaxiola	2-5:00 p.m	Room 107B, Level 1, Pennsylvania Convention Center

TUESDAY

Primary Care Behavioral Health Integration: Roles of the Key Team Members	W95	Raney, deGruy, Miller	9 – 10:30 a.m	Room 102B, Level 1, Pennsylvania Convention Center
The Tale of Two Specialties: The Integration of Oncology and Psychiatry	W102	Parsons, Davis	9-10:30 a.m.	Room 126B, Level 1, Pennsylvania Convention Center
Integrated Care and the Future of Psychiatry: Teaching Psychiatry Residents and Fellows to Work at the Interface of Mental Health and Primary Care (AADPRT)	S82	Crowley,Ratzliff, McCarron, Forstein, Joseph, Frosh, Snyder, Han	9 a.m. – 12 noon	Room 123, Level 1, Pennsylvania Convention Center
Integrating Psychiatric and General Medical Care: Military and Civilian Models	W127	Gray, Scheiber	3:30 – 5:00 p.m	Room 111A, Level 1, Pennsylvania Convention Center

WEDNESDAY

Roles for Psychiatrists in Integrated Care (AACP)	W133	Pollack, Raney, Vanderlip	9-10:30 a.m	Room 107A, Level 1, Pennsylvania Convention Center
Real World Implementation of Integrated Care Programs: Four Perspectives	W147	Ratzliff, Unutzer	11:00 a.m. - 12:30	Room 111A, Level 1, Pennsylvania Convention
Integrated Physical and Mental Health Condition Case Management	W152	Kathol, Raney	1:30 – 3:00 p.m	Room 106 A/B, Level 1, Con Ctr

**Check Final Schedule to Verify Time and Location

Integrated Care

Comorbidity, the co-occurrence of mental and physical disorders in the same person, is a well-established clinical and public health fact. The National Comorbidity Survey Replication for 2001–2003 indicated that more than 68% of persons with mental disorders reported having one or more general medical disorders, and 29% of those with medical disorders had a comorbid mental disorder (1). Diabetes, cardiovascular disease, and pulmonary disease are the most common illnesses among persons with psychiatric disorders.

From a population perspective, individuals with mental disorders have a twofold to fourfold elevated risk of premature mortality. These deaths are due to "natural causes" (such as cardiovascular disease) rather than suicide. In a multistate study of mortality data from 1997 to 2000, public-sector patients were found to die 25 years earlier on average than the general population (2).

Despite these facts, systems of care that treat individuals with serious mental illness are separate from general medical systems of care. From the mid-19th to the mid-20th century, psychiatric care took place in institutions, primarily state hospitals. Since the 1960s, most care has occurred in community settings, such as community mental health centers, day programs, nursing homes, and homeless shelters. These are separate mental health specialty programs; physical health care takes place elsewhere or not at all. Federal and state financing have reinforced two separate systems of care—one for mental health, one for physical health.

> *"Federal and state financing have reinforced two separate systems of care—one for mental health, one for physical health."*

In this issue of the *Journal*, Druss et al. (3) report on a single-site randomized controlled trial of medical care management for individuals with serious mental illness treated in a community mental health center. This intervention consisted of registered nurses educating and coaching patients and assisting with visits to comprehensive primary care services. A usual care comparison group was given a list of primary care programs in the community and referred to these programs. Individuals who received medical care management had sustained improvements in their quality of life as a result of improved quality of medical care relative to the comparison group. The authors also compared the clinical as well as the financial sustainability of the intervention after 2 years. From the broad perspective of the health system, the intervention was cost-effective—that is, positive outcomes were complemented by decreased costs during the study period. From the perspective of the clinic itself (that is, the managers who must cope with budget realities and financial losses), it was not sustainable. After the 2-year project and the lapse of the grant, the program was abandoned.

The population studied was primarily African American and poor. There was 40% coverage by Medicaid, so nearly 60% were uninsured. This lack of insurance coverage was the primary reason for the lack of financial sustainability.

There are a number of models for integrating medical, mental health, and substance use services: models within a single organization that provides all services; a partnership model in which primary care staff are embedded in a community mental health or-

ganization, or the opposite, where mental health staff are embedded in a primary care setting; and the model described in the Druss et al. article, a facilitated referral model that coordinates referrals to primary care, shares information with primary care, and helps educate patients about their health needs.

It is no surprise that the facilitated referral model Druss et al. describe failed to sustain itself beyond the grant period despite evidence of its cost-effectiveness. The large numbers of uninsured patients receiving care in this community mental health center destroyed its prospects for sustainability. The primary goal of the Affordable Care Act passed and signed by President Obama in 2010 is to decrease the number of uninsured Americans. The expansion of Medicaid to 133% of the poverty level and the creation of health insurance exchanges for uninsured middle-class Americans with subsidies should accomplish that goal. Political opposition may undermine the funding of the Affordable Care Act and its ability to decrease the number of uninsured. Even if this opposition is overcome, increased numbers of insured is a necessary but not sufficient reform to increase opportunities for integrated mental and physical health care. Programs and concepts contained within the Affordable Care Act (such as the primary care medical home and the accountable care organization [ACO]) have the potential to bring together both mental health and physical health services. Medical homes and ACOs could focus on the seriously mentally ill as fee-for-service migrates to bundled payments. These entities have clearly developed objectives and quality goals with rewards for certain outcomes, and they could move the delivery system substantially toward integration of physical and mental health. Bringing primary health care services into the community mental health center and bringing mental health services into primary care are needed changes as part of health care system reform. But they are also hostage to the issue of whether there will be enough funds to implement these service delivery innovations.

Our science tells us that it makes it little sense to split the mind and the body. Serious mental disorders are brain (body and mind) disorders requiring multiple pharmacologic and nonpharmacologic interventions. We also know that compromised brain function leads to compromises in other parts of the body, and there is the added factor that psychopharmacology can create metabolic and cardiovascular risks. Health system reform can make a difference in the lives and lifespans of patients with serious mental illness by bringing together their psychiatric and general medical care. Access to such integrated care saves lives.

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