

₩#CHAIR2019



### The Medical Differential Diagnosis of Psychiatric Disorders

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### Paul Summergrad, MD Disclosures



### Stockholder (directly purchased): Mental Health Data Services, Inc. (MHDS); Quartet Health, Inc.

# Learning Objective

Recognize the bidirectional relationship between medical and psychiatric illness.





## Agenda



- The burden of medical psychiatric illness
- Depression co-morbidity
- Complexity of medical psychiatric co-morbidity
- Mortality and cost of medical psychiatric comorbidity

### **Co-morbidity of Medical Psychiatric Illness**





Druss BG,Walker ER. Mental Disorders and Medical Comorbidity. Robert Wood Johnson Foundation, Research Synthesis Report No 21, February 2011. www.policysynthesis.org

### Number of Years Lived With Disability by Age for 20 Broad Groups of Diseases and Injuries in the United States in 2010 for Both Sexes Combined



The State of US Health, 1990-2010: Burden of Disease, Injuries, and Risk Factors. *JAMA*. 2013;310(6)581-608. Copyright © 2012 American Medical Association. All rights reserved.

## DALY's US Both Sexes, Ages 15-49



http://www.healthmetricsandevaluation.org/gbd

### Number of Deaths and Percentage of Disability-Adjusted Life-Years Related to the 17 Leading Risk Factors in the US in 2010 for Both Sexes Combined



The State of US Health, 1990-2010: Burden of Disease, Injuries, and Risk Factors. *JAMA*. 2013;310(6)581-608. Copyright © 2012 American Medical Association. All rights reserved.

### **Depression Rates in Medically III Patients**

Medical Illness	Prevalence (%)
Cardiac disease	17%-27%
Cerebrovascular	14%-19%
Alzheimer's disease	30%-50%
Parkinson's disease	4%-75%
Epilepsy Recurrent Controlled	20%-55% 3%-9%
Diabetes Self-reported Diagnostic interview	26% 9%
Cancer	22%-29%
HIV/AIDS	5%-20%
Pain	30%-54%
Obesity	20%-30%
General population	10.3%



After Evans DL, et al. *Biol Psychiatry* 2005;58:175-189.

### Deaths from Heart Disease by Age Group/DMH Enrollees with SMI vs. Control 1998-2000



National Association of State Mental Health Program Directors Medical Directors Council July 2006.

### Depression and 1-Yr Post-Myocardial Infarction (MI) Cardiac Mortality







#### Depression as a Risk Factor for Poor Prognosis Among Patients With Acute Coronary Syndrome: Systematic Review and Recommendations: A Scientific Statement From the American Heart Association

Judith H. Lichtman, Erika S. Froelicher, James A. Blumenthal, Robert M. Carney, Lynn V. Doering, Nancy Frasure-Smith, Kenneth E. Freedland, Allan S. Jaffe, Erica C. Leifheit-Limson, David S. Sheps, Viola Vaccarino and Lawson Wulsin on behalf of the American Heart Association Statistics Committee of the Council on Epidemiology and Prevention and the Council on Cardiovascular and Stroke Nursing

Lichtman JH, et al. Circulation. 2014;129(12):1350-1369.

# 10-Year Coronary Event Rates, According to Lifestyle and Genetic Risk in the Prospective Cohorts



Khera AV, et al. N Engl J Med 2016;375(24):2349-2358.

### Coronary-Artery Calcification Score in the Bio-Image Study, According to Lifestyle and Genetic Risk



Khera AV, et al. N Engl J Med 2016;375(24):2349-2358.



www.who.intglobal\_hearts.

## Depression and Increased Mortality In Diabetes

### Deaths

- 428 (12.9%) no depression
- 88 (17.8%) major depression
- 65 (18.2%) minor depression
- Baseline major depression significantly associated with
  - All cause mortality HR 2.26
  - Cardiovascular mortality HR 2.00
  - Non-cardiovascular Non-cancer mortality HR 3.35



Lin EH, et al. Ann Fam Med 2009;7(5):414-421.

### Pain and Depression



## Chronic Pain and Major Depressive Disorder in the General Population



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#### Chronic pain and major depressive disorder in the general population

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ARTICLE INFO

#### ABSTRACT

Article history: Received 14 September 2009 Received in revised form 22 October 2009 Accepted 23 October 2009

Keywords: Depression Pain Epidemiology This study aims (1) to assess the prevalence of Chronic Painful Physical Condition (CPPC) and major depressive disorder (MDD) in the general population; (2) to evaluate their interaction and co-morbidity with sleep and organic disorders; and (3) to investigate their daily functioning and socio-professional consequences. A random sample of 3243 subjects ( $\geq$ 18 years), representative of California inhabitants, was interviewed by telephone. CPPC duration was at least 6 months. Frequency, severity, duration and consequences on daily functioning, consultations, sick leave and treatment were investigated. MDD were assessed using DSM-IV criteria. The point prevalence of CPPC was 49% (95% confidence interval: 47.0–51.0%). Back area pain was the most frequent; 1-month prevalence of MDD was at 6.3% (95% CI: 5.5–7.2%); 66.3% of MDD subjects reported at least one CPPC. In 57.1% of cases, pain appeared before MDD. Pain severity was increased by poor sleep, stress and tiredness in MDD subjects. Being confined to bed, taking sick leave and interference of pain with daily functioning were twice as frequent among MDD subjects with CPPC; obese individuals with CP were 2.6 times as likely to have MDD. Pain is highly linked with depressive disorder. It deteriorates physical, occupational and socio-professional activities. Pain ad sleep disturbances are a prime motive of consultation rather than depressed mood, underlining the risk of missing a depression diagnosis.

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Ohayon MM, Schatzberg AF. J Psychiatr Res. 2010;44(7):454-461.

### **Pain and Depression**

- Community sample of prevalence of Chronic Painful Physical Condition (CPPC) and major depressive disorder (MDD) in the general population
- A random sample of 3243 subjects (P18 years)
- Point prevalence of CPPC was 49% (95% confidence interval: 47.0– 51.0%
- 1-month prevalence of MDD was at 6.3% (95% CI: 5.5–7.2%)
- 66.3% of MDD subjects reported at least one CPPC in 57.1% of cases, pain appeared before MDD
- Pain severity was increased by poor sleep, stress and tiredness in MDD
- Being confined to bed, taking sick leave and interference of pain with daily functioning were 2x as frequent among MDD subjects with CPPC than in non-MDD subjects with CPPC

Ohayon MM, Schatzberg AF. J Psychiatr Res. 2010;44(7):454-461.

### Using Chronic Pain to Predict Depressive Morbidity in the General Populations

#### ORIGINAL ARTICLE

### Using Chronic Pain to Predict Depressive Morbidity in the General Population

Maurice M. Ohayon, MD, DSc, PhD; Alan F. Schatzberg, MD

Background: Pain syndrome is thought to play a role in depression. This study assesses the prevalence of chronic (≥ 6 months' duration) painful physical conditions (CPPCs) (joint/articular, limb, or back pain, headaches, or gastrointestinal diseases) and their relationship with major depressive disorder.

Methods: We conducted a cross-sectional telephone survey of a random sample of 18980 subjects from 15 to 100 years old representative of the general populations of the United Kingdom, Germany, Italy, Portugal, and Spain. Answers provided during telephone interviews using the Sleep-EVAL system were the main outcome measure. Interviews included questions about mental disorders and medical conditions. Data on painful physical conditions were obtained through questions about medical treatment, consultations, and/or hospitalizations for medical conditions and a list of 42 diseases.

Results: Of all subjects interviewed, 17.1% reported having at least 1 CPPC (95% confidence interval [CI], 16.5%-17.6%). At least 1 depressive symptom (sadness, depression, hopelessness, loss of interest, or lack of pleasure) was present in 16.5% of subjects (95% CI, 16.0%-17.1%); 27.6% of these subjects had at least 1 CPPC. Major depressive disorder was diagnosed in 4.0% of subjects; 43.4% of these subjects had at least 1 CPPC, which was 4 times more often than in subjects without major depressive disorder (odds ratio [OR], 4.0; 95% CI, 3.5.4.7). In a logistic regression model, CPPC was strongly associated with major depressive disorder (OR: CPPC alone, 3.6; CPPC+nonpainful medical condition, 5.2); 24-hour presence of pain made an independent contribution to major depressive disorder diagnosis (OR, 1.6).

**Conclusions:** The presence of CPPCs increases the duration of depressive mood. Patients seeking consultation for a CPPC should be systematically evaluated for depression.

Arch Gen Psychiatry. 2003;60:39-47

Ohayon MM, Schatzberg AF. Arch Gen Psychiatry. 2003;60(1):39-47.

### **Pain and Depression**

- 18,890 subjects interviewed in EU, 17.1% reported at least 1 CPPC (95% confidence interval [CI], 16.5%-17.6%)
- MDD diagnosed in 4.0% of subjects; 43.4% of these subjects had at least 1 CPPC, which was 4x more often than in subjects without MDD (odds ratio [OR], 4.0; 95% CI, 3.5-4.7).
- In a logistic regression model, CPPC was strongly associated with MDD (OR: CPPC alone, 3.6; CPPC + nonpainful medical condition, 5.2)
- Key finding that in a study of 18,980 subjects, 43.4% of individuals who met criteria for MDD also had a CPPC vs. 16.1% of the general population

Ohayon MM, Schatzberg AF. Arch Gen Psychiatry. 2003;60(1):39-47.

### Association of Mental Health Conditions and Treatments with Long-Term Opioid Analgesic Receipt Among Adolescents

JAMA Pediatrics | Original Investigation

#### Association of Mental Health Conditions and Treatments With Long-term Opioid Analgesic Receipt Among Adolescents

Patrick D. Quinn, PhD; Kwan Hur, PhD; Zheng Chang, PhD; Eric L. Scott, PhD; Erin E. Krebs, MD; Matthew J. Bair, MD; Martin E. Rickert, PhD; Robert D. Gibbons, PhD; Kurt Kroenke, MD; Brian M. D'Onofrio, PhD

Editorial IMPORTANCE Adults with mental health conditions are more likely than those without to Supplemental content receive long-term opioid therapy. Less is known about opioid therapy among adolescents, especially those with mental health conditions. OBJECTIVE To examine associations between preexisting mental health conditions and treatments and initiation of any opioid and long-term opioid therapy among adolescents. DESIGN, SETTING, AND PARTICIPANTS A cohort of 1224 520 incident opioid recipients without cancer diagnoses aged 14 to 18 years at first receipt was extracted from nationwide commercial health care claims data from January 1, 2003, to December 31, 2014. Analysis was conducted from August 19, 2016, to November 16, 2017. Associations between preexisting mental health conditions and treatments and any opioid receipt were examined by comparing recipients with nonrecipients matched on sex, calendar year and years of age of first enrollment, and months of enrollment (prior to the index month for recipients, ever for nonrecipients). Associations between preexisting mental health conditions and treatments and subsequent long-term opioid therapy were examined among recipients with at least 6 months' follow-up using Cox proportional hazards regressions adjusted for demographics. EXPOSURES Mental health condition diagnoses and treatments recorded in inpatient, outpatient, and filled-prescription claims prior to opioid receipt. MAIN OUTCOMES AND MEASURES Opioid receipt, defined as any opioid analgesic prescription claim, and long-term opioid therapy, defined as more than 90 days' supply within a 6-month window having no gaps in supply of more than 32 days.

Quinn PD, et al. JAMA Pediatr. 2018;172(5):423-430.

## Pain, Mental Health and Adolescents

- Cohort of 1,224,520 incident opioid recipients without cancer diagnoses aged 14 to 18 years
- Adolescents with anxiety, mood, neurodevelopmental, sleep, and non-opioid substance use disorders and most mental health treatments were significantly more likely to receive any opioid (OR from 1.13 [95% CI, 1.10-1.16]
- All preexisting mental health conditions and treatments were strongly associated with higher rates of long-term opioid therapy

Quinn PD, et al. JAMA Pediatr. 2018;172(5):423-430.

# Prescription Opioid Use Among Adults with Mental Health Disorders in the US

Prescription Opioid Use among Adults with Mental Health Disorders in the United States

Matthew A. Davis, MPH, PhD, Lewei A. Lin, MD, Haiyin Liu, MA, and Brian D. Sites, MD, MS

Background: The extent to which adults with mental health disorders in the United States receive opioids has not been adequately reported.

*Methods:* We performed a cross-sectional study of a nationally representative sample of the noninstitutionalized U.S. adult population from the Medical Expenditure Panel Survey. We examined the relationship between mental health (mood and anxiety) disorders and prescription opioid use (defined as receiving at least 2 prescriptions in a calendar year).

**Results:** We estimate that among the 38.6 million Americans with mental health disorders, 18.7% (7.2 million of 38.6 million) use prescription opioids. Adults with mental health conditions receive 51.4% (60 million of 115 million prescriptions) of the total opioid prescriptions distributed in the United States each year. Compared with adults without mental health disorders, adults with mental health disorders were significantly more likely to use opioids (18.7% vs 5.0%; P < .001). In adjusted analyses, having a mental health disorder was associated with prescription opioid use overall (odds ratio, 2.08; 95% confidence interval, 1.83–2.35).

*Conclusions:* The 16% of Americans who have mental health disorders receive over half of all opioids prescribed in the United States. Improving pain management among this population is critical to reduce national dependency on opioids. (J Am Board Fam Med 2017;30:407-417.)

Davis MA, et al. J Am Board Fam Med. 2017;30:407-417.

## Opioid Prescriptions in Patients with Mood and Anxiety Disorders

- Cross-sectional study of nationally representative sample of noninstitutionalized US adult population from the Medical Expenditure Panel Survey
- Of the 38.6M Americans with mental health disorders (mood and anxiety disorders), 18.7% (7.2M of 38.6M) use prescription opioids vs. 5.0% of general population (p < .001)</li>
- Adults with mental health conditions receive 51.4% (60M of 115M prescriptions) of the total yearly US opioid prescriptions
- In adjusted analyses, a mental health disorder was associated with prescription opioid use overall (OR, 2.08; 95% CI, 1.83–2.35)

Davis MA, et al. J Am Board Fam Med. 2017;30:407-417.

### **Complexity of Medical Psychiatric Illness**



## Complexity of Medical Psychiatric Evaluation

- Multiple interactions can affect the Medical Psychiatric Evaluation
  - Psychiatric illness which modifies the presentation or focus of medical disorder - hypochondriacal, somatizing
  - Psychiatric symptoms due to unrecognized medical illness
    e.g. endocrine, autoimmune illness
  - Medical illness which makes psychiatric diagnosis more difficult fatigue, breathlessness,
  - Psychiatric illness and comorbid unrecognized medical illness – medical or psychiatric symptoms may be discounted

## Complexity of Medical Psychiatric Evaluation

- Are symptoms likely to be due to a psychiatric disorder?
  - Recent stress (past week)
  - Greater than or equal to 6 symptoms
  - Self-rated health only poor to fair
  - Symptom severity rated  $\geq$  6 (0-10 scale)
  - Patient rated "Difficult" by clinician
  - Age under 50
- Patients who present in the medical care system are more likely to present with sub-syndromal presentations of illnesses, often with frequent somatic symptoms

Kroenke K, et al. Am J Med. 1997;103(5):339-347.

### Medically Unexplained Symptoms in 1000 Primary Care Patients



## **Undiagnosed Medical Illness**

### •2090 clinic patients

- -Large percent (43%) had medical illness
- Almost half (46%) of illness were undiagnosed by referring source
- -Non-psychiatric physicians missed 32%
- -Psychiatrists missed 48%
- -Others (self-referred, social agency referral) missed 83%

Koranyi EK. Arch Gen Psychiatry. 1979;36:414-419.

## Medical Illness Presenting Psychiatrically

- 658 consecutive psychiatric outpatients underwent careful medical evaluation
- 9.1% had medical disorders thought to be causative of their psychiatric symptoms
- Most common psychiatric presentations were depression, confusion, anxiety, and speech or memory disorders
- Most common medical disorders were infectious, pulmonary, thyroid, diabetic, hematopoietic, hepatic and CNS diseases
- 46% of these patients suffered from medical illnesses previously unknown to either them or their physician

Hall RCW, et al. Arch Gen Psychiatry 1978;35:1315-1320.

## Medical Disorders Prompting Psychiatric Admissions

- 100 consecutive admissions to a state psychiatric hospital carefully screened for medical disorders
- 46% of patients had unrecognized medical disorders that caused or exacerbated their psychiatric illnesses or presentation
- 80% had medical disorders requiring treatment
- Endocrine, CNS, hematopoetic, and cardiovascular illness were all commonly present

Hall RCW, et al. Am J Psychiatry. 1981;138(5):629-635.

## Mortality and Psychiatric Illness



## Meta-Analysis of Mortality in Mental Disorders

- Meta-analysis of 203 studies meeting criteria of control group in same setting without mental illness across 29 countries
- Relative Risk All Cause Mortality 2.22
- 67.3% due to natural causes, rest unknown or unnatural (17.5%)
- Median years life lost = 10
- 14.3% of all deaths worldwide due to mental disorders
- 8,000,000 deaths per year

Walker ER, et al. JAMA Psychiatry 2015;72(4):334-341.



## **Call to Action**

 Think about medical or psychiatric comorbidities that may exacerbate illness or symptom presentation and lead to increased medical costs



Don't forget to fill out your evaluations to collect your credit.

