## IMPLEMENTATION OF POPULATION RESEARCH ON PAIN

Dr. Charles Helmick, Centers for Disease Control and PreventionDr. Michael Von Korf, Kaiser Permanente Washington HealthDr. Richard Nahin, National Institutes of Health

### Implementation of the National Pain Strategy Listening Session

#### **Implementation of Population Research on Pain**

Healthy People 2020 & 2030

#### Charles (Chad) G. Helmick, MD

Captain, U.S. Public Health Service (Ret.) Medical Epidemiologist, Arthritis Program NPSISC Meeting Washington, DC May 11, 2017



National Center for Chronic Disease Prevention and Health Promotion

**Division of Population Health** 

## Institute of Medicine: Relieving Pain in America

A Blueprint for Transforming Prevention, Care, Education, and Research

•IOM Committee on Advancing Pain Research, Care, and Education •Board on Health Sciences Policy

•<u>http://www.iom.edu/Reports/2011/Relieving-Pain-in-America-A-Blueprint-for-transforming-</u> <u>Prevention-Care-Education-Research.aspx</u>



Advising the nation/Improving health

A Blueprint for Transforming Prevention, Care, Education, and Research

Relieving

in Ame

Charge to the Interagency Pain Research Coordinating Committee

 October of 2012, Assistant Secretary for Health, Dr. Howard Koh, charged IPRCC

- to create a National Pain Strategy (IOM Recommendation 2-2)
- include chronic pain objectives in Healthy People 2020

http://iprcc.nih.gov/National Pain Strategy/NPS Main.htm

HP2020 Chronic Pain Workgroup

Linda Porter, DHHS/NIH/NINDS, co-workgroup coord. Chad Helmick, DHHS/CDC, co-workgroup coordinator

Michael Von Korff, GHRIRoger Chou, OHSUAnn Scher, DOD/USUHSJosie Briggs, NCCAMOlivia Carter-Pokras, U. MarylandJudith Paice, Northwestern U.Christin Veasley, CPRASteven Stanos, NorthwesternPenney Cowan, ACPADennis Turk, U WashDan Carr, Tufts UDavid Tauben, U. WashingtonSean Mackey, Stanford U.Robert Kerns, Yale U./VAMark Wallace, UC San DiegoOthers...



DHHS health objectives for the nation

- Attain high-quality, longer lives free of preventable disease, disability, injury, and premature death
- Achieve health equity, eliminate disparities, and improve the health of all groups
- Create social and physical environments that promote good health for all
- Promote quality of life, healthy development, and healthy behaviors across all life stages.

## **Outline for update**

Activities since April 17, 2015 IPRCC meeting

Survey questions for high impact chronic pain



## Four Developmental objectives for pain

- Decrease the <u>prevalence</u> of adults having high impact chronic pain
- Increase <u>public awareness/knowledge</u> of high impact chronic pain
- Increase <u>self-management</u> of high impact chronic pain
- Reduce <u>impact</u> of high impact chronic pain on family/significant others



## Activities since April 17, 2015

- Pilot test questions (Von Korff)
  - Feasible to assess low, moderate and high impact chronic pain in population surveys
- Discussion of questions (e.g., PROMIS, Profile of Chronic Pain, NHIS) with NCHS cognitive lab
- NCHS cognitive lab testing
- Case definition questions included in 2016 & 2017 NHIS



Defining high-impact chronic pain

2016-2017 NHIS pain questions

- In the past six months, how often did you have pain? Never Some days Most days Every day [concept: chronic vs non-chronic pain]
- 2. Over the past six months, how often did pain limit your life or work activities? Never Some days Most days Every day [concept: low and high impact pain]



# Other pain questions

#### HP2020 pain questions (NOT on 2016-2017 NHIS)

 Over the past six months, how often did YOUR pain affect your family or significant others? Never Some days Most days Every day [concept: burden on family/significant others]

4. To what extent are you able to manage your pain so that you can do the things you enjoy doing?

Not at all A little A lot Somewhere in between a little and a lot [concept: assessing self-management of pain]



## **Next Steps**

- 1. Analyze 2016 and 2017 NHIS pain question data
- 2. 2018 NHIS redesign:
  - A. accommodate NCHS required pain questions
  - B. Add our "other" questions (family; self-mgmt)
- 3. Increase public awareness/knowledge of high impact chronic pain
- 4. Funding:
  - A. NHIS core questions are "free"
  - B. "Sponsored modules" (additional questions)?
- 5. Begin planning Healthy People 2030

## **Questions or Comments?**

For more information please contact Centers for Disease Control and Prevention

Charles G. (Chad) Helmick, MD Captain, U.S. Public Health Service (Ret.) Medical Epidemiologist, Arthritis Program Centers for Disease Control and Prevention E-mail: CHelmick@cdc.gov Web: http://www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



National Center for Chronic Disease Prevention and Health Promotion

**Division of Population Health** 



#### National Pain Strategy Population Research

#### Michael Von Korff

Kaiser Permanente Washington Health Research Institute





#### A Comprehensive Population Health Level Strategy for Pain

### NPS population research workgroup report:

Olivia Carter-Pokras David Dodick Joseph Goulet Robin Hamill-Ruth Linda LeResche Sean Mackey Linda Porter Ann Scher (Co-Chair) Raymond Tait Greg Terman Elizabeth Unger Chris Velicier Michael Von Korff (Co-chair)



#### **Population Research Recommendations**

*Goal:* Provide methods and measures to guide progress towards improved prevention and management of chronic pain in the US.

**Objective 1:** Estimate the prevalence of chronic pain and highimpact chronic pain by key risk factors and population characteristics.

**Objective 2:** Use electronic health care data linked to patient-reported pain data for research to improve chronic pain care.

**Objective 3:** Develop patient-reported and electronic health care data metrics to track progress and identify emerging needs.



## **Concepts and Definitions**

Based in the WHO International Classification of Functioning, Disability and Health (ICF)

Impairment: Problems in physiological function or anatomical structure

Participation restriction: Healthrelated problem in social role engagement

*Chronic pain:* Pain present on most days for 6 (or 3) months. High impact chronic pain: Substantial participation restrictions related to chronic pain in work, social or self-care activities present on most days for 6 (or 3) months.







## National Health Interview Survey Questions Assessing Chronic Pain and High Impact Chronic Pain

|   | Never | Some<br>Days | Most<br>Days      | Every<br>Day    |
|---|-------|--------------|-------------------|-----------------|
| Over the past 3 months, how often did you have pain?  |       |              | Chron             | c Pain          |
| Over the past 3 months,<br>how often did pain interfere<br>with your life or work activities? |       |              | High lr<br>Chroni | npact<br>e Pain |



#### Percent of Adults Reporting Pain, Chronic Pain and High Impact Chronic Pain (Estimates weighted to account for sample selection probabilities)



(Kaiser Permanente Washington adult enrollees Sample size = 770)

KAISER PERMANENTE®

## Pain Interference with Life Enjoyment (last 7 days) Comparing Persons with Low, Moderate and High Impact Chronic Pain

Pain interference with enjoyment of life (0 to 10 rating) in prior 7 days By chronic pain impact level



Pain interference with life enjoyment rating

(Kaiser Permanente Washington adult enrollees Sample size = 770)



### Revised Chronic Pain Diagnostic Clusters (ICD-9 and ICD-10 Codes)



Kaiser Permanente®

#### Example of Analysis of EHR Data Using Pain-Related Diagnostic Clusters

#### Percent Receiving Chronic Opioid Therapy by Pain-related Diagnostic Cluster Analyses of 2013 Electronic Health Care Data



Provisional Pain-Related Diagnostic Groups (N=289,464 Kaiser Permanente Washington adult enrollees, 2013)

#### KAISER PERMANENTE®

## **Examples of Trend Analyses with EHR Data**



\*\* Medicaid data provided by Deborah Fulton-Kehoe of the University of Washington

#### KAISER PERMANENTE

### **Examples of Trend Analyses with EHR Data**

Percent of COT Patients Receiving 60+ Days Supply of Sedatives in Quarter (COT defined as receiving 60+ days supply of opioids in quarter)



\*\* Medicaid data provided by Deborah Fulton-Kehoe of the University of Washington Stribution



NPS Population Research Supplemental Work with Lynn DeBar, Michael Von Korff & Bob Kerns

## **On-line Survey Patient-Reported Metrics with EHR Linkage**







Health Care Systems Research Collaboratory

## Can a Chronic Pain Research Network Be Developed?

Modeled after NIH networks for cancer, heart disease, drug abuse and mental health research

- Virtual data warehouse for pain data (Pain-related diagnostic clusters, medicine use, ambulatory & inpatient care, relevant tests and procedures, patient and provider characteristics)
- Pain assessment data from electronic medical record, if available (e.g. pain ratings obtained routinely at VA health care visits)
- Linkage to patient survey data obtained via low-cost web surveys
- Methodologic expertise to conduct pragmatic trials and evaluations of pain-relevant innovations or changes in patient care



U.S. Department of Health & Human Services • National Institutes of Health



National Center for Complementary and Integrative Health

# Implementation of the National Pain Strategy: pain prevalence from national surveys

Presented by Dr. Richard Nahin



## Agenda

- Present estimates of pain prevalence and severity for U.S. adults using population-based surveys
- Introduce the NIH "All of Us" program (formerly The Precision Medicine Initiative) as is might relate to the National Pain Strategy



## More national data on an individual's pain experience vs. whether they had a given pain-related condition



## Prevalence of painful conditions: National Health Interview Survey

## Prevalence of painful conditions: National Health Interview Survey



#### Nahin RL. 2017

NHIS questions on a person's pain experience

Frequency (persistence): In the past 3 months, how often did you have pain?

Never, some days, most days, every day

NHIS questions on a person's pain experience

- Frequency (persistence): In the past 3 months, how often did you have pain?
  - Never, some days, most days, every day
- Intensity (bothersomeness): Thinking about the last time you had pain, how much pain did you have?
  - A little, between a little and a lot, a lot

## NCHS/CDC's K. Miller and M. Loeb

(UN chartered Washington Group for Disability Statistics

|                |                               | PAIN FREQUENCY |           |   |
|----------------|-------------------------------|----------------|-----------|---|
|                |                               | Some days      | Most days | Every day                                   |
| PAIN INTENSITY | A little pain                 | A              | D         | G   |
|                | In between a little and a lot | В              | E         | н   |
|                | A lot of pain                 | С              | F         |   |
|                |                               |                | XXXXXX    | $\times \times \times \times \times \times$ |

Category 1 Category 2 Category 3 Category 4 (least severe) A B,D,G C,E,H F,I



## 



# As pain severity increase, individuals more likely to report poor health status



Nahin RL. J Pain. 2015

# Heterogeneity in how people respond to pain even in those with similar levels of pain



Nahin RL. J Pain. 2015

# Association between pain categories and measures of healthcare utilization: NHIS 2012



# Association between pain categories and measures of healthcare utilization: NHIS 2012



## Prevalence of painful conditions - NHIS



#### Nahin RL. 2017

Relationship between the number of painful health conditions and a person's experience of pain

Absence of painful conditions synonymous with absence of pain

Multiple painful conditions synonymous with severe pain



Relationship between the number of painful health conditions and a person's experience of pain

Absence of painful conditions synonymous with absence of pain?

Multiple painful conditions synonymous with severe pain?



# Does pain severity vary by the number of health conditions?



# Does pain severity vary by the number of health conditions?



# Does pain severity vary by the number of health conditions?



Pain severity varies by the number of health conditions in the direction you would expect



Pain severity varies by the number of health conditions in the direction you would expect



# The prevalence of potentially painful health conditions does not equal the prevalence of pain





## Overestimate the number of adults who were pain free





## Overestimate the amount of severe pain





## More national data on an individual's pain experience vs. whether they had a given pain-related condition



## Outline

- Present estimates of pain prevalence and severity for U.S. adults
- Introduce the NIH "All of Us" program (formerly The Precision Medicine Initiative) as is might relate to the National Pain Strategy

• One million or more <u>participants</u>, reflecting the broad diversity of the U.S, providing data on an ongoing, longitudinal basis.



- One million or more <u>participants</u>, reflecting the broad diversity of the U.S, providing data on an ongoing, longitudinal basis.
- Collect: Lifestyle, Genes, Environment data





- One million or more <u>participants</u>, reflecting the broad diversity of the U.S, providing data on an ongoing, longitudinal basis.
- Collect: Lifestyle, Genes, Environment data



- One million or more <u>participants</u>, reflecting the broad diversity of the U.S, providing data on an ongoing, longitudinal basis.
- Collect: Lifestyle, Genes, Environment data
- <u>Not</u> a study on any one disease, but a huge data resource to inform many research studies on a wide variety of health conditions



#### **PPI/Survey Modules for our Launch Target**

- 1. Contact/Sociodemographics<sup>A</sup> (10:29)
- 2. Overall Health/Mental Health<sup>A</sup> (2:48)
- 3. Personal Habits<sup>A</sup> (2:47)
- 4. Personal Health History<sup>C</sup>
- 5. Medications<sup>C</sup>
- 6. Family History<sup>B</sup>
- 7. Health Care Access and Utilization<sup>A</sup> (3:22)
- 8. Sleep<sup>A</sup> (4:10)



<sup>A</sup> Pilot + PPI WG process complete
<sup>B</sup> Pending Pilot data on participant acceptability and time to completion studies
<sup>C</sup> Implementation/testing to use PTC delivery (Pilot + PPI WG stakeholders working as key informants to PTC)

## Pain in All of Us

The initial launch will include one pain measure in the "Overall Health" module:



## Pain measures in All of Us

| Ref. Survey           | Question Stem          | Responses                  |
|-----------------------|------------------------|----------------------------|
| PROMIS v.1.1 – Global | In the past 7 days how | [Rated on a scale of 0-10, |
| INCLUDED at launch    | would you rate your    | from "No pain" to "Worst   |
|                       | pain on average?       | imaginable pain"]          |
|                       |                        |                            |
|                       |                        |                            |
|                       |                        |                            |
|                       |                        |                            |
|                       |                        |                            |
|                       |                        |                            |
|                       |                        |                            |
| 영영영영영영영영영영            |                        |                            |
|                       |                        |                            |
|                       |                        |                            |
|                       |                        |                            |
|                       |                        |                            |

 $\bigcirc$ 

The initial launch will include one pain measure in the "Overall Health" module:

In the past 7 days, how would you rate your pain on average: 0 (no pain) to 10 (worst pain imaginable)

Additional pain questions are candidates to be add at a later time:

## Proposed pain questions: All of Us

| Ref. Survey                         | Question Stem           | Responses                      |  |  |
|-------------------------------------|-------------------------|--------------------------------|--|--|
| PROMIS v.1.1 – Global               | In the past 7 days how  | [Rated on a scale of 0-10,     |  |  |
| INCLUDED                            | would you rate your     | from "No pain" to "Worst       |  |  |
|                                     | pain on average?        | imaginable pain"]              |  |  |
| National Pain Strategy              | Over the last six       | I have not had pain            |  |  |
|                                     | months, on about how    | I have had pain, but on less   |  |  |
|                                     | many days have you      | than half the days             |  |  |
|                                     | had pain?               | I have had pain on more than   |  |  |
|                                     |                         | half the days, but not every   |  |  |
|                                     |                         | day                            |  |  |
|                                     |                         | I have had pain every day, but |  |  |
|                                     |                         | not all the time               |  |  |
|                                     |                         | I have had pain all day, every |  |  |
|                                     |                         | day, without break             |  |  |
| PROMIS v1.1 – Pain                  | In the past 7 days how  | Not at all                     |  |  |
| Interference                        | much did pain interfere | A little bit                   |  |  |
|                                     | with your day to day    | Somewhat                       |  |  |
|                                     | activities?             | Quite a bit                    |  |  |
| National Center for Complementary a | and Integrative Health  |                                |  |  |

