

September 11, 2014
MHA Annual Meeting

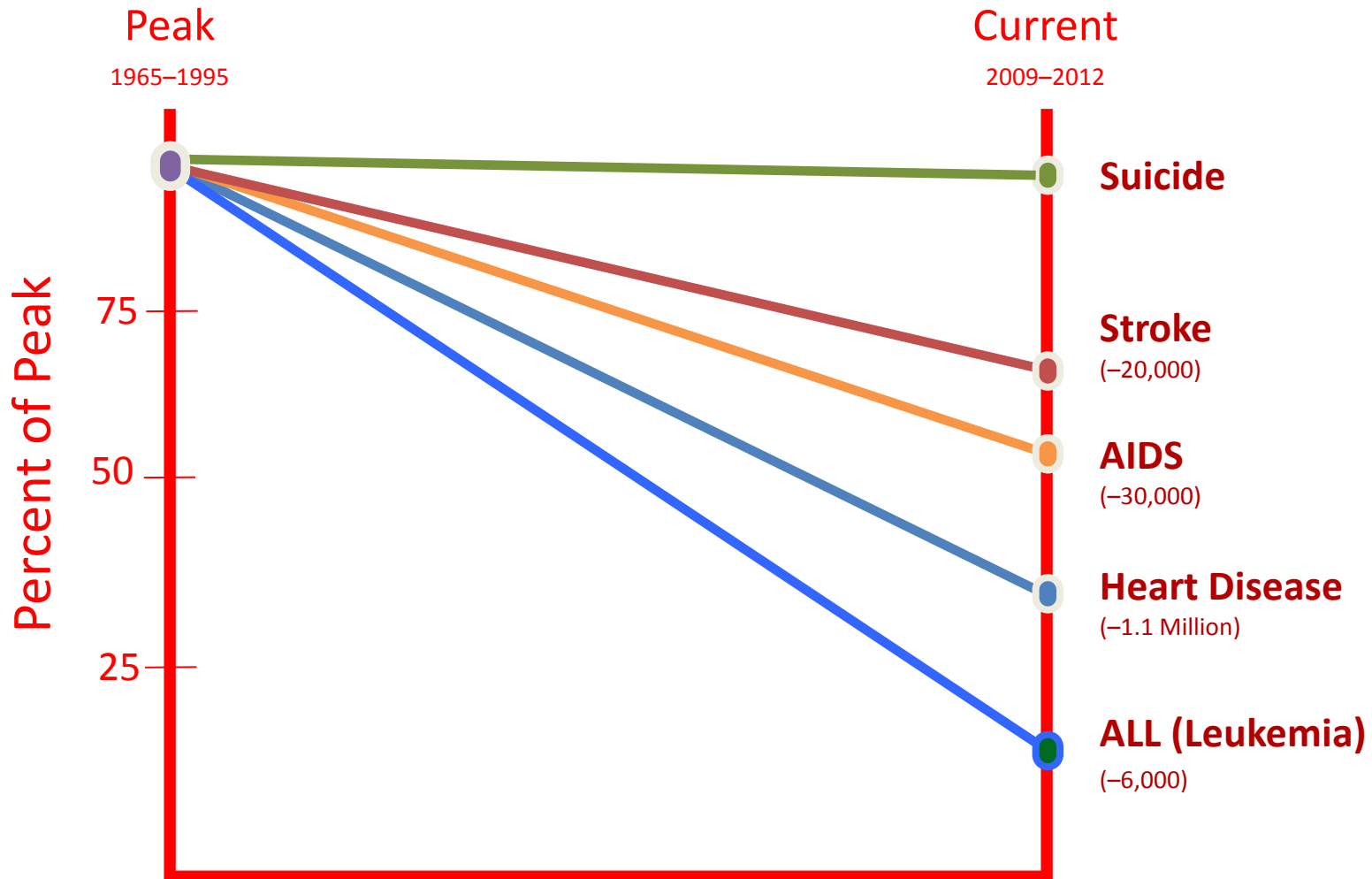


***NIMH Update:
The State of the Science***

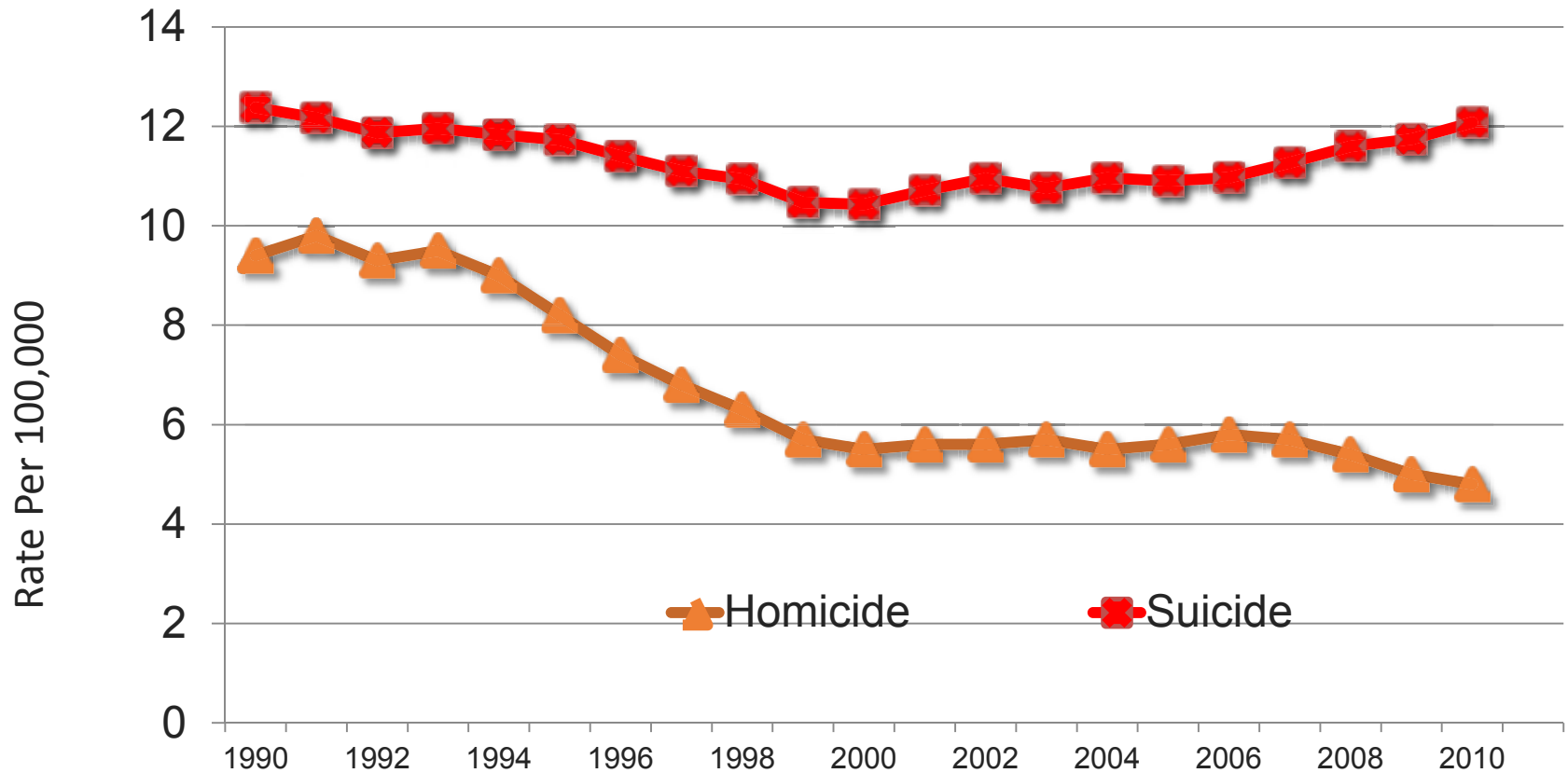
Philip Wang, MD, DrPH
Deputy Director, NIMH



Mortality from Medical Causes



U.S. suicide rate unchanged in 2 decades

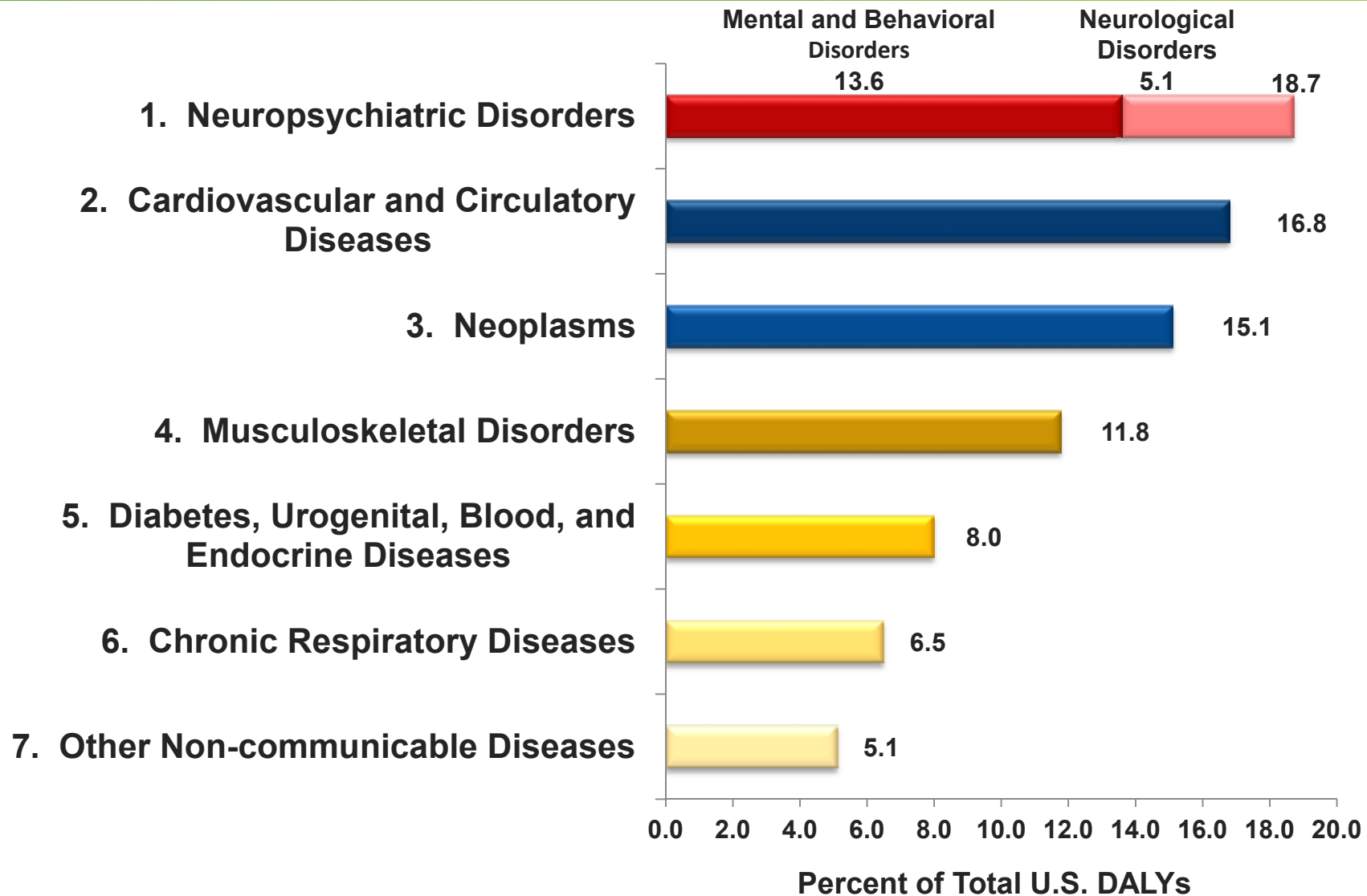


Homicides have dropped from 9.8/100,000 in 1992 to 4.8/100,000 in 2010 (<15,000/yr)

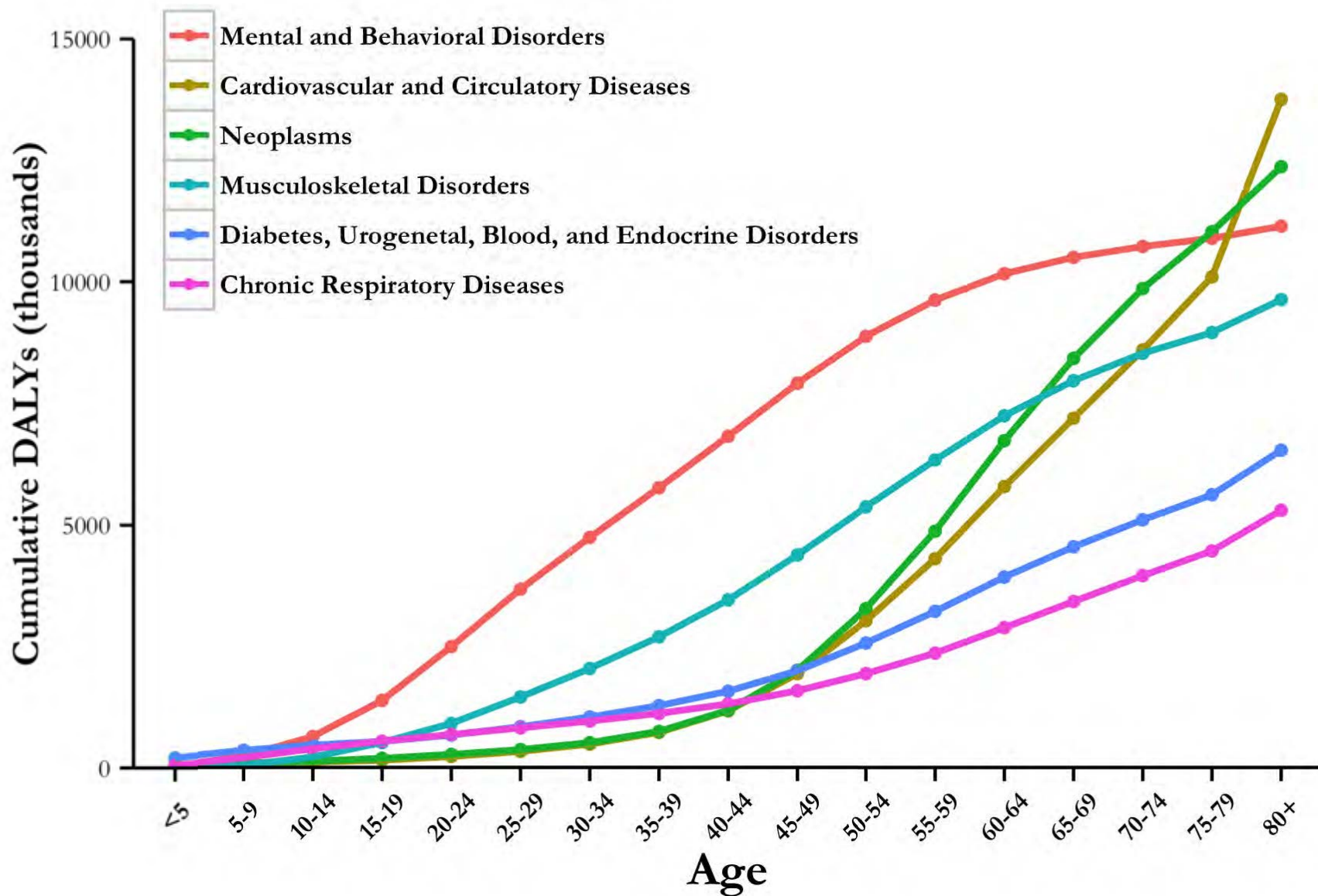
SOURCES: Bureau of Justice Statistics (homicide); Centers for Disease Control (suicide)

U.S. Burden of Diseases: 291 diseases and injuries

Leading Categories of DALYs 2010



The most disabling disorders before age 50



The State of Mental Health in 2014

- Diagnosis limited to symptoms; detection late.
- Etiology unknown; prevention not well developed for most disorders.
- Treatment is trial and error – no cures, no vaccines.

Inconvenient Truth #1: We have failed to bend the curve for morbidity and mortality from mental illness.

Why?

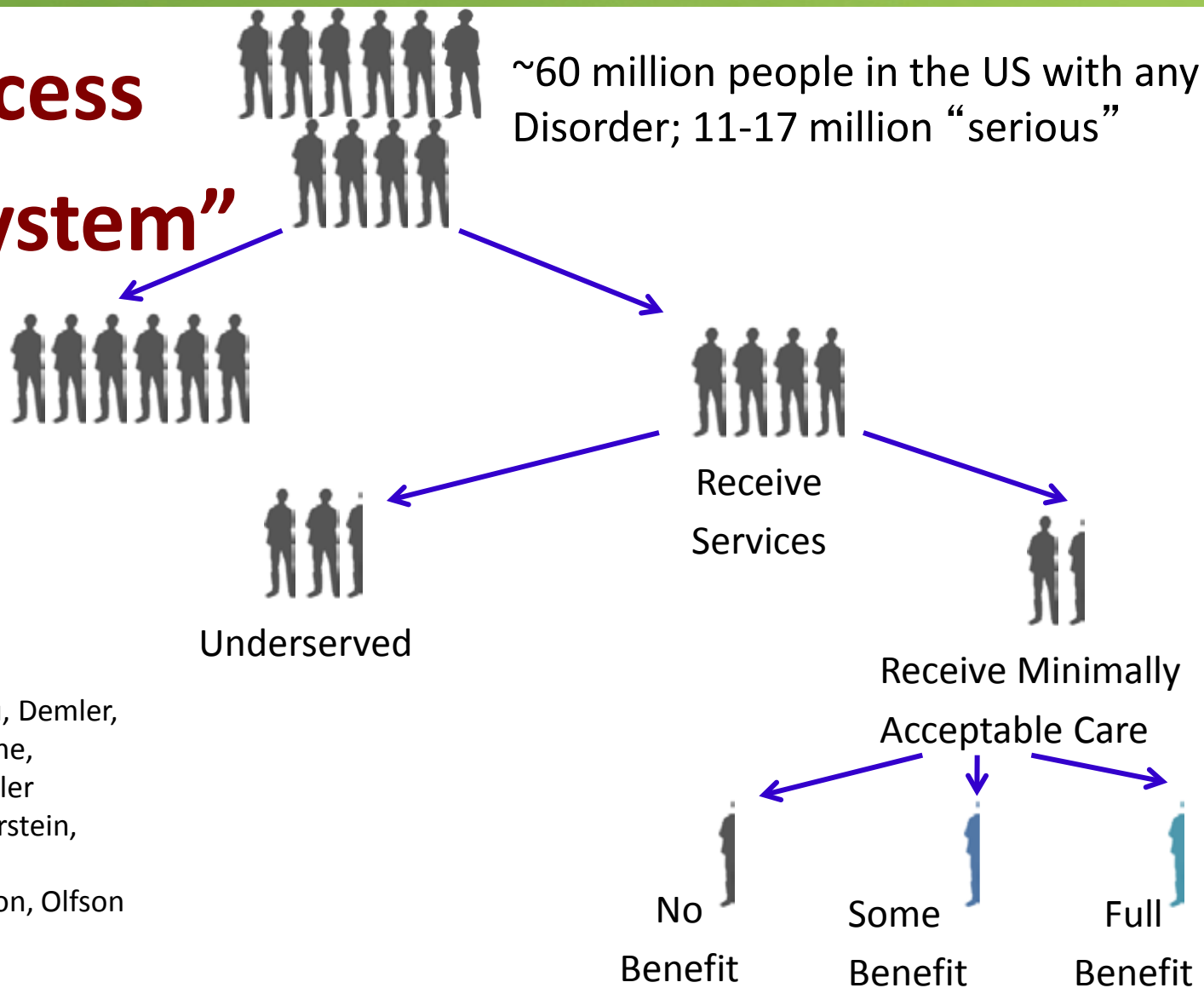


Why have we failed to bend the curve?

Lack of Access

Broken "system"

Poor care



Sources:

NSDUH (2009); Kessler, Chiu, Demler, & Walters (2005); Wang, Lane, Olfson, Pincus, Wells & Kessler (2005); Merikangas, He, Burstein, Swendsen, Avenevoli, Case, Georgiades, Heaton, Swanson, Olfson (2011)

Why have we failed to bend the curve?

- **Lack of Accountability – Who is responsible?**
- **Denial of illness**
- **Fragmentation of care**
- **Criminalization**



The New York Times



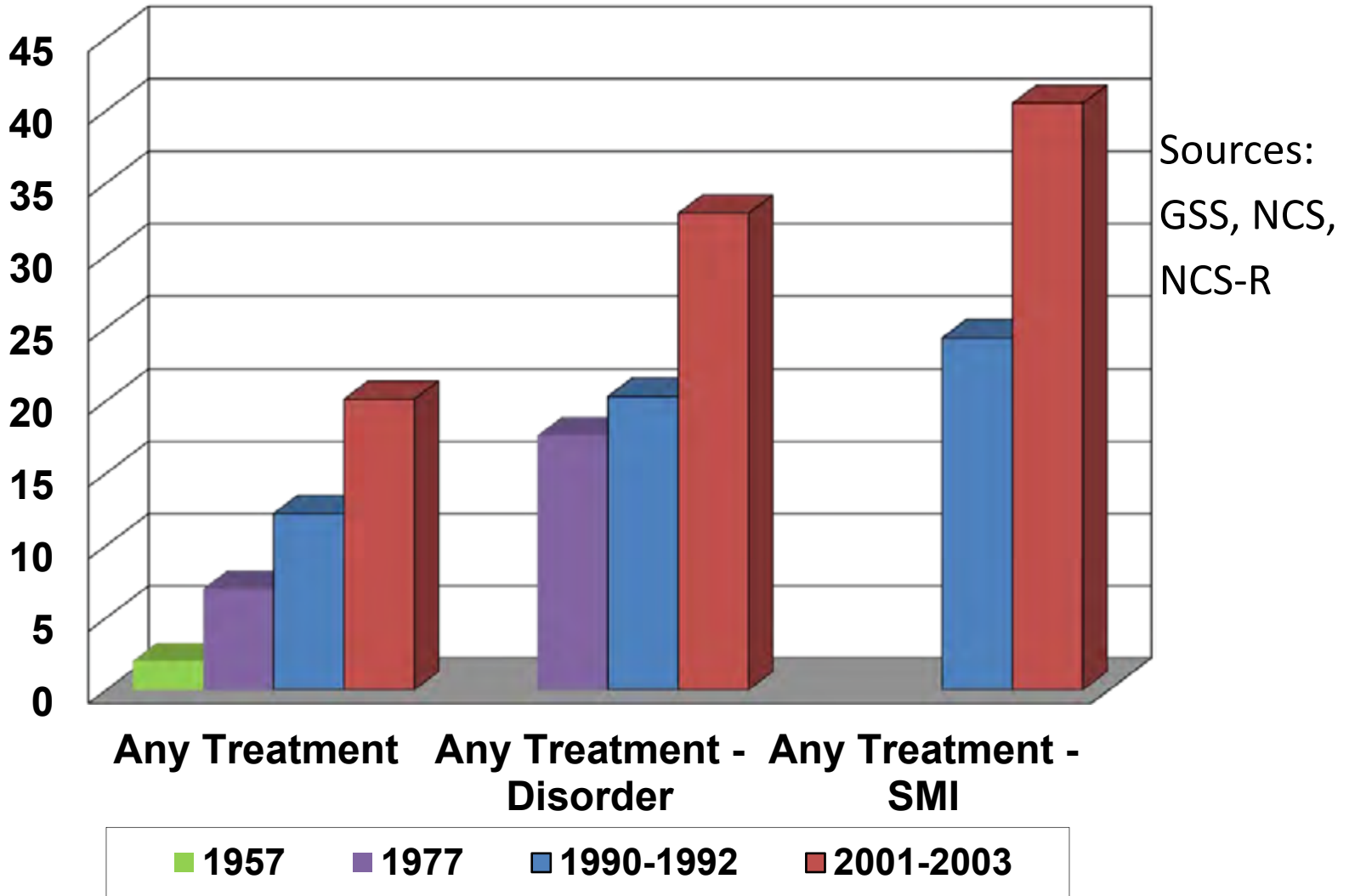
Nicholas
Kristof

EDITORIAL

Treatment, Not Jail, for the Mentally Ill

Published: January 31, 2013

Will more care bend the curve?

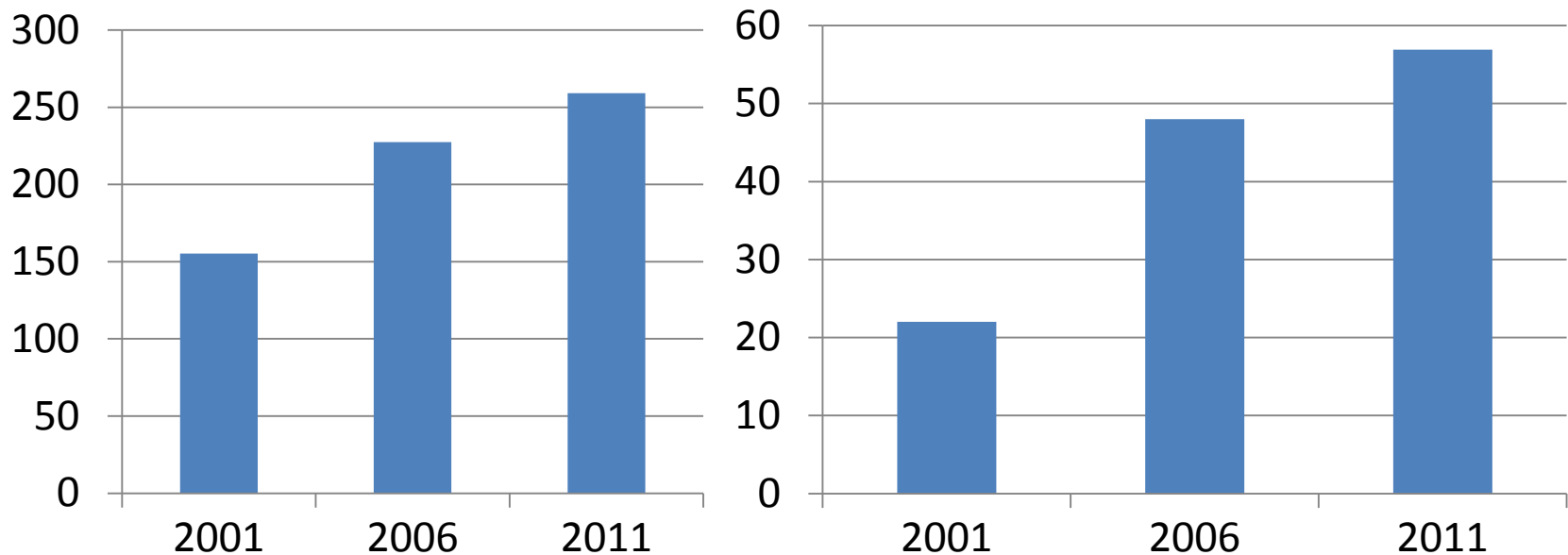


Will more care bend the curve?

IMS Health: millions of prescriptions in US market

A. Antidepressant prescriptions

B. Antipsychotic prescriptions



Administrative data reveal more children in care system, more people on SSI, more payments for MH via Medicaid

Inconvenient Truth #2:

More people getting more of today's Rx
but outcomes are not any better

If we are to bend the curve we must:

Not only improve access and quantity,
we must improve options and quality.

Improving options and quality requires
a different approach.

A Different Approach?

The Opinion Pages

OP-ED CONTRIBUTOR

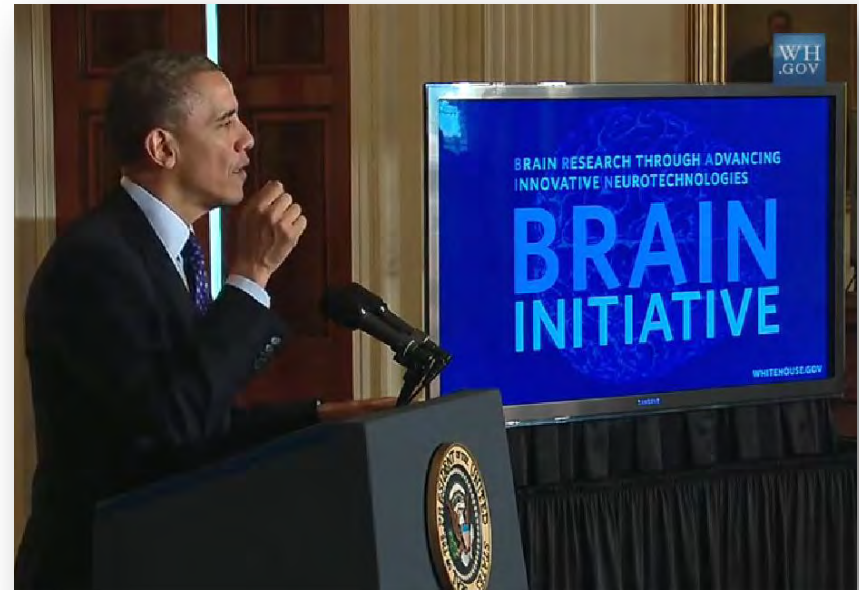
The New York Times

To Know Suicide

Depression Can Be Treated, but It Takes Competence

By KAY REDFIELD JAMISON AUG. 15, 2014

“The next great American project”

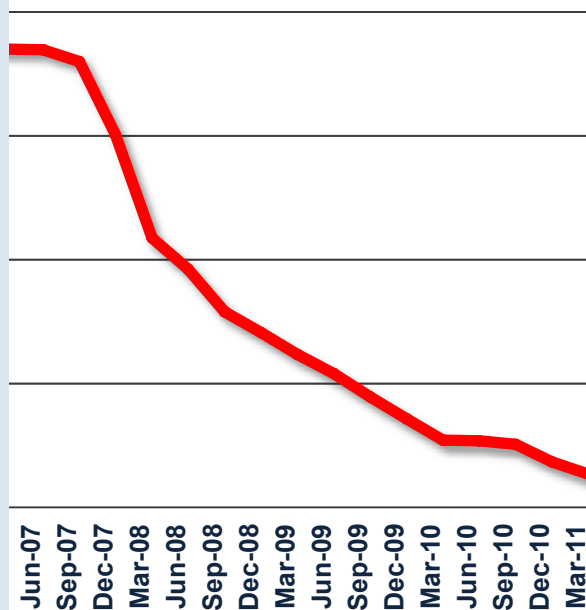
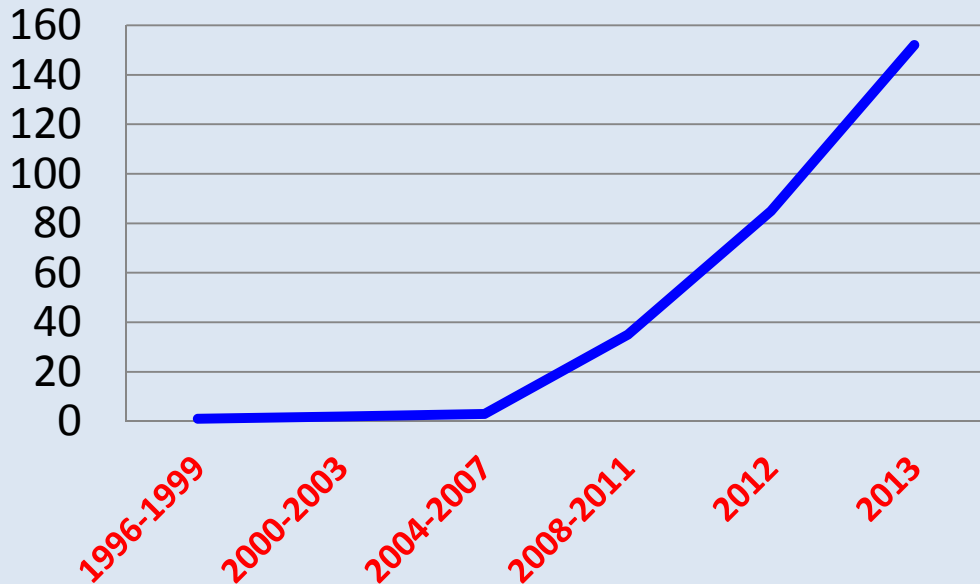


The Genomic Revolution

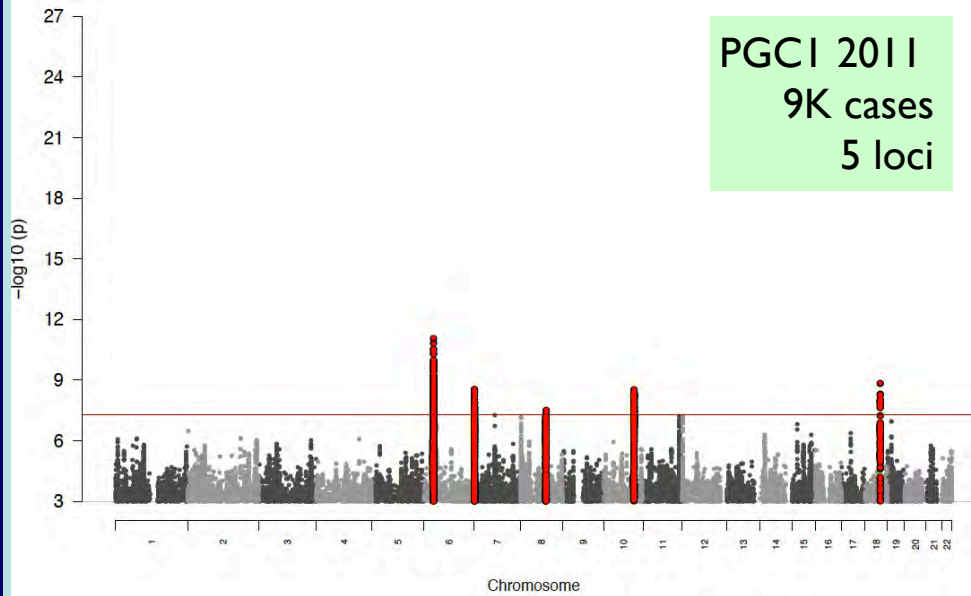
Cost per Megabase of DNA Sequence

\$10,000

Confirmed Psychiatric Gene Findings

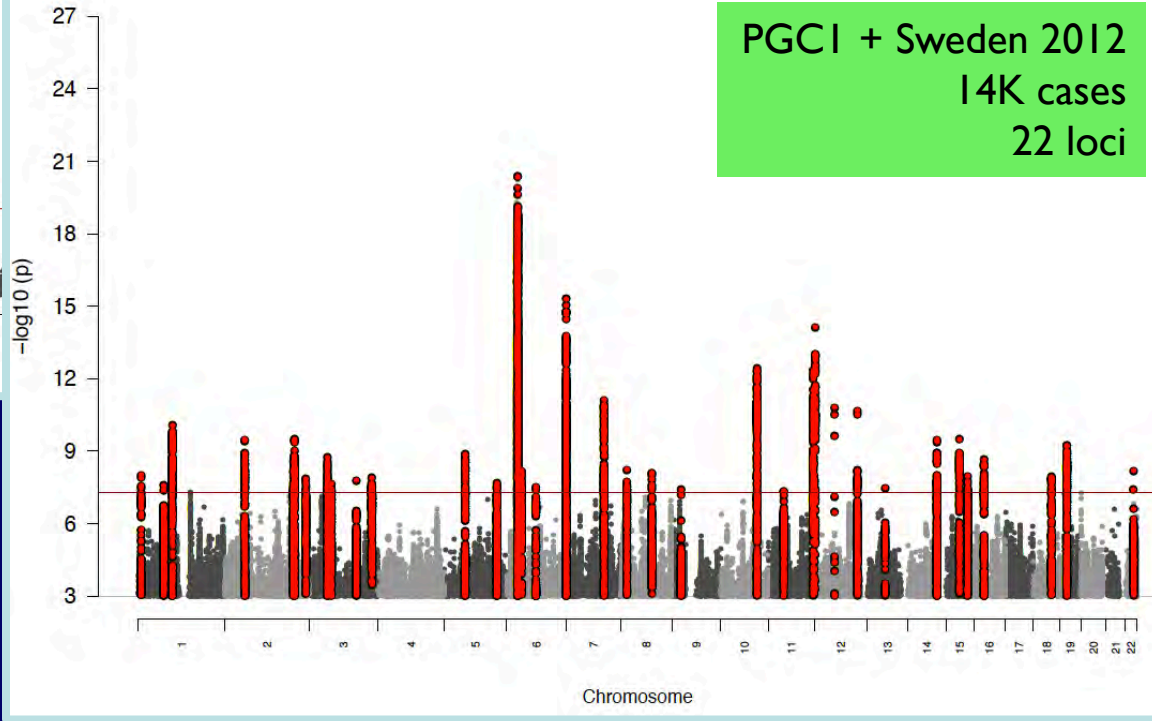
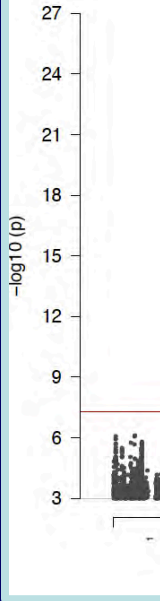


PGC1 2011
9K cases
5 loci



PGCI 2011
9K cases
5 loci

PGCI + Sweden 2012
14K cases
22 loci



PGCI 2011
9K cases
5 loci

PGCI + Sweden 2012
14K cases
22 loci

PGC2 2013
31K cases
78 loci
Rank #3

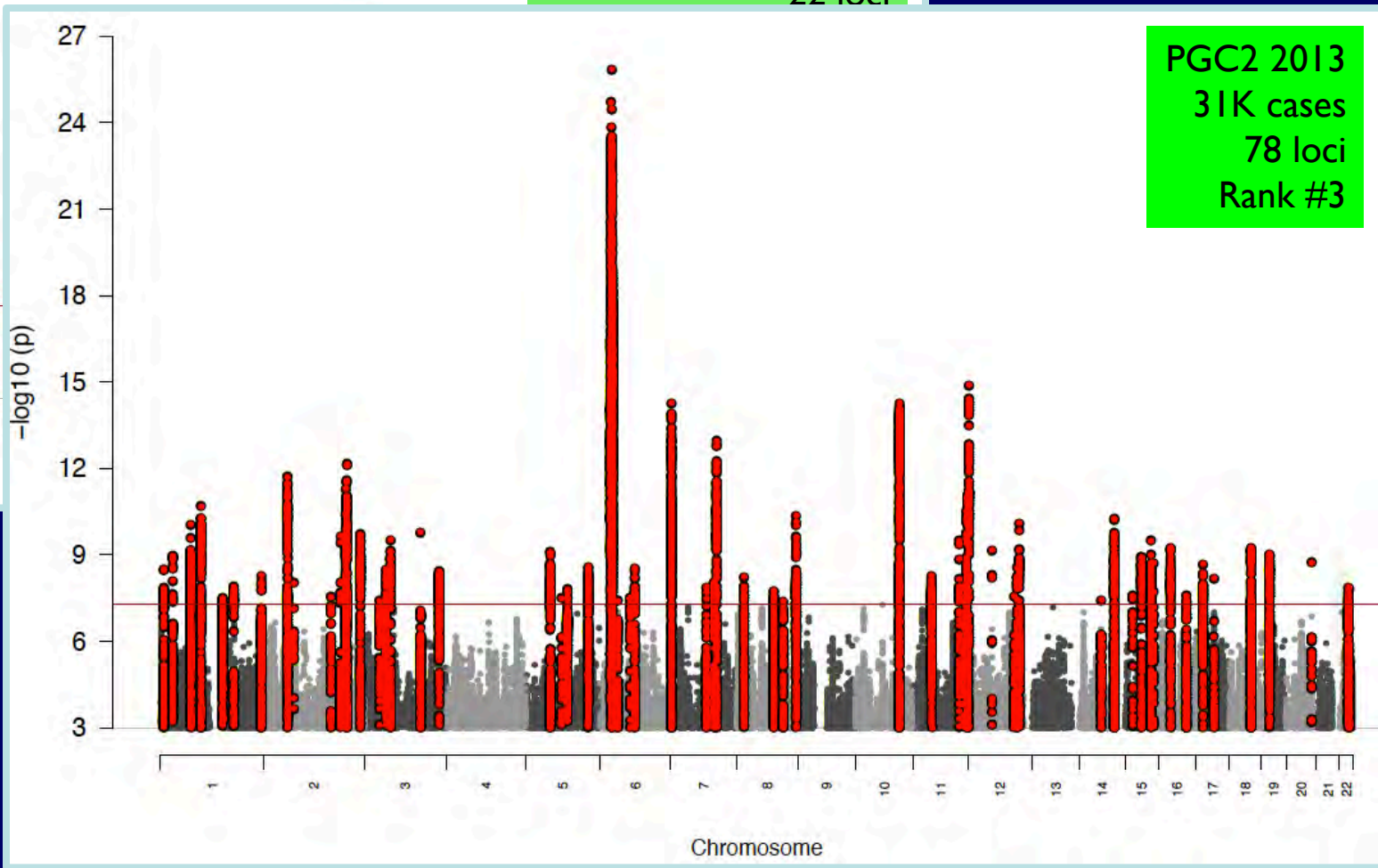
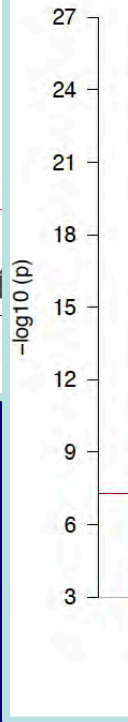
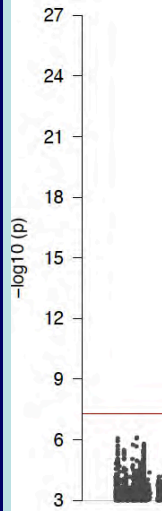
-log₁₀ (p)

-log₁₀ (p)

27
24
21
18
15
12
9
6
3

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Chromosome

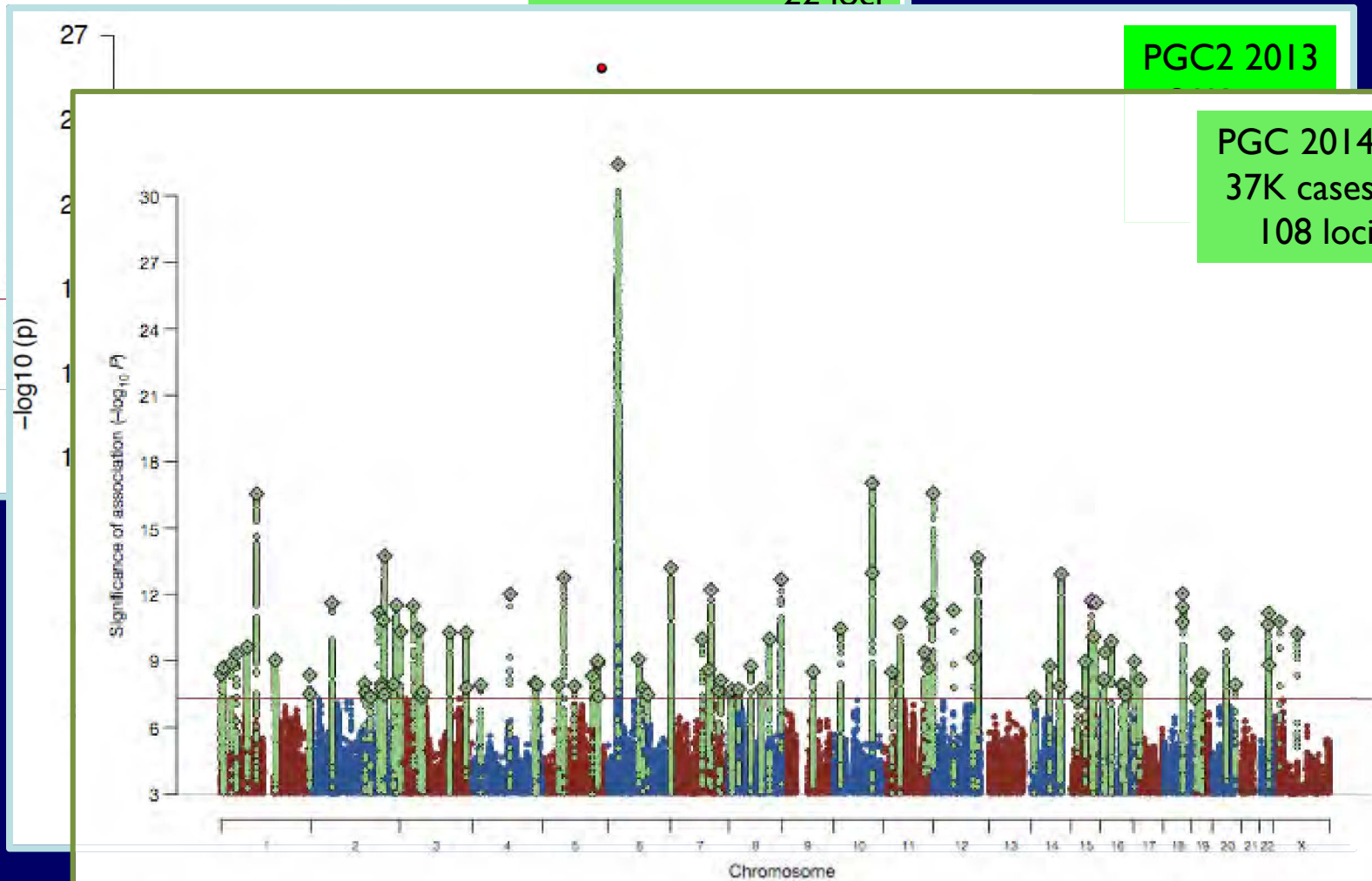
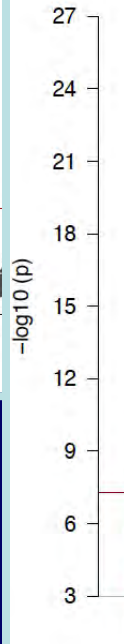
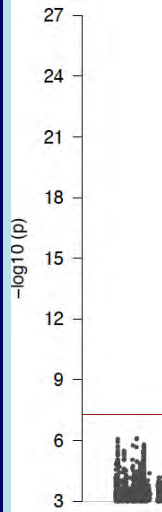


PGC1 2011
9K cases
5 loci

PGC1 + Sweden 2012
14K cases
22 loci

PGC2 2013

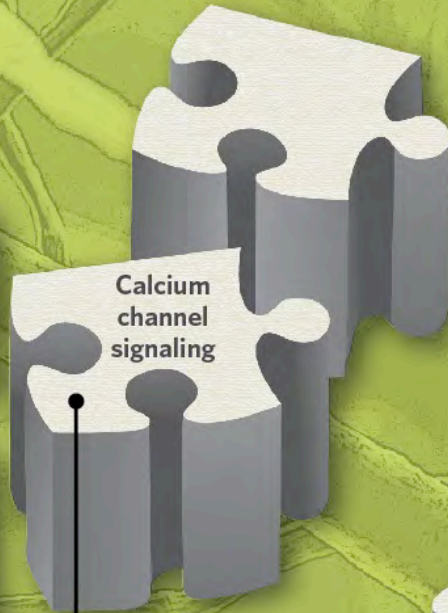
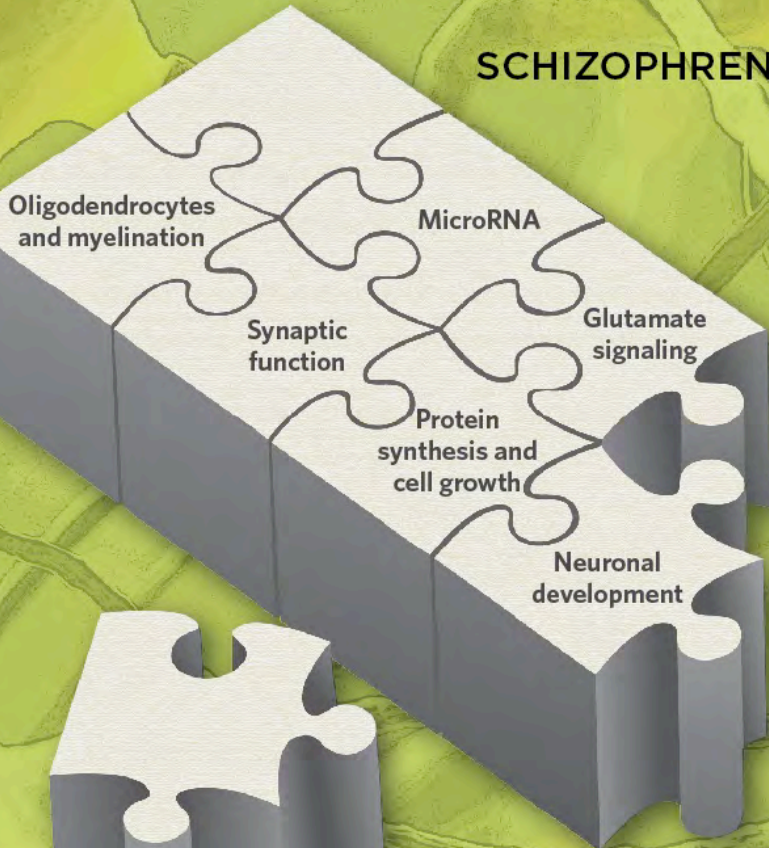
PGC 2014
37K cases
108 loci



THE SUSPECTS

Based on new genetic findings, researchers have fingered the following cellular dysfunctions as playing a role in schizophrenia and/or bipolar disorder:

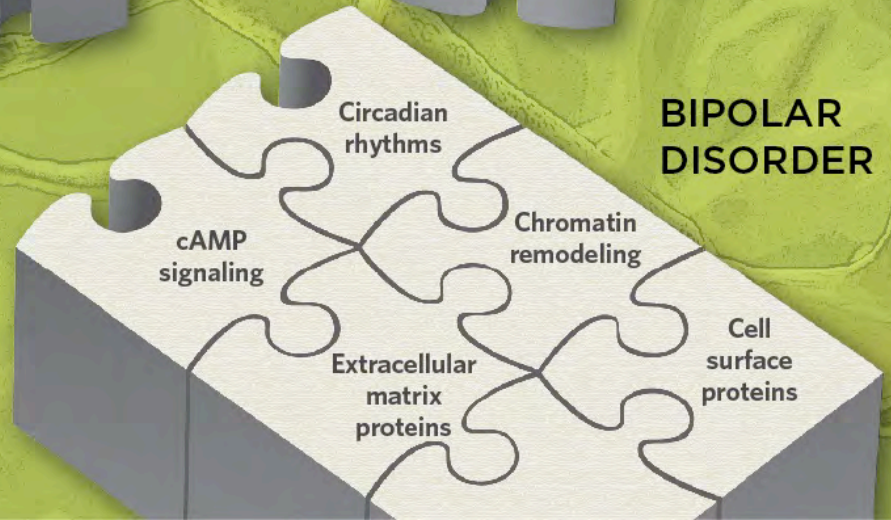
SCHIZOPHRENIA



BOTH

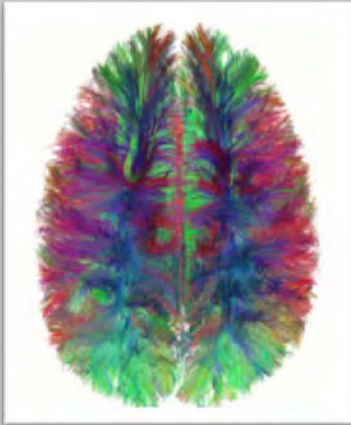


BIPOLAR DISORDER

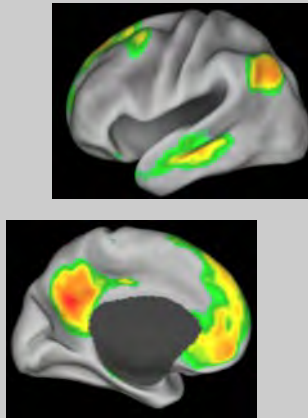


The Neuroscience Revolution

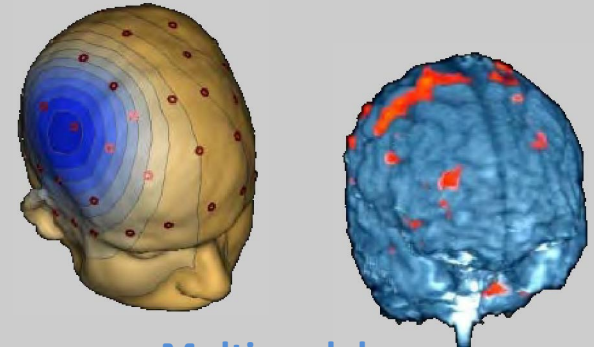
Structural
Connectivity



Functional
Connectivity

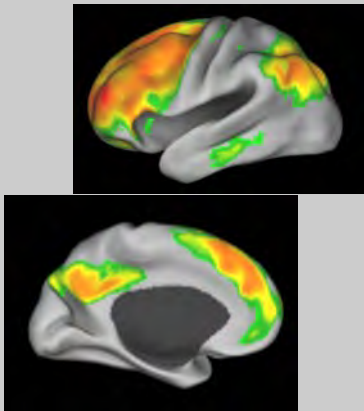


Temporal
Connectivity

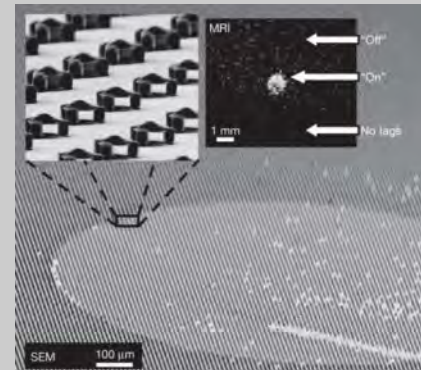
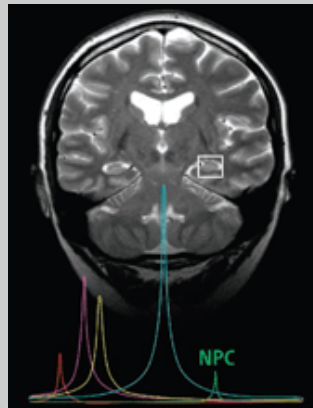


Multimodal
Integration

Molecular Imaging



New Molecular Imaging



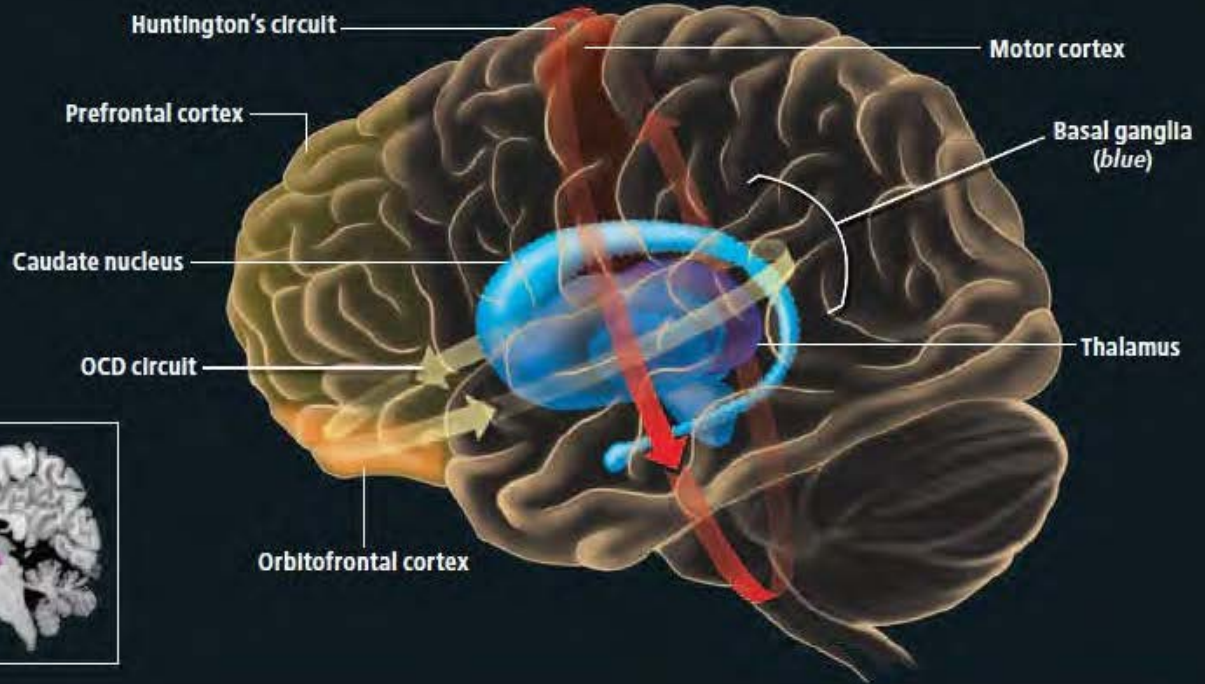
Wash U
U Minn
MGH

The Human Connectome

OCD as a Brain Disorder

A CONSTANT PROD

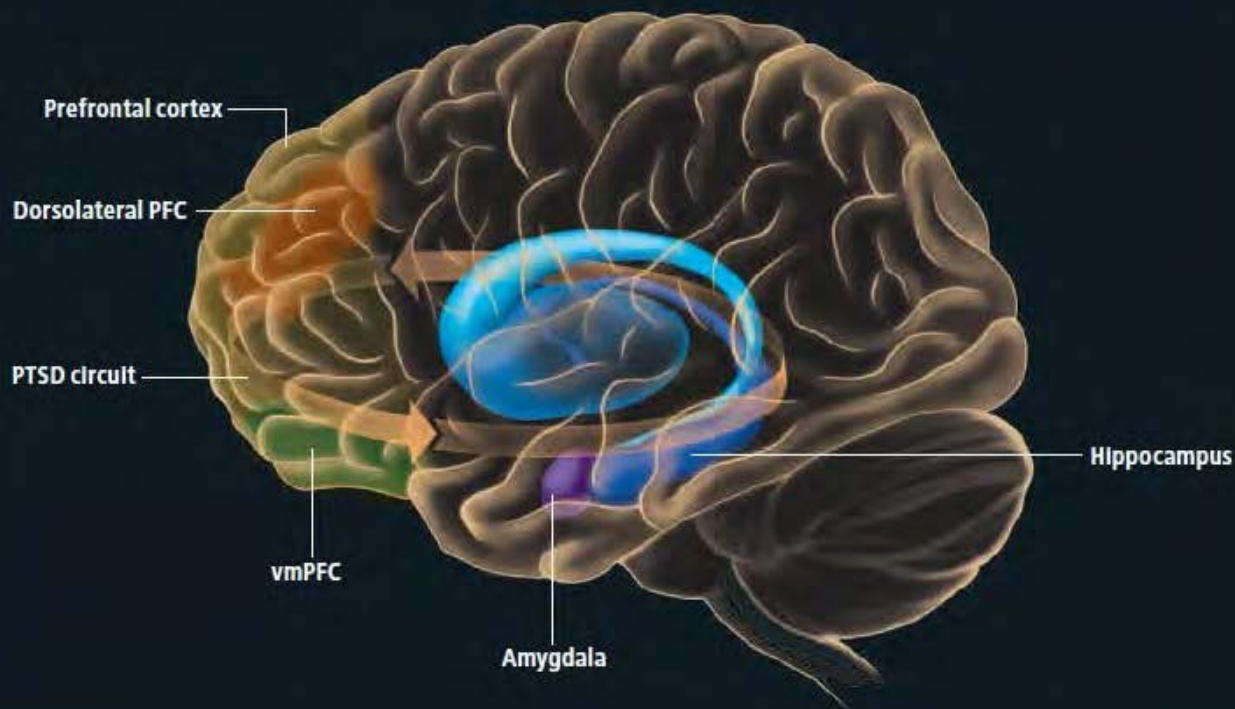
Recurrent unwanted thoughts (obsessions) and/or repetitive behaviors (compulsions)



PTSD as a Brain Disorder

PERPETUATOR OF FEAR

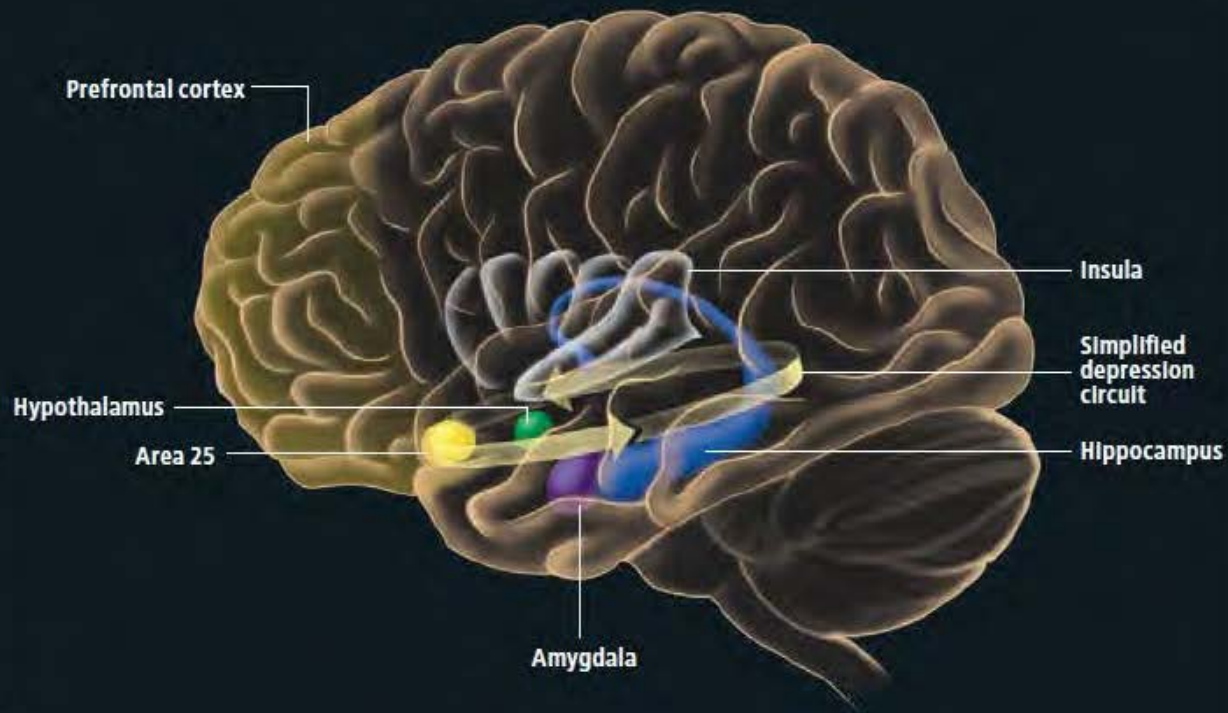
Flashbacks, bad dreams, insomnia, frightening thoughts, avoidance, guilt, depression, hyperarousal



Depression as a Brain Disorder

GOVERNOR OF MOOD

Hopelessness, helplessness, suicidal thoughts, anorexia, loss of libido, sleep disturbance



Inconvenient Truth #3: In spite of progress, we still don't know enough to ensure prevention, recovery, or cure for many people w SMI

If we are to bend the curve, we must harness and direct the revolutions in genomics and neuroscience to:

Transform diagnostics

Transform therapeutics

Bending the curve with clinical neuroscience

Transforming diagnostics

**From behavioral disorders to brain disorders:
Diagnosis rooted in biology and behavior**

Transforming therapeutics

**From chemical imbalance to circuit dysfunction
Treatments for circuit tuning**

Diagnosis 2014

Symptoms only
Defined by consensus
Reliable but not valid

Heterogeneous
MDD: 256 combinations

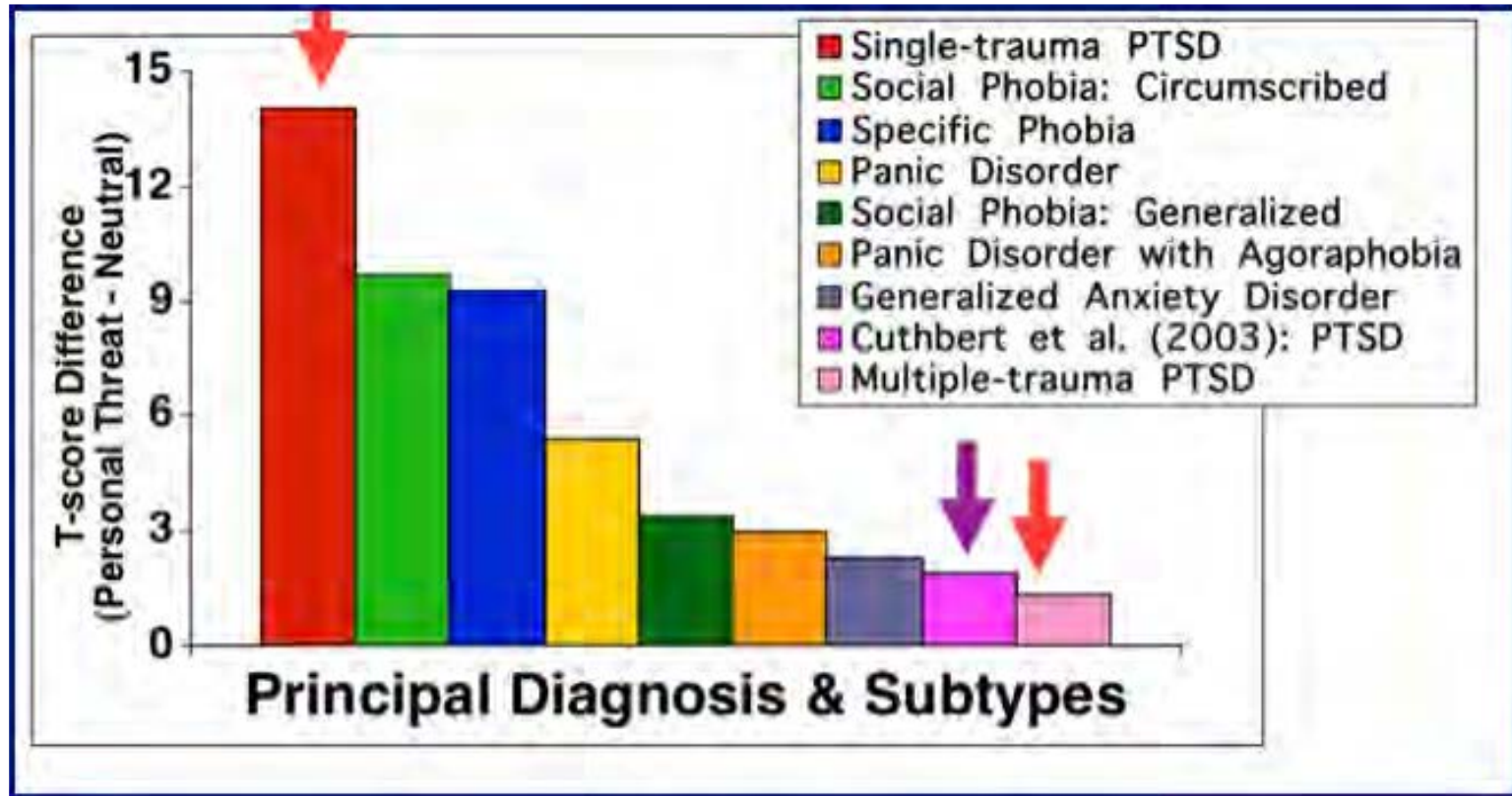


Treatments focused on
symptoms not cures

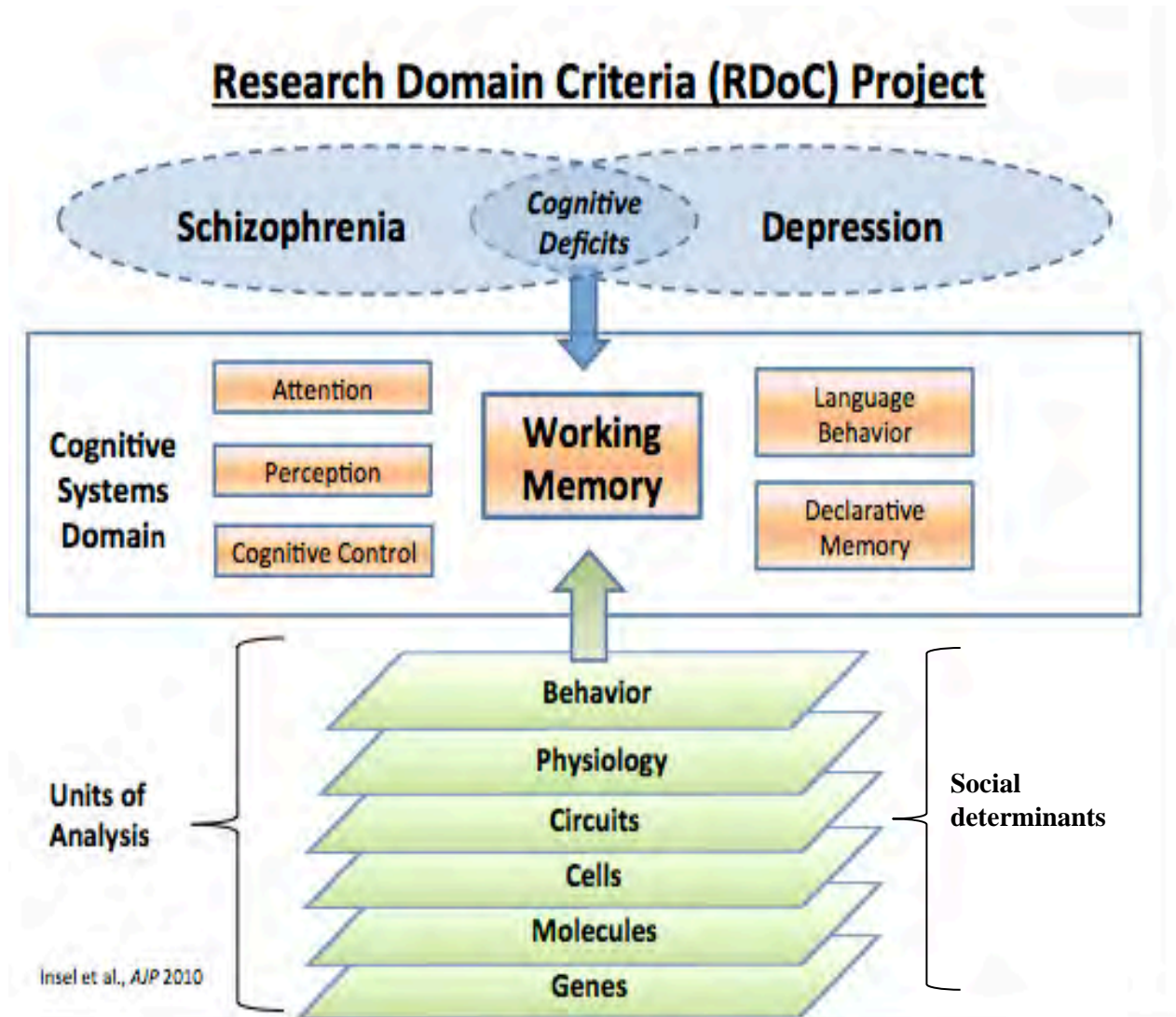
Symptoms are late
manifestations of
brain disorders

Transforming Diagnosis: PTSD

Fear Potentiated Startle Response



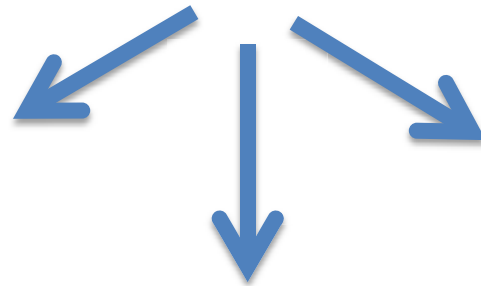
Transforming Diagnosis: RDoC



Diagnosis 2024 (If RDoC Succeeds)

- Based on multiple factors
- Created via information commons
- Reliable, valid, and person-centered

Specific for an individual



Tailored interventions/preventions

Indicate risk and resilience

Treatments 2014

- Fragmented (medications vs psychosocial)
- Mostly focused on symptom control
- Access limited, adherence poor



Medications –
Little innovation,
Little R&D

Treatments depend
on the provider not
the patient

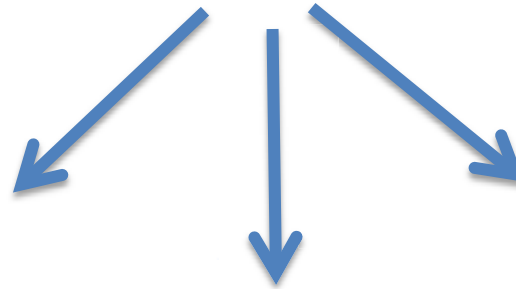
Psychotherapy –
dose and duration
not known

Promising Therapeutics

- Ketamine – Treating depression in 6 hours instead of 6 weeks.
- Family-focused Therapy – Treating anorexia nervosa by working with parents instead of removing parents.
- Deep brain stimulation to correct circuit dynamics in refractory depression

Treatments 2024

- Preemptive and Personalized
- Person centered
- Network solutions not magic bullets



Engaging brain's
plasticity

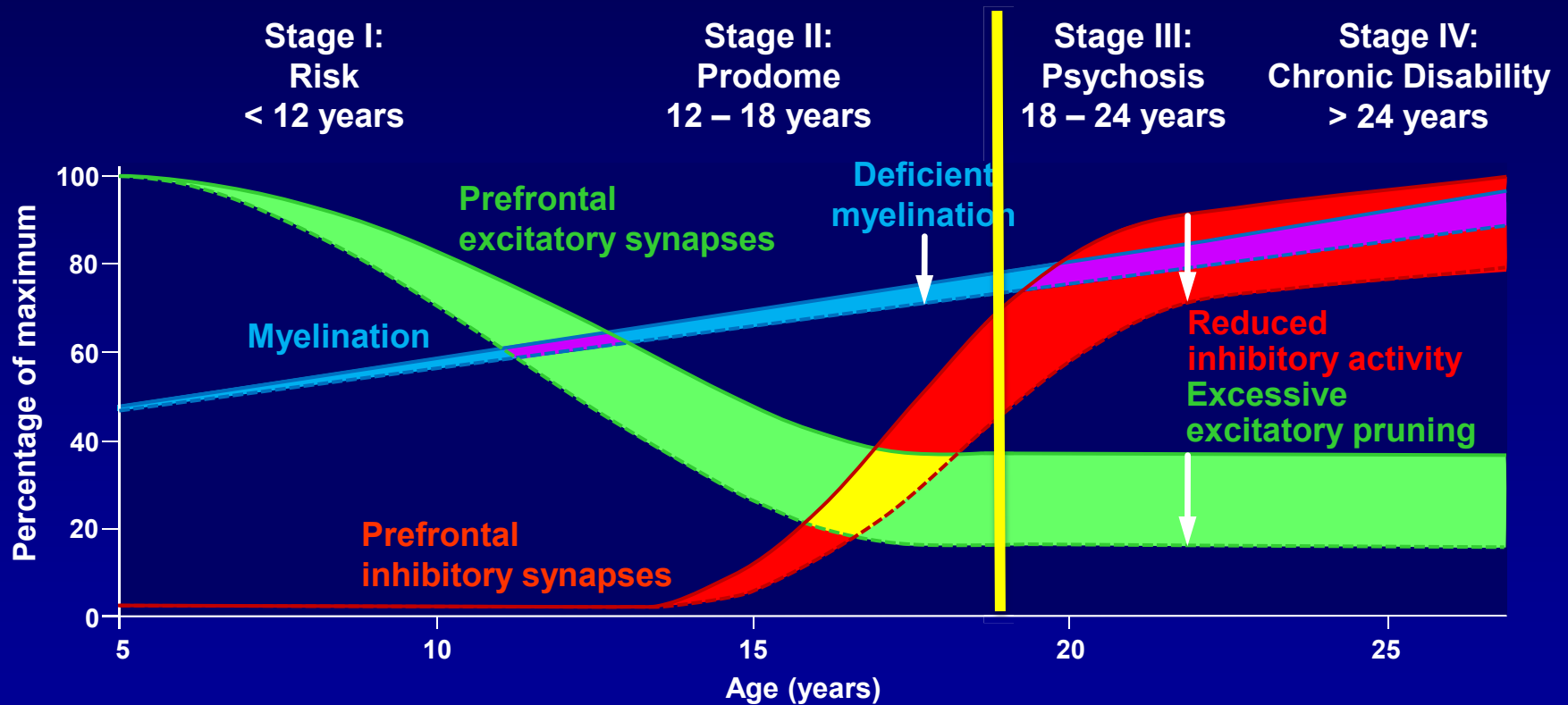
Team-based
with toolkit of
options

Integrated with
medical care

The Problem

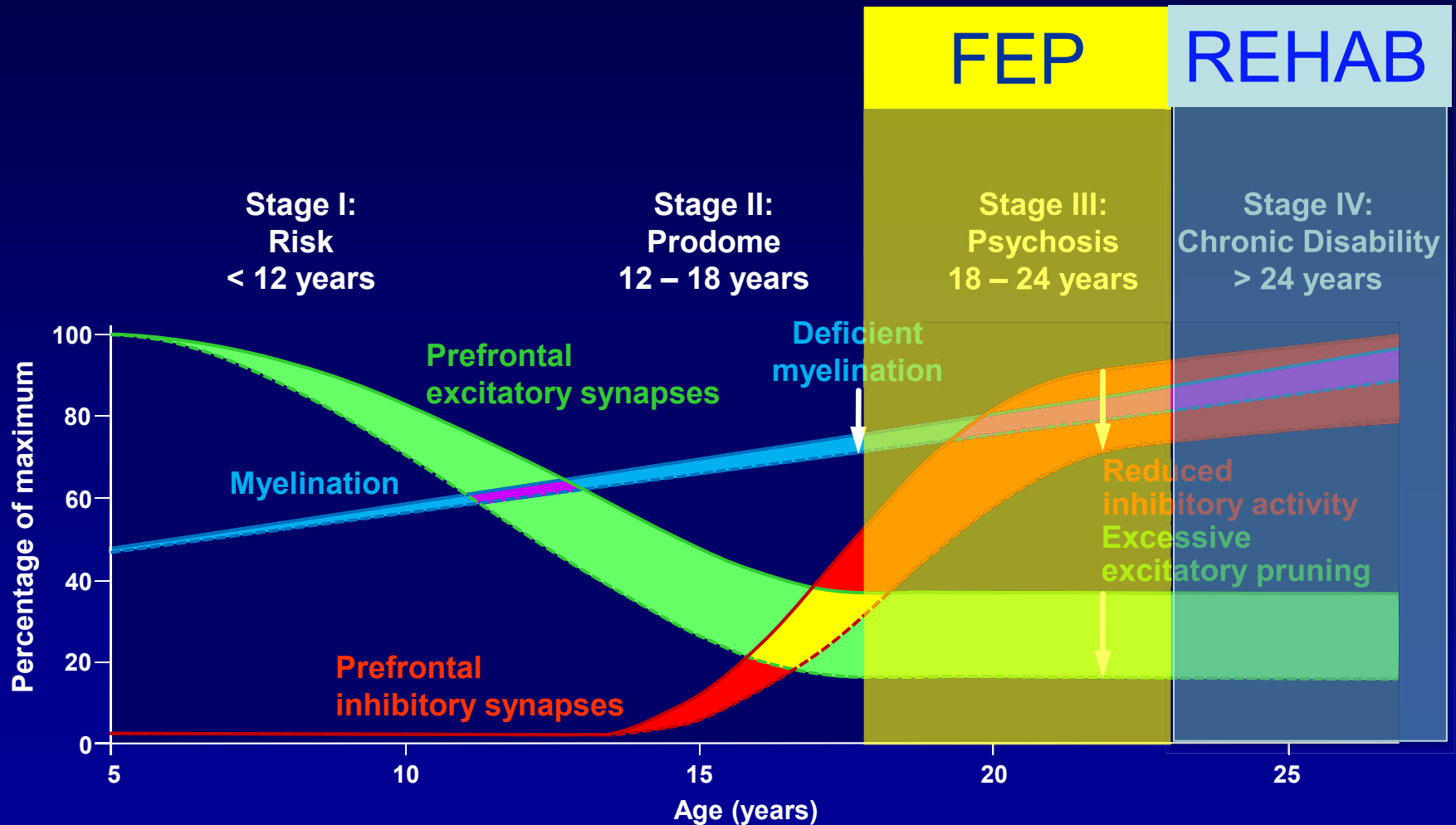
Who wants to wait until 2024???

Schizophrenia - A Neurodevelopmental Disorder



Adapted from
Insel, *Nature*, 2010

Schizophrenia - A Neurodevelopmental Disorder



Adapted from
Insel, *Nature*, 2010

RAISE: Recovery After Initial Schizophrenia Episode

- 2 Studies
- 134 Providers
- 22 States
- 469 Participants
- 36 Sites
- Policy relevant!



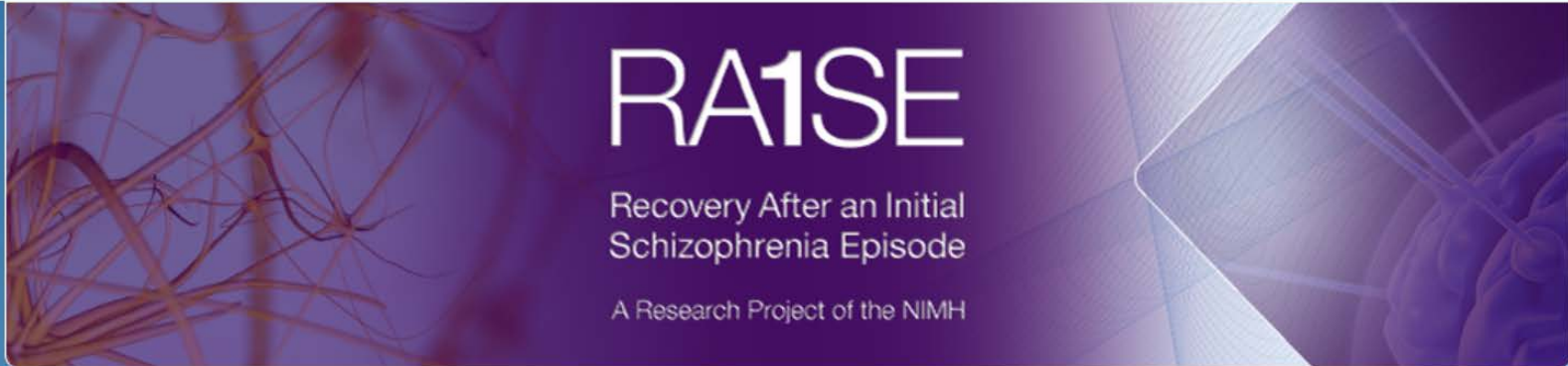
Orange color states = RAISE sites

RAISE Toolbox:

- Coordinated Specialty Care
- Person-centered treatment
- CBT-informed individual resilience training
- Family psycho-education
- Supported education / Supported employment
- Low dose antipsychotic medication
- Liaison with primary medical care providers

Coordinated Specialty Care





Home > Health & Education > Mental Health Information > Schizophrenia

Coordinated Specialty Care for First Episode Psychosis - Resources

- Evidence-Based Treatments for First Episode Psychosis: Components of Coordinated Specialty Care
- RAISE Coordinated Specialty Care for First Episode Psychosis Manuals
- RAISE Early Treatment Program Manuals and Program Resources
- *OnTrackNY* Manuals & Program Resources
- Voices of Recovery Video Series

<http://www.nimh.nih.gov/health/topics/schizophrenia/raise/coordinated-specialty-care-for-first-episode-psychosis-resources.shtml>

RAISE Implementation – Rapid and Broad

December, 2013

RAISE feasibility study completed

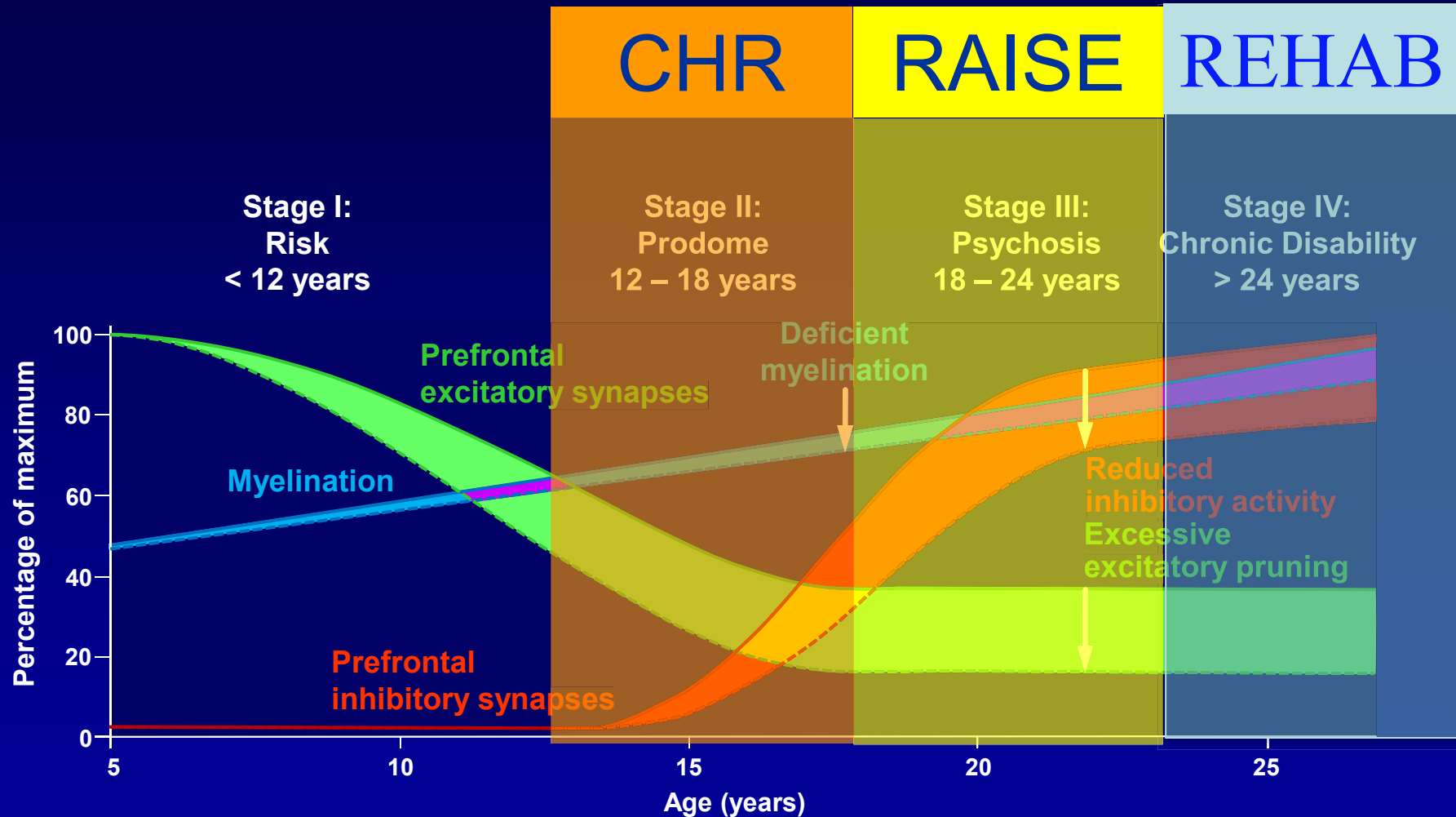
January, 2014

Congress required SAMHSA to implement RAISE-like treatment program (Coordinated Specialty Care) via Mental Health Block Grants in all 50 states

September 30, 2014

Every state will have a plan

Schizophrenia - A Neurodevelopmental Disorder



Adapted from
Insel, *Nature*, 2010

Can we prevent psychosis?

Do we know who is at risk?

Yes!


- North American Prodrome Longitudinal Study (NAPLS) has followed 765 help-seeking individuals at risk for psychosis
- 81 (11%) transitioned to psychosis within one year
- 7 variables improve prediction from 11% to over 70%

Can we prevent psychosis?

Do we know how to prevent psychosis?

Early interventions to prevent psychosis: systematic review and meta-analysis

BMJ

 OPEN ACCESS

BMJ 2013;346:f185 doi: 10.1136/bmj.f185 (Published 18 January 2013)

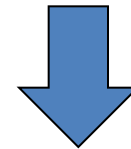
Megan R Stafford *systematic reviewer*¹, Hannah Jackson *research assistant*¹, Evan Mayo-Wilson *senior research associate*², Anthony P Morrison *professor of clinical psychology*³, Tim Kendall *codirector National Collaborating Centre for Mental Health*⁴

- **CBT – yes; 50% risk reduction, but quality of evidence is “moderate”**
- **Antipsychotics – no**
- **Omega-3 Fatty Acids – maybe**
- **Targeted cognitive training – ???, but stay tuned**

Cognitive Training: Using Brain Plasticity to Alter Circuits

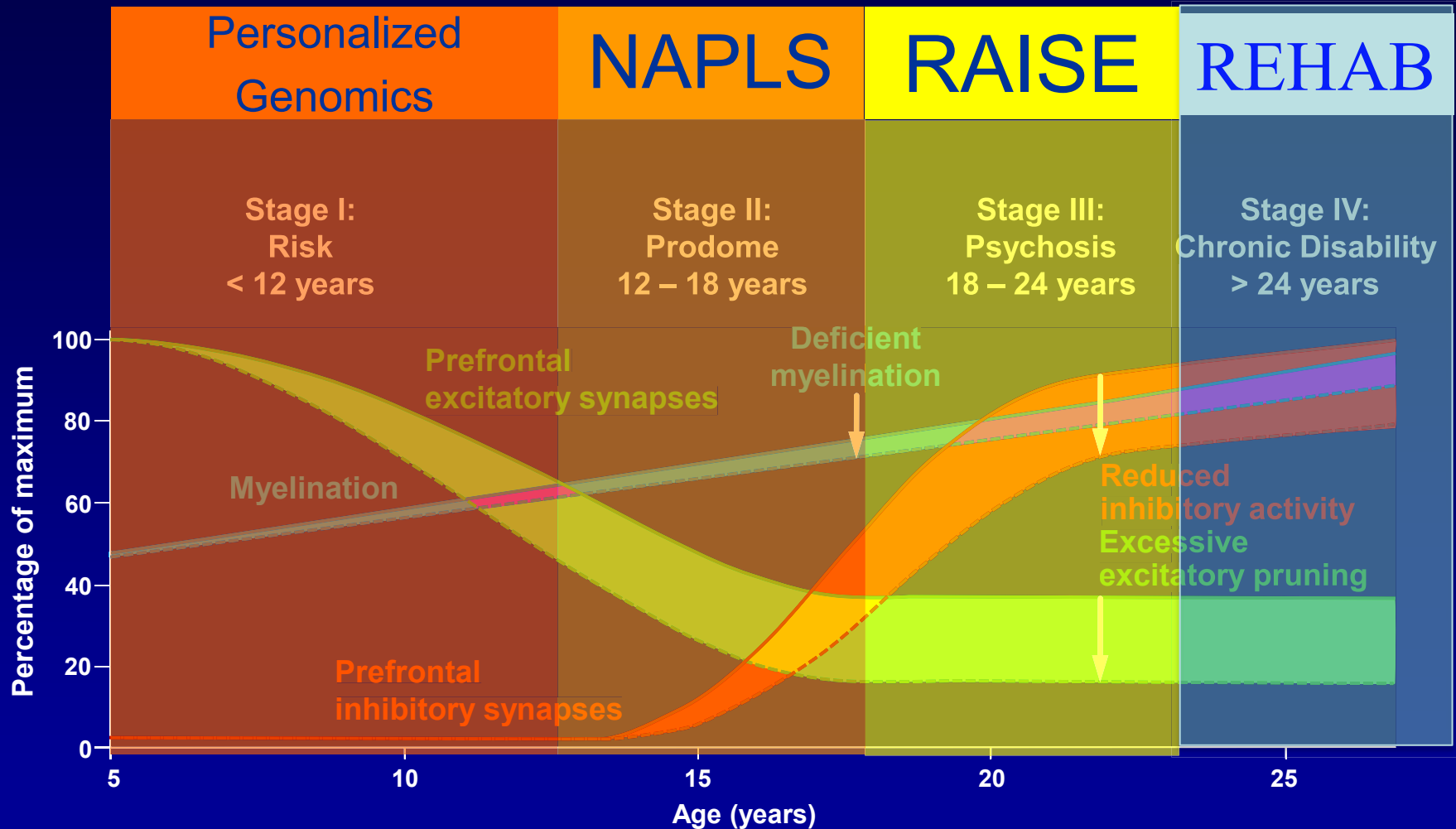


Attention (ADHD)
Appraisal (anxiety)
Social skills (autism)
Memory (MCI)
Exec Fcn (psychosis)



Improved Function

Schizophrenia - A Neurodevelopmental Disorder



Adapted from
Insel, *Nature*, 2010

Diagnostics and Therapeutics

What have we learned?

- Early intervention is critical
- Therapeutics = tuning circuits
- From magic bullets to “network solutions”

Inconvenient Truth #4 Science is slow.

**But we can use what we know
already to bend the curve!**

Long-term:

Develop precision medicine for mental disorders

Create a new generation of networked treatments

Integrate practice and research

Short-term:

Do what we know!

Bundle treatments together to optimize outcomes

Disseminate these innovations to those most in need

Summary

Inconvenient Truth #1 We have failed to bend the curve

Inconvenient Truth #2 Not just access and quantity, but options and quality.

Inconvenient Truth #3 We don't know enough – science is essential for progress.

Inconvenient Truth #4 Science is a long-term solution, but there are short-term gains.

The path to better service is better science.

Thank you !



National Institute
of Mental Health

Paving the Way for Prevention, Recovery, and Cure

www.nimh.nih.gov

Research = Hope