

# Building a Population-Based System of Care for Psychosis: **The STEP Program**

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Connecticut Mental Health Center



# I. The Problem

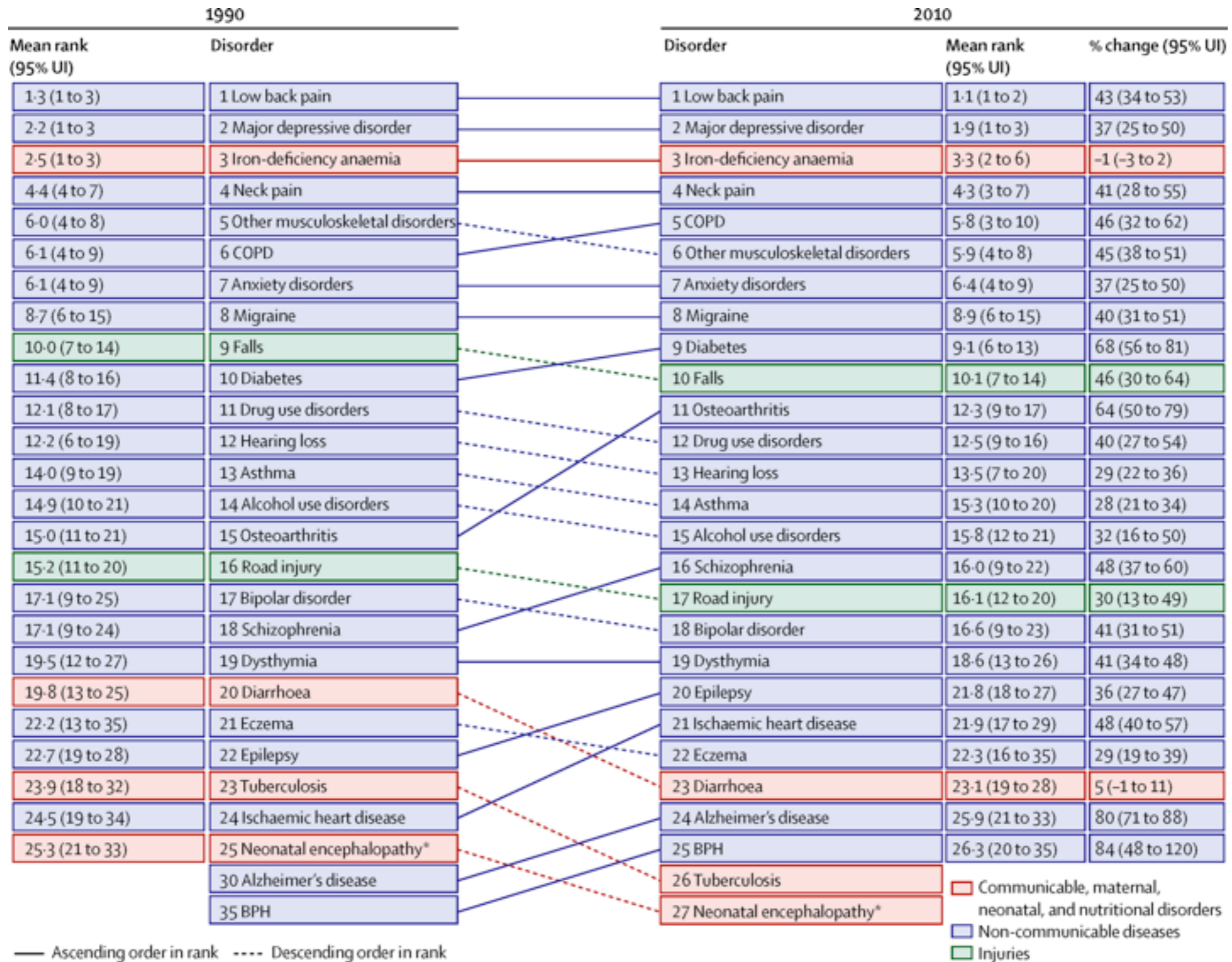
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## A. Psychotic disorders are common, distressing and disabling:

- Affects between 0.55 and 1 percent of people during their lives (McGrath et al, 2008);
- With routine care, less than a fifth of patients achieve full recovery after a first episode of psychosis (Menezes et al., 2006).

## B. Psychotic disorders are expensive:

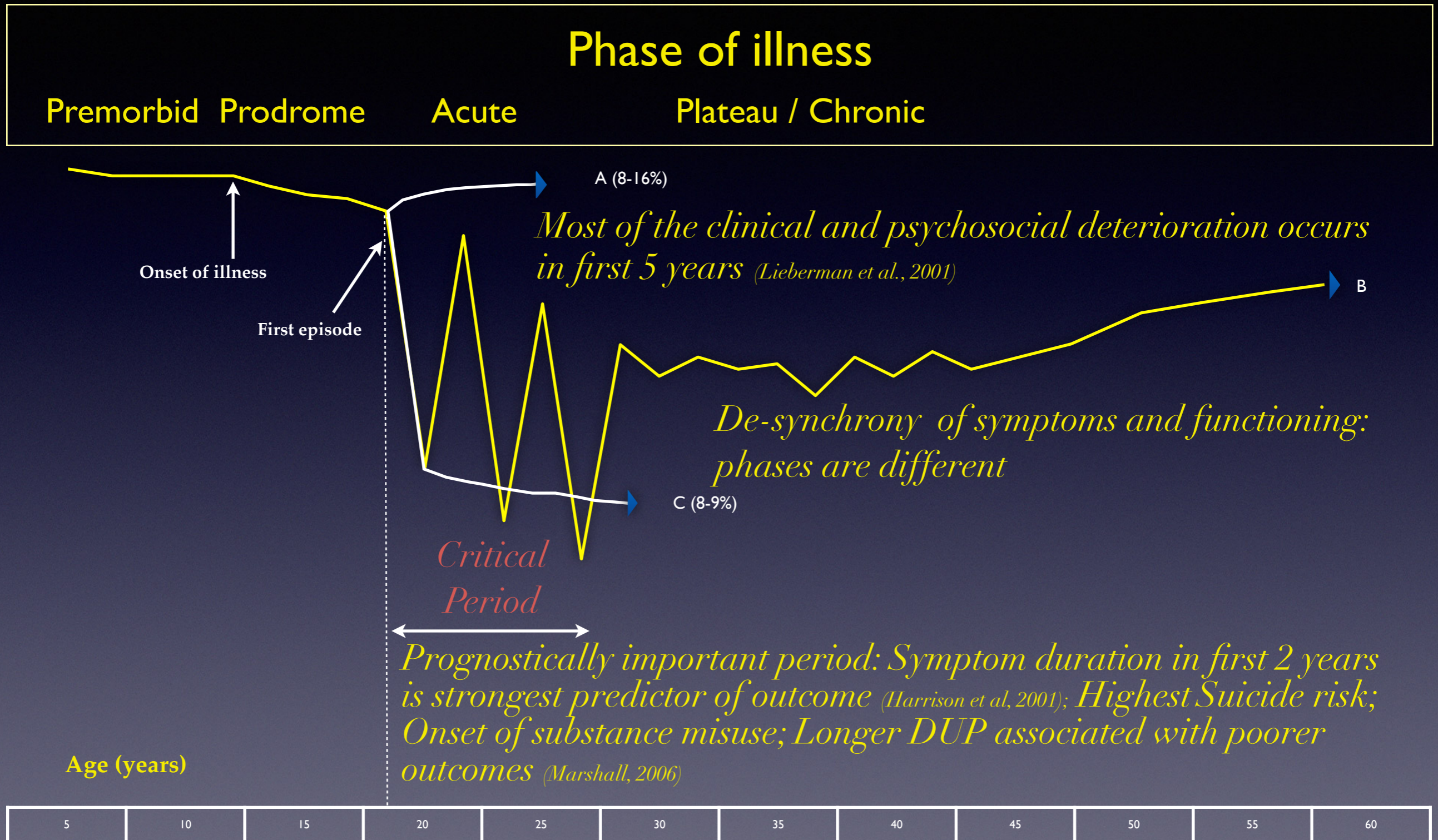
- Schizophrenia leads annual U.S. mental illness expenditure (\$62.7 billion, 2002 dollars) attributable mostly to acute hospitalizations in early course and vocational losses in longer term (Wu et al., 2005).



# The Persistent and Heavy Burden of Psychotic Illnesses Leading causes of Years Lived with Disability (YLD) worldwide

(Source: Global Burden of Disease, 2010 Lancet. 2012;380(9859):2163–2196)

# The Critical Period: Rationale for Early Intervention for the Schizophrenia(s)



# II. EI can improve outcomes

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## A. Early Detection (ED)

- Intervening earlier (even without enriching care) appears to have durable effects on functional outcome (Larsen et al, 2011)

## B. First Episode Services (FES)

- Intervening comprehensively after the onset of psychosis improves outcomes over usual care (OPUS Trial, Lambeth Trial) at 2+ years (reviewed in Srihari et al, Psych Clinics N America 2012)

# ED can improve outcomes

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## **TIPS (Norway/Denmark): DUP**

**reduction** 114 weeks mean (26 weeks median) -->  
25 weeks mean (5 weeks median)

- Reduced distress and disability at presentation for care
- Improved *negative symptoms* at 5 years
- Doubled chance for recovery at 10 years (31 vs. 15%) (Velden WT et al.,2012)

# Comprehensive (First-Episode Services) improve outcomes & costs

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- 3 Randomized Controlled Trials (RCTs) of FES in U.K., Denmark and Norway had established significant improvements in
  - relapse,
  - re-admission,
  - suicidality,
  - social and vocational functioning and quality of life (Craig:2004, Petersen, 2005)
- Health economic analysis in the U.K. and Denmark have also supported cost effectiveness of these intensive ACT based models of care (Mihalopoulos et al, 2009).

# Knowledge Translation: State of the Art for EI in 2006

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- Efficacy (can it work?) ✓
- Effectiveness (does it work?) ? in U.S.
- Costs (is it worth it?) ? in U.S.
- Dissemination (is it portable?) ? in U.S.



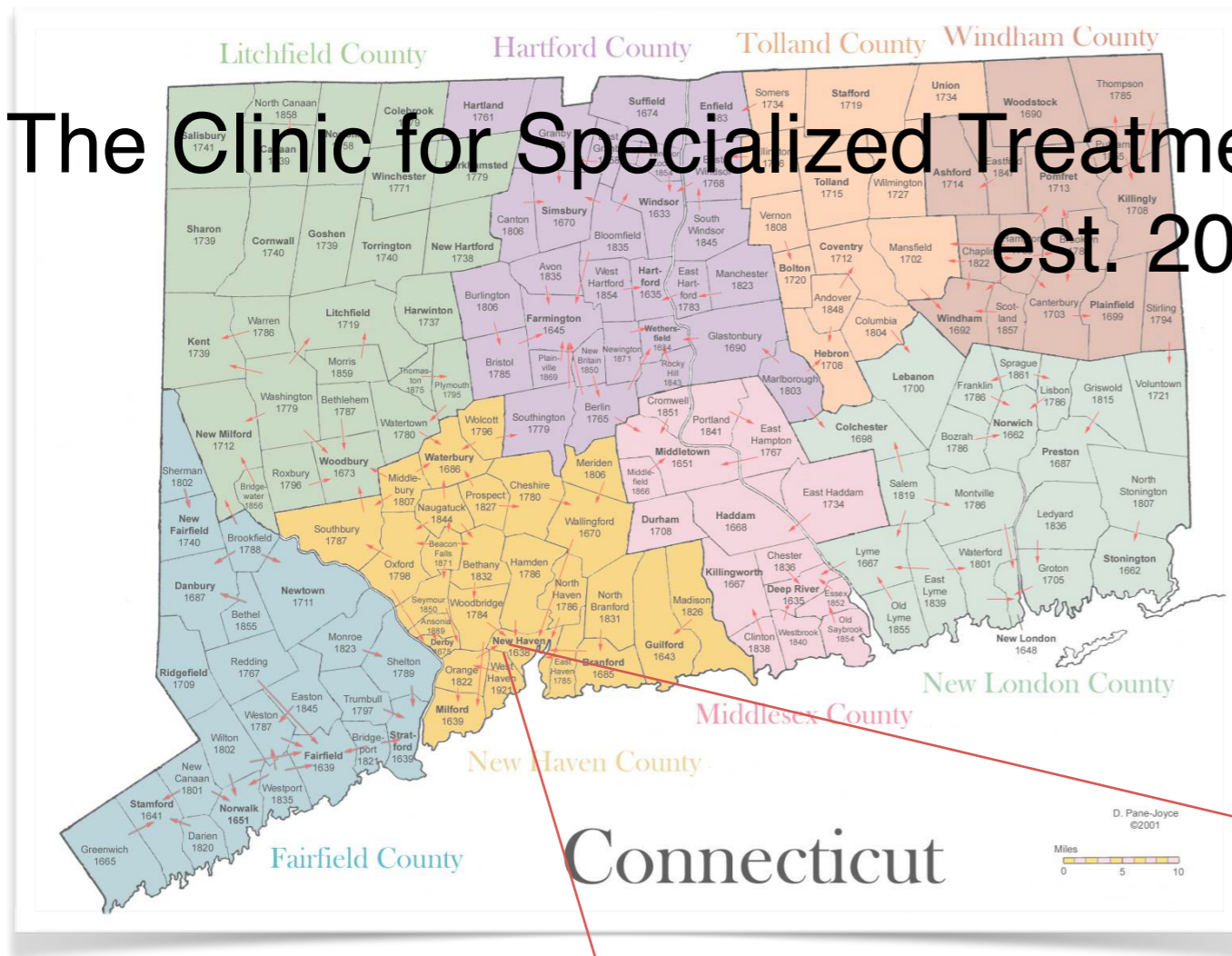
# III. STEP 1.0

(NIH RC1 MH088971)

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*Can a feasible and cost-effective model of FES be delivered in a 'real-world' U.S. setting?*

# The Clinic for Specialized Treatment Early in Psychosis (STEP) est. 2006



- **Pragmatic RCT (2007-'13)**
  - Broad recruitment
  - Feasible interventions
  - Relevant outcomes

- **Based in public sector**  
DMHAS-Yale partnership
- **Addressed barriers to access**
  - Insurance status
  - Catchment of residence
  - Adolescent-Adult agencies



# The STEP Trial

## 2007-'13

ClinicalTrials.gov NCT00309452  
NIH MH088971-01

Age: 16-45 yo  
Duration of illness:  $\leq 12$  wks lifetime  
antipsychotic Rx AND  $< 5$  yrs illness  
Exclusion: sub-induced psychotic d/o  
Exclusion: DDS (DMR) eligibility

REFERENCE POPULATION  
Individuals in early stages of psychotic  
illnesses in CT  $\sim 400-500$ /yr

SOURCE POPULATION

STUDY POPULATION

Referrals from:  
CMHC triage  
YNHH Hospital/ER  
Area Clinics  
College counseling



TAU

Referral to private or  
public-sector care

STEP Care

Based within CMHC  
ambulatory services

# STEP: A Diverse Population

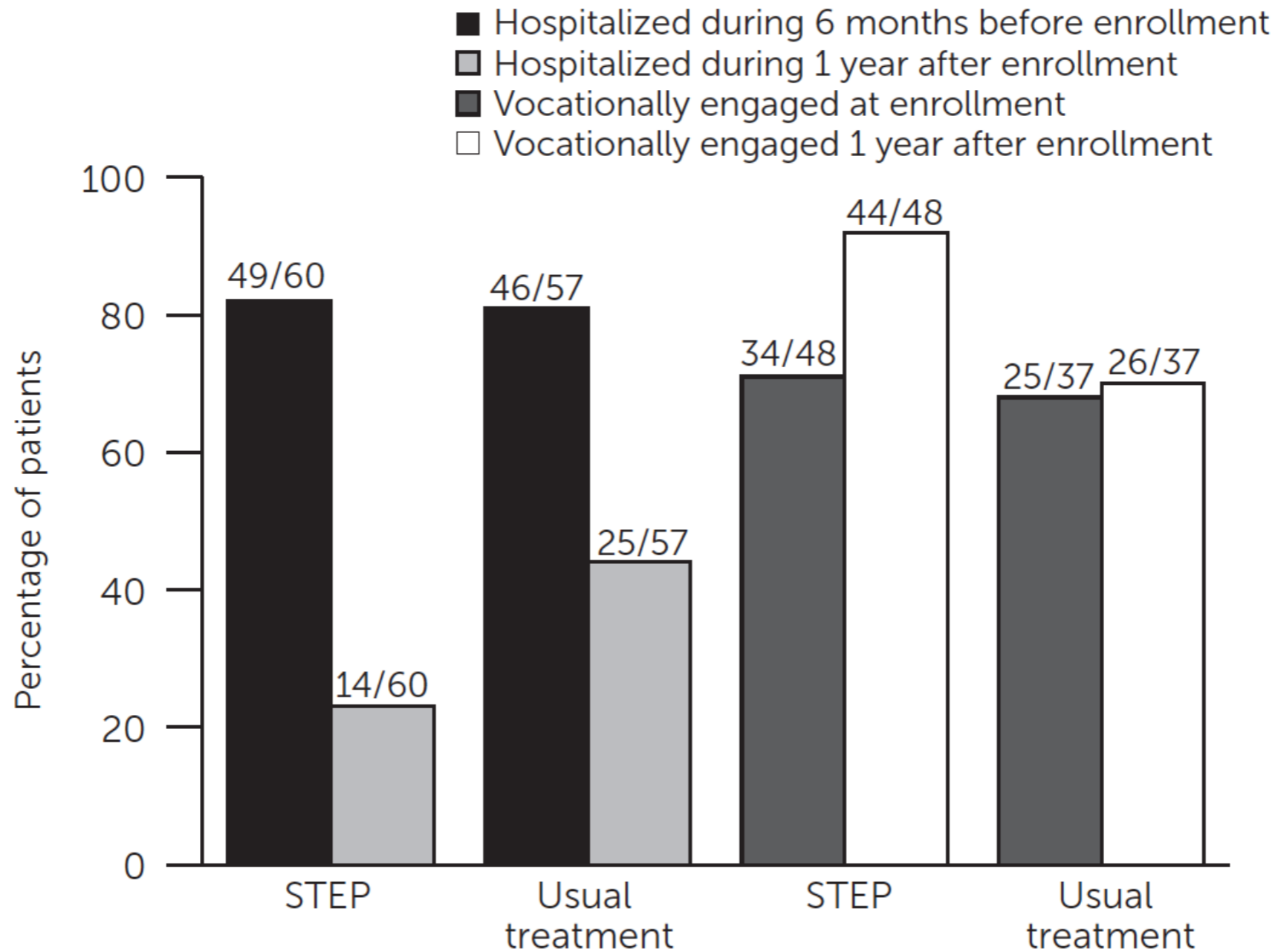
Demographics	STEP participants (n=149)
Age, mean (SD) years	22.9 (4.8)
Gender, male, n (%)	121 (80%)
Race/Ethnicity, n (%)	
African American	63 (42%)
White	58 (39%)
Latino/a	21 (14%)
Asian	3 (2%)
Multi-racial	4 (3%)
Immigrant (First Gen.)	43 (29%)

# High Clinical Distress At Entry

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- Co-morbid Sub Use Disorders: 45%
- Previously hospitalized: 89%
- Previous suicide attempt(s): 9%
- Unemployed: 61%
- mean DUP in months (+/- sd): 10 (+/-12)
  - *>50% with DUP > 3 mos.*
  - *>40% with DUP > 6 mos*
  - *Interquartile range: 12 mos.*

**FIGURE 1. One-year hospitalization and vocational engagement outcomes among STEP participants and those in usual treatment<sup>a</sup>**



1. NNT of 5 for Hospitalization over first year
2. Fewer in STEP had 'dropped' out of labor force 8% vs. 33%

# Components of STEP care

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- Evaluation: for rare secondary causes (e.g. epilepsy, fronto-temporal dementia) and more common taxonomic categories (acute intermittent psychoses, bipolar disorder, MDD with psychosis, borderline PD)
- Family Education / Support: individual and group
- Social cognition and skills: individual and group
- Individual Psychotherapy
- Pharmacologic Treatment
- Rehabilitation (Support for employment and/or education)

*Integration within a team that phases and prioritizes goals based on explicit principles of care*

# What is STEP care? Phase-specific

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## 1. ACUTE

Engage around 'interrupted' narratives: work, school, relationships

Safety: self-harm & impulsive aggression

Symptoms: remission of 'positive' symptoms, mood/anxiety

Cognitive losses, stigma, substance use

## 2. STABILIZATION

Maintain symptomatic remission

Prevent relapse

Support rehabilitation

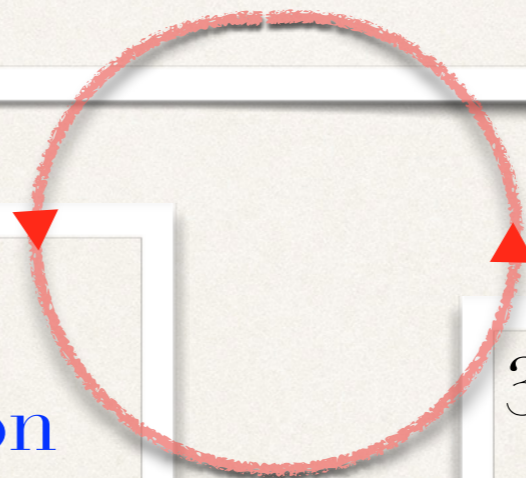
Work/school, relationships

## 3. RECOVERY

Prevent relapse

Maintain functioning

Cardiovascular risk





# Summary

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## 1. The Problem

- Psychotic illnesses are disabling and costly
- Effective models of First-Episode Services have been in existence >10yrs around the world

## 2. STEP 1.0 models a U.S. solution

STEP care is a feasible and effective model of early intervention:

- Reduced frequency and duration of hospital use
- Improved school & employment engagement
- Improved range of measures of symptoms, social functioning and quality of life
- Reduced direct costs of expensive hospital care by implementing non-intensive, office-based FES

# IV. STEP 2.0: Adding Early Detection to specialized care

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## The STEP+ED trial (NIH R01MH103831)



Beth Israel Deaconess  
Medical Center

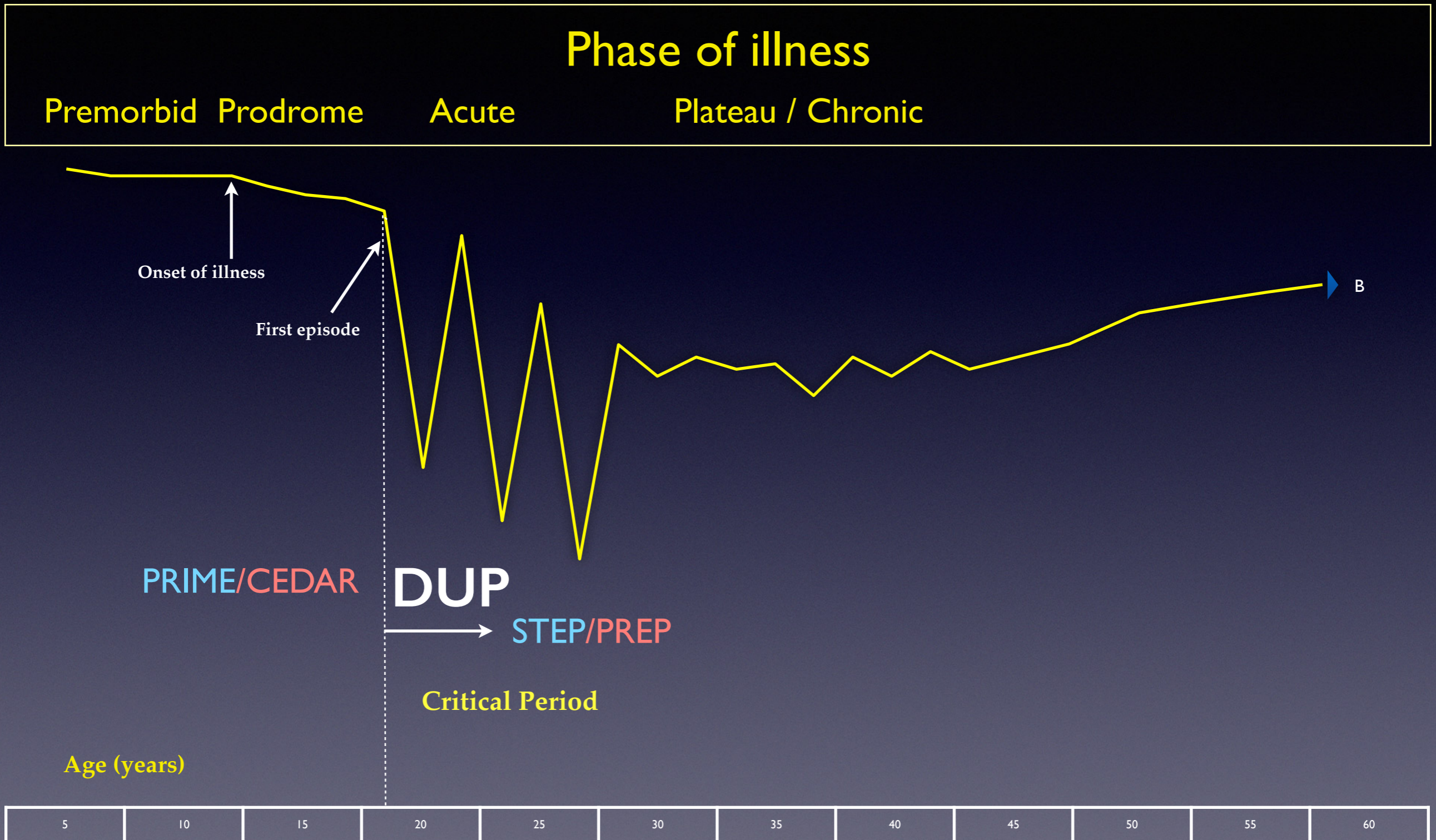


HARVARD MEDICAL SCHOOL  
TEACHING HOSPITAL



**RED ROCK**  
BRAND BUILDING  
UNIFYSIMPLIFYAMPLIFY

# Early Intervention (EI) services in *New Haven* & *Boston*



Adapted from Srihari et al. *Psych Clin of N America*, 2012

# STEP-ED: Specific Aims

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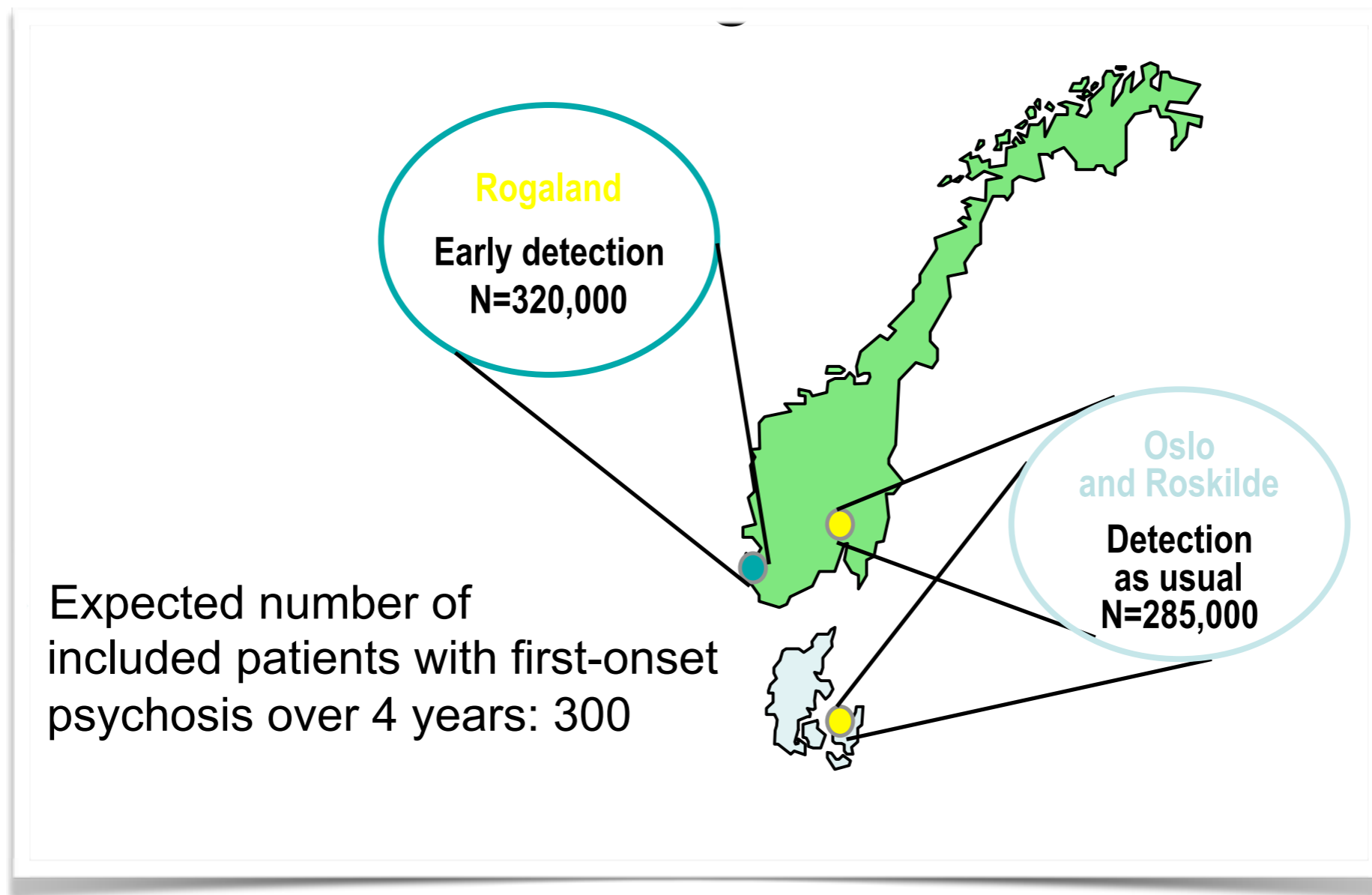
**1. Primary:** To determine whether an early detection intervention can reduce DUP in the US *vs.* usual detection.

Goal: 50% reduction of DUP

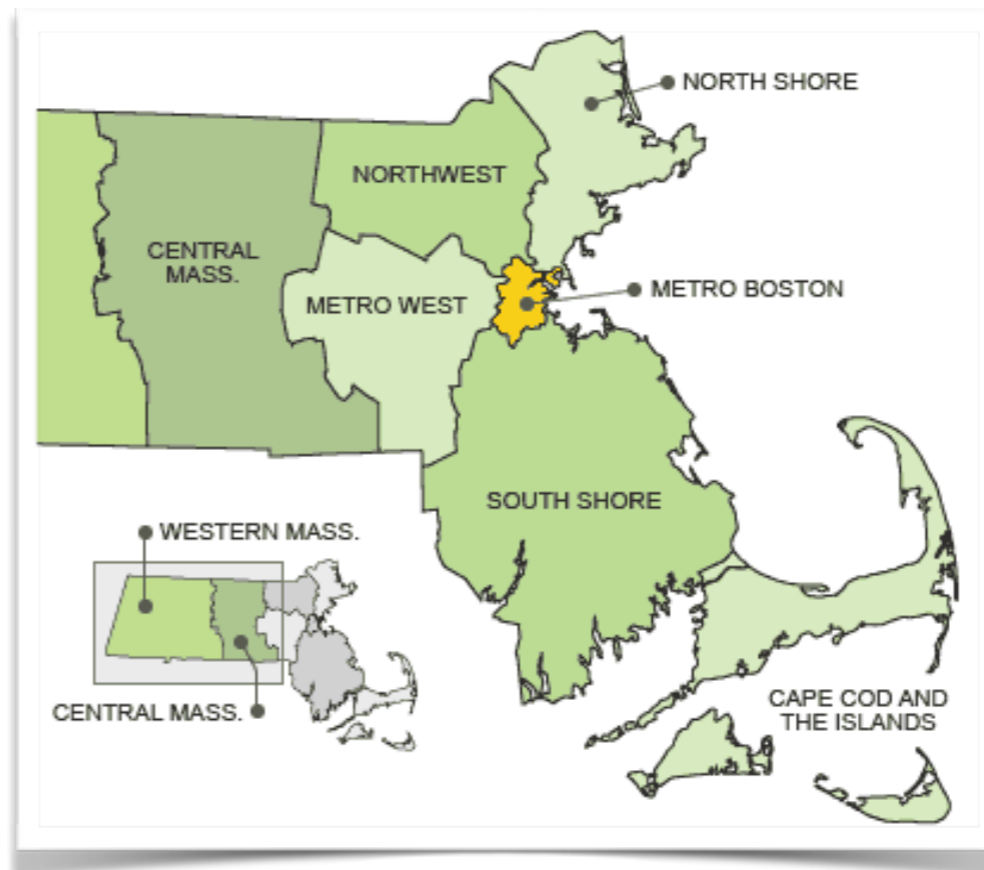
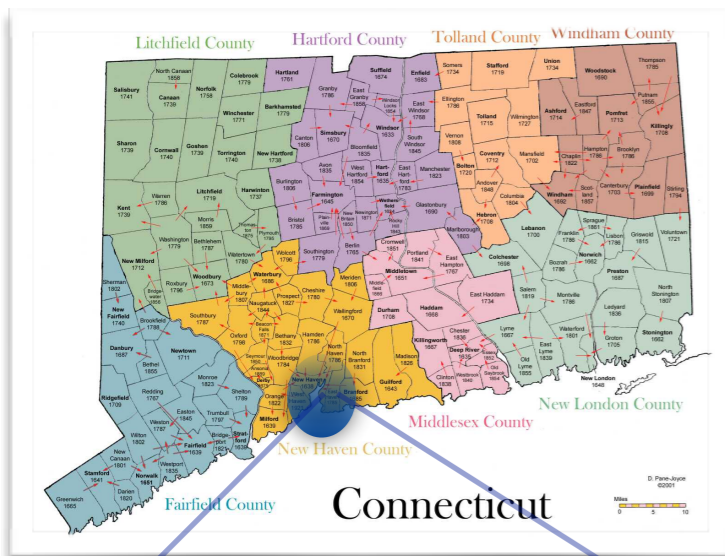
**2. Secondary:** To determine whether DUP reduction can augment the outcomes of FES

Goal: >75% will be vocationally engaged at one year

# TIPS, Norway & Denmark



(Melle I et al. Arch Gen Psych 2004)



## Metropolitan Boston

Population: 646,000

Area: 232.1 km<sup>2</sup>

# STEP-ED catchments

## Rogaland

Population: 473,600

Land Area: 8,590 km<sup>2</sup> (3,320 sq mi)



## BOW-H-HAVENS

Population: 323,285

Area: 365 km<sup>2</sup>

Estimated incident cases of psychosis: 70-100/yr

# The STEP Program: Developmental History

- 2006: founded within a public-academic collaboration (CMHC-Yale) (Srihari et al., Psych Services 2009)
- 2007-2013: STEP 1.0 RCT establishes real-world effectiveness (Srihari et al., Psych Services 2015)
- 2013: STEP receives CT-DMHAS funding to stabilize clinical service
- 2014: Development of Early Detection campaign
- Additional SAMHSA set aside funding supports staffing...
- 2015: ED campaign launches....

## Public-Academic Partnerships

### Early Intervention for Psychotic Disorders in a Community Mental Health Center

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Leslie Hyman, L.C.S.W.

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Early intervention may improve long-term outcomes for psychotic illnesses. Early-intervention services in other countries have focused on reducing the duration of untreated illness and adapting interventions for younger patients. This column describes the process of building such a service, called specialized treatment early in psychosis (STEP), at the Connecticut Mental Health Center. This effort is rooted in a longstanding collaborative relationship between the Connecticut Department of Mental Health and Addiction Services and Yale. The authors describe the critical contribution of such partnerships in evaluating the cost-effectiveness of early intervention in a "real-world" U.S. setting. (*Psychiatric Services* 60:1426-1428, 2009)

Psychotic disorders rank among the top ten causes of global disability (1). Health care policy in Australia, the United Kingdom, and Scandinavia (2) has included systematic efforts to implement, study, and

With the exception of Dr. Frisman, who is affiliated with the Connecticut Department of Mental Health and Addiction Services, Hartford, the authors are affiliated with Connecticut Mental Health Center and Yale University School of Medicine, New Haven. Send correspondence to Dr. Srihari, Connecticut Mental Health Center, 34 Park St., 2nd Floor, New Haven, CT 06519 (e-mail: vinod.srihari@yale.edu). Lisa B. Dixon, M.D., M.P.H., and Brian Hepburn, M.D., are editors of this column.

refine early-intervention services. These are models of care that attempt to reduce the duration of untreated illness and provide care adapted to younger patients. Three randomized controlled trials of early-intervention programs have demonstrated modest reductions in symptom severity, relapse rates, and suicidality and improvements in social and vocational functioning and quality of life (3-5).

#### Early intervention for psychotic disorders: the U.S. paradox

There is a conspicuous absence of a comparable U.S. strategy for early intervention. Care for psychotic disorders must be seen against the backdrop of mental health care in the United States in general. Epidemiologic assessments have shown that less than half of the population with mental disorders receive treatment (6), with evidence of a worsening since 2000 in treatment rates for those with serious mental illnesses (7) and longer delays between illness onset and care (8). The fragmentation of payment for and delivery of mental health services makes a coherent approach to early intervention difficult to implement. According to studies conducted in countries with national health care systems (9,10), savings related to early intervention emerge over a longer period than the typical annual enrollment period. Savings are thus likely to be realized by public and not private payers. We describe the implementation of an early-intervention initiative in a U.S. community mental health center and its particular salience as a model of successful public-academic collaboration.

#### Early intervention in Connecticut via public-academic collaboration

In 2005, a workgroup of faculty members from the Yale Department of Psychiatry began meeting to address a problem long recognized by members of the Yale Prevention Through Risk Identification, Management & Education (PRIME) research clinic. This clinic has since 1998 pioneered the early identification and treatment of individuals at risk for psychotic disorders. When conversion to full-blown psychosis occurred, the PRIME staff experienced considerable difficulty finding providers to care for them, especially when family income or insurance made them ineligible for public-sector care. Evidence linking longer durations of untreated illness with poorer outcomes (11) added to the more acute concerns for these patients' unmet needs. The notion of creating a clinic for first-episode psychosis patients was raised.

Initially the group explored private-sector models for funding the service. The local teaching-hospital leadership felt that the proposed service was clinically important and would provide an attractive training site but were concerned about fiscal viability. The only models perceived to break even financially were time-limited partial-hospitalization or intensive outpatient programs that would require patients to participate daily for two to four hours. We expected that many individuals experiencing an initial psychotic episode would require lower-intensity, longer-term treatment that better fit active work or school schedules. Several other arrangements were similarly at-

“Everything you read in newspapers is absolutely true, except for that rare story of which you happen to have first-hand knowledge.” -Erwin Knoll

## *Developing a DUP reduction campaign*

*Media + Professional Outreach + Performance Improvement*



# Theories of Health Behavior Change

## ***Macro or Mass (vs. Individual) Behavior Change Models***

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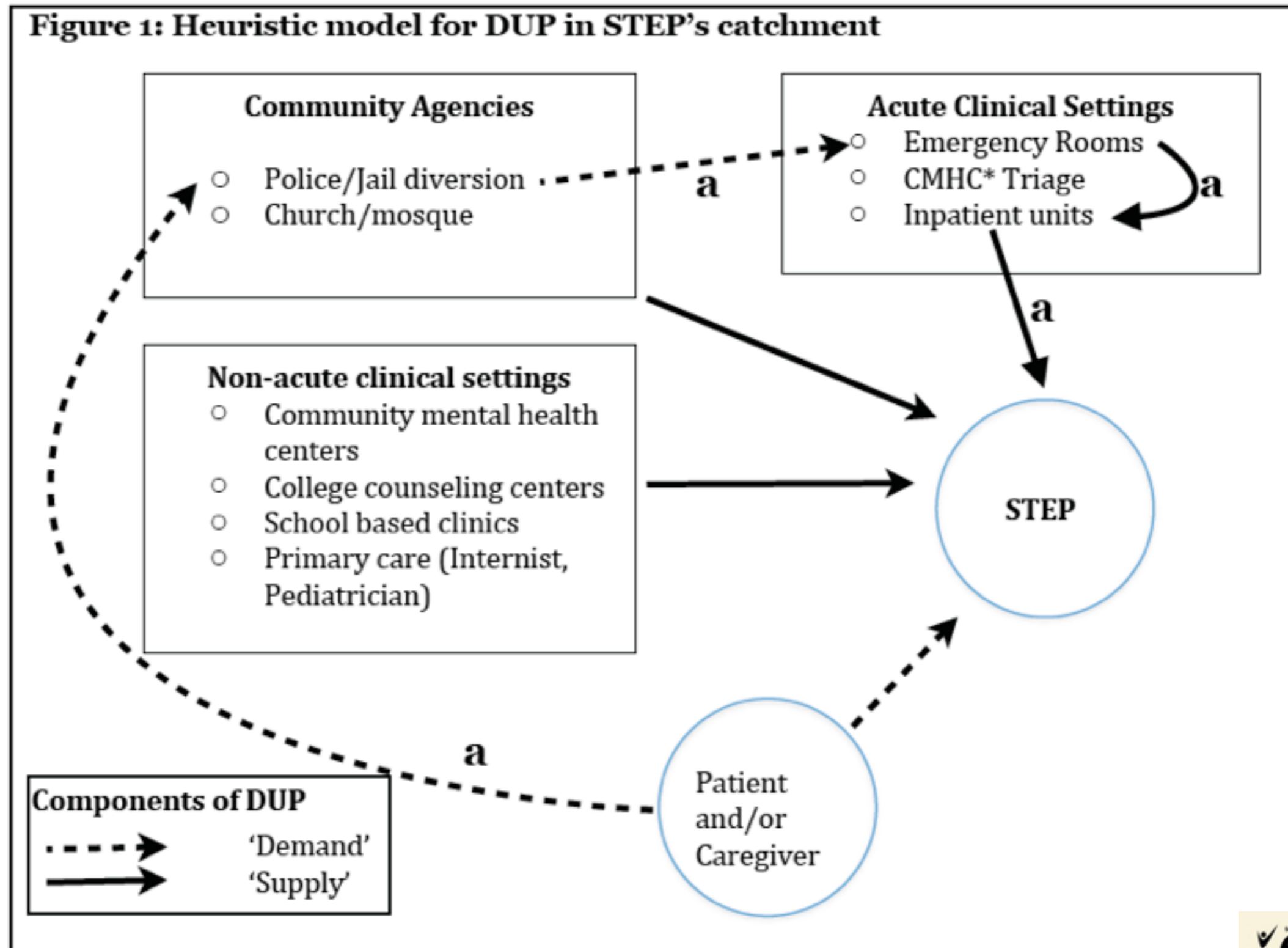
1. Social Marketing: “a program-planning process that applies commercial marketing concepts and techniques to promote voluntary behavior change” Grier & Bryant, 2005

*Better conceived of as a set of tools/strategies rather than a theory of behavior change*



***Education vs. Law vs. SM*** “...marketing influences behavior by offering alternative choices that invite voluntary exchange. Marketing alters the environment to make the recommended health behavior more advantageous than the unhealthy behavior it is designed to replace and then communicates the more favorable cost-benefit relationship to the target audience.”

# Addressing Pathways To and Through Care



# Theories of Health Behavior Change

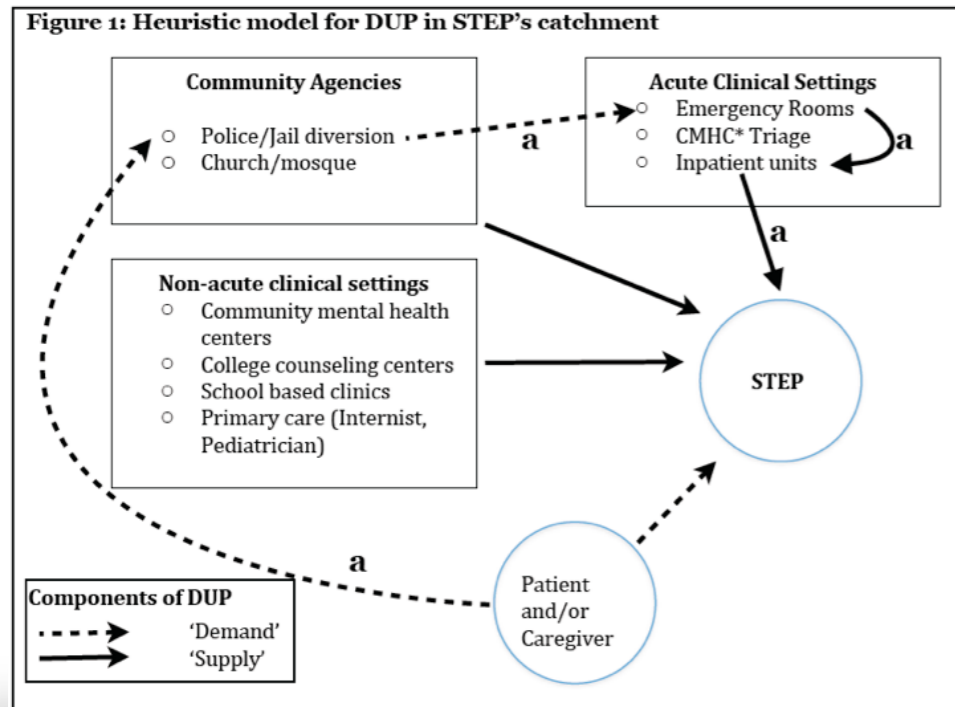
## ***Macro or Mass (vs. Individual) Behavior Change Models***

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2. Social-Ecological Model: addressed multiple different levels e.g. individual, interpersonal, institutional/organizational, community, and social structure/policy/systems (McLeroy et al., 1988) and uses multiple individual change theories

*STEP-ED will employ an Ecological approach that utilizes Social Marketing strategies.....*

# STEP-ED: Theory of the campaign



1. Modified *Goldberg-Huxley* model: Levels and Filters; Non-clinical actors/organizations
2. 'Demand' (onset to identification of illness and initiation of help-seeking) and 'Supply' (correct identification of diagnosis and referral to FES) components of DUP

3. Entry into care as an iterative/interactive process with the caregiving system (including non-professional actors) vs. a linear progression towards effective help-seeking behavior (e.g. transtheoretical model). Also, a social process (influenced by family/peers/ cultural mores)

4. *Ecological* approach or 'kitchen-sink' campaign: agnostic about relative strength of supply and demand contributors to DUP, broad assessment of impact

# STEP-ED: 3-pronged Early Detection

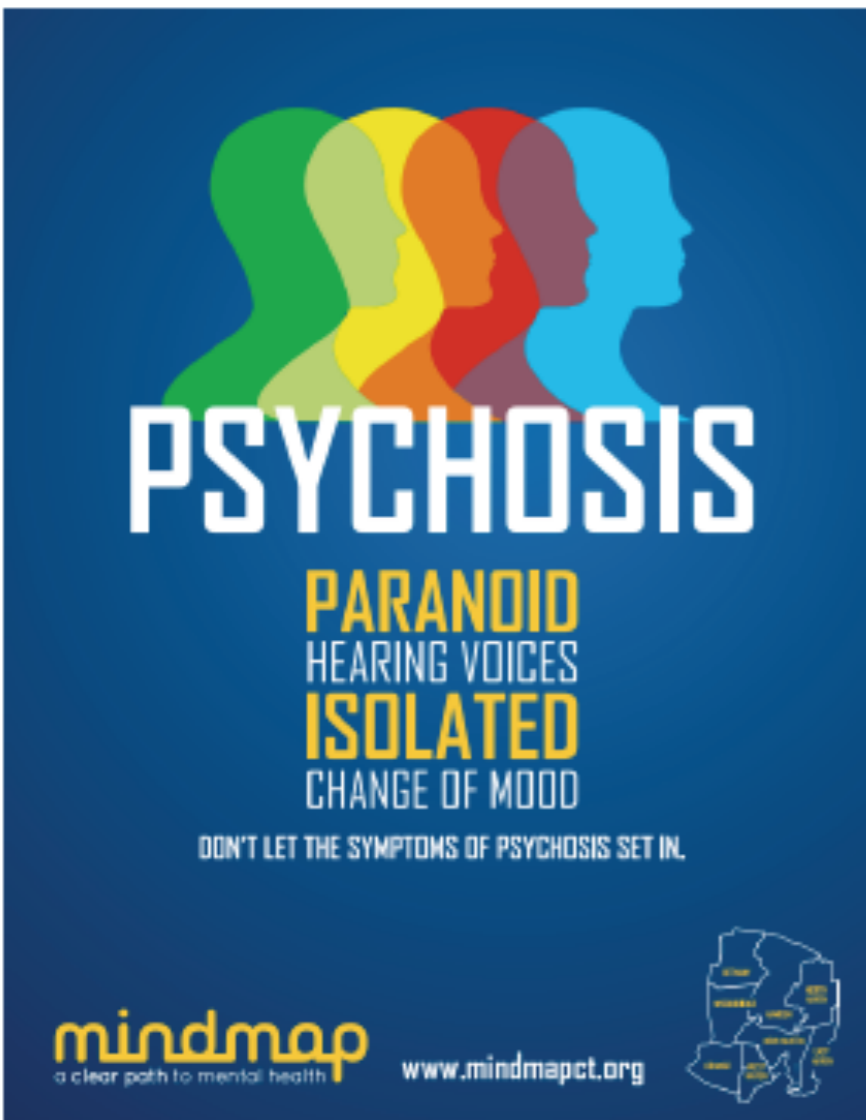
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## #1: Media Campaign (targets *Demand*)

- *Distinct* messages
  - (i) patients,
  - (ii) friends/ peers
  - (iii) family/ adult caregiver using a variety of *Channels*
- Multiple *Channels* (social and traditional media, professional and advocacy networks)
  - social vs. mass media

# STEP-ED: 3-pronged Early Detection:

## 1. Media campaign



PSYCHOSIS

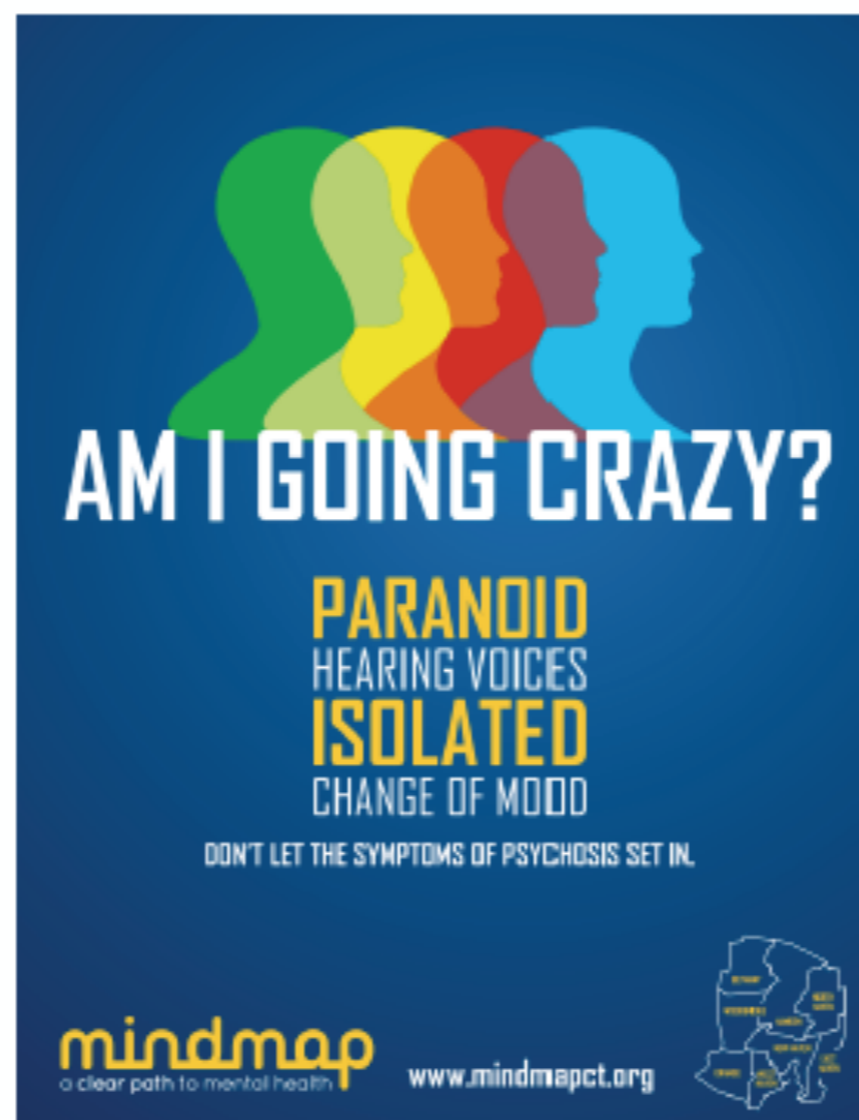
PARANOID  
HEARING VOICES  
ISOLATED  
CHANGE OF MOOD

DON'T LET THE SYMPTOMS OF PSYCHOSIS SET IN.

mindmap  
a clear path to mental health

www.mindmapct.org

Map of Connecticut with mental health services locations



AM I GOING CRAZY?

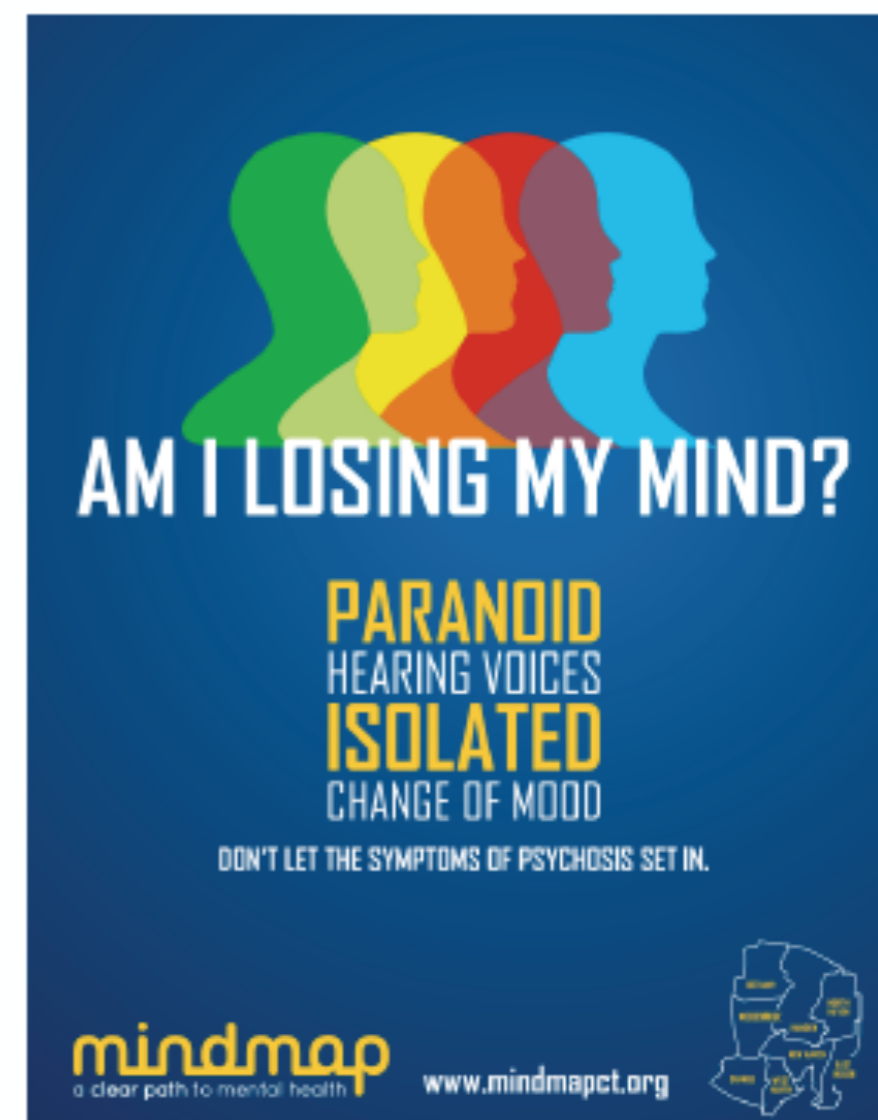
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Map of Connecticut with mental health services locations



AM I LOSING MY MIND?

PARANOID  
HEARING VOICES  
ISOLATED  
CHANGE OF MOOD

DON'T LET THE SYMPTOMS OF PSYCHOSIS SET IN.

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Map of Connecticut with mental health services locations

- 3 Distinct *Messages*
- Multiple *Channels*



# PSYCHOSIS

**DEPRESSED  
UNMOTIVATED  
WITHDRAWN  
APATHETIC**

DON'T LET THE SYMPTOMS OF PSYCHOSIS SET IN.

**mindmap**  
a clear path to mental health

[www.mindmapct.org](http://www.mindmapct.org)



# PSYCHOSIS

**OVERWHELMING CONFUSION  
POOR HYGIENE  
THINGS LOOK OR SOUND DIFFERENT**

DON'T LET THE SYMPTOMS OF PSYCHOSIS SET IN.

**mindmap**  
a clear path to mental health

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**PSYCHOSIS**  
AM I LOSING MY MIND?



IF SOMETHING IS WRONG WITH YOUR CHILD  
BE THE FIRST TO GET THEM HELP

WHERE



CHECK IN

#mindcheck  
quiz here



IF YOUR FRIEND WAS HURTING  
YOU'D CALL A DOCTOR



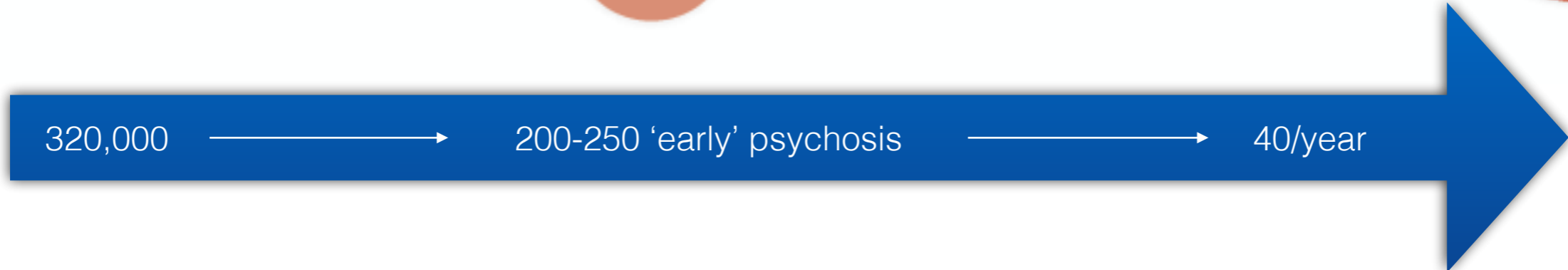
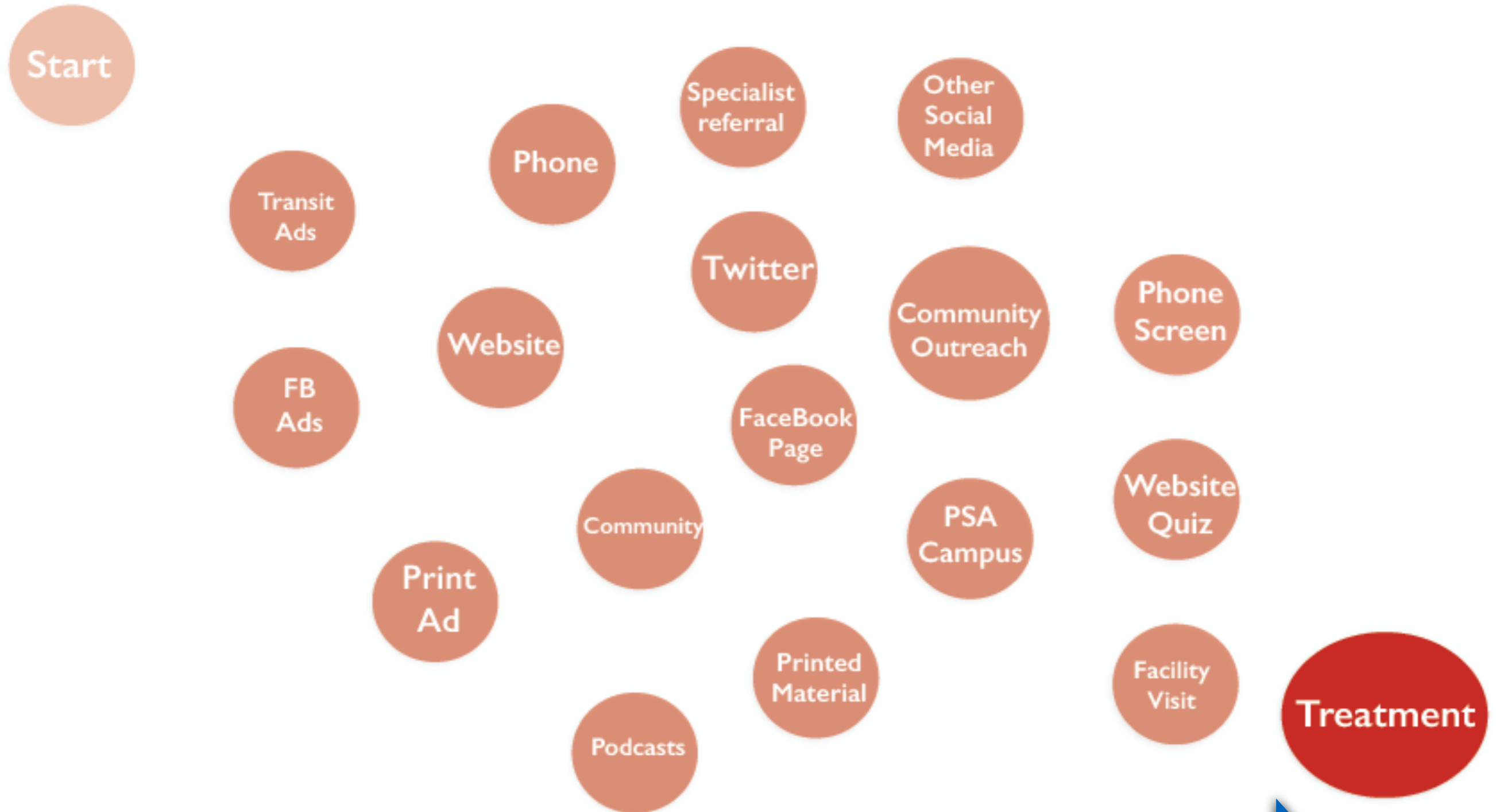
**PSYCHOSIS**  
DON'T LET THE SYPTOMS SET IN

SHARE



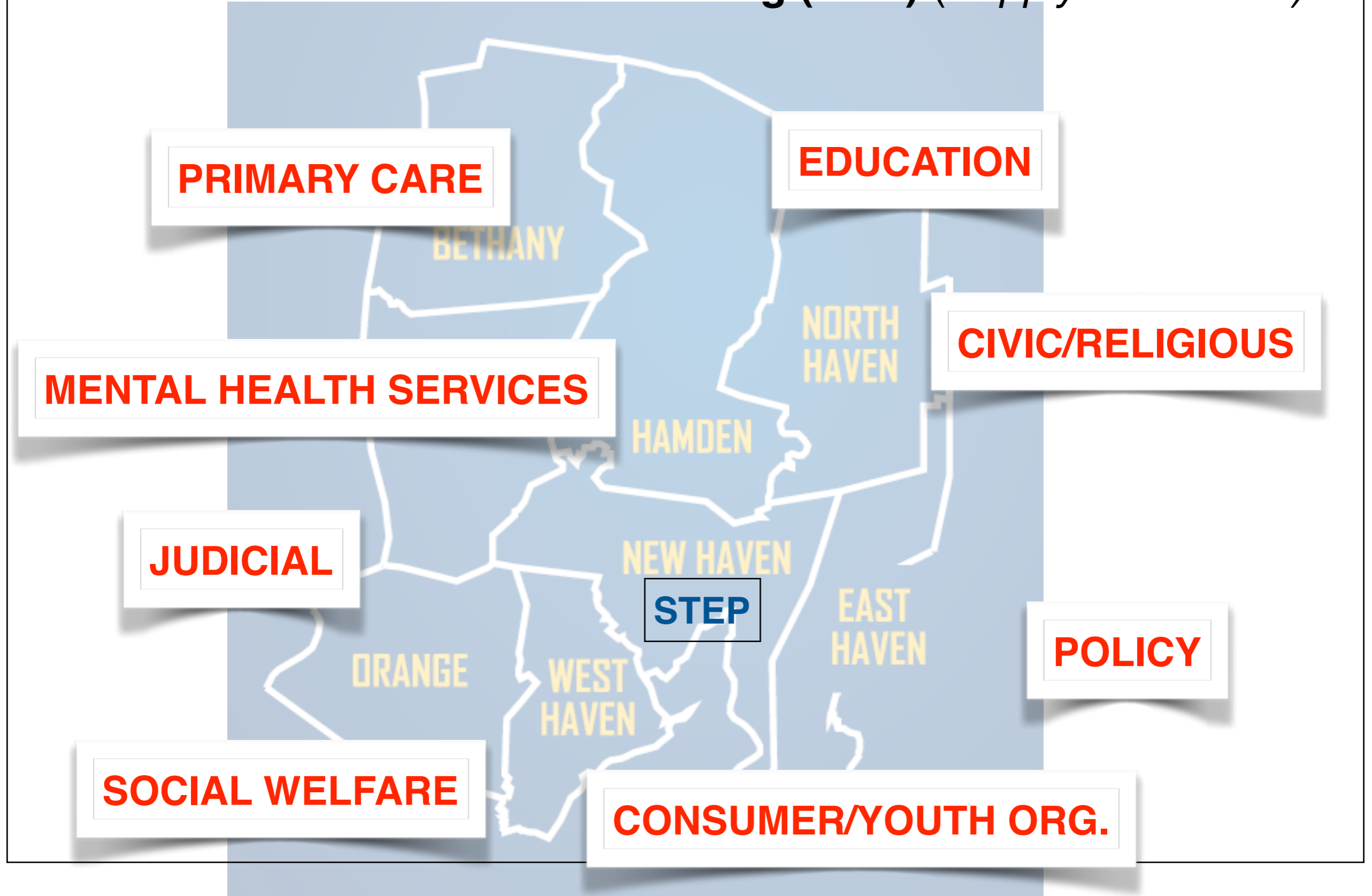






# STEP-ED: 3-pronged Early Detection:

## # 2: Professional Outreach & Detailing (POD) (*Supply & Demand*)



# STEP-ED: 3-pronged Early Detection

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## **# 3: Rapid Access to STEP care (RAS)** (targets *Supply & Demand*)

- Simple, structured screening to determine eligibility and begin engagement into care
- Relationship management/responsiveness to all 8 POD groups
- In-person eval within 24hrs and on-site of referral if preferred
- ‘Pre-referral’ support for parents/caregivers/friends & POD
- Continuous audit of delay: screening to engagement

# The STEP-ED trial: other design elements

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## *Sampling*

- 16-35yo
- Within 3 yr. of psychosis onset
- Any schizophrenia spectrum disorder
- Living in 8 towns (New Haven/ED site) or usual catchment (Boston/noED site)

## *Measures*

- ‘DUP 1’ & ‘DUP 2’
- Pathways to Care
- Neuro/Social Cognition
- Social & Vocational Fx
- QOL
- Symptoms
- Resource utilization

*Srihari et. al (BMC Psychiatry, 2014)*

# V. Salience of the STEP-ED project

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*Envisioning Population Based Systems of care*

# Population Health

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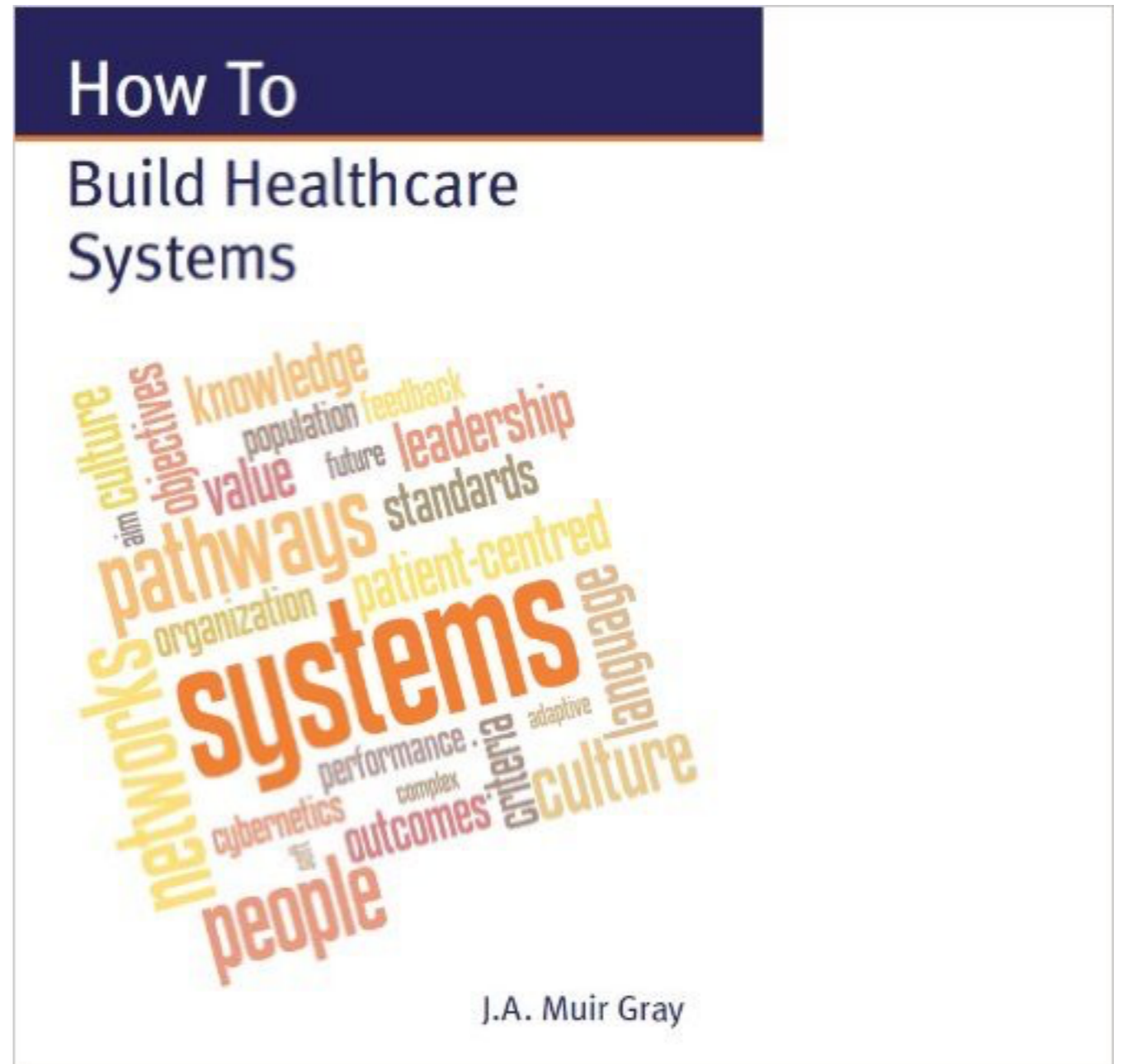
*“A goal of achieving measurable improvements in the health of a defined population.”* (Kreuter M, Lezin N. 2001)

A middle ground between the traditional focus of the clinic (focused on outcomes of those already in care) and public health (focused on environmental determinants of health) (see Kindig et al., 2008)

# Making Population Health Operational

*A Systems-Network-Pathways perspective*

(See Jani A, Gray M in [outcomes.BMJ.com](http://outcomes.BMJ.com))





# Population-based systems of care

A system of care for complex health conditions is “A set of activities with a common set of objectives...”

e.g. 75% of FEP in southern CT will be *vocationally engaged at one year f/u*

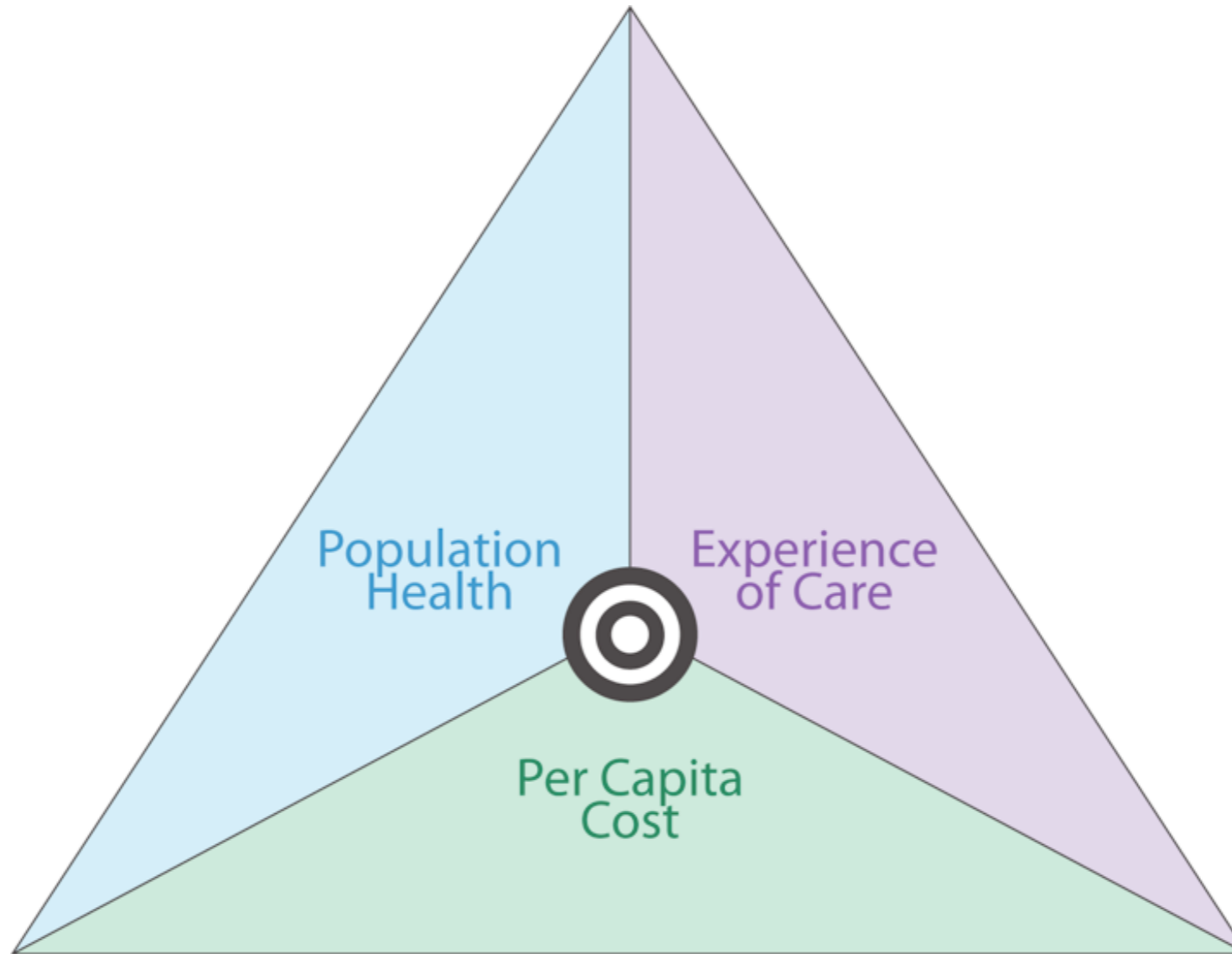
A network is a set of organizations and individuals that deliver the system of care

Pathways are the routes that patients follow through the network

- Gray, *Better Value Healthcare*, 2013

***The STEP program seeks to model a population based system of care for psychotic disorders by engaging a network to transform pathways in a defined geographic area (8 contiguous towns).***

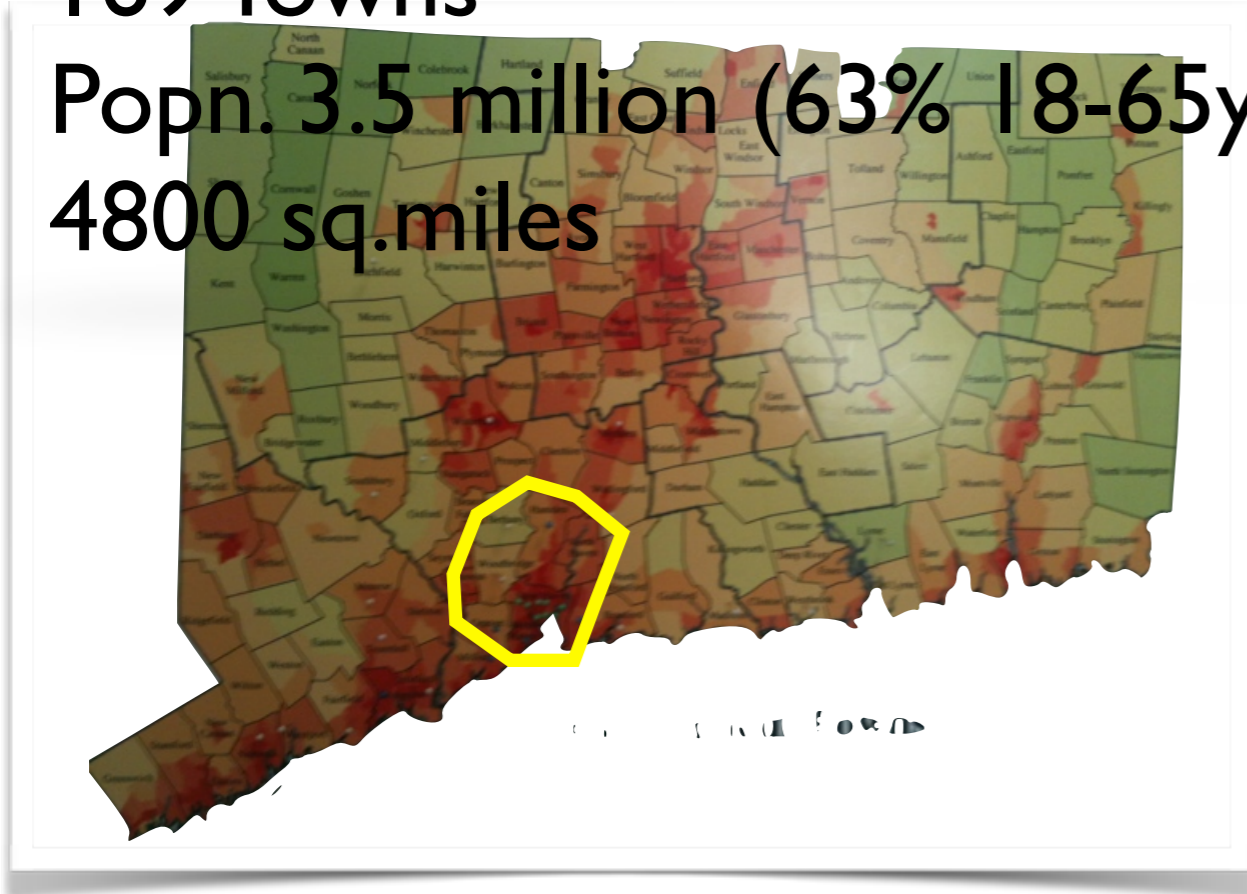
# Population-based systems of care for Psychosis as a way to reach the Triple Aim: FES as 'integrators'



(Berwick et al., 2008)

# “What happens to individuals with psychosis in Connecticut ?”

- 169 Towns
- Popn. 3.5 million (63% 18-65yo)
- 4800 sq.miles



**DUP**

‘First-break’ ~500/yr

Identification of illness

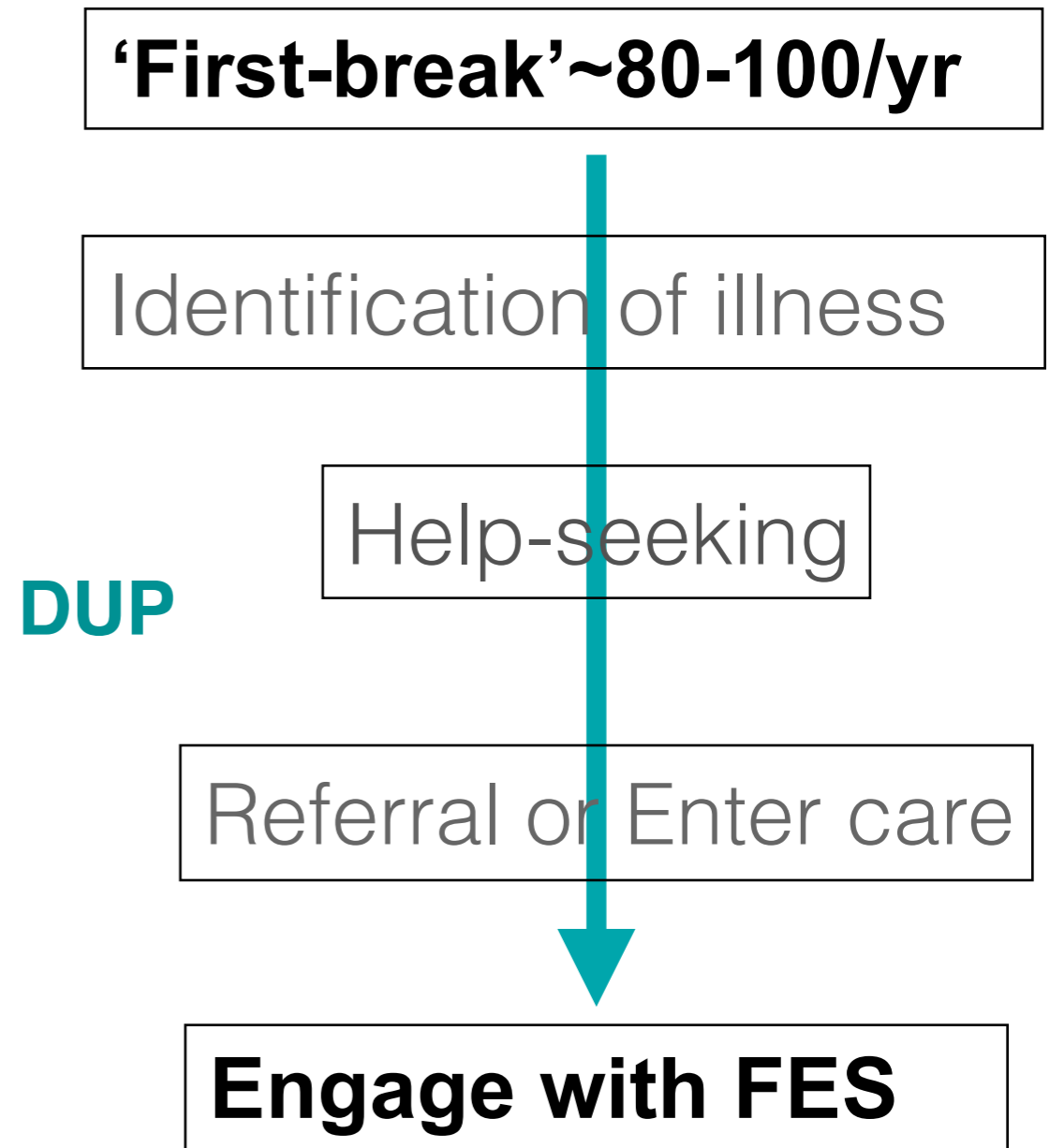
Help-seeking

Diagnosis/Referral

Treatment

169 towns: 5 LMHAs, 3-4 regional healthcare networks, multiple private and public providers...

# What happens to individuals with psychosis in Connecticut ? building a model



DUP as a measure that can deliver accountability and allow useful comparisons across geographic sectors

# The STEP-ED Team

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## **STEP/Yale/CMHC**

Jessica Pollard, Ph.D.  
*Director of Clinical Services*

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Nina Levine, B.A.

Vinod Srihari, M.D. (P.I)

## **PREP/Harvard/MMHC**

Larry Seidman, Ph.D. & Matcheri  
Keshavan, M.D. (site-P.I.s)

Suzannah Zimmet, M.D.

Michelle Friedman-Yakoobian, Ph.D.

Raquelle Mesholam-Gately, Ph.D

## **Red Rock (Marketing)**

Glen McDermott

Giulia Gouge

Jeff Kubarych

Mason Rabinowitz

George Vasilopoulos

## **TIPS (Norway) - Consultants**

Inge Joa

Svein Friis

Jan Olav Johannessen



EARLY INTERVENTION FOR PSYCHOSIS

WHO ARE WE  
LOOKING FOR?

**STEP**

Recent onset of psychosis (<3 years)  
16 - 35 years  
Restricted to the following towns:



If in doubt about eligibility, please call us OR get the patient's verbal consent to give us their contact information, leave that on our voicemail, and we'll take it from there.

**mindmap**  
a clear path to mental health

**PRIME**

At risk or 'prodromal' for psychosis  
12 - 35 years  
No geographic restrictions

(203) 589-0388  
[www.mindmapct.org](http://www.mindmapct.org)

**dmhas**  
Yale SCHOOL OF MEDICINE

# The STEP Program



L to R: Miranda Mast (Vocational Specialist); Anna Fiskin, MD (Resident); Lauren Utter Psy.D (Primary Clinician); Tracey George LCSW (Primary Clinician); \*Shannon Imetovski RN (not in picture, Primary Clinician); Al Powers MD, (Resident); Barbara Walsh PhD, (Director of Assessment and Professional Outreach); Nina Levine BA (Research Assistant); Jessica Pollard PhD, (Director of Clinical Services); John Cahill MD (Medical Director); Vinod Srihari (Program Director)