Improving care utilization, fitness and smoking in young adults with SMI: Results from the ProHealth Integrated Care Program

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Funding from the Substance Abuse and Mental Health Administration

Objectives

- Participants will evaluate the features of an integrated primary care and community mental health program for young adults with SMI and describe service utilization outcomes for this group
- Participants will examine the elements of effective fitness and nutrition interventions for young adults with SMI and demonstrate the outcomes of intervention participants
- Participants will analyze the components of effective smoking cessation interventions for young adults with SMI and smoking cessation outcomes after participation in such treatment

Introduction to the ProHealth Reverse Integrated Care Program

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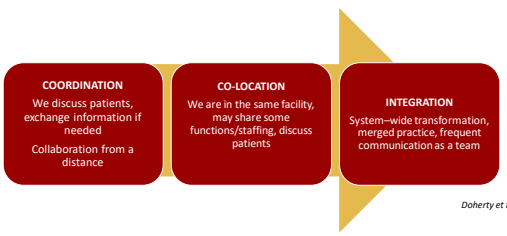
Adults with Serious Mental Illness

- Adults with serious mental illness (SMI) have increased risk for:
  - Poor health, higher rates of chronic disease
  - Higher levels of Emergency Department (ED) and inpatient utilization
- Adults with SMI have reduced life expectancy of 10-25 years due to preventable disease.
- Is it possible to intervene early to prevent this pattern?
- **Obtained a SAMHSA grant to state of NH to implement integrated care and wellness interventions among young adults with SMI in 2018**

Heart disease and cancers are primary causes of death in persons with MI

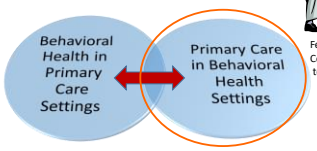
Data from Oklahoma 1996-2000; Colton et al, 2006

Framework of Integration



Doherty et al, 2013

Person-Centered Collaborative Care Opportunities: ProHealth NH



Federally Qualified Health Center and Community Mental Health Center teamwork

Wellness for Smoking Cessation, Nutrition and Fitness
Appealing, easy to use cessation interventions with coaching, smartphone apps and incentives for improving health behaviors

ProHealth NH: Reverse integration with wellness interventions

- Integrated, on-site primary care in 2 urban and 1 rural community mental health center (CMHC) in New Hampshire
- CMHC partner with Federally Qualified Health Center (FQHC)
- Targets **young adults** with SMI (age 16 to 40)
- Goals:
  - **Increase access** to primary care and preventative healthcare for young adults with SMI in behavioral health care
  - Engage in care that improves health and mental health and reduces preventable emergency care utilization
- **Hypotheses: Integrated care with wellness interventions will**
  - **Increase outpatient primary care utilization; Decrease ED and inpatient hospital utilization**
  - **Increase smoke cessation; increase fitness and nutrition**

Health Characteristics of Young adults with SMI: Interim report

- High rates of risky health behaviors and markers of early cardiovascular disease in young adults with SMI (mean age 28)
  - Approx 50% smoke cigarettes
  - Over 50% have obesity
  - Approx 50% have hypertension
  - Almost 33% have laboratory metabolic abnormalities
  - Over 50% have lifetime cardiovascular score indicating high probability of cardiovascular event
- Despite high medical risk factors, most medical conditions were not identified in medical record problem list
- C/W previous U.S. research (Correll et al 2016) and suggests that young adults with SMI may not be receiving adequate medical care

Brunette et al, 2022

Integrated primary care and behavioral mental health

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Study Design

- Individuals were enrolled into integrated primary and mental health care
  - Assessed every 6 months
- Analyzed **self report data** on the 217 young adults (age 16-39) with SMI enrolled in ProHealth NH from April 2019-Feb 2021
  - *83 subjects with 12-month service utilization follow-up*
  - *71 subjects with 18-month service utilization follow-up*
- Structured interview asked about Emergency Department (ED) and hospital utilization
- Benchmarked with NH Medicaid claims for beneficiaries enrolled in CMHC services in 2019-2021

Statistical Analyses

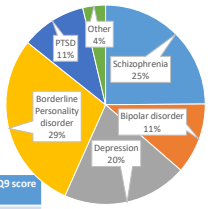
- Pre- vs. Post- intervention analyses at 12 months and 18 months
- Binomial or Poisson Linear mixed effects regression
- Adjusted for COVID-19 pandemic and attributes associated with loss to follow-up
  - Homelessness
  - Site
  - Schizophrenia diagnosis

Baseline Demographics (n=217 Medicaid beneficiaries)

• Female	109 (50%)	
• Average Age	27.9 (SD 5.5)	[range 16-39]
• Non-white	38 (18%)	[vs. 11% in NH]
• Hispanic Ethnicity	27 (12%)	[vs. 4% in NH]
• Heterosexual	152 (70%)	
• Homeless in past month	17 (8%)	
• Not employed	141 (65%)	[vs. 2.7% in NH]

Mental and Physical health at baseline

- Average PHQ9 score
  - **10.1** (SD 7.1)
- Average SF-12 physical score
  - **47.0** (SD 10.1)
  - Scale 0-100, score <50 among young adults suggests physical condition
- Average SF-12 mental score
  - **40.8** (SD 11.3)
  - Scale 0-100, score <42 among young adults suggests depression

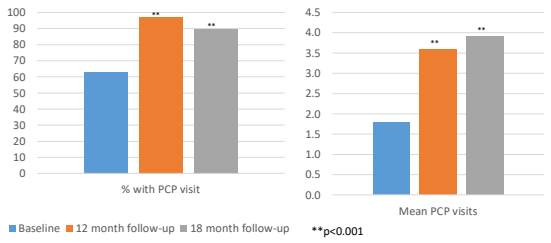


Depression severity	PHQ9 score
Normal	0-4
Mild	5-9
Moderate	10-14
Mod-severe	15-19
Severe	20-27

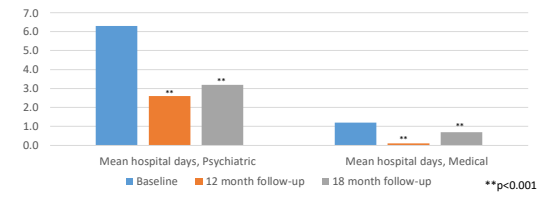
Results

Service utilization in the 12 months before enrollment and during integrated care

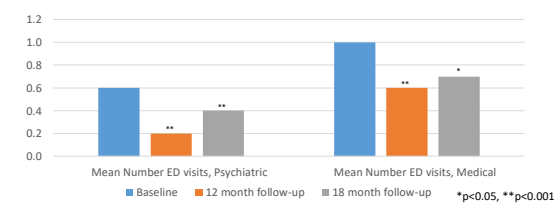
Primary Care use significantly increased during the 12 months after enrollment in integrated care



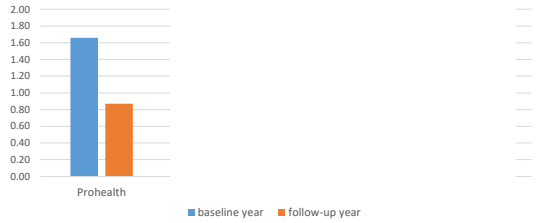
Inpatient hospitalizations significantly decreased during the 12 months after enrollment in integrated care



ED visits significantly decreased during the 12 months after enrollment in integrated care



Decreases in total ED visits among integrated care participants were more than twice as large as statewide year-over-year decreases among Medicaid beneficiaries with SMI



Satisfaction Outcomes

- Satisfaction with services was very high
- Did not differ significantly between those with and without ED or inpatient hospital utilization

	12 month	18 month
Satisfaction outcomes (1-5 Likert Scale)	Mean (SD) n= 83	Mean (SD) n= 71
Like the services received	4.4 (0.7)	4.4 (0.7)
Would recommend agency to a friend	4.4 (0.6)	4.4 (0.7)
Would get services from this agency if had choices	4.3 (0.7)	4.3 (0.8)

Participant Perceptions of Integrated Care

- Focus groups were conducted at all three sites
- Participants were all asked the same set of questions
- Groups lasted for about one hour each
- Meetings were recorded, transcribed and analyzed for themes
- Themes represent *participant perceptions*

	Younger Participants (<33 year old)	Older Participants (≥ 34 year old)
Site 1 (Urban2)	9	11
Site 2 (Urban1)	2	4
Site 3 (Rural)	11	

Themes from Participant Perceptions

- ProHealth integrated care reduced stigma and barriers to care
- Care that was co-located was more convenient and easier to access
- ProHealth integrated care led to improved communication and teamwork
- ProHealth integrated care attracted providers who had a proclivity for working with patients with SMI
- ProHealth participants struggle with a complex interplay of physical and mental health conditions
- Perceptions were similar among young and middle-aged adults
- Perceptions were less positive among participants at a site with less effective integration

"I've had bad experiences when I wasn't in integrated care, and once they see your mental health in your file, they blow you off, 'it's in your head'"

"[Before] I didn't go as often; like I would miss appointments, but now that it's here, it's good"

"[Now], everybody knows what's going on, so there's no chaos between mental and physical… Before it was terrible"

"She was the first doctor I've had in a very long time where I felt like I was being listened to"

"I have a lot of like appointments I go to, both physical and mental appointments"

Conclusions

- First study to look at the effect of integrating on site primary care into CMHC care among *young adults with SMI*
- Giving young adults with SMI better access to primary care
  - is viewed positively by service participants
  - appears to reduce unnecessary acute healthcare utilization while maintaining high satisfaction
- Future research may evaluate whether the reduction in unnecessary ED visits and inpatient hospitalizations reduces overall cost of care

Questions and discussion

Fitness and Nutrition Interventions

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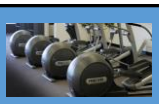
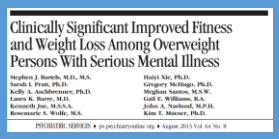
CDC RCT



- In SHAPE v. gym membership only
- Three Year Award
- Riverbend Community Mental Health Center in Concord, NH
- Concord YMCA
- Included Focus on Nutrition
- Final Sample Size: 133

CDC RCT (n=133) :
At 12 months: 49% in the In SHAPE group achieved either clinically significant increased fitness (>50 m on 6MWT) or weight loss (5% or greater)



Clinically Significant Improved Fitness and Weight Loss Among Overweight Persons With Serious Mental Illness

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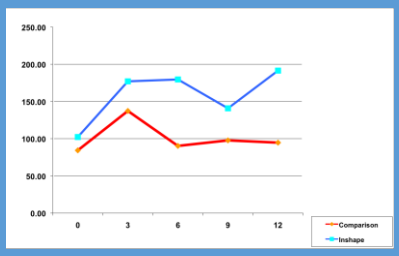
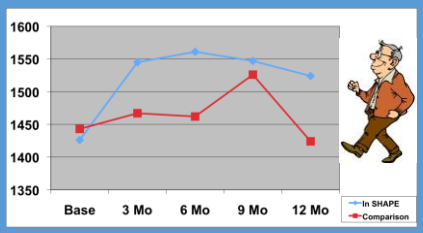
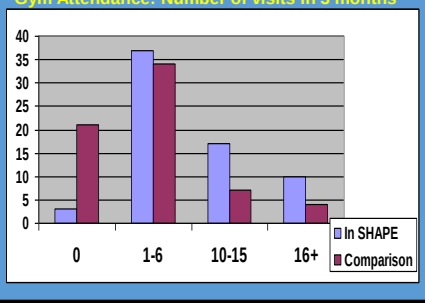
Minutes of (Self-Reported) Exercise



Exercise Capacity: 6 Minute Walk Test



Gym Attendance: Number of visits in 3 months



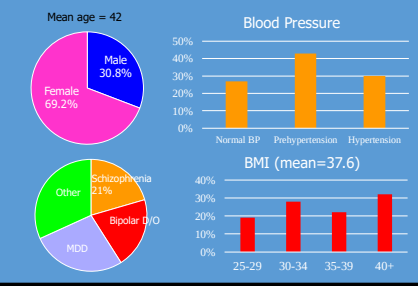
CMS Study:
Healthy Choices, Healthy Changes

- Goal: Reduce cardiovascular risk in smokers and overweight/obese consumers
- 4 Weight Management and 3 Smoking Cessation Programs offered at all 10 CMHCs in NH
- Consumers could choose the programs in which they were willing to participate
- 1400 enrolled in Tobacco Education (661 in Smoking Cessation); 1350 enrolled in WM (1100 received In SHAPE)

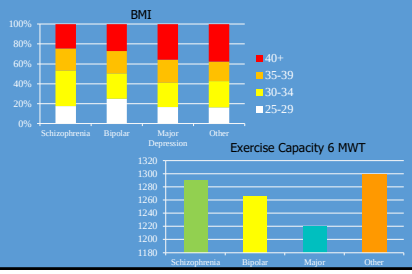
Weight Management
(age 18+, BMI>25, sedentary)

Group 1: Fitness Club Membership	Group 2: In SHAPE Program	Group 3: Weight Watchers	Group 4: In Shape + Weight Watchers
1A:	2A:	3A:	4A:
Free gym mebership for up to 24 months ($20/month)	Same as 1A + individual sessions with fitness trainer up to 24 months	Free membership ($20/month) for up to 24 months	Same as groups 2A & 3A
1B:	2B:	3B:	4B:
Same as above + $5/each (up to $15/wk) for going to gym	Same as above + $5/each (up to $15/wk) for going to gym w/out trainer	Same as above + $10 to attend one weekly meeting	Same as above plus rewards in Groups 2B &3B

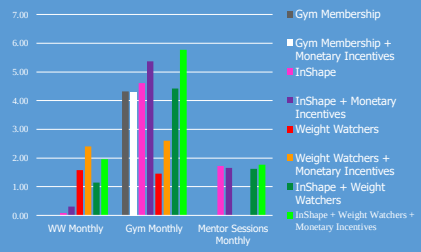
Baseline Characteristics



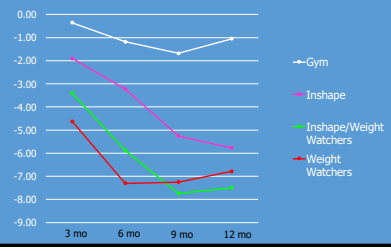
BMI and Exercise Capacity by Diagnosis
Major Depression particularly at risk



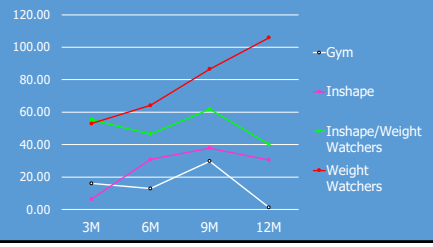
Weight Management - Participation



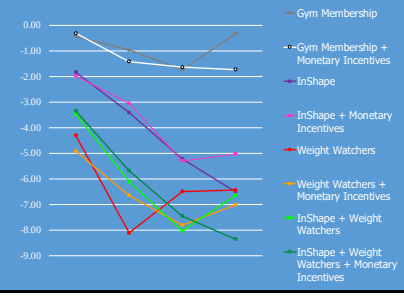
Weight Management - Change in Weight by Group



Weight Management - Change in Walk by Group



Change in Weight by Group & Incentives



Longitudinal Model Predicting Change in Weight (adjusted for gender & diagnosis)

- No main effect for group
- No main effect for incentives
- Significant group*incentive interaction (The In SHAPE + WW + incentives group had the best outcomes over time)

Summary of Outcomes

In SHAPE primarily impacts…

- Clinically meaningful weight loss in some (not most);
- Clinically meaningful improvement in cardiovascular endurance in some (not most)
- Increased exercise and use of fitness facilities
- Improvements in self-concept and negative symptoms

Questions and discussion

Breathe Well Live Well Smoking cessation Intervention

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6/9/23

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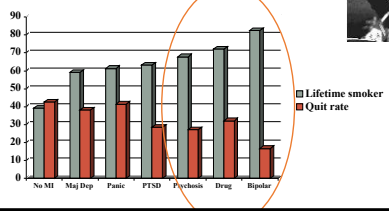
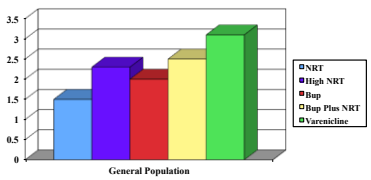
Smoking and mental illness
(Lasser et al, 2000)



IT'S THE SMOKE THAT IS DANGEROUS: Toxins in smoke cause CVD, cancer, lung disease, diabetes

How much do meds help people quit?



Odds ratios for treatment effect over placebo in general population
(Fiore 2008 for DHHS; Smith et al, Arch Gen Psych 2009)

Breathe Well Live Well (BWLW)

Manualized intervention adapted from Freedom From Smoking

Sessions with Health Coach (Sessions 1-8)
Initial session in person; all others phone or videoconf

Incentives for abstinence couldn't be properly implemented due to pandemic

Counseling for behavior change

Pharmacotherapy to reduce withdrawal & urges

quitStart app for motivation & skills with incentives for use ($10 vs $30)

NCI's QuitStart: Appealing and usable for SMI after initial coaching session

App	QuitGuide (n=9)	quitSTART (n=6)
Days of Use*	5±3	11±4
App Interactions*	6±4	41±26
Notifications Completed+	1 (0-8)	19 (0-37)

Gowarty et al, 2021

CMHC staff delivering BWLW

- Peers, staff with non-clinical masters and masters
- Received 1-week training to become tobacco treatment specialist and 2 day BWLW training, session recordings with coaching; weekly tapering to twice monthly supervision
- Staff were trained to use the manual, sessions were guided by checklists

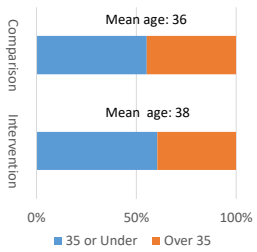
8 sessions of BWLW in initial 4 months period

- **Month 1** 5 Weekly sessions Intro, assessment, learn about triggers,
  - Decide on pharmacotherapy and provide NRT if desired
  - Download app and learn to use it, verify app use and provide incentives
  - Preparing to go smoke free – plan the quit
- Check in/support on **quit day** at end of month
- **Month 2** Single session Stress management skills to avoid smoking, support pharmacotherapy, support app use
- **Month 3** Single session Relapse prevention and coping with MH symptoms, support pharmacotherapy, support app use
- **Month 4** Single session Improving and maintaining smokefree skills, Healthy living
- (Months 5-8 monthly sessions for relapse prevention and 12 mo follow-up– to be evaluated later)

Initial Evaluation

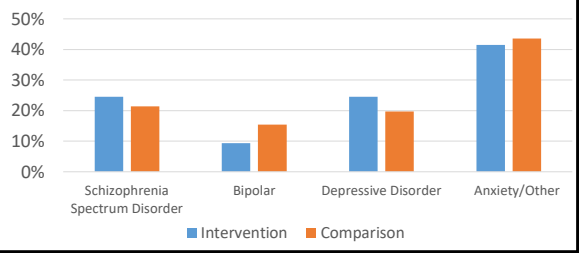
- Baseline and 4-month follow up assessments for BWLW participants
- Examined outcomes for participants who attended at least Session 1
- Preliminary Efficacy:
  Abstinence (self report that was verified with breath CO and session notes)
  Smoking behavior – cigarettes per day (CPD), quit attempts
- Feasibility: Intervention utilization; retention
- Comparison group– used data from all smokers enrolled in ProHealth integrated Care during intervention period
  - Missing imputed as smoking
- Enrollment began 2/2020; pandemic hit; adjustments were made to deliver first session and assessments mostly via phone or video meeting

Participant characteristics



	Intervention n=53	Comparison n=117
Assigned male at birth	51%	52%
People of color	10%	18%
Sexual minorities	16%	22%
Alcohol daily or almost daily	15%	9%
Cannabis daily or almost daily	23%	24%

All had SMI disability: Primary diagnoses included



Feasibility – participation in intervention

Participation in treatment

- Attended 5.8 of 7 sessions on average
- 62% used a cessation medication (50% NRT)
- App use 8.5 weeks out of 16 on average

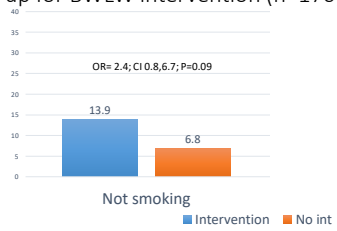
Efficacy of the intervention

Abstinence and quit behaviors

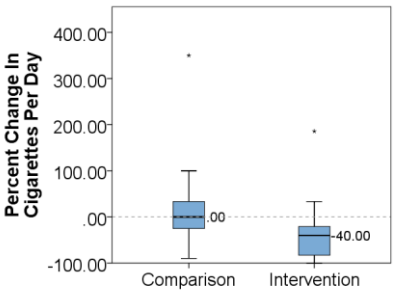
	Intervention n=53	Comparison n=117	OR	CI
	N (%) or mean (SD)	N (%) or mean (SD)		
Biologically verified abstinence at follow-up	8 (15%)*	6 (5%)	3.3	1.1-10.0

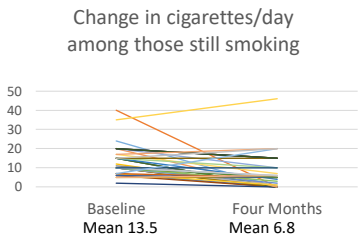
*p<.05, ** P<.01; NA=not assessed; NC=not completed as odds ratio was not appropriate
[a] Total n=27 (participants reporting quit attempt)
[b] Total n= 28 (non-abstinent participants with follow-up data)
[c] Total n=55 (non-abstinent participants with follow-up data)

6 mo. f/u among smokers who did & did not sign up for BWLW intervention (n=170)



Change in smoking behavior among those still smoking at follow-up





Summary and discussion: Feasibility

- FEASIBILITY: Providing most of the BWLW components by CMHC staff (mostly remotely) was feasible
  - Counseling, app and meds were utilized
  - Support person coaching did not get implemented to large degree – pending focus groups will explore reasons
- Delivery with range of **non-expert CMHC workers** with peers, people with non-clinical master's degrees was feasible (similar to Evins 2021 PCORI study)

Summary and discussion: Efficacy

- **BWLW provided similar outcomes with fewer sessions and no abstinence incentives (14-20% abstinence),**
  - even when assessed during the pandemic in younger population
- Outcomes from other similar studies for comparison:
  - 14 sessions telephone **BWLW with large monetary incentives** for abstinence achieved **quit rate of 18%** (in middle aged smokers with SMI) (Brunette, Pratt, Ferron et al 2018)
  - **Chantix and 14 sessions therapy** for smokers with SMI achieved **quit rates of 18-29.2**% (Williams et al; Evins et al)
  - **NRT patch and 12 weekly brief counseling** sessions in EAGLES trial achieved quit rate of **20.4% in MI** pts; **13% of pts with psychosis** (Anthenelli et al 2016 and Evins et al 2019)

Team and collaborators

- Sarah Pratt, PhD
- Joelle Ferron, PhD,
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- Gail Williams, MSW
- Todd McKensie
- Alisa Tvorun Dunn
- Gillian Sowden, MD
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- Sheila Considine-Sweeny
- Julie Christensen-Collins
- Jennifer Alford-Teaser
- Margaret Almeida
- Cassandra Durand
- Julianne Carbin

Questions and discussion

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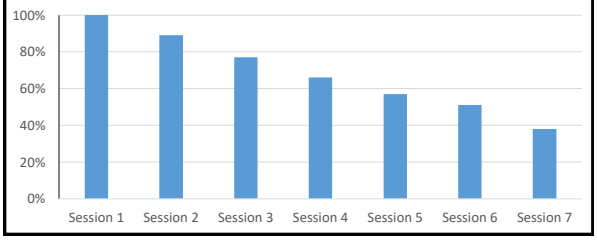
Questions & thank you

BWLW counseling attendance: 5.8 of 7 sessions



Retention in research evaluation session

Missing = smoking