BACK TO SCHOOL: HOW HEALTH CENTERS CAN ADDRESS DIABETES RISK

February 11, 2020
Learning Objectives

• Describe strategies to optimize health center staff roles to partner with schools to address diabetes risk factors in elementary school children

• Describe two evidence-based programs for preventing diabetes in elementary aged children that health centers can bring to schools
Reminders

• All attendees are in listen-only mode.
• We want to hear your questions! To ask a question during the session, use the “Chat” icon that appears on the bottom your Zoom control panel.
• Please complete evaluation poll questions at the end of the presentation.
We Believe…

In the transformational power of the health and education intersection

Healthy Students make better learners
National Nurse-Led Care Consortium (NNCC)

A membership organization that supports nurse-led care and nurses at the front lines of care.

NNCC provides expertise to support comprehensive, community-based primary care.

- Policy research and advocacy
- Technical assistance and support
- Direct, nurse-led healthcare services
Type 2 Diabetes Mellitus (T2DM) and Prediabetes Among Children and Teens: Increasingly Prevalent in the US

- Before 1990, T2DM among children and teens was almost unknown; still uncommon, but a growing problem
- Prediabetes in children and teens rising
- Nearly one in five (18%) youth met criteria for pediatric prediabetes
- School-wide focused approaches in high-risk areas address environmental risks for everyone
Risk Factors for Pediatric Diabetes

• Obesity

• Race/ethnicity

• Socio-economic status, including neighborhood factors
Why is Screening in Elementary School Important?

• Identify children who may have T2DM but no/low symptoms
• Identify children with pre-diabetic conditions
• Identify children and schools at increased risk
  – Provide interventions at individual, family, and school or community level
Why Collaborate With Schools?

Health centers, in collaboration with schools can play a powerful role in performing appropriate screening, prevention, and management of elementary-aged children with obesity and other pre-diabetic indicators.
Collaboration Types with Schools

• School-based health care services
  – Targeted interventions for students with pre-diabetic indicators
  – School-wide interventions to prevent diabetes

• School-based health centers
A school-based health center is a shared commitment between a community’s schools and health care organizations to support students’ health, well-being, and academic success by providing preventative, early intervention, and treatment services where students are: in school.
Types of Primary Care Providers in SBHCs

- Nurse Practitioner: 85%
- Physician: 40%
- Physician Assistant: 20%

(n=2,317)
2020 is the Year of the Nurse
Nursing and Population Health

WHAT IS NURSING?

Nursing is the protection, promotion, and optimization of health and abilities, prevention of illness and injury, facilitation of healing, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, groups, communities, and populations (American Nurses Association, 2015).
The Nurse Workforce is Growing

Role Growth at Health Centers
2012-2018

- All physicians: 28%
- Physician assistants: 40%
- Nurse practitioners: 106%
- Certified nurse midwives: 29%
- Other nurses: 47%
Optimizing the Nurse Role

In Health Centers

• Focus on population health and partnership development
• Expand role for MAs and other staff to screen and coordinate with nurse leaders
• Collaborate with health center leadership to improve data sharing between health centers and schools

In Schools

• School nurses are “at the epicenter of what kids bring to schools”
  – Social/economic factors
  – 1 in 4 children present with a chronic condition
• Work in conjunction with health centers to promote population health
Cultivating Nurse Leaders

Ask yourself and your team....

● Could nurses (RNs/APRNs) serve as clinical champions for prevention programs (like MEND and WeCan)?
● How can nurse leadership optimize and enhance the practice, experience, and capabilities of other roles?
● How are school nurses incorporated as partners?
2. 2012-2018 UDS data analysis
Evidence-Based Programs

Jessica Wallace, MPH, MSHS, PA

James Huang, MD, FAAFP
Thank you!
Emily Kane, MPA
ekane@phmc.org

Andrea Shore, MPH
ashore@sbh4all.org
Back to School: How Health Centers Can Address Diabetes Risk

MEND at Denver Health

Jessica Wallace, MPH, MSHS, PA-C
Why should schools and health centers work together to provide family weight management programs (and help support healthy weight)?
The US Preventive Services Task Force (USPSTF) recommends that clinicians screen for obesity in children and adolescents 6 years and older and offer or refer them to comprehensive, intensive behavioral interventions to promote improvements in weight status. (B recommendation). JAMA. 2017; 317 (23): 2417-2426.
Prevalence of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2017
Poverty = poverty = poverty
Safety-Net Health Care Organization

Denver Health
An innovative healthcare system that is a model of success for the nation.

Our Areas of Focus

- **Clinical Care**
  Highest quality, low-cost provider

- **Education**
  Academic center teaches the next generation of healthcare workers

- **Research**
  Ongoing, leading-edge research

Denver Health Medical Center
One of Colorado's busiest hospitals with 25,000+ inpatient admissions annually, ranked in the top 5% for inpatient survival

Denver Health Foundation
Providing additional resources that bridge the gap financially to fund special projects and specific needs

Rocky Mountain Poison and Drug Center
Trusted experts for multiple states and over 100 national and international brands

ACUTE Center for Eating Disorders
Providing medical stabilization for patients with life-threatening eating disorders—credited with saving more than 600 lives

Emergency Response
Operating Denver's emergency medical response system, the busiest in the state—handling 200,000 emergency calls and logging 1 million miles on our emergency vehicles each year

NurseLine
Registered nurses field 200,000+ calls per year—advising on medical information, home treatment, and when to seek additional care—giving patients peace of mind 24/7

Denver Health Medical Plan, Inc.
Keeping our community healthy by providing healthcare insurance to 96,000+

Rocky Mountain Regional Trauma Center
Region's top Level I Trauma Center for adults and Level II Center for children—whole family care

School-Based Health Centers
Keeping kids in school by providing vital health care to DPS students through 17 in-school clinics, free of charge

Denver Public Health
Keeping the public safe through prevention and tracking data—contributing toward decreased smoking and teen pregnancy rates

Denver Health Care
Providing a safe haven and center for public inmates

Corrections Care
Providing medical care to prisoners in Denver's jails and via telemedicine

TOP 5% in the Nation

- Denver Health Medical Center
- Rocky Mountain Poison and Drug Center
- ACUTE Center for Eating Disorders
- Emergency Response
- NurseLine

Rocky Mountain Center for Medical Response to Terrorism
Working every day to plan for the "what if" for 5 states
What is MEND?
MEND 7-13: a family-centered intervention

10 weeks, twice weekly, 2 hours each session

<table>
<thead>
<tr>
<th>Who</th>
<th>First hour</th>
<th>Second hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>Mind and Nutrition</td>
<td>Parenting discussion</td>
</tr>
<tr>
<td>Children</td>
<td>Exercise</td>
<td></td>
</tr>
</tbody>
</table>
Out-of-the-box program
High-impact teaching tools
Practical application: grocery store tours
Children's physical activity
MEND 7-13 RCT: Three month outcomes improved at six months

**Waist circumference (cm)**

- Start (pre): Control: 82.0, Intervention: 77.7
- 3m (post): Control: ns, Intervention: ns
- 6m (3m post): Control: P=0.018, Intervention: ns

**BMI (kg/m²)**

- Start: Control: 27.7, Intervention: 25.7
- 3m: Control: ns, Intervention: ns
- 6m: Control: P=0.046, Intervention: ns

**Recovery Heart Rate (bpm)**

- Start: Control: 122, Intervention: 93
- 3m: Control: P<0.001, Intervention: P<0.001

**Self-esteem score (out of 24)**

- Start: Control: 19.4, Intervention: 16.7
- 3m: Control: ns, Intervention: ns
- 6m: Control: P=0.02, Intervention: ns

*Sacher et al, Obesity, 2010*
### US reach and demographics: 2008-2017

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>6,713</td>
</tr>
<tr>
<td>Hispanic origin</td>
<td>73%</td>
</tr>
<tr>
<td>African American</td>
<td>17%</td>
</tr>
<tr>
<td>SES: &lt;200% FPL</td>
<td>83%</td>
</tr>
<tr>
<td>SES: single parents</td>
<td>30%</td>
</tr>
<tr>
<td>SES: ≤ HS education</td>
<td>51%</td>
</tr>
<tr>
<td>Medicaid</td>
<td>41%</td>
</tr>
<tr>
<td>Uninsured</td>
<td>17%</td>
</tr>
</tbody>
</table>
## Change in health-related behaviors

<table>
<thead>
<tr>
<th></th>
<th>Before MEND</th>
<th>After MEND</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 minutes physical activity/day</td>
<td>52%</td>
<td>81%</td>
</tr>
<tr>
<td>Change in physical activity after MEND 7-13</td>
<td>+4.5 hrs / week</td>
<td></td>
</tr>
<tr>
<td>Sedentary for more than 2 hours/day</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>Change in sedentary behavior after MEND 7-13</td>
<td>-2.8 hrs / week</td>
<td></td>
</tr>
<tr>
<td>Sugar-sweetened beverages a few times/day</td>
<td>10%</td>
<td>2%</td>
</tr>
<tr>
<td>Rarely consumed sugar-sweetened beverages</td>
<td>25%</td>
<td>43%</td>
</tr>
<tr>
<td>&gt; 5 servings fruit and vegetables/day</td>
<td>21%</td>
<td>40%</td>
</tr>
<tr>
<td>&lt; 2 servings fruit and vegetables/day</td>
<td>16%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Cardiovascular fitness (recovery heart rate after step test)</strong></td>
<td><strong>-4.5 bpm</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Participants decrease or reduce BMI z-score after MEND 7-13</strong></td>
<td><strong>83%</strong></td>
<td></td>
</tr>
</tbody>
</table>

*All results are highly statistically significant (all p < 0.0001)*
Weight is a family issue: Parental baseline BMI and change after MEND

67% of parents maintained or reduced their BMI
Implementation in a clinical setting

Demand
- 21,000 overweight/obese children (35.8%)
- Large numbers of MCD, minority/Latino, all <200% FPL

Access/barriers
- Despite other child weight management programs in community settings in Denver, few patients were actually participating, and little info on those who did participate.
- How can we best comply with USPSTF guidelines?
Our kids (and families) are sick

- 14% elevated cholesterol
- 12% elevated ALT
- 22% elevated BP
January 2015 – grant funding: Integrate MEND into FQHCs
Referral from PCP to program in a familiar setting (medical home)
School-Based Health Center connection
(and hooray for nurses!)

• Champion the program for families
• Know which kids would benefit from program, and provide insights into family challenges and opportunities
• Linkages between school and clinic
Grocery store tours
### 2015-2016 outcomes:

<table>
<thead>
<tr>
<th></th>
<th>Before MEND</th>
<th>After MEND</th>
<th>Change</th>
<th>Lower CI</th>
<th>Upper CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMI (kg/m²)</strong></td>
<td>N 65</td>
<td>Mean 26.5</td>
<td>SD 4.6</td>
<td>Mean 25.8</td>
<td>SD 4.6</td>
<td>-0.8</td>
</tr>
<tr>
<td><strong>BMI z-score</strong></td>
<td>N 65</td>
<td>Mean 2</td>
<td>SD 0.43</td>
<td>Mean 1.88</td>
<td>SD 0.49</td>
<td>-0.12</td>
</tr>
<tr>
<td><strong>Waist circumference (inches)</strong></td>
<td>N 67</td>
<td>Mean 34.9</td>
<td>SD 4.7</td>
<td>Mean 34.5</td>
<td>SD 4.6</td>
<td>-0.4</td>
</tr>
<tr>
<td><strong>Physical activity (hours/week)</strong></td>
<td>N 77</td>
<td>Mean 6.5</td>
<td>SD 6.6</td>
<td>Mean 11.4</td>
<td>SD 6.3</td>
<td>4.8</td>
</tr>
<tr>
<td><strong>Sedentary activities (hours/week)</strong></td>
<td>N 73</td>
<td>Mean 6.4</td>
<td>SD 6.7</td>
<td>Mean 3.7</td>
<td>SD 3.2</td>
<td>-2.7</td>
</tr>
<tr>
<td><strong>Heart rate (beats per minute)</strong></td>
<td>N 80</td>
<td>Mean 104.5</td>
<td>SD 13.5</td>
<td>Mean 94.5</td>
<td>SD 12.4</td>
<td>-10</td>
</tr>
<tr>
<td><strong>Nutrition score (score 0-28)</strong></td>
<td>N 72</td>
<td>Mean 16.8</td>
<td>SD 4.4</td>
<td>Mean 21.5</td>
<td>SD 3.8</td>
<td>4.7</td>
</tr>
<tr>
<td><strong>Total Difficulties (score 0-40)</strong></td>
<td>N 69</td>
<td>Mean 11.6</td>
<td>SD 6</td>
<td>Mean 10.1</td>
<td>SD 5.9</td>
<td>-1.5</td>
</tr>
<tr>
<td><strong>Body Image (score 0-24)</strong></td>
<td>N 73</td>
<td>Mean 12.2</td>
<td>SD 5.8</td>
<td>Mean 14.5</td>
<td>SD 6.1</td>
<td>2.3</td>
</tr>
</tbody>
</table>
Adult/parent impact

**Parental fruit+vegetable consumption (n=91)**

Before: 3.0
After: 4.0

**Parental Mental Health scale (n=90)**

Before: 48.0
After: 52.0

**Parental BMI (n=27)**

Before: 33.0
After: 33.0

P-values:

- Parental fruit+vegetable consumption: P=0.003
- Parental Mental Health scale: P=0.01
- Parental BMI: P=0.4
Risk reduction – lab changes:

<table>
<thead>
<tr>
<th>Series1</th>
<th>Baseline</th>
<th>Post-MEND</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.84%</td>
<td>5.79%</td>
</tr>
</tbody>
</table>

Prediabetes (n=16)
Fatty liver disease

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Post-MEND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series1</td>
<td>78.65</td>
<td>54.57</td>
</tr>
</tbody>
</table>
Baseline Post-MEND

<table>
<thead>
<tr>
<th>Complication</th>
<th>Baseline</th>
<th>Post-MEND</th>
</tr>
</thead>
<tbody>
<tr>
<td>total cholesterol (&gt;170)</td>
<td>196.65</td>
<td>180.44</td>
</tr>
<tr>
<td>LDL (&gt;110)</td>
<td>133.64</td>
<td>102.67</td>
</tr>
<tr>
<td>triglycerides (&gt;130)</td>
<td>216.43</td>
<td>151.13</td>
</tr>
</tbody>
</table>
What about diabetes risk?

“In youth with prediabetes-range A1c, BMI stabilization was associated with improvement of glycemia.”

Information on MEND:
https://healthyweightpartnership.org
YES, WE CAN!
INTEGRATING COMMUNITY AND PRODUCE RX INTO WELLNESS GROUP VISITS

James Huang, MD, FAAFP
Washington DC

• Unity Health Care, Inc.
  • D.C.’s largest network of community health centers
  • Upper Cardozo Health Center
Population

In Washington, D.C., nearly one in three children is overweight or obese, and many low-income families face barriers to accessing healthy foods.
1 out of 10 residents of the metropolitan Washington region is food insecure. Nearly \( \frac{1}{3} \) of them are children.
Intervention

Group wellness visits that engage families are a promising intervention for addressing chronic illnesses and improving health outcomes.
History of Program Development

• 2008 - adapted NHLBI weCan! curriculum

• Growth through partnerships with community organizations
  • Fruit & Vegetable Prescription Program (Produce Rx)
Program Structure

- Child/family referred by provider
- Weekly drop-in class/group visit, year round, bilingual
- Team: registration clerk, medical assistants, providers, and learners
- Register and vitals taken from 5-6pm
  - Unstructured play, healthy snacking (fruits/veggies)
- Brief 1:1 with clinician, documented in EMR
  - review health knowledge & behavior
  - financially sustainable, clinical session for provider
- Nutrition & Physical Activity for 90 minutes
- Usually 5-15 families per class
Wellness Group Visit at Unity

• Collaborative effort that focuses on:
  • Engaging families
  • Healthy eating on a budget
  • Promoting physical activity
  • Connecting families to community resources
Body mass index-for-age percentiles:
Boys, 2 to 20 years

A 10-year-old boy with a BMI of 23 would be in the obese category (≥ 95th percentile).

A 10-year-old boy with a BMI of 21 would be in the overweight category (85th – < 95th percentile).

A 10-year-old boy with a BMI of 18 would be in the healthy weight category (5th – < 85th percentile).

A 10-year-old boy with a BMI of 13 would be in the underweight category (< 5th percentile).
Unique Community Partnerships

- Enhanced programming
- Stronger community connections
- Richer experience for families
- Increased retention
Nutrition Education Programs: DC Central Kitchen
Nutrition Education Programs:
SNAP Ed
Nutrition Education Programs: Common Threads

• Health & wellness for children, families, communities through cooking & nutrition education

• Family cooking classes led by professional chefs in clinic’s demonstration kitchen
Nutrition Education Programs: CHOP CHOP Healthy Recipes
Community Garden: City Blossoms

• Fostering healthy communities by developing creative, kid-driven green spaces

• Plant/harvest in garden & prepare a healthy meal
Physical Activity

- Volunteer yoga and zumba instructors
- Community pool (DC Parks & Rec)
- Playgrounds
Access to Local Parks
Produce Rx

Doctors in D.C. write prescriptions for fresh fruits and vegetables that can be redeemed for free produce to help at-risk patients manage diet-related chronic illnesses.

THE FVRx PROCESS

1. **Patients** are enrolled by a health provider as a FVRx participant.

2. Participants attend a FVRx clinical visit to set goals and discuss nutrition and the importance of healthy eating.

3. Participants receive a FVRx prescription during the visit and health indicators are collected.

4. Prescriptions are redeemed for fresh fruits and vegetables at participating retailer, where redemption is tracked.

5. Participants attend monthly clinic visits to refill their FVRx prescription and set new goals for healthy eating.
Evaluation

Enrolled families completing program

- 23
- 2

Prescription redemption rate

- 94%
Evaluation

• 50% reduced their BMI percentile

Health Knowledge/Behavior due to program participation:
• 92% agreed/strongly agreed that they were able to better take care of their health & learned new things about how to care of their health
• 46% improved their rating of their children’s overall health
• 30% increased their knowledge about how to prepare fresh fruits and vegetables
• 38% increased their knowledge about where to buy locally grown produce
Partnerships

1491 programs serve people in Farmington, CT (06032)

Programs like:

Programs for:
- Anyone in need, Veterans, Families, Seniors, Low income, Homelessness, LGBTQ+, Children, Limited Mobility, Anxiety, Unemployed, Infants, Immigrants, Domestic Violence Survivors, Pregnancy, Cancer, Substance Dependency, Disabilities, Criminal Justice History, and more!

Type a search term, or pick a category
Success Stories

1. Community building
2. Connecting to local resources
3. Change in behavior
4. Knowledge & engagement
It also changed my life because it made me less shy to talk to people and I learned new fruits and vegetables, and that makes me help the people who need the names of the vegetables. Also, I learned how to cook different plates with new vegetables and fruit. This new and sort of amazing way I got this job changed my social life and also my life with eating healthy and learning healthy foods!
Conclusion

This family wellness group visit model highlights the value of strong community partnerships, which enhance retention and increase support for families towards achieving their healthy lifestyle goal:

- Weekly billable group visit
- Family engagement
- Community partnerships & collaborative efforts
- Fruit & vegetable prescriptions
Acknowledgements

Wellness Team - MAs, PRCs, providers
Upper Cardozo Health Center
Unity Health Care, Inc.
Community Partners
Participating Families
QUESTIONS?

Please enter your questions into the “Chat” box of the Zoom control window.
Upcoming Learning Collaborative

Four-Part Learning Collaborative
Advancing School Partnerships to Address Diabetes Risk Factors in Elementary School Children
Begins Tuesday, March 3, 2020 at 2:00 pm ET

- Part 1: Tuesday, March 3, 2020 at 2:00 pm - 3:30 pm ET
- Part 2: Tuesday, March 10, 2020 at 2:00 pm - 3:30 pm ET
- Part 3: Tuesday, March 24, 2020 at 2:00 pm - 3:30 pm ET
- Part 4: Tuesday, March 31, 2020 at 2:00 pm - 3:30 pm ET