

MEASURING FIDELITY OF EVIDENCE-BASED INTERVENTIONS (EBI) IN COMMUNITIES

Merck Childhood Asthma Network (MCAN)

MCAN Program Sites:

- Chicago
- Los Angeles
- New York
- Philadelphia
- Puerto Rico



Agenda

Introduction (10 minutes)

Panel 1: Open Airways for Schools (30 minutes)

developer and implementer presentations

short question and answer period

Panel 2: Yes We Can and NCICAS (30 minutes)

(National Collaborative Inner-City Asthma Study)

developer and implementer presentations

short question and answer period

Closing discussion (20 minutes)

Which of the following best describes you? (pick the best answer)

1. **Developer (25%)**
(participated in the development and initial efficacy testing of an evidence-based intervention)
2. **Implementer (25%)**
(participated in the implementation and/or adaptation of an evidence-based intervention at a larger scale)
3. **Evaluator (25%)**
(of evidence-based interventions at any stage)
4. **Funder (13%)**
(provider of direct or indirect resources for implementation/evaluation)
5. **Client/user (0%)**
(have received an evidence-based intervention)
6. **Other (13%)**

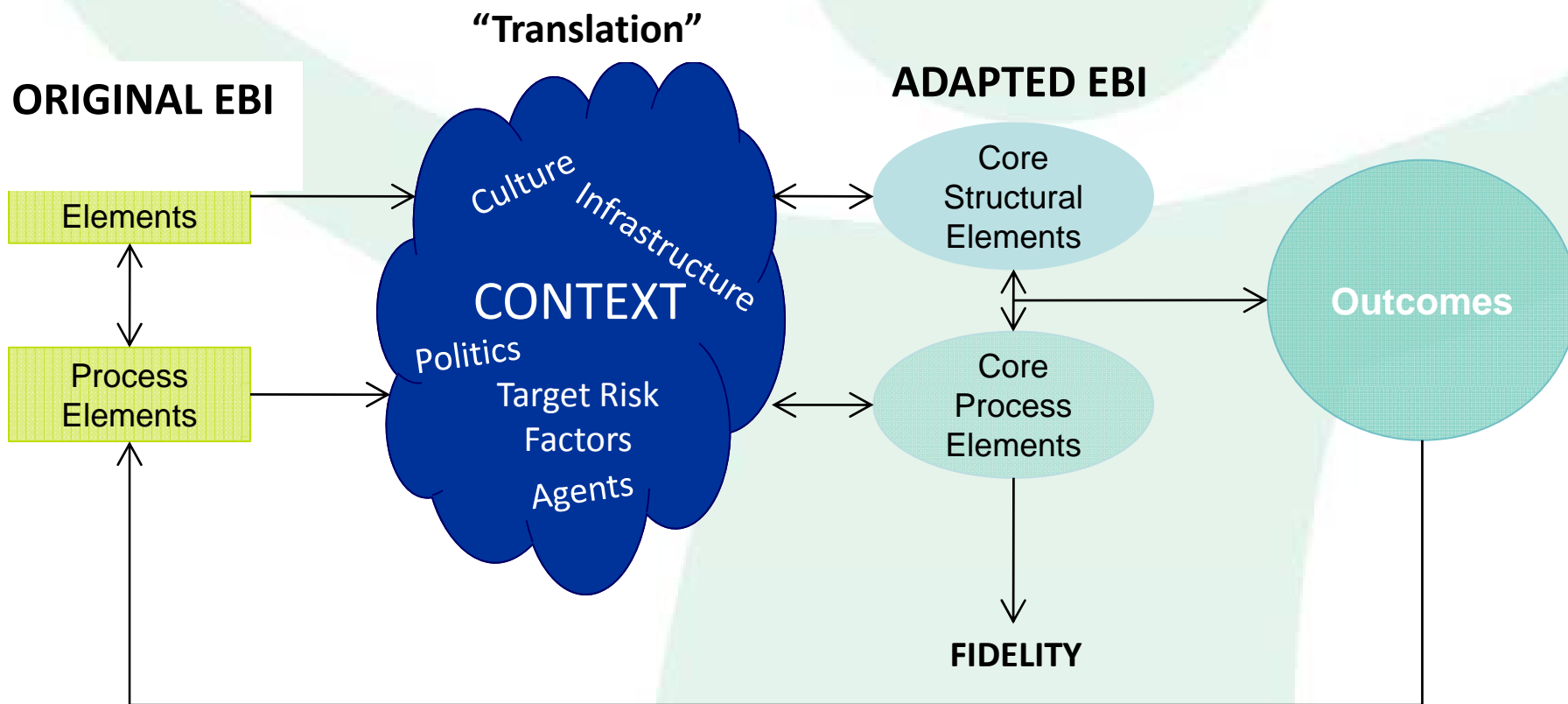
How much experience do you have in measuring fidelity of interventions in communities?

1. No experience (13%)
2. Very little experience (22%)
3. Some experience (43%)
4. Considerable experience (17%)
5. Extensive experience/expert (4%)

Justification for adaptation of EBI's in community settings

- Structural limitations in capacity, funding, etc. can make implementing the original protocol unfeasible
- The intervention may not be effective in this setting
 - Protocol components may not match the risk profile of the community
 - Protocol components may not work in this population (e.g. not culturally appropriate)
- Not all protocol components may be necessary
- The community may have the imperative to “do something” when there is incomplete information

Conceptual Model



Structural Elements

Intervention:

- The framework for intervention delivery
 - physical/social/organizational setting
 - characteristics of intervention providers, tools and resources at their disposal
 - e.g., *qualifications for intervention staff*

Context:

- Community or organizational characteristics which hinder or enhance implementation
 - e.g., *technical and cultural competency or lack thereof of available intervention staff*

Adapted from Donabedian

Process Elements

Intervention:

- *Protocol: how the intervention is supposed to be delivered within/by an agent; specific activities and/or methods for delivering those activities*

Context:

- Community or organizational characteristics which hinder or enhance implementation
 - *e.g., availability of competent staff*

Adapted from Donabedian

Steps to Adaptation

- Decide what changes to the intervention protocol may be needed to :
 - minimize or bypass barriers to implementation
 - harness potential enhancers in the community context
- Design and implement the changes for the specific community
- Evaluate the effect of the changes iteratively

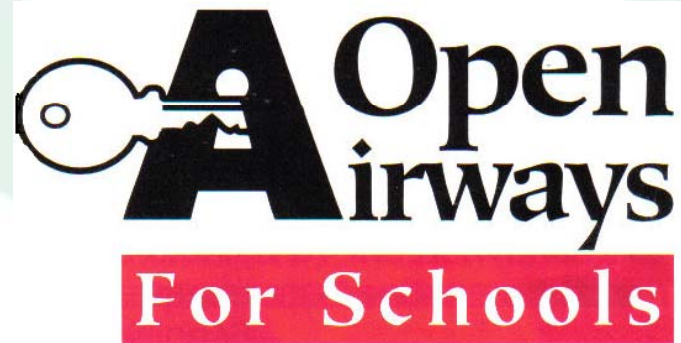
Defining Fidelity

- *Fidelity* refers to “the adherence of actual treatment delivery to the protocol originally developed” (Mowbray 2003) or “the degree program developers implement programs as intended by the developers” (Sussman 2006)”

Defining Core Components

- Specify “*which traits are replicable, how these attributes are created and the characteristics of environments in which they are worth replicating*”
- “*The most essential and indispensable components of an intervention practice or program*”

PANEL 1:
Evidence-Based Intervention:
Open Airways for Schools (OAS)



Discussant 1: Developer
Jean-Marie Bruzzese, Ph.D.
NYU Child Study Center
NYU Langone Medical Center

What is OAS?

- School-based intervention for 8 to 11 year olds to teach them asthma management skills in order to reduce the severity and burden of asthma
- Broadly disseminated today by American Lung Association

Core Elements: STRUCTURAL

Fidelity Parameter	OAS
Setting	<ul style="list-style-type: none">• Schools
Target Population	<ul style="list-style-type: none">• 3rd to 6th grade students with asthma
Staffing	<ul style="list-style-type: none">• School nurses, health educators, ALA volunteers, college students, teachers• Two instructors who can team-teach
Training	<ul style="list-style-type: none">• ALA staff
Standardized Materials	<ul style="list-style-type: none">• Scripted lessons, posters, child and parent handouts (translated/validated in Spanish)

Core Elements: PROCESS

Fidelity Parameters: Procedures/Activities

- **Teaching methods**
 - Interactive: open-ended questions, stories, games, and role-playing
 - Model new skills and provide strong verbal praise
 - Repeat child's responses
 - Transition and summarize between topics within a lesson, and from lesson to lesson
- **Use only standardized educational material**
 - Scripted lessons, posters and student handouts
 - “Letters to Parents” and take-home assignments
- **Standardized evaluation:** pre-post child survey tapping knowledge and management skills provided in the curriculum

Core Elements: PROCESS

Fidelity Parameter: Intervention Dosage

- **Six 40-minute group lessons**
 - Expand to 7 lessons, with review and graduation ceremony/party on last day
 - Reduce to 5 lessons by combining Lessons 5 & 6
- **Groups were held twice a week for 3 weeks**
 - Should never run less frequently than once a week

OAS: Implementation and Adaptation in Chicago, LA, and Puerto Rico

Maureen Damitz, AE-C

Respiratory Health Association, Chicago, IL

Kimberly Uyeda, MD, MPH

Los Angeles Unified School District

Marielena Lara, MD, MPH

La Red de Asma Infantil de Puerto Rico

Core Elements: STRUCTURE

	Chicago	Los Angeles	Puerto Rico
Setting	Elementary schools	Same	Same
Staffing	ALA volunteers (hired through the Americorps program)	ALA staff (paid); ALA volunteers; School nurses (stipend)	School teachers (incentives provided)
Trained By	OAS Master Trainer (fidelity)	ALA staff and/or OAS Master Trainer	OAS-Master Trainer and/or ALA certified staff
Training Length	Full-day	Half-day	Half-day
Eligibility	8-11 year olds with asthma	8-11 yo (occasionally younger) with asthma	All 8-12 yo(4 th -6 th grade) with and without asthma
Standardized Materials	Same as ALA's	Same as ALA's	Same as ALA's translated into Spanish

Structure Adaptations in LA

- Collapsing the number of lessons
 - Usually 5th and 6th lessons
 - Fit into school schedules
 - Spacing the program into one week
- Occasionally teach younger children
 - Elementary schools have children with asthma
 - Modified methods (e.g., team younger and older children)
 - Benefit to younger child (?) vs. detraction for target/eligible children

Structure Adaptations Across Sites

- Program are not running on true volunteers (incentives, paid staff)
 - This makes sustainability and quality year to year challenging
- Changing instructors (turn around time) changes quality
 - Can have positive/negative program impact
 - Different people bring in their own bias
 - Can have data impact

Core Elements: PROCESS

	Chicago	LA	Puerto Rico
Intensity/ Dosage	5-6, 40min lessons over 1- 6 wks	5-6, 50min over 5-6 wks	6-8 sessions, 45min (class period) 2-6 wks
Timing of Delivery	During school day; Class time	After school	During class time (teacher chooses)
Parental Consent	Passive (opt-out)	Active (written)	No consent (Dept. of Education approved)
Standard Evaluation	ALA (original version)	ALA (updated version)	ALA updated version- Spanish)

Core Elements: Process (Cont.)

	Chicago	LA	Puerto Rico
Incentives for Students/ Families	Small tokens; spacers	Spacers and peak flow meters	Same as LA (children with asthma only)
Incentives for Schools	Equipment (nebulizers)	Stipend for school nurses	Certificates of recognition
Incentives for Facilitators	Volunteers hired through Americorps	Nurses stipend as above, ALA paid staff	Gift certificates for high participation rates; count as teacher training

Process: Adaptations in CHI and PR

- Program is delivered during class time
 - In PR as part of science curriculum that teachers have to provide
- OAS Consent process depends on:
 - When program is delivered
 - Whether it's part of the school curriculum

Process: Adaptations in CHI and LA

- Low priority of health and controlling chronic disease makes incentives necessary for recruitment of schools and retention of students
- Equipment supplies fit in lesson topics
- Help increase fidelity to teaching methods (model skills, practice skills, take-home assignments)

Contextual Factors in Communities and Schools

- Prioritization of academics (school)
 - “High stakes” testing
 - Less priority on health and prevention
- Prioritization of non-health issues (family)
- Difficulty connecting with parents (school)
 - *in loco parentis*, "in the place of a parent"
- Limited and declining resources (school, community, budget and staffing cuts)

Questions/Discussion

PANEL 2:
Evidence-Based Intervention:
The *Yes We Can* Urban Asthma
Partnership
(YWC)
The National Cooperative Inner-City
Asthma Study
(NCICAS)

Developer: **Shannon Thyne, MD**
UCSF

What is Yes We Can?

- Medical-social model for asthma care based in a specialty asthma clinic setting
- Medical provider and Community Health Worker (CHW) Partnership
- Tailored asthma interventions focused on treatment and self management
- Disseminated in US and Puerto Rico (10+ sites) through implementing institutions with varying degrees of fidelity

Core Elements: STRUCTURAL

Fidelity Parameter	YWC
Setting	<ul style="list-style-type: none">• Homes and Clinic
Target Population	<ul style="list-style-type: none">• Children ages 0-18 with asthma
Staffing	<ul style="list-style-type: none">• Community Health Workers (CHWs) and medical providers
Training	<ul style="list-style-type: none">• Asthma providers/study developers; community environmental control experts
Standardized Materials	<ul style="list-style-type: none">• Clinic database/EMR and YWC Toolkit

Core Element: Process

Fidelity Parameter: Intervention Dosage

- Clinic visits at 0, 1, 6 and 12 months
- Home visits between clinic visits
- Targeted case management based on initial risk stratification to low, moderate, or high risk status
- Primary care provider resumption of care once risk decreased

Core Element: Process

Fidelity Parameter: Procedures/Activities

- Targeted case finding from urgent care, schools, etc.
- Clinic visits for medical and social assessment with risk stratification at first visit
 - Spirometry, skin testing, action plan
 - CHW introduction, education, and planning for home visit
- Home visits focused on education, environmental controls, and review of action plan

The National Cooperative Inner-City Asthma Study (NCICAS)

- Multi-center, study of low income, minority children in the inner cities
- Investigation of factors related to asthma morbidity
- Educational intervention designed to improve asthma outcomes
- Now replicated in many sites

Core Elements: STRUCTURAL

Fidelity Parameter	NCICAS
Setting	<ul style="list-style-type: none">• Research centers, homes, telephone
Target Population	<ul style="list-style-type: none">• Children ages 5-11 with asthma
Staffing	<ul style="list-style-type: none">• Masters level social workers (Asthma Counselor)
Training	<ul style="list-style-type: none">• Training for Asthma Counselor• Communication skills training for physicians and patients/families
Standardized Materials	<ul style="list-style-type: none">• Standardized materials and protocols

Core Element: Process

Fidelity Parameter: Intervention Dosage

- Intervention assessment of risk at first visit for all patients
- Phone and in person visits at monthly intervals over 2 year period
- Targeted case management based on individual needs of patients

Core Element: Process

Fidelity Parameter: Procedures/Activities

- Individual risk profile assessment at entry
 - Spirometry, allergy testing
- Counseling sessions
 - 2 adult group sessions (based on A+ Asthma Program),
 - 2 child group sessions
- Counselor interactions
 - In person, every 2 months for 1 year
 - Via phone, months between visits
 - Tailored to individual risk profiles



YWC: Implementation and Adaptation in New York (WIN for Asthma)

Sally Findley, PhD
Columbia University

WIN for Asthma in Northern Manhattan, NYC

- **Community Context:**
 - Washington Heights/Inwood Pop= 270,000 in 2000
 - 75% Latino, mostly Dominican origin
 - Low-income: 75% receive Medicaid or subsidized benefits
 - Families live in primarily low-rise rental walk-ups
- **Medical Context:**
 - 20-25% asthma prevalence
 - Children's Hospital has 4 affiliated community clinics
 - Many small pediatric practices
 - No single asthma clinic
- **Asthma Program Precedents:**
 - ABC coalition with strong CBO leadership
 - Existing linkages and training to many PCPs
 - Positive experience w. CHWs

Why We Liked Yes We Can: SF vs. Northern Manhattan, NYC

- **Structural/Contextual Similarities:**
 - Inner city, low-income, minority neighborhood, heavily immigrant
 - Health Systems Model: Integrated medical+social team
 - Partnership model: Hospital, community clinic, CHW
- **Process Strengths:**
 - Needed Care coordination elements of Yes We Can
 - Clear criteria for engaging families in CC
- **Outcomes:**
 - Demonstrated effectiveness of **CHW** to provide asthma education and support to improve asthma management

Yes We Can vs. WIN program Structure

Yes We Can Structure & Process

- One provider (asthma clinic)
- Recruit directly from health care system
- Nurse/clinical coordinator links to PCPs
- CHW based at clinic
- CC intensity varies with risk

WIN for Asthma Structure & Process

- Multiple providers, no single champion
- Asthma clinic only very high risk children, so recruit from multiple sources
- Medical director as clinical coordinator for multiple PCPs
- CHW based at CBO
- CC program only for 1 risk-group, uniform intensity

Translating Yes We Can Structure to NY Structure: Health System Linkages

- **Multiple Medical Providers**
 - Asthma clinic not suitable for recruitment
 - Recruitment from multiple providers and community
 - No single asthma champion
 - Medical director becomes asthma champion
- **Supporting Quality of Care by Multiple Providers**
 - PACE training offered to all PCPs
 - Intensive QI to PCPs with children in CC
 - PACE training context for QC recommendations to PCPs
 - No routine spirometry or allergy testing;
 - No routine clinical visits a priori in protocol
- **Clinical coordinator serving Multiple Providers**
 - PCP practices differ, few have nurse/clinical coordinator
 - Initial check-in by WIN medical director
 - Follow-up as needed by CHW to assist family in keeping appointments

Translating Yes We Can Process to NY : Care Coordination/CHW

- **WIN Care Coordination = 4 CHW based at 4 CBOs**
 - Multiple providers needs multiple CHW
 - CHW jointly supervised by CBO and hospital supervisors
 - Enhances community ownership of the program
- **WIN adaptation of the YWC training**
 - Adapted from manual to create 1-month intensive training
 - Frequent refreshers and in-service training
- **Care Coordination protocol adapted for NYC**
 - Initial visit (not home, at CBO) to identify social service needs and prepare tailored plan
 - Home visit for Environ Assessment and Actions
 - Follow-up with monthly phone calls to ensure that tailored intervention is received and implemented
 - Patient navigation as needed
 - 1 additional home visit if needed
 - Supported by group asthma education at school or day care center
- **Supervision**
 - Group bi-monthly, indiv monthly;
 - less direct feedback from CHW to PCP



The CAPP Philadelphia Experience: Effectiveness/Adaptation of NCICAS

Tyra Bryant-Stephens, MD
The Children's Hospital of Philadelphia

Philadelphia MCAN/CAPP Intervention: Contextual Factors

Philadelphia

- ✓ ~1.4 million residents; 26% prevalence of asthma in children; ~70% mild asthma; 60/40 male/female
- ✓ Disadvantaged neighborhoods characterized by old housing stock with poor maintenance, overcrowding, 75% below poverty level, rowhouses,
- ✓ Multiple academic medical centers; 8 public health centers; 20 FQHC's
- ✓ School district- leadership changes throughout intervention with funding concerns

Eligibility Criteria

- ✓ Children recruited from disadvantaged neighborhoods in inner-city through provider referral, self-referral, school referral and community partners referral
- ✓ Primarily African American and Latino families
- ✓ 1 hospitalization or ≥ 2 ED visits in year prior to enrollment

Fidelity vs. Infidelity

- ✓ Asthma education (one-to-one in the home)
- ✓ Asthma Self-management skills
- ✓ Environmental Intervention in home and bedroom
- ✓ Individualized counseling sessions- every 2 weeks (more often than NCICAS)
- ✓ Communication with primary care providers
- ✓ Referral to community resources and social services
- ✓ Frequent contact in person/phone
- ✓ Regional pcp training- most from one network but multiple providers

- ✓ Staff- CHW instead of MSW
- ✓ No skin testing done
- ✓ Clinical asthma assessment from patient's charts
- ✓ More asthma education sessions in the homes
- ✓ More time spent reviewing medications and proper use of controller meds
- ✓ Daily diary completed by caregivers
- ✓ Visited every 2 weeks or called
- ✓ Environmental interventions taught to caregivers. Only used professional services for severe pest infestation
- ✓ Caregivers paid for 1/2 of vacuum price
- ✓ Caregivers installed tile themselves

Adaptation#1: Utilization of Community Health Workers to Implement Intervention

Advantages: lower cost, build community capacity, peers more effective educators, familiarity with neighborhoods and safety issues, greater knowledge of social context and political fix, able to contribute to effective design and implementation because of their community context expertise

Disadvantages: Less education- may require more training and supervision for consistency in educational implementation and data collection

Strategies to Adapt to CHW

- Community Health Workers
 - All CHW's residents of targeted neighborhoods
 - At least 3 years experience and/or education post-high school. In addition all had 3 years previous experience with CAPP
 - Supervised by Master's prepared Health Educator with >20 years experience

Training For CHW

- ✓ Asthma Education
- ✓ Structured didactic training with frequent assessment/booster sessions
- ✓ Structured progression of advancement towards independence
 - ✓ Master's level supervisor accompany CHW –field supervision
 - ✓ Buddy teaching with experienced CHW
 - ✓ Feedback to CHW
 - ✓ Independence with quarterly field supervision until experienced
- ✓ Data Collection training from MPH Study Coordinator
- ✓ Certified as Healthy Home Specialists and Smoking Cessation Counselors

Adaptation #2: Tailored interventions for most common environmental asthma triggers

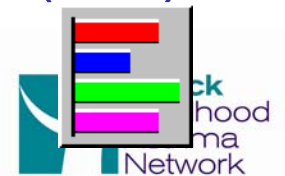
Used NCICAS findings in inner-city AA/PR families, focused on most common triggers for intervention-tailoring based on environmental exposure:

- **Advantages:** lower cost; easy to generalize to other programs who already have “outreach workers”; removes barriers of health access/coverage; easier to standardize intervention (duration, supplies, resources)
- **Disadvantages:** families may not buy-in to eliminating triggers for which they haven’t seen any asthma symptoms; more difficult to prove causal relationship

Questions/Discussion

In your opinion, why does the measurement of fidelity matter ? (pick the best answer)

1. It helps to ensure standardization (9%)
2. Provides data regarding effectiveness of the intervention in different settings (39%)
3. Facilitates articulation of barriers and enhancers to high-fidelity implementation (17%)
4. Helps to clarify decisions regarding adaptations of intervention components (26%)
5. Intervention components are implemented (9%)
6. Other (0%)



**In your opinion, which factor is most relevant for making decisions about how to adjust an EBI for community settings?
(pick top 3 answers and press SEND)**

1. Target Community socio-demographics (24%)
2. Individual recruitment and Selection Criteria (15%)
3. Community health care infrastructure (17%)
4. Intervention Staff and Leadership (19%)
5. Intervention Tools and Components (14%)
6. Intervention intensity (7%)
7. Evaluation parameters (5%)



The 3 programs discussed today were implemented with varying degrees of fidelity in different settings. How important do you think it was to maintain fidelity in these implementations?

1. Not important (0%)
2. Somewhat important (17%)
3. Neutral (13%)
4. Very important (65%)
5. Critical (4%)

Closing Remarks