Developing the CHW Evidence Base

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What Is Evidence?

- Depends on the audience
  - Scientists
  - Policy makers
  - Health care payers
  - CHWs
  - Program managers

Why Bother with Evidence?

- To influence funders
- To influence policy makers
- To improve programs
- To assure that CHW programs are making a difference

Limitations of Current CHW Evidence

- Appropriate study design
  - Comparison group
  - Sample size
  - Duration of follow-up
- Theoretical framework
- Appropriate outcome measures
  - Health
  - Economic
  - Individual vs. community level
- Adequate intervention description
  - Program
  - CHWs
- Generalizability

Thanks to Carl Rush

Challenges in Doing CHW Research

- Combining research with service
  - Assuring fidelity to research protocols
  - Adhering to a tight timeline
  - Defining a specific, replicable model
  - Providing benefits to all
  - Balancing researcher and community perspectives
- Retaining participants over time
- Obtaining funding for both intervention and evaluation

So…how do we address these challenges?

- Study design
- Combining research and service
- Theoretical framework
- Outcome measures
- Generalizabilty

What Study Designs Can Be Used to Evaluate CHWs?

- Controlled Trials
  - Randomized
  - Non-randomized/quasi-experimental
- Single Group Studies
  - Pre/Post
  - Post only
- Case Studies
- Cost-Effectiveness Studies

Study Designs

Controlled Trials

- Choice of comparison group
  - "Usual Care"
  - Comparison to other intervention
- Pros
  - Only difference between groups is intervention
- Cons
  - Generalizability
  - Lack of intervention for all participants
- Tips
  - Conduct in real-world settings with practical protocols
  - Early and late intervention groups

Quasi-Experiments

- Choice of comparison group
  - "Usual Care"
  - Comparison to other intervention
- Pros
  - Allows evaluation when randomization impossible
- Cons
  - Groups can differ in ways that affect outcomes, independent of intervention
- Tips
  - Control for differences statistically

Single Group Studies

- Pros
  - Simple
- Cons
  - Weakest design
  - “Natural” changes over time independent of intervention
  - If “post” only, no way to know if change occurred
- Tips
  - Times series analysis

Case Study

- Descriptive
  - Process of implementing intervention
  - Context of intervention
  - Participant reactions to intervention
- Methods
  - Interviews and focus groups
  - Story banks
  - Intentional story-telling
  - Participant questionnaires
  - Archival materials
  - Thematic analysis
- Very useful for assessing community-level outcomes

Cost-Effectiveness

- Compares costs of two alternatives
- Works best if single main impact
- Compares differences in cost with differences in effects
  - Incremental Cost Effectiveness Ratio

$$\text{CE ratio} = \frac{\text{cost}_{\text{new strategy}} - \text{cost}_{\text{current practice}}}{\text{effect}_{\text{new strategy}} - \text{effect}_{\text{current practice}}}$$

- Example
  - Dollars per symptom-free day gained

So, What Design to Choose?

- Needs to be convincing to audience
- Needs to be feasible
  - Cost
  - Time
- Needs to be acceptable
  - Participants
  - Community
- RCTs are NOT always the best way to go!
- Try to include Case Study with other designs

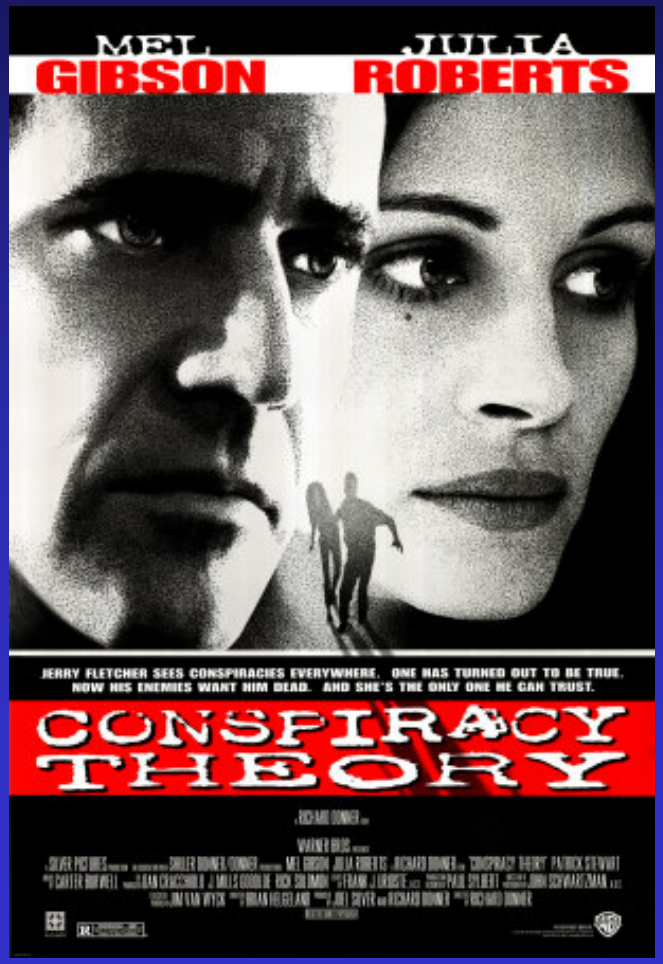
Process Evaluation

- Program description
  - Client and community characteristics
  - CHW characteristics and training
  - CHW supervision and infrastructure support
  - Recruitment and retention
  - Intervention protocols
  - Activities completed
- Fidelity of protocol implementation
- What worked…and what didn't
- Barriers to implementation
- Client satisfaction
- Community partner perceptions

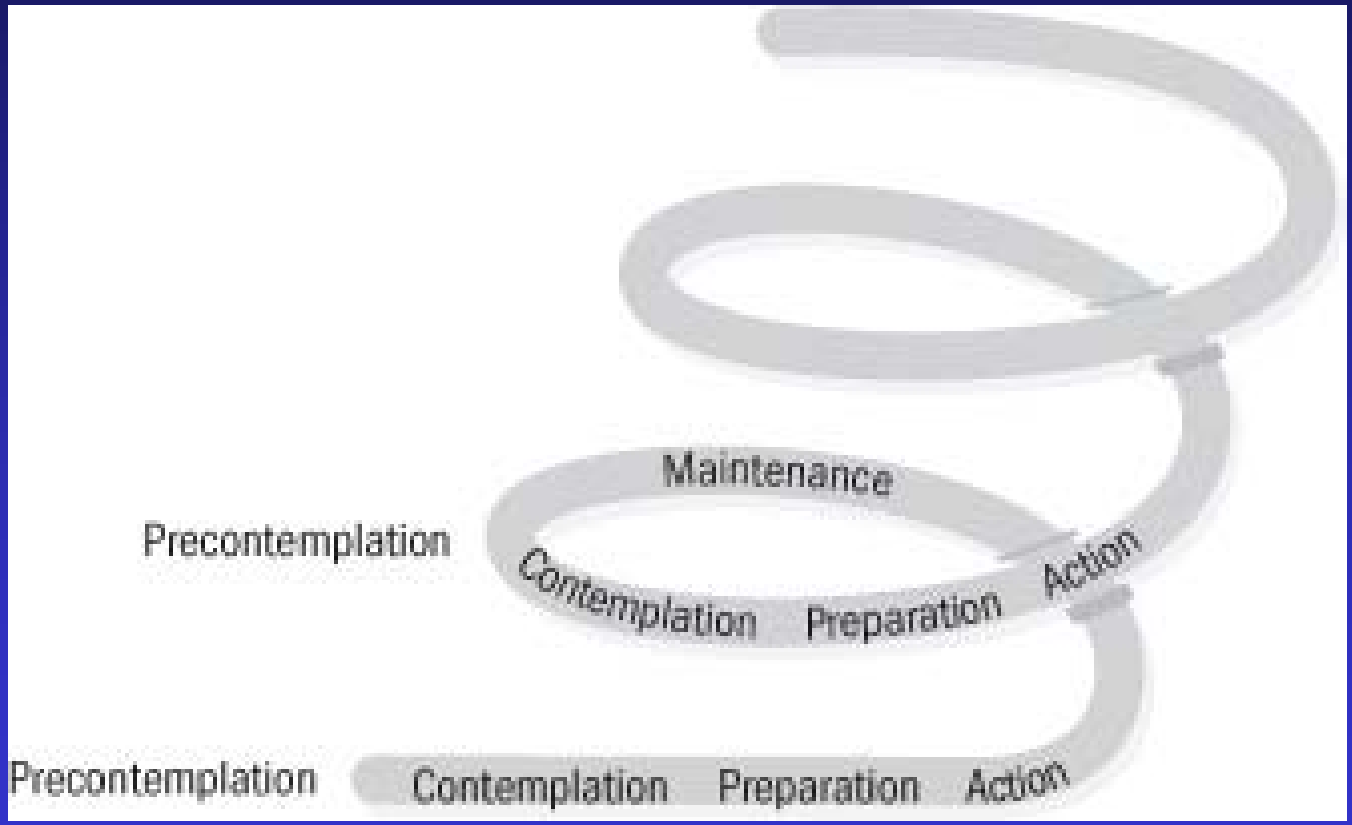
Combining Research and Service
Participatory Research Methods

- Partnership of community and researchers who jointly develop projects for mutual benefit
- Research focuses on a defined community and brings benefit to the community
- All partners have real influence on all project phases
  - project focus and objectives
  - implementation (including budget, hiring)
  - evaluation design, data collection and analysis
  - interpretation and dissemination of research findings
- The values, perspectives, and contributions of all partners are respected
- Research process builds trust and nurtures long-term relationships

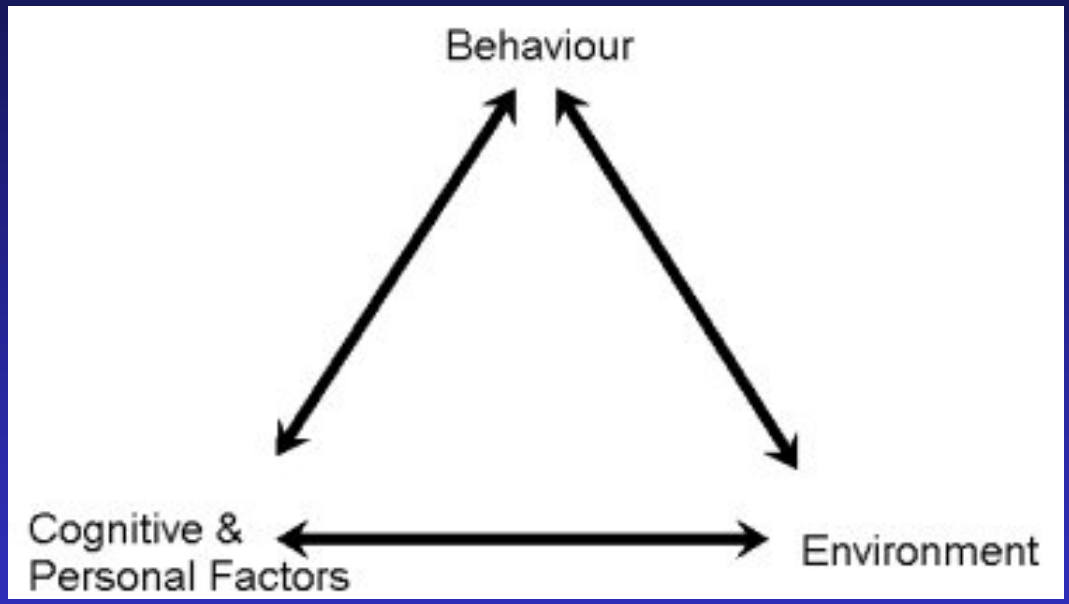
Theoretical Frameworks



Theoretical Frameworks
Stages of Change

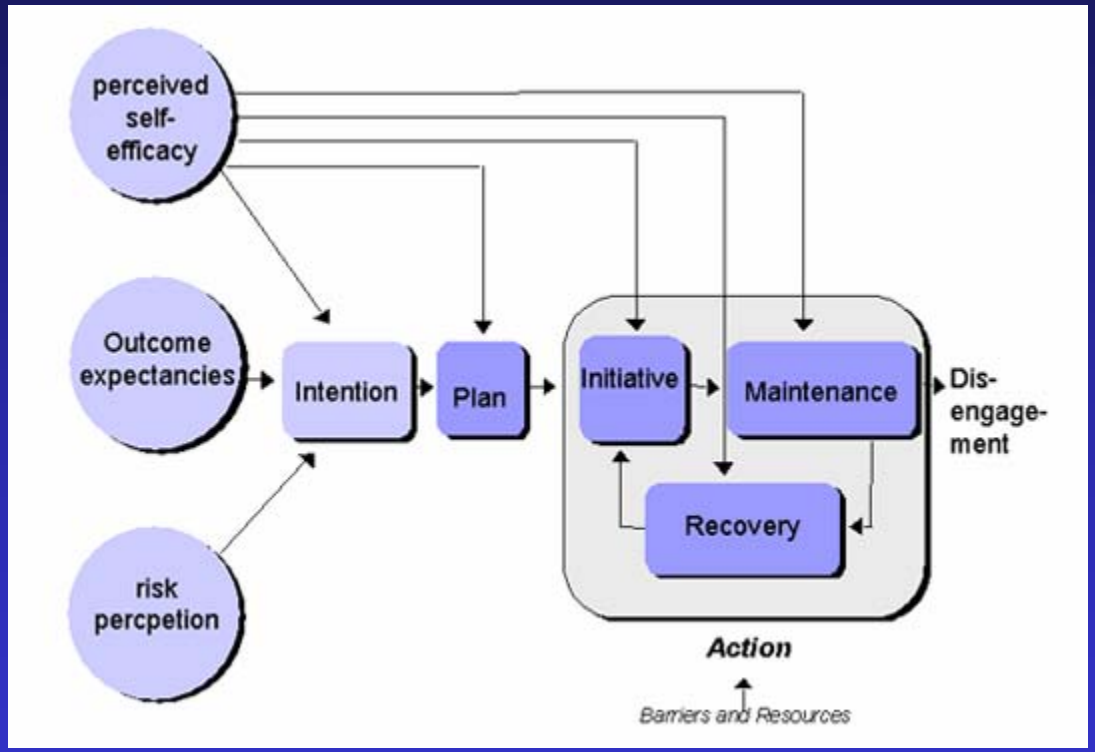


Theoretical Frameworks
Social Cognitive Theory



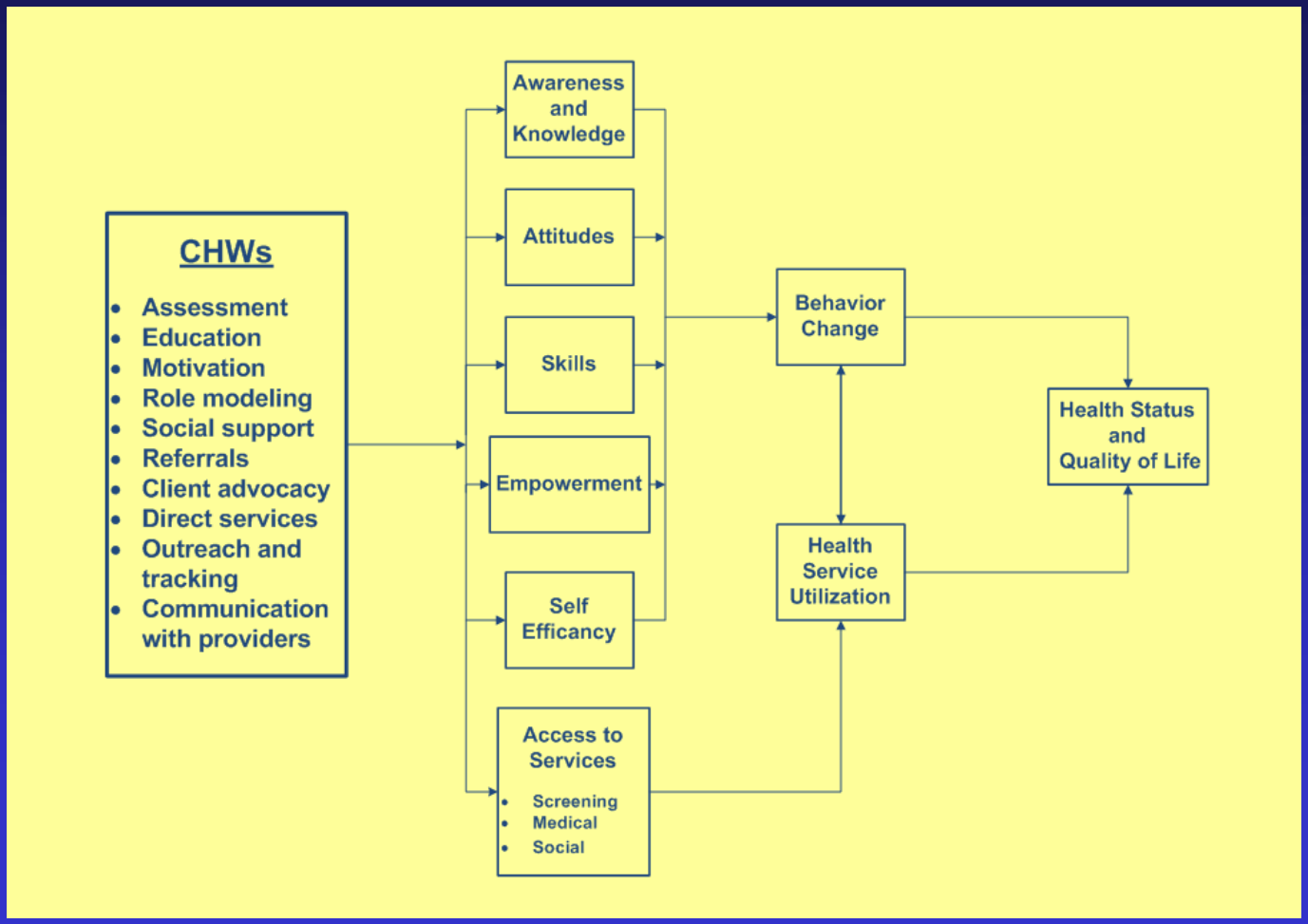
- Self-efficacy
- Outcome expectations
- Observational learning
- Self-regulation

Theoretical Frameworks
Health Action Process

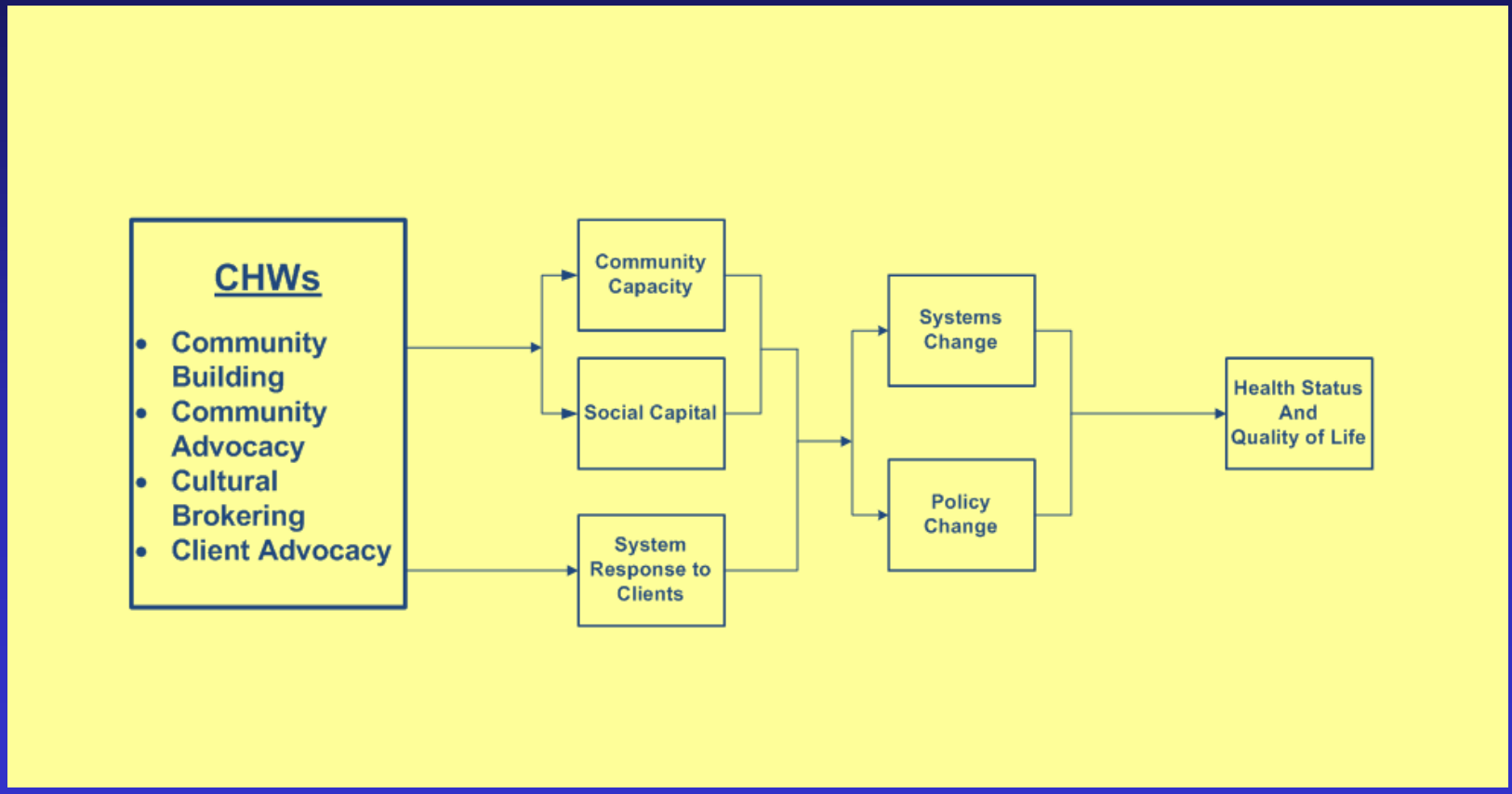


(Renner & Schwarzer, 2003; Schwarzer, 1999)

Measures of CHW Effectiveness: Individual Level



Measures of CHW Effectiveness: Community Level



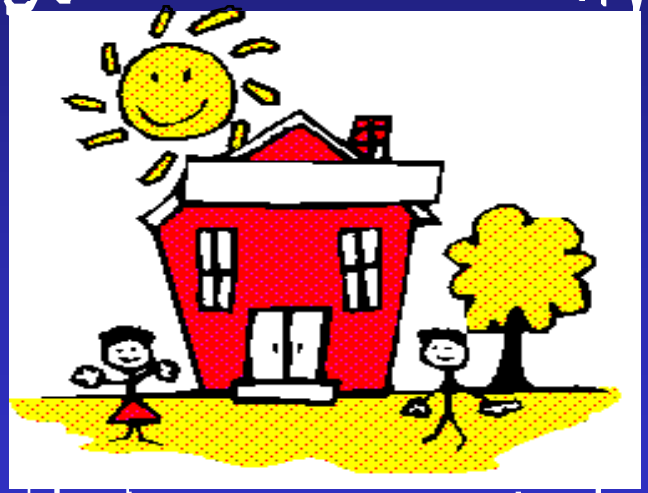
Generalizabilty

Can the research model be applied in other settings?

- Site
- Implementer
- Participants
- Protocols
- Budget

Healthy Homes

Seattle-King County



Healthy Homes Project

HEALTHY HOMES-II ASTHMA PROJECT · KING COUNTY ASTHMA FORUM ·

Community Health Worker Home Visits for Asthma

- 3-7 visits to low-income children with asthma
- Assess home environment and develop environmental Action Plan
- Offer education and support for self-management (HH-II only)
- Link to primary care
- Provide asthma trigger control resources (bedding covers, vacuum, door mat, cleaning supplies)
- Provide social support

Putting on a mattress cover

CHWs on the job….

Research design

- Eligibility
  - Household income below 200% poverty
  - Child with asthma
- Randomized controlled design
  - Healthy Homes I
    - High group: full intervention
    - Low group: one visit, follow-up call, bedding covers only
    - Low group crosses over to high group after one year
  - Healthy Homes II
    - CHW plus Clinic Nurse vs. Clinic Nurse only
    - Clinic Nurse only group gets CHW services after study

What If We Couldn't do a RCT?

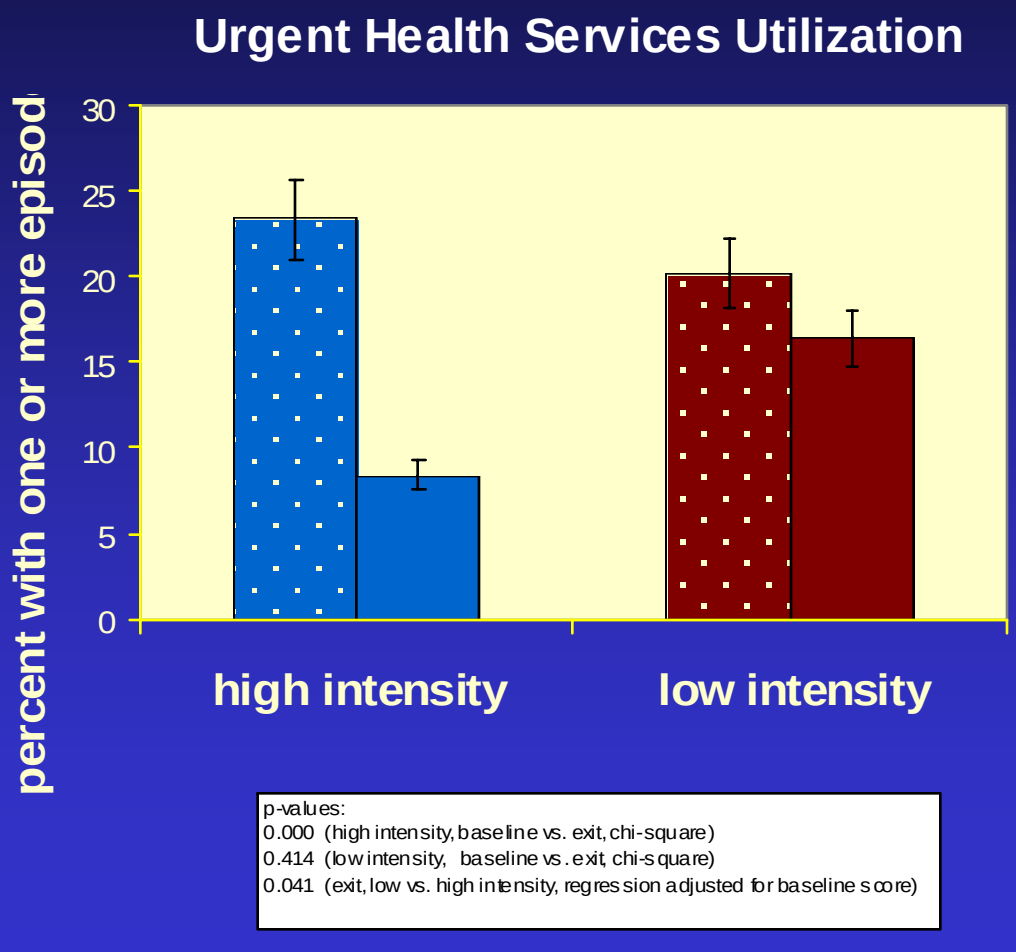
- Find a comparison group
  - E.g. data about similar people not getting CHW services from an existing database
- Pre/post study
  - Compare outcomes to RCT data published from a similar population
- Use a logic model
  - Examine intermediate outcomes
- Do a case study

Outcome Measures

- Primary Outcomes
  - Child's asthma symptoms
  - Caregiver quality of life
  - Asthma-related health services utilization
- Secondary Outcomes
  - Behavior change
  - Environmental change
  - Social support
  - Self-efficacy

Outcomes

- Decreased symptoms
- Improved caretaker quality of life
- Reduced urgent health services utilization
- Increased caretaker knowledge and actions
- Reduced exposures more in the high intensity group.



Outcomes

Healthy Homes I				
Outcome	**Within Group**		**Across Groups**	
	Difference	p-value	Difference	p-value
Symptoms (days/2 weeks)	**4.7**	0.000	1.29	0.138
QoL (points)	**1.6**	0.000	**0.58**	0.005
Utilization (abs % dec/OR)	**-15%**	0.000	**0.38**	0.026

Healthy Homes II				
Outcome	**Within Group**		**Across Groups**	
	Difference	p-value	Difference	p-value
Symptoms (days/2 weeks)	**1.9**	0.000	**0.94**	0.046
QoL (points)	**0.6**	0.000	**0.22**	0.049
Utilization (abs % dec/OR)	**-23%**	0.000	0.69	0.177

Healthy Homes Process Measures

- Visits per participant
- CHW caseload
- Participant satisfaction
- Elements of protocol delivered
- Case study description
  - Participant survey
  - Staff debrief
  - Partner debrief
  - Data systems
  - Project records

Healthy Homes Cost Measures

- Costs of program delivery
- Medical costs
  - Hospitalizations
  - ED visits
  - Unscheduled clinic visits
- Did not capture other costs
  - Medication use
  - Indirect costs (e.g. lost work or school)

Healthy Homes I
Costs and Savings

- Program costs per client
  - High Intensity: $1345
  - Low intensity: $222
- Urgent medical care savings per client (12 months)
  - High intensity: $1205 - 2001
  - Low intensity: $1050 - 1786
- Cost of fluticasone 220 ug: $1392/year

It Works…
but How to Sustain and Spread It?

- Use evidence to encourage others to adopt the model
  - Steps to Health
  - Allies Against Asthma
  - National Asthma Guidelines
  - Puget Sound Regional Council
- Use evidence to encourage funders to pay for the service
  - WA State Medicaid Agency

HH Research Supports Advocacy

Medicaid Asthma Home Visit Pilot Project

- Appropriates $466,000 from the general fund for an asthma pilot for Medicaid-eligible children in King County.
- Local advocates join together
  - PHSKC
  - ALA
  - PSR
  - Community members
- Legislative champions make it happen

The End

Extra Slides

Use only if time…

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Project Goal and Objective

- **Goal:**

  To improve detection and follow-up of elevated blood pressure among high risk populations (low income African and Caucasian Americans)

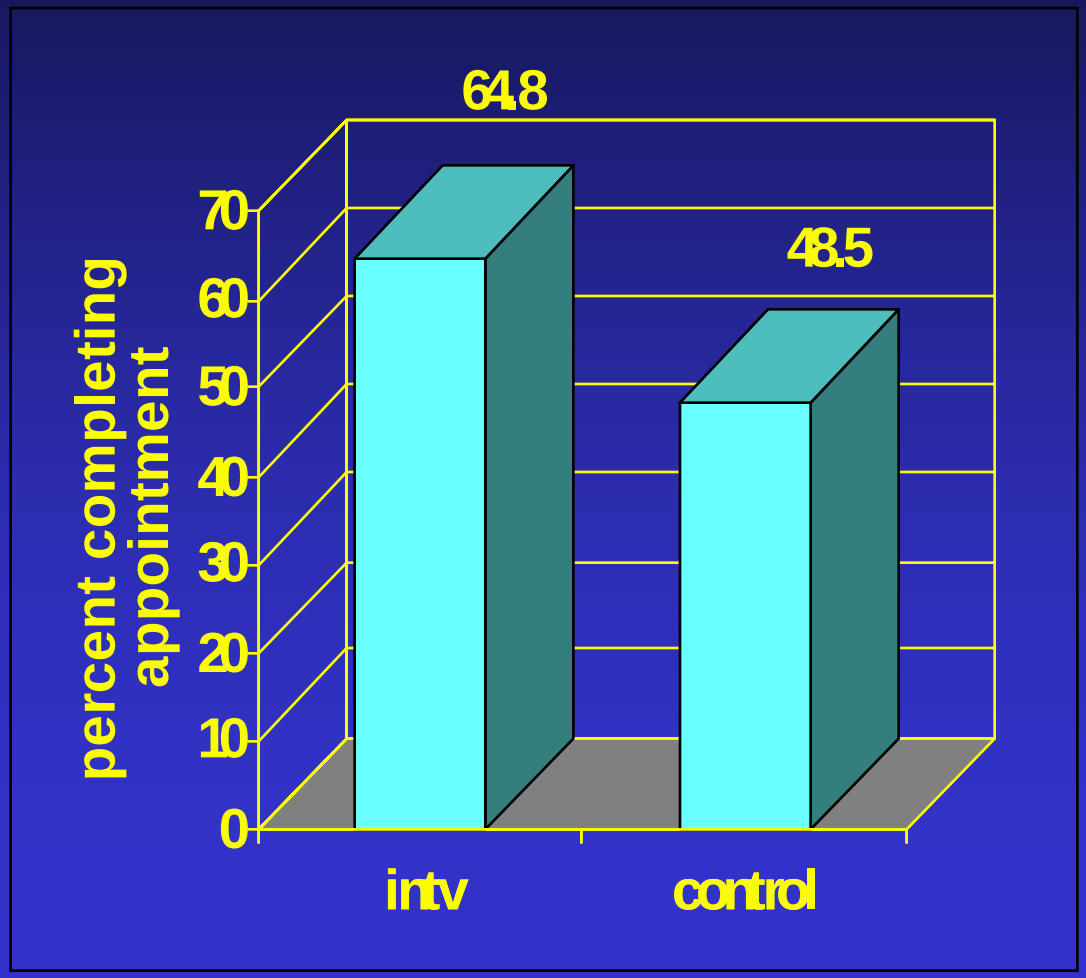
- **Objective:**

  To asses the effect of tracking and outreach by CHWs on adherence with medical follow-up by persons with elevated blood pressures detected during community blood pressure monitoring

Community BP Monitoring: Program Description

- Outreach workers perform BP screening and tracking
  - Measure blood pressure
  - Make medical appointments for clients
  - Follow standardized client tracking protocol
  - Reduce barriers limiting access to care
- Outreach workers also:
  - Build rapport with clients
  - Provide education on cardiovascular disease, other chronic conditions and healthy behaviors
  - Make referrals to other community resources
  - Provide social support
  - Track down difficult to reach clients, including home visits

Effectiveness of Intervention:
Participants Completing Follow-Up Within 90 Days



- Number needed to treat: 6 (95% CI: 4-19)
- Relative increase in follow-up: 32% (95% CI: 9-62%)
- p value: 0.005

Client Experience with SHIP Outreach Staff

- 96.5% rated their experience with outreach staff as good or excellent
- 91% thought outreach workers were very/extremely useful in helping access care
- 99.3% would refer others to the project
- All thought outreach worker services should continue in the community

Cost Benefit Analysis

- Value everything in terms of dollars
  - Not just costs avoided
- Subtract costs from dollar value of benefits to obtain a measure of net benefit
- Unique ability to determine whether or not a program is better than existing alternatives

Community Health Workers

- Community members trained to provide culturally-competent health education and support services
- Share race/ethnicity and culture with clients
- Viewed as trusted source of information
- Address many determinants of health
  - Access
  - Health behaviors
  - Social Support
  - Education and self-management support
  - Healthy environments
  - Cross-cultural mediation

Benefits of Participatory Research

- Hypothesis generation
  - New ways of looking at issues
  - Questions relevant to community concerns
- Data collection
  - More valid and reliable responses
  - Greater cooperation with data collection
- Subject recruitment
  - More effective recruitment and retention

Benefits of Participatory Research

- Study design and implementation
  - Community acceptability
  - Practical, feasible protocols
  - Cultural competence
- Interpretation and application of findings
  - Understanding *how* an intervention works
  - Project sustainability
  - Increased likelihood that findings will shape practice

Characteristics of Participatory Research

- Requires adequate resources and defined structure and processes
- Requires time, good communication, consistency and continuity of relationships
- Flexibility of program goals to foster a participatory process
- Researchers need to share power with community partners
- Mutual accountability to reach shared project goals
- Respects diversity within the community
- Collaboration is fun, time-consuming, easy, frustrating, personally rewarding and a tool for better research.

Healthy Homes
Participatory Research Methods

- Study governance
  - Steering Committee
  - Parent Advisory Group
  - CHW participation on project team
- Study design
  - Community concerns with controlled design
- Data collection
  - Review, edit and shorten questionnaire
  - Cultural context: “Does your child have asthma?”
- Dissemination of findings
  - Newsletter
  - Celebration