School- Based Health Evaluation: An Interactive Workshop

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Presenter Disclosures

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(1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose
Objectives

• To discuss what key publications from the literature have shown about SBHC
• To identify a question from your own SBHC experience & plan an evaluation to address that question
• To compare qualitative & quantitative evaluation

Biostatistics: A Brief Overview

• Descriptive
• Inferential
• Variables
• Design
• Analyses
Biostatistics

• Descriptive

• Inferential

Variables

• Discrete or categorical
  – Nominal
  – ordinal

• Continuous
  – Interval
  – ratio

• Dependent / Independent
• Qualitative / Quantitative
Analyses

- Univariate - descriptive
- Bivariate - inferential
- Multivariate - inferential

Univariate Analyses

- Descriptive
- Qualitative (categorical or discrete)
  - Nominal
  - Ordinal
- Quantitative (continuous)
  - Interval
  - Ratio
Qualitative Variables

- Discrete
- Proportions
- Confidence intervals
- +/- an interval

Quantitative Variables

- Continuous
- Means
- Standard deviations
- Ranges
Normal Distributions

Central Tendency & Dispersion

- Mean
- Median
- Mode
- Standard deviation
- Range
- Interquartile range
Skewed Distribution

Bivariate Analyses

- Parametric statistics
  - Continuous variables
  - Think bell-shaped curve & statistics using parameters of a normal distribution

- Non-parametric statistics
  - Categorical variables
  - Think proportions, histograms, chi-square
Multivariate Analyses

- Sounds good!
- Get a biostatistician!!!!
- Would you want me managing your father’s incipient stroke??

Strength of Causal Relationship

- Is the association strong?
- Is there a temporal relationship?
- Is there a dose-response relationship?
- Is the relationship biologically plausible?
- Is the association specific?
SBHC Research & Evaluation

• Addresses questions that arise in clinical practice
• Has practical application
• Uses rigorous scientific methods
• Results inform the practice

SBHC Research & Evaluation

• Being creative
  – Recognize question(s)
  – Devise approach(es) to get the answer
• Using good judgement
  – Good science versus what’s practical
• Common sense
  – Re: design, sample size, data
Study Designs

- Cross-sectional survey
- Prospective survey
- Pre-post study
- Cohort study
- Case-control study
- Randomized clinical trial

Continuous Quality Improvement
Steps in the PDSA Cycle

- **Plan**: Consider the question, the test of observation and the data collection
- **Do**: Try out the test on a small scale
- **Study**: Set aside time to analyze the data
- **Act**: Refine the change

Steps in the PDSA Cycle: Plan

- Plan the test or observation and the data collection
  - State the objective of the test
  - Make predictions about what will happen and why
  - Develop a plan to test the change
  - Determine what data are needed
Steps in the PDSA Cycle: Do

• Try out the test on a small scale
  – Carry out the test
  – Document problems and unexpected observations
  – Begin analysis of the data

Steps in the PDSA Cycle: Study

• Set aside time to analyze the data
  – Complete the analysis of the data
  – Compare the data to your predictions
  – Summarize and reflect on what was learned
Steps in the PDSA Cycle: Act

• Refine the change
  – Determine what modifications should be made
  – Prepare a plan for the next test

Changing a SBHC practice is like trying to change the tire on a bicycle while you are riding it
Process of Program Evaluation

- Step 1: state program objective(s)
- Step 2: select services necessary to accomplish objective(s)
- Step 3: select variables
- Step 4: select methods of data collection & study design
- Step 5: interpret results

- Step 1: State program objective(s)
  - Clear
  - Achievable
  - measurable
Process of Program Evaluation

• Step 2: select services necessary to accomplish objective(s)
  – Service is part of the program
  – Service is related to objective
  – Service is discrete

Process of Program Evaluation

• Step 3: select variables
  – Measures of the problem
  – Measures of the process(es) or output(s)
  – Measures of the outcome(s)
Process of Program Evaluation

• Step 4: select methods of data collection & study design
  – Established forms of data collection
    • Other evaluation projects
    • Data collection for other purposes
  – De novo forms of data collection
  – Pre – post study design
  – Comparison with another program / setting
  – Controlled trial

Process of Program Evaluation

• Step 5: interpret results
  – Who is your audience?
  – Was the service delivered?
  – Were the objectives met & to what degree?
  – What are the implications for the service?
Audiences for Evaluation

- SBH team: for quality improvement
- Administration: for reimbursement
- Parents: for access & spectrum of care
- School administrators: for attendance
- State Department of Health: for accountability

School-Based Health Centers: Outcomes

- ↓ Emergency Room use
- ↓ Hospitalization rate
- ↓ Absenteeism
- ↑ Comprehensive Physical Exams
- ↑ Access to care
- No evidence to suggest impact on academic outcomes
Adolescent Annual Visits

- Obtained lists of all adolescents with Bassett PCPs from MCO
- Calculated the proportion who had had CPE
- Compared SBHC rate to all-Bassett rate and then to national rates
Child and Adolescent Visits

School-Based Health and Academic Outcomes

- Accountability, especially since “No Child Left Behind”
- Violates Step 2: service relates to objective
- Rx for B+ in algebra - doesn’t work
- Published reports show that SBHCs ↓ absenteeism
SBHCs: Impact on ED Visits

- Used Bassett ED only
- Selected two control schools
- Visits classified by Zipcode
- Stratified by severity and time of day
- Compared year before and two years after opening of SBHC (pre-/post, intervention/control)
SBH Evaluation in Progress

- Spirometry for asthma care in SBHC
- Bassett HealthCare “market share”
- Downstream visits as a result of SBHCs

Spirometry for Asthma in SBHCs

- New NHLBI guidelines for asthma care recommend spirometry
- Telehealth technology allows spirometry in SBHCs
- Pre & post – comparison procedure codes using IDX data
Bassett “Market Share”

- Adolescent annual exams used as a proxy for “market share”
- Census data used to estimate adolescent universe
- Pre- & post- proportions compared
- IDX data used

SBHC Downstream Visits

- Annual exams used to generate SBHC population
- Bill areas compared pre- & post- SBHC using IDX data
- Visit volumes used as a proxy for ‘downstream revenues’
References


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