CDR: Prevention - Data, Best Practice and Review Findings

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Co-Directory, Policy Core, Injury Research Center
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• Why CDR
  – Starts with your story

• Cases
  – Harborview Injury Center
    • Recommendation Generator
      – *Assess the problem*
      – Write the recommendation
      – Follow-up

• Partnerships
Effective, Evidence-Based Treatment
Kids Job

Grow, Develop, Enjoy Life
(Reach Potential, Contribute to Society)

Health Care Policy, Legislation

Environment

Health Profession, Critical Care - Safety Net

Prevention
Evans RG, Stoddard GL. Social Science and Medicine. Chapter 2, Producing Health, Consuming Care, 1990
“Assess the Problem”

1. **Problem statement / define the problem**
   - Mechanism of death or injury - what we are trying to prevent
   - Incidence, how big a problem is it?
     - Layering of data - local, state, national
   - Risk factors

2. **Evidence-based prevention**
   - What works or at least what currently makes sense - Harborview approach

3. **Local capacity / feasibility**
   - Resources, cost, value, disparity, culture

4. **Spectrum of prevention**
   - Multiple levels, synergy, spill over
Case

12 year old African American child, long history of asthma, presented with significant respiratory distress to the ED. History of multiple PICU admissions, several requiring intubation and mechanical ventilation. Parents separated, spends every other weekend with one or the other. Wheezing, past admission history of environmental factors: secondhand smoke, carpeting throughout apartment, water leaks, and dog and cat also present. Child on corticosteroid inhaler, rescue Beta-agonists, takes meds when he is feeling ill, misses medical appointments. No exercise induced history, history of missing school after visiting smoking parents home.
Define the problem

- Asthma exacerbation
- Incidence
  - 9.1% of U.S children (6.7 million) - 2007
  - 5.6% of all childhood hospitalizations - 2006
  - Leading chronic disease among U.S children
  - Racial disparity
    - African American children 1.6 x incidence for white children
      - Hospitalization rates 2 x
      - Low SES 2x
  - A leading cause of missed school days

1. CDC Asthma website
Define the problem

- **Risk factors**
  - Genetic and social interaction
    - SES status, reaction to stress
  - Environmental
    - Household
      - Dust mites, carpet, mattress, pillows, pets, secondhand smoke, cockroach and rodent allergens, mold
    - Pollution
      - Diesel exhaust, combustible fuel particles, ozone, nitrogen oxides
  - Access to quality medical care
    - National Asthma Guidelines
      - Medication access
    - Health care literacy - patient, family, school, community

Case

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Interventions
Noreen M. Clark, *Peds* 2009

- Disease management by patient
- Family involvement
- Medical care
- Work / school support
- Community awareness and action
- Community environmental control
- Policy
Intervention

• Home outreach to patient and family
  – Education
    • Environment, medical management, smoking
  – Environmental management
    • Mattress and pillow covers, cockroach pest control, mold, HEPA vacuums
  – Several studies - decrease in symptoms, increase in quality of life for patient and family, some show reduction in acute care visits. Cost, labor intensive
  – Spectrum of prevention

Fight Asthma Milwaukee
John Meurer, MD, MBA
Interventions in Randomized Controlled Trial

• Nurse asthma education and action plan reinforced during an average 4 home visits

• Nurse and social worker asthma case management and care coordination

• Environmental interventions
  – Specialized professional cleaning and dust removal (100% of homes)
  – Provision of a vacuum cleaner (100%)
  – Integrated pest management when needed (50%)
  – Minor home repair for moisture intrusion (25%)

• Both the treatment and control groups received
  – Mattress and pillow encasings
  – Lead-based paint hazard reduction when needed
Prevalence of Persistent Asthma Symptoms in Intervention and Control Groups at Baseline and 12-Month Follow-Up

Intervention improvement was significant when compared to the controls (p<0.04)
**Significant Intervention Benefits**

- Symptom-free days in past 2 weeks increased from 9.7 to 11.6 for intervention group and from 9.1 to 10.1 for controls
- Intervention group had 72% greater reduction in dust loading in homes than controls at 12-month follow-up
- In the intervention but **not** the control group:
  - 39% increase in beddings laundered in hot water ($p<0.0008$)
  - 23% increase in nurse-observed dust-free homes at follow-up ($p=0.006$)
  - 18% decrease in dampness ($p=0.04$)
  - 17% decrease in evidence of mice/rats ($p<0.04$)
Benefits for Both Groups

• For both groups, caregiver asthma quality of life improved 66% (p<0.001) with no significant difference between 2 groups

• At 12-month follow-up, homes with vacuums had better asthma-related quality of life (p<0.03)
  – Vacuums in intervention group increased from 46% to 96%
  – Vacuums in control group increased from 56% to 68%

• Exercise increased 26% for the control group (p<0.002) and 26% for the intervention group (p=0.0003)
Intervention

• Medical care
  – Access
  – Use of National guidelines, steroid inhaler use
  – Partnerships

• Schools
  – Permission to take medications
  – School nurse programs, asthma clinics within the school, teacher awareness, school environment
  – Bus exhaust exposure

• Community policy
  – Air quality, smoke-free laws, quit help lines
  – Residential zoning -- mold, pest control
  – Stress reduction, employment, family support, health care literacy
  – Coalitions
Case

4 yr. old white female, usually healthy child, no past medical problems. Attending a family gathering at a relative’s house. Playing with other children, out of parents sight for 5 minutes, unable to locate her. After 15 minutes, another child says she is under a floating raft in the pool. The child is removed from the water, blue and not breathing. CPR started, EMS is called, child is taken to the hospital. Other history: Pool fenced in on three sides, sliding door into pool area unlocked, child did not know how to swim.
Define the problem

- Toddler / preschool age drowning
- Incidence - how big is the problem?
### 10 Leading Causes of Death, United States
#### 2005, All Races, Both Sexes

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**WISQARS™** Produced By: Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention  
**Data Source:** National Center for Health Statistics (NCHS), National Vital Statistics System
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## 10 Leading Causes of Death, Wisconsin
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Other sources

- WI Burden of Injury Report - 2002-2004
  - 1-4 years of age, drowning ranked 2nd (18)

- CDR
  - 4th leading cause of all reported cases, 2005
Define the problem, Risk factors / interventions

1. Age (1-4)
   • Pool, pond, tube, bucket
2. Gender
   • Girl
3. Past health
   • Special needs?
4. Caregivers
   • Distraction
   • Home, elsewhere
5. Swimmer? (Harborview- recommended, promising, unproven ineffective, harmful)
6. Pool
   • Enclosure (73%) - height, gate
   • 4 sides? (83%) - Scalable?
   • Cover
     • Floating toys
7. CPR
8. EMSC *
9. Others?
   • Pool alarms
   • General education
   • Alcohol

(Harborview - recommended, promising, unproven ineffective, harmful)
Case

6-month-old white female, former 28-week gestation, born to 17-year-old mother, history of smoking, left in the care of child’s maternal grandfather. Grandfather fell asleep with the infant on the couch, when he awoke child was not breathing. Attempted some resuscitation, called EMS, CPR resuscitation by EMS crew, taken to local hospital. Further history: child found between MGF and pillow, face against pillow.
Define the problem

- Unsafe sleep - suffocation
- Incidence - how big is the problem?
### 10 Leading Causes of Death, United States

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**WISQARS™** Produced By: Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention

Data Source: National Center for Health Statistics (NCHS), National Vital Statistics System
## 10 Leading Causes of Death, Wisconsin
### 2005, All Races, Both Sexes

<table>
<thead>
<tr>
<th>Rank</th>
<th>Age Groups</th>
<th>Age Groups</th>
<th>Age Groups</th>
<th>Age Groups</th>
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<td>Maternal Pregnancy Comp. 30</td>
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<td>Homicide 3</td>
<td>Congenital Anomalies 6</td>
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<td>Benign Neoplasms 1</td>
<td>Influenza &amp; Pneumonia 2</td>
<td>Six Tied 1</td>
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<td>Influenza &amp; Pneumonia 1</td>
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<td>Complicated Pregnancy 11</td>
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<td>Chronic Low. Respiratory Disease 3</td>
<td>HIV 5</td>
<td>Congenital Anomalies 18</td>
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</tbody>
</table>

**WISQARS™** Produced By: Office of Statistics and Programming, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention
Data Source: National Center for Health Statistics (NCHS), National Vital Statistics System
### 10 Leading Causes of Injury Deaths, Wisconsin

#### 2005, All Races, Both Sexes

<table>
<thead>
<tr>
<th>Rank</th>
<th>&lt;1</th>
<th>1-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-24</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>65+</th>
<th>All Ages</th>
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<tr>
<td>1</td>
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<td>Unintentional Fire/burn 8</td>
<td>Unintentional MV Traffic 6</td>
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<td>Unintentional MV Traffic 81</td>
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<td>Unintentional Natural/Environment 11</td>
<td>Unintentional Poisoning 11</td>
<td>Unintentional Poisoning 11</td>
<td>Unintentional Drowning 54</td>
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</tbody>
</table>

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Data Source: National Center for Health Statistics (NCHS). National Vital Statistics System
Other sources

• WI Burden of Injury Report - 2002-2004
  < 1-4 years of age, suffocation, rank # 1
Define the problem,
Risk factors

1. Age 6 months
   • Peak 2-3 months
2. Preterm birth
3. Gender
   • Male
4. Race
   • African American
   • American Indian
   • Alaska Native
5. Young mother
6. Smoking
7. Caregiver
   • 20 % of SIDS, secondary caregivers
8. Sleeping
   • Back to sleep
     • Child care centers
   • Firm surface
   • Not couch or chair
   • No pillows, soft toys
   • Crib
   • Bed sharing
     • Over-tired, alcohol
9. CPR, EMSC

Summary

• CDR starts with your story / passion
• Build support with layered incidence data
• Identify risk factors / opportunities for prevention
• Look to the evidence for what works or what makes sense (partners)
• Follow up
Thank You!!

Rodent CDR

Teri Covington
Abby Collier
Keri Frisch
Amy Schlotthauer
Becky Turpin
Brianna Kopp
Karen Ordinans
Bill Perloff
"...all we need to make us really happy is something to be enthusiastic about."

Charles Kingsley (1819–1875)