Medication Adherence in Asthma

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Objectives

▪ Describe similarities and differences in medication adherence in adult and pediatric populations

▪ Describe approaches to improving adherence in adult and pediatric patients with asthma through the use of simplified educational messages and self management regimens

▪ Integrate shared decision-making techniques into patient-educator/clinician communication which are patient-centered care and that support adherence
“Keep a watch also on the faults of the patients, which often make them lie about the taking of things prescribed”

Hippocrates

Adherence

The extent to which a person's behavior - taking medication, following a diet, and/or executing lifestyle changes - corresponds with agreed recommendations from a health care provider

WHO 2003
Adherence

- Adherence is a process not only an outcome
- Adherence is not dichotomous
  - Chronic underuse
  - Erratic patterns of use
  - Mixed
  - Primary vs. secondary
  - Administration technique
  - Unintentional vs. intentional

No factors reliably predict adherence
Types of Non-Adherence

**Unintentional Non-adherence**
- Patient Ability & Resources
  - Practical Patient Barriers to Adherence

**Intentional Non-adherence**
- Patient Beliefs & Motivations
  - Patient Perceptual Barriers to Adherence

*Additional categories: REMINDERS/ ROUTINES, PATIENT EDUCATION*
ADHERENCE TO LONG-TERM THERAPIES

PATIENT EDUCATION 5.5 hours
PULMONARY REHAB

Information
Behavioral Skills
Motivation

EDUCATION IS NECESSARY BUT NOT SUFFICIENT

Patient education is necessary but not sufficient

How best to measure adherence?

- Biochemical measurement
- Provider estimate
- Patient self-report
- Prescription refill data
- Electronic monitoring

Direct biochemical measurement of adherence

**Advantages**

- Objective
  - Blood theophylline
- Confirms intake

**Disadvantages**

- Cost
- Difficulty in detecting due to limited systemic absorption
- Does not differentiate between intentional and non-intentional non-adherence
How adherence is measured in clinical trials

Provider estimate of adherence

**Advantages**
- Cost

**Disadvantages**
- Subject to bias
- Doesn’t confirm intake
Telephoning the patient’s pharmacy to assess adherence with asthma medications by measuring refill rate for prescriptions

<table>
<thead>
<tr>
<th>Pharmacy Refill Data</th>
<th>85-100%</th>
<th>51-84%</th>
<th>&lt;50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;50%</td>
<td>6</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>51-84%</td>
<td>6</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>85-100%</td>
<td>30</td>
<td>19</td>
<td>14</td>
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</tbody>
</table>

116 pts on chronic medications

Patient self-report of adherence

**Advantages**
- Cost

**Disadvantages**
- Subject to bias
Prescription refill estimate of adherence

**Advantages**
- Cost
- Unbiased

**Disadvantages**
- Does not confirm intake
- Does not differentiate between intentional and non-intentional non-adherence
Electronic measurement of adherence

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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<tbody>
<tr>
<td>Objective</td>
<td>Cost</td>
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<td></td>
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<td></td>
<td>Does not differentiate between intentional and non-intentional non-adherence</td>
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</tbody>
</table>
Mean Truncated Adherence 60%

Asthma SELF-MANAGEMENT Adherence

<table>
<thead>
<tr>
<th>Asthma SM Behavior</th>
<th>Adherence</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICS</td>
<td>47-57% 29 RCTs of 2210 pts</td>
<td>Normansell et al 2017 Cochrane Database of Sys Rev</td>
</tr>
<tr>
<td>SABA</td>
<td>N = 53; mean refill 5.1/1.3 canisters</td>
<td>Bollinger et al 2013 AAAI</td>
</tr>
<tr>
<td>Environmental Remediation</td>
<td>48%</td>
<td>CDC Vital Signs 2011</td>
</tr>
<tr>
<td>Appointment Keeping</td>
<td>29% of pediatric primary care visits (5326/7511 missed)</td>
<td>McGovern et al 2017 J Asthma</td>
</tr>
</tbody>
</table>
Risk of asthma death from non-adherence

Types of non-Adherence

SMART INHALERS
Acceptability to adult asthma patients

- My Air Coach
  - 75% of people with asthma are willing to carry and use a connected device

- Propeller
  - 256 exit surveys (52% of subjects)
    - 86% of adults and 84% of children with asthma found reports useful
    - 59% of those in the active intervention reported learning about new triggers
    - 15% stopped monitoring in first month
    - 43% stopped monitoring before the end of study
      - Merchant et al JACI 2016

Practical considerations in pediatric asthma
What is missing in non-adherence measurement?

Connection between adherence and disease control

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COACHING
NAVIGATION
MOTIVATIONAL INTERVIEWING
SHARED DECISION MAKING
ADHERENCE TO LONG-TERM THERAPIES

Education, reminders and routines do not enhance motivation

- Interventions grounded in behavior change theory, prioritizing the clients' perspective by empowering clients to set and achieve health goals
  - health education and health promotion
Coaching in asthma

**Adults**

- Technique coaching in 123 elderly patients improved inhaler technique
  - Crane et al 2014 npj Primary Care Respiratory Medicine

**Pediatrics**

- RCT of telephone-based peer coaching for 900+ parents reduced symptoms and acute care
  - Garbutt et al 2015 JACI
- RCT using call center pediatric nurses improved parental QoL (N = 362)
  - Garbutt et al 2010 Arch Pediatr Adolesc Med. 2010
- RCT of coach in ED did not increase PCP f/u (N =92)
  - Smith 2006 Acad Emerg Med
- RCT of 141 parents coached on home management increased PCP visits but did not decrease acute care
  - Nelson 2011 Arch Pediatr Adolesc Med

**Patient navigators/advocates**

- Sees patients
- Provides education to patients +
- Helps patients cope
- Answer questions, assess the need for an action plan or arranges for further assessment
- Improve access and interactions with the health care team
- Facilitates timely transfers and promote continuity of care
- Functions as a single ‘point person’

Dajczman 2013 Can Resp J
Navigation

COPD

- Pre-post study of 202 patients decreased acute care utilization
  - Dajczman 2013 Can Resp J

Asthma

- Feasibility and acceptability studies only
  - Apter et al 2013 J Asthma
  - Black et al 2010 J Asthma

Shared decision-making

When providers understand patient preferences they can facilitate discussion of the risks and merits
  offering options to consider jointly

Helps to reconcile differences
  leading to mutually agreed upon higher quality decisions that best match patients’ needs with evidence-based recommendations
Why should we negotiate with patients?

What patients value needs to be held in equal regard as what providers value. Prior research has demonstrated that this approach improves clinical outcomes in a wide variety of other chronic and acute conditions:

- Medication adherence, disease control, patient safety

Shared decision-making and asthma

**Adults**
- BOAT RCT of 612 adults
- SDM had better controller adherence, better asthma-related QoL, health care use, asthma control, lung function and lower rescue medication use
  - Wilson et al 2010 AJRCCM

**Pediatrics**
- RCT of 60 parents
  - Parents used and liked SDM portal
  - Children had a lower frequency of asthma flares
  - Parents missed fewer days of work
  - Fiks et al 2015 Ped

Pragmatic extension of BOAT to 30 primary care sites in NC
  - Tapp et al 2011 Implement Sci
MOTIVATIONAL INTERVIEWING

- Psychotherapeutic approach that attempts to move an individual away from a state of indecision or ambivalence and towards finding motivation to making positive decisions and accomplishing established goals

Motivational interviewing
copd

- RCT of provider MI training in 40 general practices in the Netherlands delivered to 1086 patients with COPD
  - Not cost-effective
    - Boland et al 2015 BMJ

Pediatric asthma

- RCT of 422 adolescents to web-based asthma SM with MI strategies
  - Improved symptom-days and restricted activity days
  - Among teens meeting baseline criteria for rebelliousness, there were fewer symptom-days, symptom-nights, school absences, and restricted activity days
    - Joseph et al 2013 J Adolesc Health

- Meta-analysis showed MI important component in reducing child’s ETS exposure
  - Baxi et al 2014 Cochrane Database Syst Rev
Conclusions

- Patients need to be supported, not blamed
  - tailored interventions are required
- Health professionals need to be trained in adherence
- A multidisciplinary and multidimensional approach is needed

“Increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments”