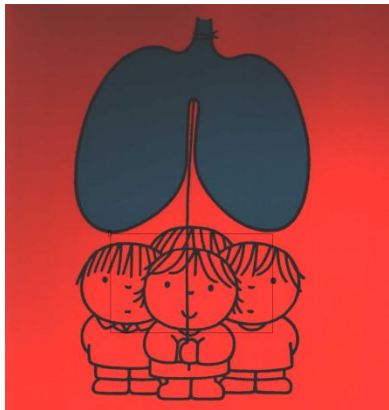


Improving adherence to maintenance therapy in children with asthma



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Learning aims

At the end of this presentation, you

- Can describe the importance of nondadherence in childhood asthma
- Can discuss the prevalence of nonadherence in childhood asthma
- Can begin to do something about nonadherence to maintenance therapy in childhood asthma

Overview

- Nonadherence: is it important?
- Measuring adherence in asthma
- Prevalence of poor adherence in asthma
- Determinants of poor adherence
- Treatment of poor adherence

Nonadherence: is it important?

- Poor adherence → poor outcomes in all chronic diseases
- Childhood asthma: poor adherence related to
 - Increased symptoms
 - Increased hospital admissions
 - Asthma deaths

Di Matteo, Med Care 2002;40:794-811
Ordonez, Arch Dis Child 1998;78:143-7

Milgrom, JACI 1996;98:1051-7
Robertson, Pediatr Pulmonol 1992;
13:95-100

Confirms clinical practice:

- 7
r
- H
Most children referred for evaluation of problematic severe asthma have issues with adherence or inhalation technique
 - 23% no medication at home, or med out-of-date

And their asthma can be well controlled once these issues have been taken care of

De Boeck, *Pediatr Pulmonol* 2009;44:743-8

The importance of nurse-led home visits in the assessment of children with problematic asthma

Bracken, *Arch Dis Child* 2009;94:780-4

Nonadherence: is it important?

- 2 studies comparing asthma management and follow-up in primary care and hospital-based paediatric asthma clinic
- Self-reported ICS adherence
 - Low in primary care
 - High in hospital care

Kueth, Prim Care Respir J 2010;19:62-7

Klok, Acta Paediatr 2011;100:248-52

Nonadherence: is it important?

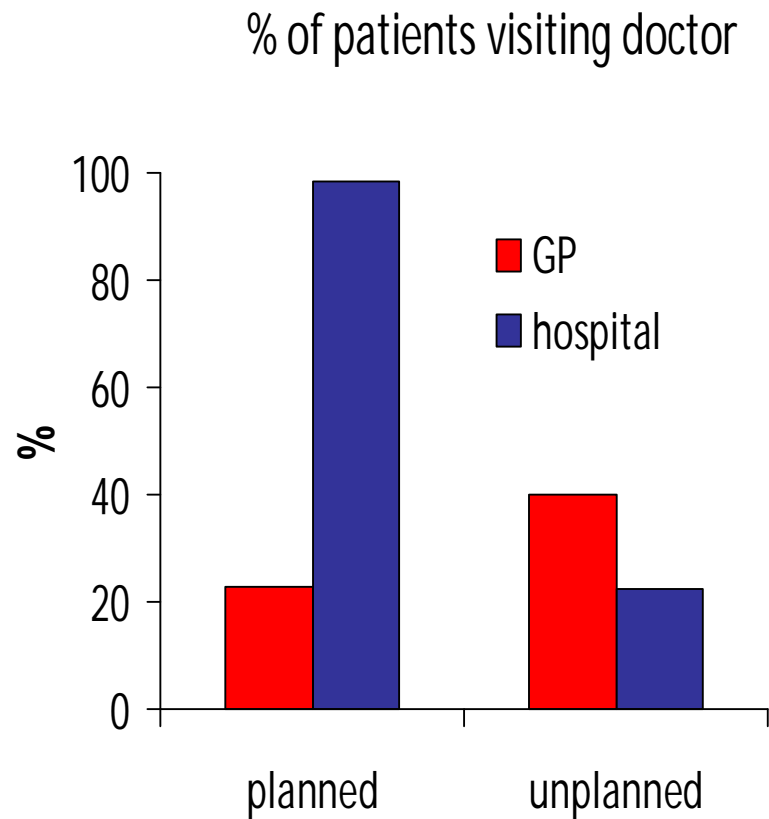
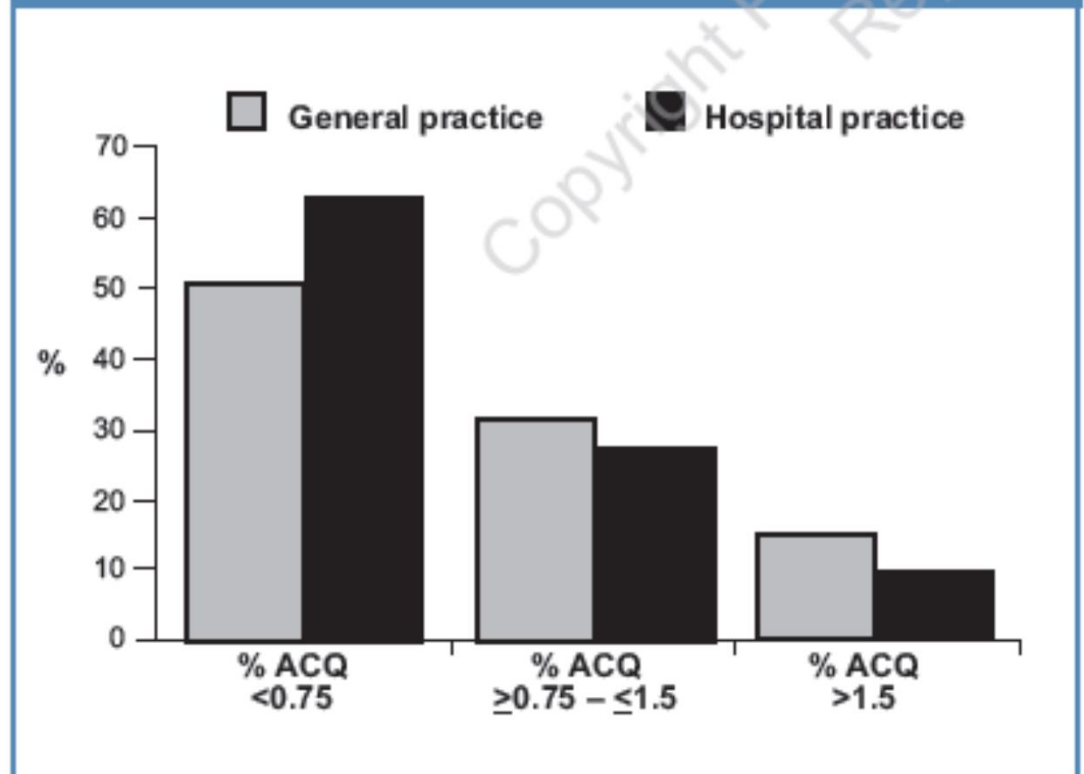


Figure 3. Asthma control questionnaire; dichotomisation; < 0.75 = well controlled > 1.5 = poor control.⁹



Kuethé, Prim Care Respir J 2010;19:62-7
Klok, Acta Paediatr 2011;100:248-52

Low ACQ = good control

Measuring adherence in asthma

- Parental report or self-report
- Interviewing child in non-confrontational way
- Pharmacy refill records
- Canister weight or device counters
- Electronic measurement



Parental/self report is unreliable

Canister weight and pharmacy refill rates overestimate true adherence

Electronic measurement necessary to assess adherence reliably

self report canister weight pharmacy electronic

27 and 100 children 7-16 yrs with asthma 6-12 months adherence

Measuring adherence in asthma

Talking to children about adherence is useful

- In fact

More useful than talking to parents

Doctor's assessment of adherence unreliable

- D

Electronic measurement = gold standard

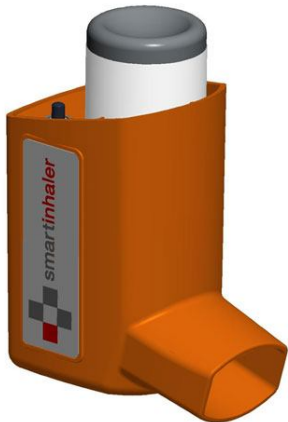
Bender, Pediatrics 2007;120:e471

Burgess, Respirology 2008;13:559-63

Electronic adherence measurements



- only counts doses
- does not account for “dumping”



- records date & time of actuation
- allows most accurate assessment of adherence
- accurate & valid

(Respir Med 2006;100:841-5)

Electronic Measurement of Medication Adherence in Pediatric Chronic Illness: A Review of Measures

Lisa M. Ingerski, PhD, Elizabeth A. Hente, BA, Avani C. Modi, PhD, and Kevin A. Hommel, PhD

J Pediatr 2011;159:528-34

Most people having been prescribed ICS do not pick up refill prescriptions after 3 months

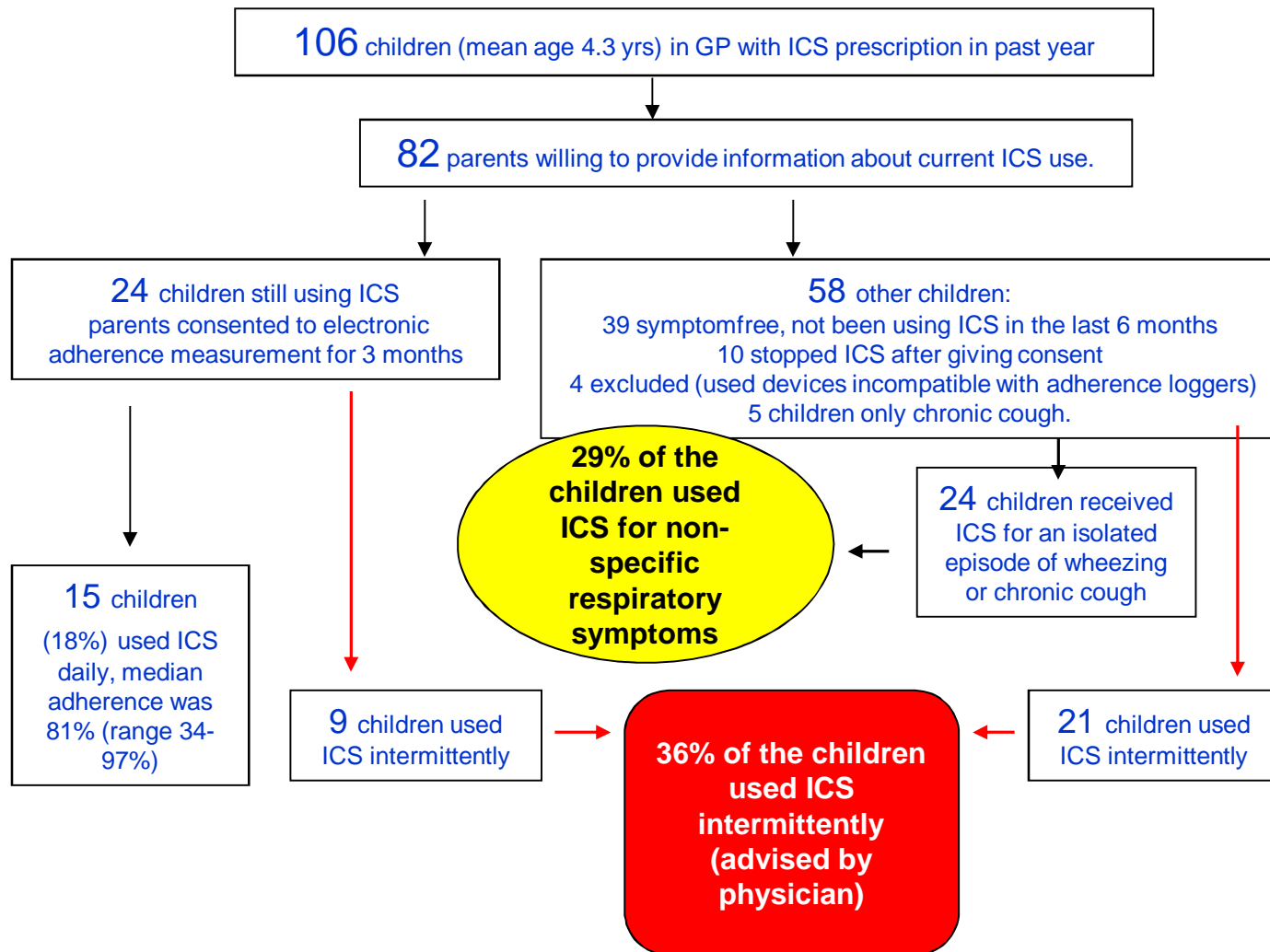
Partly due to poor prescription of ICS by physicians (prescribed as 6-12 wk "course" for nonspecific cough or dyspnoea)

Blais, Respir Med 2011;105:846-55

Days/year on which med was "taken"
(pharmacy refill rates)

Hasford, Allergy 2010;65:347-54

Prevalence of poor adherence



Long-term adherence to ICS is poor in children with asthma

- S
- C

Notoriously poor in adolescents and in inner-city children in USA

Weinstein, Ann Asthma Allergy Immunol 2011;163:283-91

| | | | | |
|---------------|---------------------------------|----------------------------|--|---------------|
| Fergusson | | | | |
| Jonasson | | | | |
| Burgess 2000 | 87 children 1-7 yrs (1 month) | Smart Inhaler | Median 70.5% | Range 21-100% |
| Nikander 2011 | 115 kinderen 5-10 yrs (1.5 yrs) | Turbuhaler PIF measurement | Median 86% first 45 days, 59% last 45 days | |

Determinants of adherence

What is the most common cause of poor adherence?

- a. Poor asthma knowledge
- b. Low parental education
- c. Mild asthma
- d. Forgetting to take the medication
- e. Parental perceptions of asthma & meds

Very few long-term studies

- **Very few studies looking at comprehensive range of possible determinants**
 - Socio-economic status/education of parents
 - **Asthma knowledge**
 - Age of patient
- *Important:*
 - Illness & medication beliefs

Ho, J Allergy Clin Immunol 2003;111:498-502

Weinstein, Ann Allergy Asthma Immunol 2011;106:283-91

Dean, Arch Dis Child 2010;95:717-23

- T
a **Parents are concerned about safety of maintenance medication for their child's asthma**

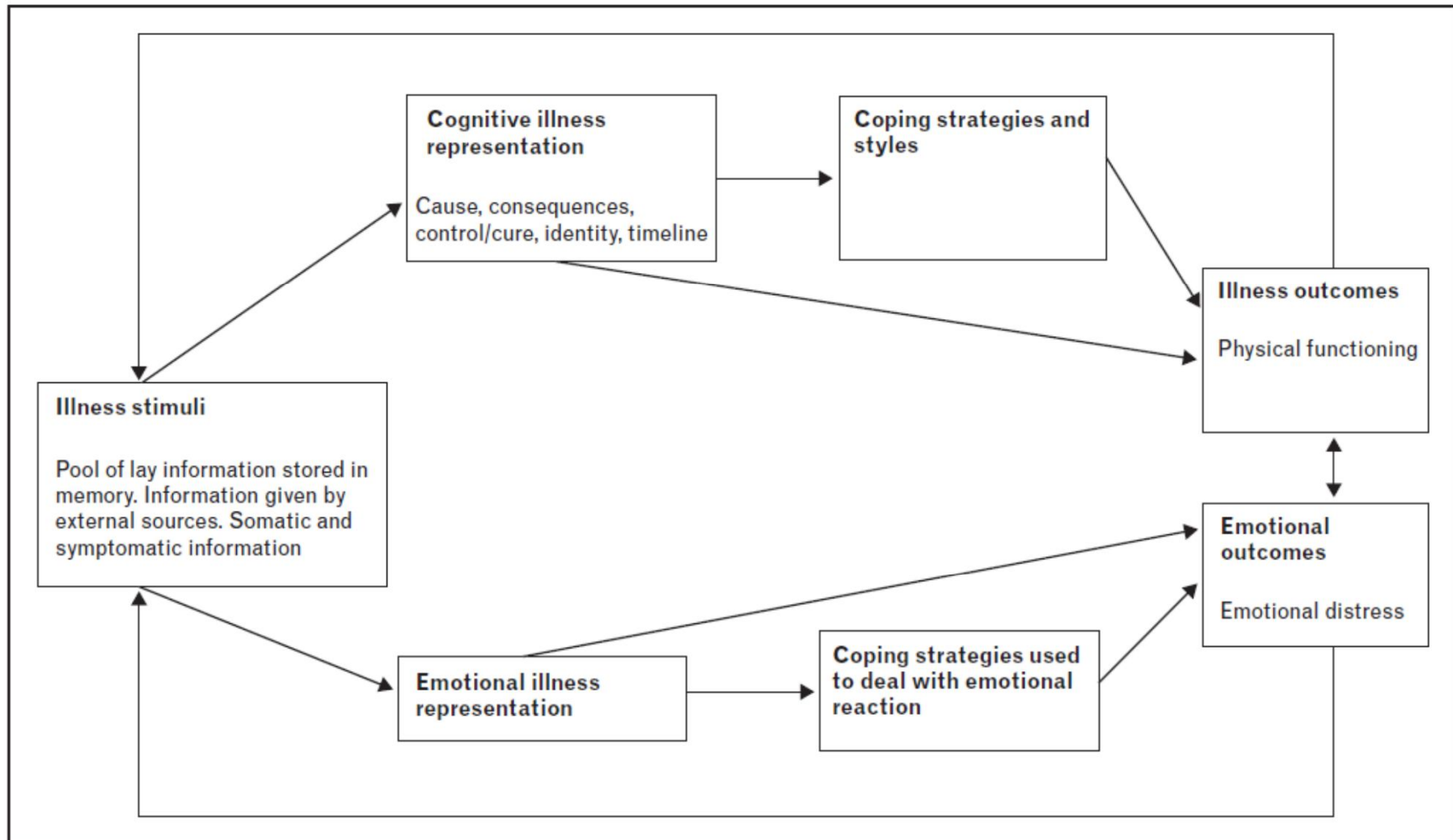
- N
g **Medication beliefs are strong drivers of adherence and of asthma control**

- 7
3 Smith, Pediatrics 2008;122:760-9

- **77%:** need > concern
- 13% concern > need

0=

The common sense model



Zwolle Asthma Focus Group Study

Six focus groups

- Three from primary care (five randomly chosen practices)
- Three from our secondary care paediatric asthma clinic

Inclusion criteria

- Parents of children 2-12 years of age
- Doctor's diagnosis of asthma
- Prescribed inhaled corticosteroids (ICS) last year

Standard focus group methodology

- Semi-structured interview by independent moderator
- Audiotaped and verbatim transcription
- Coded by two independent researchers

Zwolle Asthma Focus Group Study

Illness perceptions from parents in primary care

Cause

"My child has asthma; her airways are inflamed"

Cure / control

"Asthma is a chronic disease"

"I realise that my child will probably remain asthmatic for many more years"

Consequence

"Daily medicine keeps her airways quiet"

Timeline

"I know that asthma varies over time"

"When she has no asthma symptoms the airways may still be inflamed; therefore, she needs her daily medicine"

Identity

"She has asthma but can live a normal life"

Medication perceptions from parents in primary care

"It is poison"

"We are afraid of long-term side effects"

"I don't like medicines altogether"

"It doesn't work as well when you use it on a daily basis"

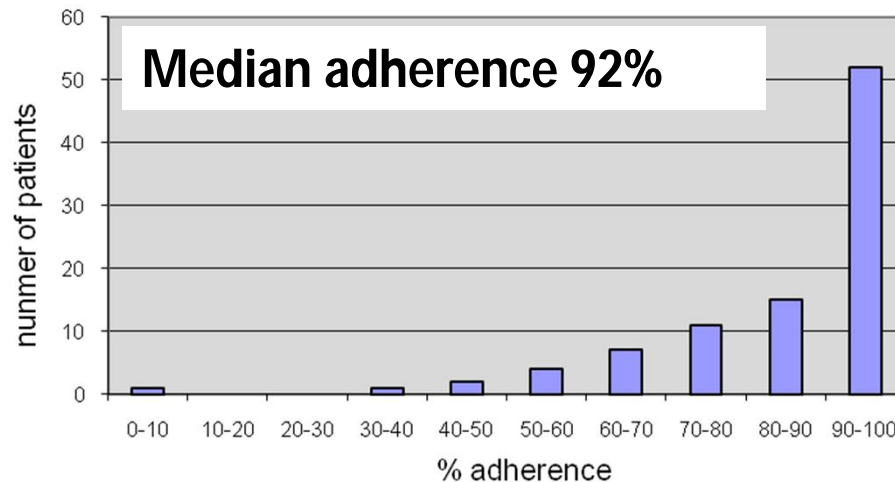
"I don't believe in adding stuff to a body every day – that cannot be good"

Zwolle adherence study

- 150 children with asthma 2-12 yrs of age
- All followed up in secondary care asthma clinic
- All on maintenance therapy with ICS
- Follow-up for 1 year
- Adherence monitored electronically (Smart inhaler®, Smartdisk®)
- Comprehensive range of determinants of adherence assessed

Zwolle adherence study: first results

- 3 month adherence in 93 2-6 yr old children (representative sample from patients in clinic)



72% of children used >80% of prescribed doses

Median adherence first month 93%, third month 90% ($p=0.02$)

Very high median adherence in this setting

Zwolle adherence study:

High adherence *can* be achieved

- Determinants of adherence:
 - Is largely driven by parental beliefs
 - Answers to items on beliefs about medication questionnaire:
 - Without medicines, my child would be very ill
 - My child's life would be impossible without his/her medicines
 - My child's health depends on his/her medicines
 - Answers to treatment satisfaction questionnaire

93%: need > concern

How to achieve good adherence

- Education alone → no effect on adherence
- Education + behavioral intervention improves adherence
 - Monitoring & goal setting
 - Problem solving self-management
 - Linking medicine taking to daily routines

A systematic review of interventions to enhance medication adherence in children and adolescents with chronic illness

Arch Dis Child 2010;95:717-23

Angela J Dean,¹⁻³ Julie Walters,⁴ Anthony Hall^{4,5}

Useful classification of nonadherence

(Rand 2004)

- **Erratic** nonadherence

- Forgetting medication
- Complexity of treatment
- Chaotic lives or family routines

Simplifying treatment
Link to daily routines

- **Unwitting** nonadherence

- Do not understand rationale for treatment
- Confuse maintenance with on demand treatment

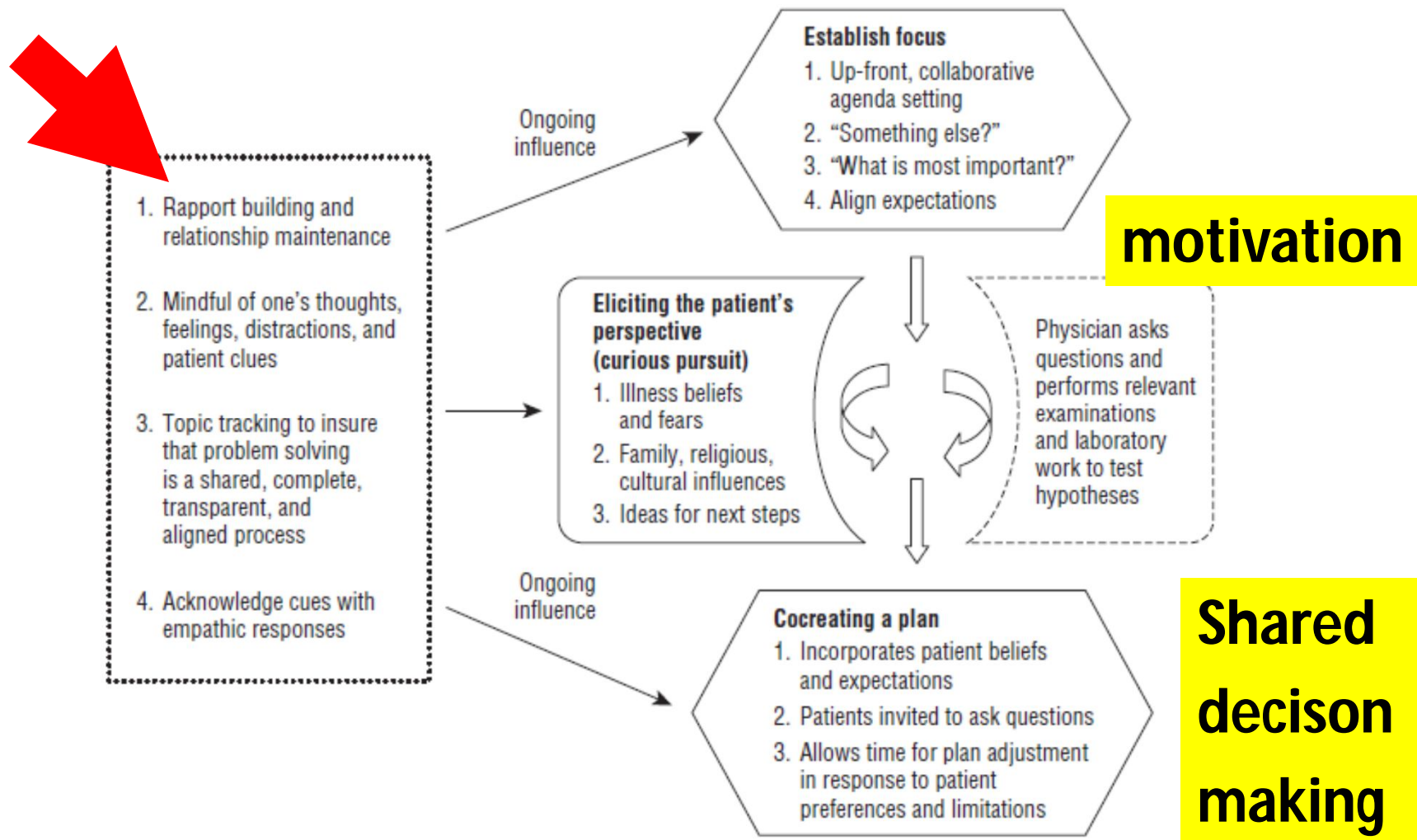
Written action plans

- **Intelligent** nonadherence

- Patients feel they know more about disease/med than doctor
- Driven by illness beliefs and concerns about side effects

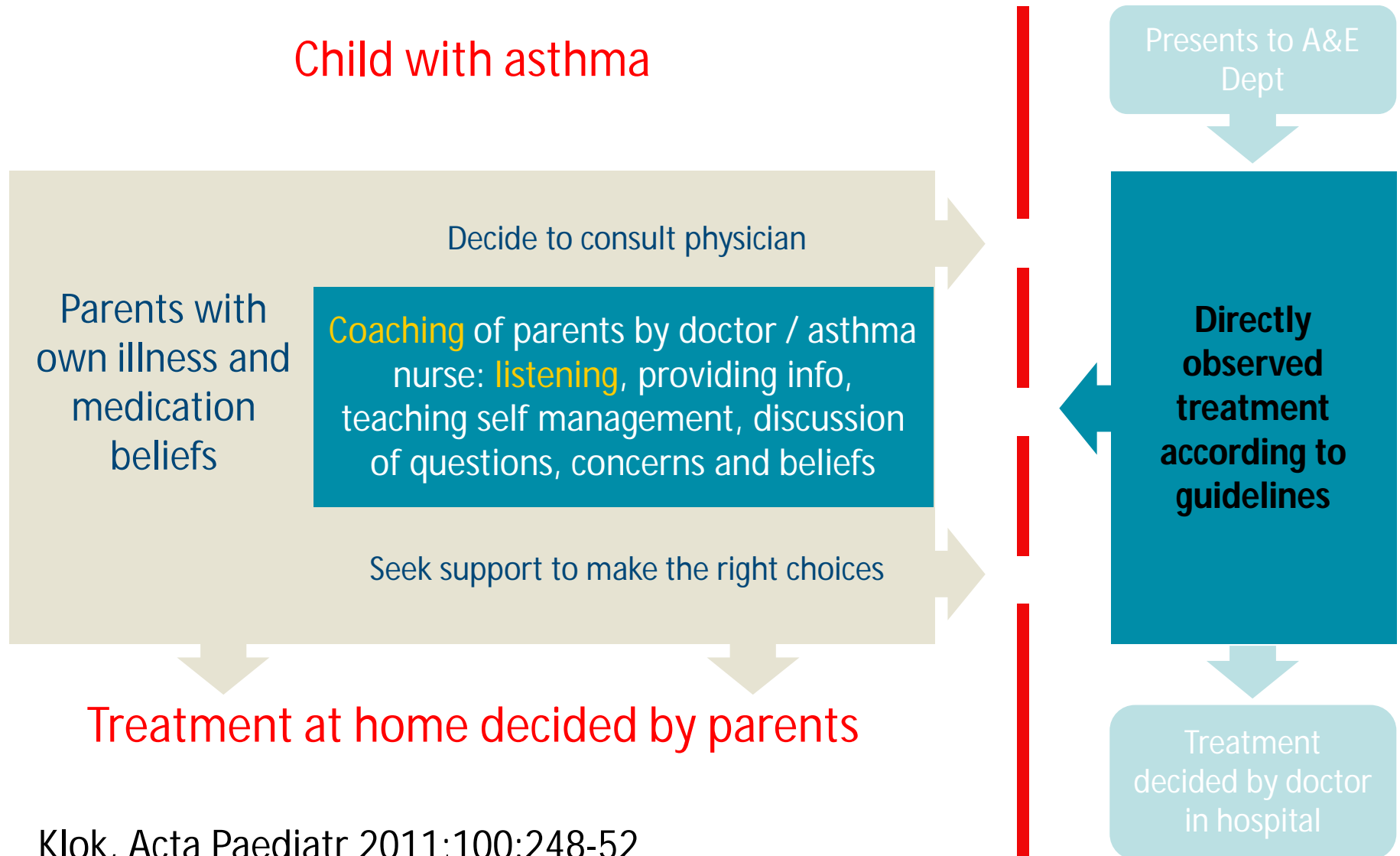
“You can’t alleviate fear by relaying facts” (Søren Pedersen)

Treatment of nonadherence



Doctors prescribe, parents decide

Child with asthma



Patient centered communication

- Adherence consistently associated to communication style
- Friendly, empathic communication with genuine interest in patient's context → improved adherence
- Training doctors in communication → improved adherence

Physician Communication and Patient Adherence
to Treatment
A Meta-Analysis

Kelly B. Haskard Zolnierak, PhD, and M. Robin DiMatteo, PhD†*

Med Care 2009;47:826-34

Motivation enhancement

- Offering unsolicited advice is counterproductive
- First step = exploring patient's reasons for the undesired behaviour (= poor adherence)
 - Illness and medication beliefs
 - Showing genuine interest
 - Looking for ambivalence cues
- Second step = assessing motivation
- Third step = asking permission to provide information

BRYAN LASK, FRCRACH, FRCRCH

MOTIVATING CHILDREN AND ADOLESCENTS TO INCREASE ADHERENCE

J Pediatr 2003;143:430-3

Shared decision making

Shared Treatment Decision Making Improves Adherence and Outcomes in Poorly Controlled Asthma

Sandra R. Wilson¹, Peg Strub², A. Sonia Buist³, Sarah B. Knowles¹, Philip W. Lavori⁴, Jodi Lapidus³, William M. Vollmer⁵, and the Better Outcomes of Asthma Treatment (BOAT) Study Group*

¹Palo Alto Medical Foundation Research Institute, Palo Alto, California; ²The Permanente Medical Group, San Francisco, California; ³Oregon Health and Science University, Portland, Oregon; ⁴Stanford University School of Medicine, Stanford, California; and ⁵The Kaiser Permanente Center for Health Research, Portland, Oregon

- proof of principle study
- comparing regular (extensive care) to shared decision making

Shared decision making

| Clinician decision making | Shared decision making |
|--|--|
| Establish rapport; explain follow-up | + explain SDM approach |
| Assess asthma, triggers, medication use | + identify patient goals and preferences |
| Provide information | Same |
| Analysis: discuss PFT results, assess level of control, address potential adherence problems | same |
| Prescription: Rx, written asthma plan, etc. | Negotiation: discuss treatment options & relative merits bearing in mind patient goals & preferences Agree on treatment |

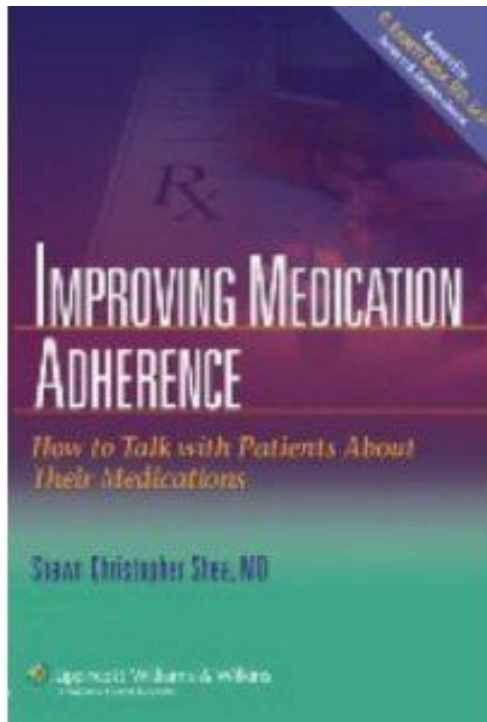
Shared decision making

- Higher refill adherence (67 vs 46%)
- Better asthma control (relative risk of total control 1.9, 95% CI 1.3-2.9)
- Trend towards better lung function

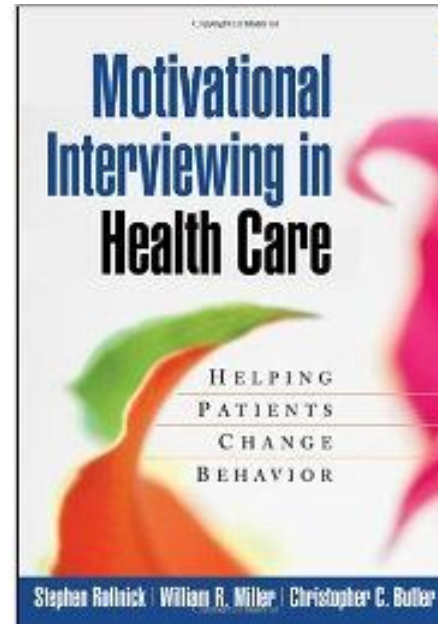
Conclusions

- High adherence to maintenance ICS in children with asthma *can* be achieved
- Requires comprehensive approach
 - Patient-centered communication style
 - Motivational interviewing
 - Shared decision making
- This can all be learned
- Best achieved by team effort

Further reading



S.C. Shea



S. Rollnick, W. Miller, C. Butler

The Zwolle approach

- Full work up by paediatric chest physician
- Diagnosis confirmed, treatment plan **agreed** with patient & parents
- Comprehensive asthma education by doctor & asthma nurse
- Entire team trained in patient centered communication
- Close follow-up:
 - Stress importance of daily ICS use
 - Address questions and concerns/beliefs
 - Actively identify and treat comorbidity



**¡ Muchas
gracias !**

**Laguna Miscanti (-8° C!)
San Pedro de Atacama, October 2011**

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