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CareTrack Kids: What is the level of evidence-based care delivered to Australian children?

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University of South Australia

The ACHS Improvement Academy

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- The ACHS Improvement Academy

How good will my care be?

Institute of Medicine 2001

How good will my care be?

- Can I access care?
- Can I afford it?
- Will there be errors and will I be harmed?
- Will care be provided in accordance with my personal circumstances, wishes, and dignity?
- Will I get the right care?

Institute of Medicine 2001

How good is our health system?

- Can patients access the system regardless of where they live, their abilities and finances?
- How many patients are harmed?
- What are patients experiences of care?
- Does the healthcare system deliver value for money?
- Is care being delivered in line with evidence or best practice?

Institute of Medicine 2001

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CareTrack Kids

How good is our health system?

- Can patients access the system regardless of where they live, their abilities and finances?
- How many patients are harmed?
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- Does the healthcare system deliver value for money?
- **Is care being delivered in line with evidence or best practice?**

Institute of Medicine 2001

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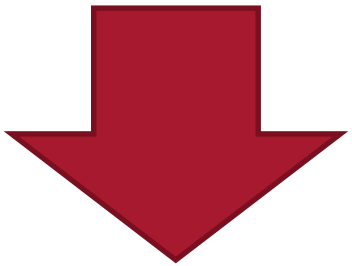
CareTrack Kids

Appropriate care

- **Care in line with evidence** (according to recommendations in clinical practice guidelines - CPGs)

Why is evidenced-based care important?

Use of a written **asthma** action plan[1]:



- Absences from work or school
- Hospital admissions
- Emergency visits to general practice
- Reliever medication use

Lung function[1]

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Zemek, Bhogal, Ducharme. *Arch Pediatr Adolesc Med*. 2008

CareTrack Kids

Why is evidenced-based care important?

Gastro-oesophageal reflux disease (GORD):

- The evidence for effectiveness of acid suppression medication is not strong
- Associated with increased infections in children[2].

Chung, Yardley. *Hosp Pediatr*. 2013

Appropriate care

- Many studies and audits on appropriate care
- Tend to be single conditions, a few indicators, single organisations
- Organisations may be biased towards high performers
- Electronic extraction can only use a specific set of indicators

- What level of evidence-based care does the population receive?

Research

CareTrack: assessing the appropriateness of health care delivery in Australia

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Editorial p 67
Perspectives p 76, p 78

▶MJA Podcast

How appropriate is the health care delivered to Australians? A seminal study in the United States showed that American adults received "recommended care" only 55% of the time in the years 1999–2000.[1] Estimates of "appropriate care" — defined here as care in line with evidence-based or consensus-based guidelines[2] — are limited in most countries, including Australia, to small groups of conditions, often in particular settings.[3,4]

Despite some evidence of great variations in care and poor compliance with guidelines (Box 1), no comprehensive study of the appropriateness of the health care received by Australians has been undertaken. Without such information, we will be unable to create sustainable systems that have "the capacity to measure, monitor and act on health care performance data".[8] Financial considerations alone would suggest that maximising the rate at which patients receive appropriate care is a national priority.[9] The aim of the CareTrack Australia study reported here was to determine the percentage of health care encounters at which a sample of Australians received appropriate care.[2]

1 Recent examples of poor compliance with guidelines in Australia

Community-acquired pneumonia: Use of a recommended pneumonia severity index was documented in 5% of 691 presentations at 37 hospitals, and concordance with national guidelines in 18%, leading to inappropriate antibiotic use.[5]

Low back pain: Although guidelines discourage its use, more than a quarter of 3533 patient visits resulted in a referral for imaging. The recommended care focuses on advice and simple analgesics, yet only 21% and 18% of patients, respectively, received these.[6]

Hyperlipidaemia: Of 397 participants at high absolute risk, 24% received primary prevention, and of those who were already treated, 38% reached target levels.[7] ◆

Abstract

Objective: To determine the percentage of health care encounters at which a sample of adult Australians received appropriate care (ie, care in line with evidence-based or consensus-based guidelines).

Design, setting and participants: Computer-assisted telephone interviews and retrospective review of the medical records (for 2009–2010) of a sample of at least 1000 Australian adults to measure compliance with 522 expert consensus indicators representing appropriate care for 22 common conditions. Participants were selected from households in areas of South Australia and New South Wales chosen to be representative of the socioeconomic profile of Australians. Health care encounters occurred in health care practices and hospitals with general practitioners, specialists, physiotherapists, chiropractors, psychologists and counsellors.

Main outcome measure: Percentage of health care encounters at which the sample received appropriate care.

Results: From 15 292 households contacted by telephone, 7649 individuals agreed to participate, 3567 consented, 2638 proved eligible, and 1154 were included after gaining the consent of their health care providers. The adult Australians in this sample received appropriate care at 57% (95% CI, 54%–60%) of 35 573 eligible health care encounters. Compliance with indicators of appropriate care at condition level ranged from 13% (95% CI, 1%–43%) for alcohol dependence to 90% (95% CI, 85%–93%) for coronary artery disease. For health care providers with more than 300 eligible encounters each, overall compliance ranged from 32% to 86%.

Conclusions: Although there were pockets of excellence and some aspects of care were well managed across health care providers, the consistent delivery of appropriate care needs improvement, and gaps in care should be addressed. There is a need for national agreement on clinical standards and better structuring of medical records to facilitate the delivery of more appropriate care.

Methods

Details of the CareTrack study methods have been published elsewhere.[2] The methods were based on the US study[1] but differed in three main ways. Rather than convening expert panels, we recruited individual clinical experts to develop our clinical indicators; we recruited participants from rural and remote areas, in addition to metropolitan areas; and we conducted onsite medical record review rather than reviewing copied records at a central location.

Selection of conditions

We selected 22 conditions that include several of the most common in Australia, according to estimates of the burden of disease[10] and studies of primary care activity.[11] Fourteen of the 22 are National Health Priority Areas,[12] and 15 were included in the US study.[1] Three conditions[2] — venous thromboembolism, surgical site infection, and antibiotic use — represent evidence–practice gaps.[13,14] Although cancers account for 20% of disability-adjusted life-years,[10] they were not included because of low projected numbers in the sample. Instead, screening indicators for colorectal, lung, breast and prostate cancer were included within the condition "preventive care". Falls and pressure ulcers were not included because they were already being studied.[15]

Development and ratification of indicators

Indicators for the 22 conditions were developed, modified or updated from

JAMA | Original Investigation

Quality of Health Care for Children in Australia, 2012-2013

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IMPORTANCE The quality of routine care for children is rarely assessed, and then usually in single settings or for single clinical conditions.

OBJECTIVE To estimate the quality of health care for children in Australia in inpatient and ambulatory health care settings.

DESIGN, SETTING, AND PARTICIPANTS Multistage stratified sample with medical record review to assess adherence with quality indicators extracted from clinical practice guidelines for 17 common, high-burden clinical conditions (noncommunicable [n = 5], mental health [n = 4], acute infection [n = 7], and injury [n = 1]), such as asthma, attention-deficit/hyperactivity disorder, tonsillitis, and head injury. For these 17 conditions, 479 quality indicators were identified, with the number varying by condition, ranging from 9 for eczema to 54 for head injury. Four hundred medical records were targeted for sampling for each of 15 conditions while 267 records were targeted for anxiety and 133 for depression. Within each selected medical record, all visits for the 17 targeted conditions were identified, and separate quality assessments made for each. Care was evaluated for 6689 children 15 years of age and younger who had 15 240 visits to emergency departments, for inpatient admissions, or to pediatricians and general practitioners in selected urban and rural locations in 3 Australian states. These visits generated 160 202 quality indicator assessments.

EXPOSURES Quality indicators were identified through a systematic search of local and international guidelines. Individual indicators were extracted from guidelines and assessed using a 2-stage Delphi process.

MAIN OUTCOMES AND MEASURES Quality of care for each clinical condition and overall.

RESULTS Of 6689 children with surveyed medical records, 53.6% were aged 0 to 4 years and 55.5% were male. Adherence to quality of care indicators was estimated at 59.8% (95% CI, 57.5%-62.0%; n = 160 202) across the 17 conditions, ranging from a high of 88.8% (95% CI, 83.0%-93.1%; n = 2638) for autism to a low of 43.5% (95% CI, 36.8%-50.4%; n = 2354) for tonsillitis. The mean adherence by condition category was estimated as 60.5% (95% CI, 57.2%-63.8%; n = 41 265) for noncommunicable conditions (range, 52.8%-75.8%); 82.4% (95% CI, 79.0%-85.5%; n = 14 622) for mental health conditions (range, 71.5%-88.8%); 56.3% (95% CI, 53.2%-59.4%; n = 94 037) for acute infections (range, 43.5%-69.8%); and 78.3% (95% CI, 75.1%-81.2%; n = 10 278) for injury.

CONCLUSIONS AND RELEVANCE Among a sample of children receiving care in Australia in 2012-2013, the overall prevalence of adherence to quality of care indicators for important conditions was not high. For many of these conditions, the quality of care may be inadequate.

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Aims

CARETRACK KIDS

1. Obtain ***national agreement*** on sets of indicators for the management of 17 common paediatric conditions.

2. Measure the ***appropriateness*** of health care delivered to children in Australia in acute, primary and community health care settings.

Methodology to assess appropriateness at a population level

1. Select conditions that are prevalent and have a high burden of disease

2. Create indicators that reflect appropriate care

3. Sample patients and healthcare providers at a population level

4. Undertake a manual review of medical records against indicators

Open Access Protocol

BMJ Open

CareTrack Kids—part 1. Assessing the appropriateness of healthcare delivered to Australian children: study protocol for clinical indicator development

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ABSTRACT

Introduction: Despite the widespread availability of clinical guidelines, considerable gaps remain between the care that is recommended (appropriate care) and the care provided. This protocol describes a research methodology to develop clinical indicators for appropriate care for common paediatric conditions.

Methods and analysis: We will identify conditions amenable to population-level appropriateness of care research and develop clinical indicators for each condition. Candidate conditions have been identified from published research; burden of disease, prevalence and frequency of presentation data; and quality of care priority lists. Clinical indicators will be developed through searches of national and international guidelines, and formatted with explicit criteria for inclusion, exclusion, time frame and setting. Experts will review the indicators using a wiki-based approach and modified Delphi process. A formative evaluation of the wiki process will be undertaken.

Ethics and dissemination: Human Research Ethics Committee approvals have been received from Sydney Children's Hospital Network, Children's Health Queensland Hospital and Health Service, and the Women's and Children's Health Network (South Australia). Applications are under review with Macquarie University and the Royal Australian College of General Practitioners. We will submit the results of the study to relevant journals and offer national and international presentations.

Strengths and limitations of this study

- Using and evaluating a novel method for ratifying indicators of 'appropriate care' for 20 paediatric conditions.
- Achieving consensus on clinical indicators of 'appropriate care' that may be used for point-of-care decision-making and benchmarking purposes.
- The recruitment of experts for the review process may introduce selection biases.

INTRODUCTION

Australian paediatricians commonly see children with a diverse range of sometimes complex health conditions.[1] Clinical practice guidelines (CPGs) are available to help healthcare providers deliver appropriate care (care in line with evidence-based or consensus-based guidelines).[2–4] However, it is not always easy for healthcare providers to navigate their way through CPGs due to factors such as: lack of timely access, multiple CPG sources and hence a lack of consensus, and lengthy recommendations that may not be specific or practical for point-of-care decision-making.[5–10] Definitions of objective or measurable compliance with processes and outcomes are often lacking.[5–10]

Research was undertaken in the USA between 1998 and 2000 to develop recommendations for a range of paediatric conditions, and to benchmark the quality of ambulatory care against these recommendations.[11] However, no such study has been conducted in Australia or elsewhere. The overall objective of CareTrack Kids (CTK) is to determine the appropriateness and safety of healthcare for common conditions delivered to children in Australia. In order to achieve this, a set of measurable clinical indicators is required.[5]

The CTK project involves a suite of three separate but related studies: part 1 (this study)—developing a set of clinical 'appropriateness' indicators for common paediatric conditions; part 2—measuring the appropriateness of paediatric care in Australia against these clinical indicators (using an onsite

PLOS ONE

RESEARCH ARTICLE

Clinical indicators for common paediatric conditions: Processes, provenance and products of the *CareTrack Kids* study

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Abstract

Background

In order to determine the extent to which care delivered to children is appropriate (in line with evidence-based care and/or clinical practice guidelines (CPGs)) in Australia, we developed a set of clinical indicators for 21 common paediatric medical conditions for use across a range of primary, secondary and tertiary healthcare practice facilities.

Methods

Clinical indicators were extracted from recommendations found through systematic searches of national and international guidelines, and formatted with explicit criteria for

Track Kids

Methodology

1. SELECT CONDITIONS

Acute Abdominal Pain
Attention Deficit Hyperactivity Disorder
Acute gastroenteritis
Anxiety
Asthma
Autism
Bronchiolitis
Croup
Depression
Diabetes
Eczema
Fever
Gastro oesophageal Reflux Disease
Head Injury
Otitis Media
Tonsillitis
Upper Respiratory Tract Infection

Methodology

2. DEVELOP INDICATORS OF EVIDENCE-BASED CARE

- 99 CPGs used containing 1,266 recommendations across 17 conditions

- 479 indicators
- Range: 9 (eczema) to 54 (head injury)

- 407 (75%) indicators - consensus-based

- Underuse: 430 (90%)
- Overuse: 49 (10%)

- Diagnosis: 171 (36%)
- Treatment: 210 (44%)
- Ongoing management: 98 (20%)

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Indicator examples

Children discharged from hospital after an acute asthma episode had a written asthma action plan

Children who presented with gastroenteritis had their degree of dehydration assessed

Children with a sore throat and with no other symptoms or signs of tonsillitis were NOT prescribed antibiotics

Methodology

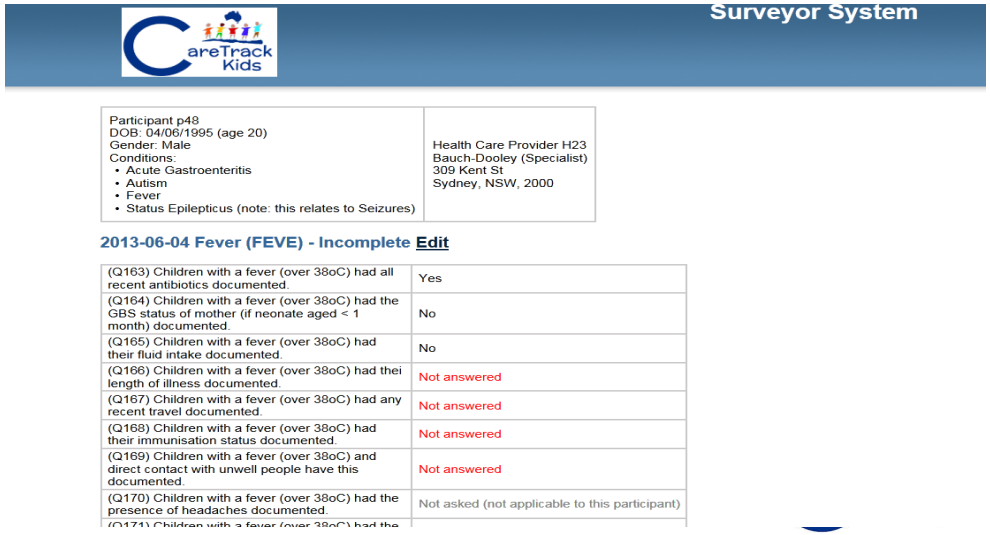
3. SAMPLE HEALTH CARE PROVIDERS AND PATIENTS

- Multiple Healthcare Provider types – Hospitals (ED/ward), GPs and Paediatricians
- 3 states – New South Wales, South Australia, Queensland and selected regions within each state
- Children aged <16 years with at least one condition managed in 2012-13
- Aim: 400 records per condition

Methodology

4. REVIEW MEDICAL RECORDS

- Nine surveyors (Registered Nurses) employed and trained to collect the data
- Medical record review for care occurring in 2012-2013
- Secure database developed to collect data using laptops
- Kappa scores = 0.71 - 0.76



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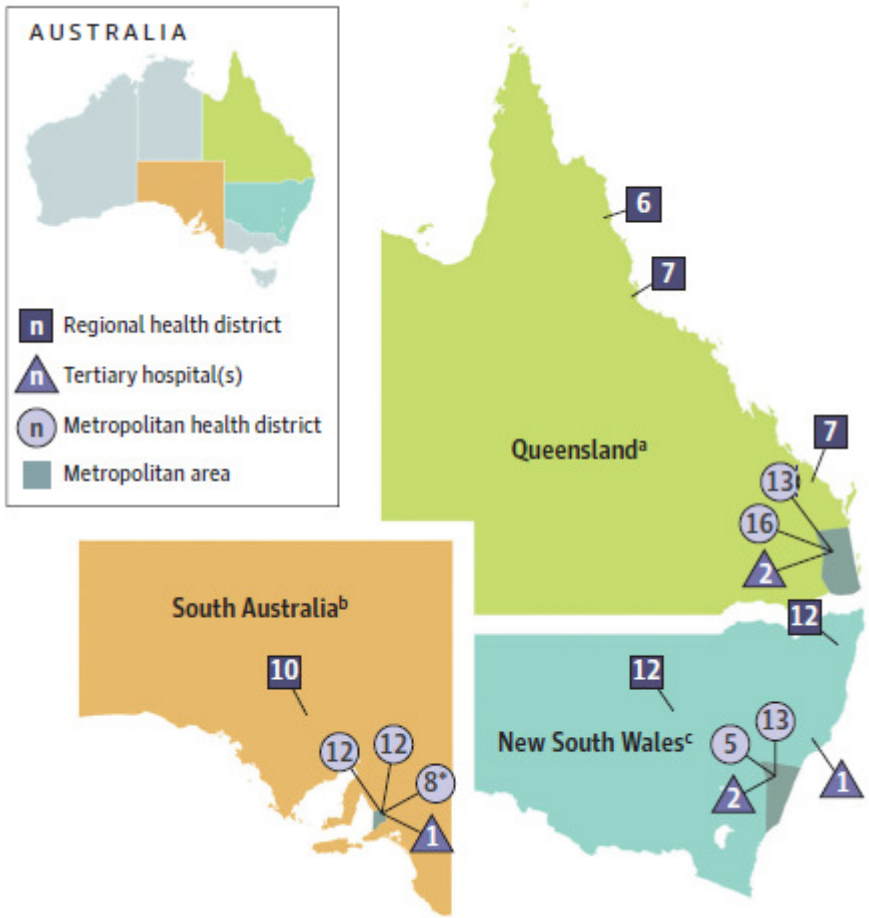
Results

- 139 health care sites: 85 GPs, 20 paediatricians' offices, and 34 hospitals
- 6,689 children's medical records reviewed
- 1 - 7 separate clinical conditions (median = 1) per child
- 160,202 eligible indicator assessments during 15,240 visits



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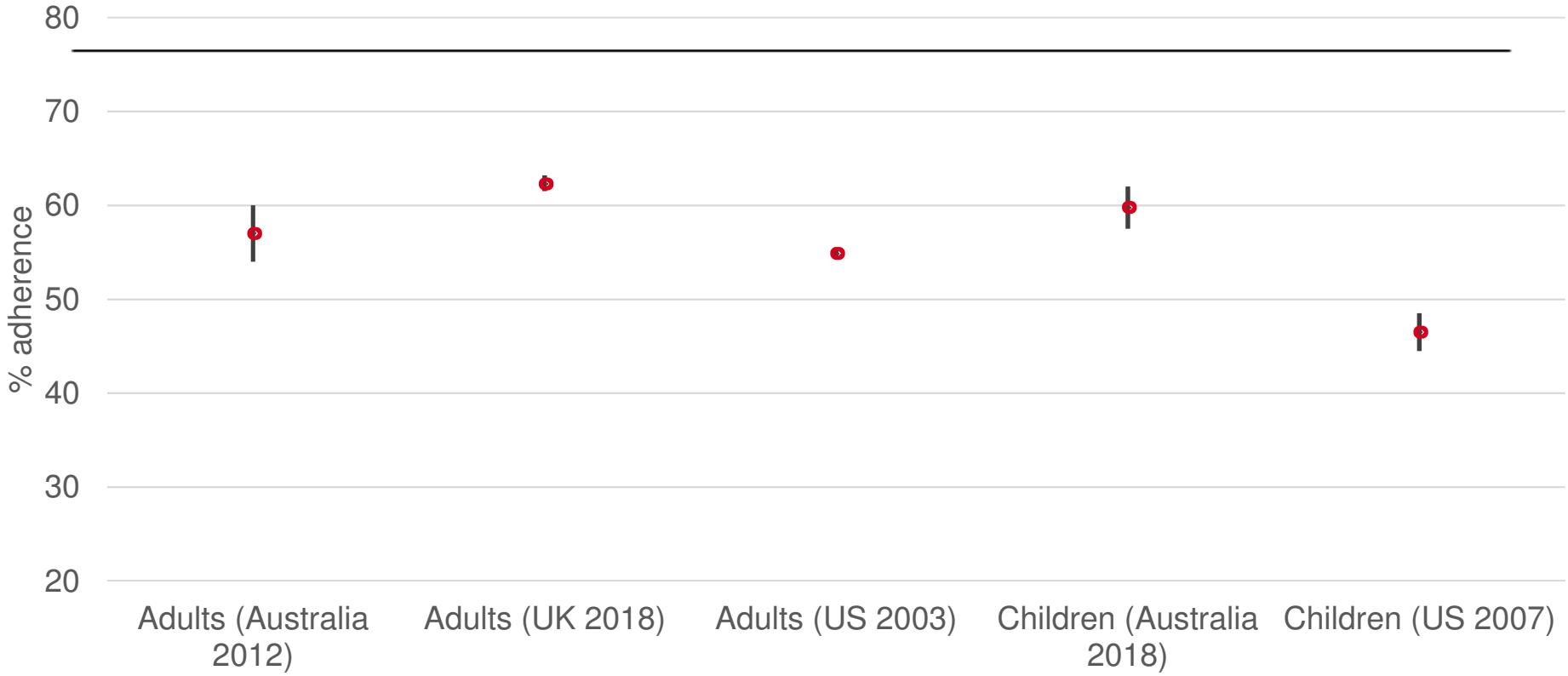
CareTrack Kids

What % of children receive evidence-based care?

- 60%

Large scale appropriateness studies



Runciman 2012, Steel 2018, McGlynn 2003, Mangione-Smith 2007, Braithwaite 2018

Quality of care by condition

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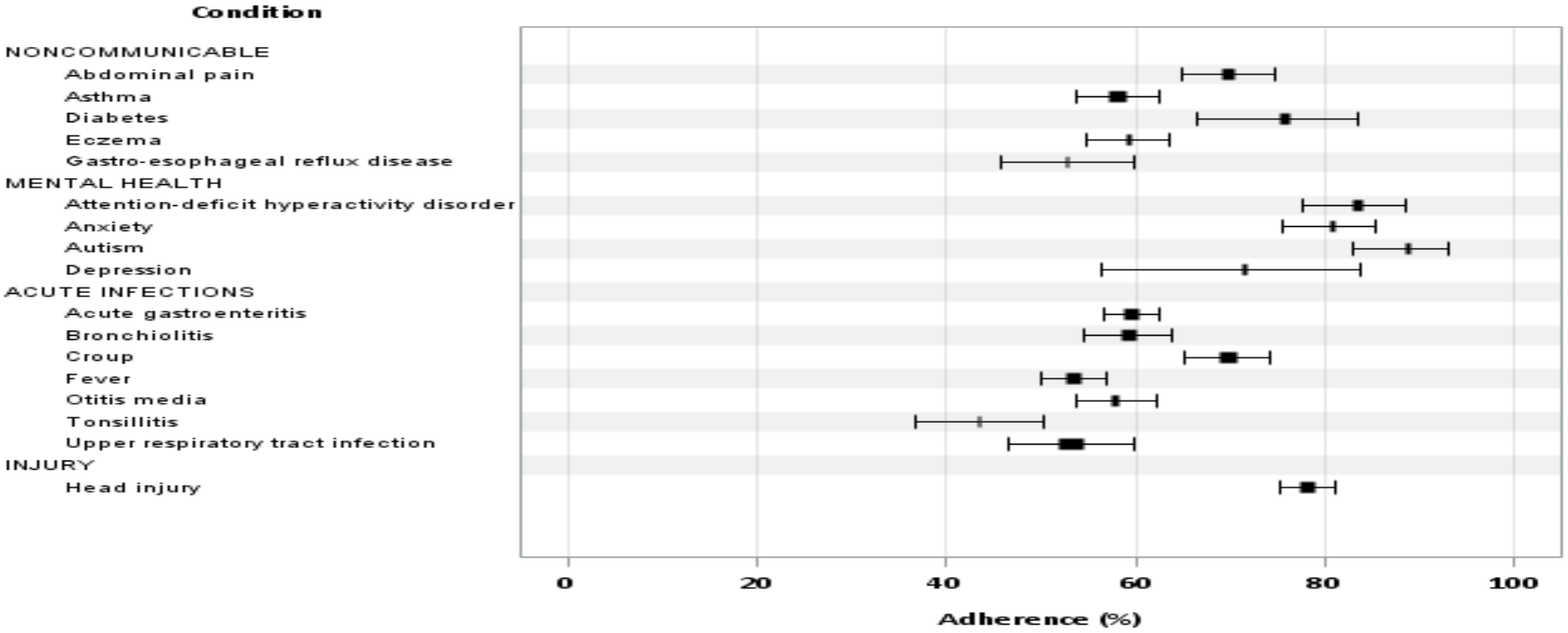

Braithwaite et al 2018

Quality of care by over/underuse

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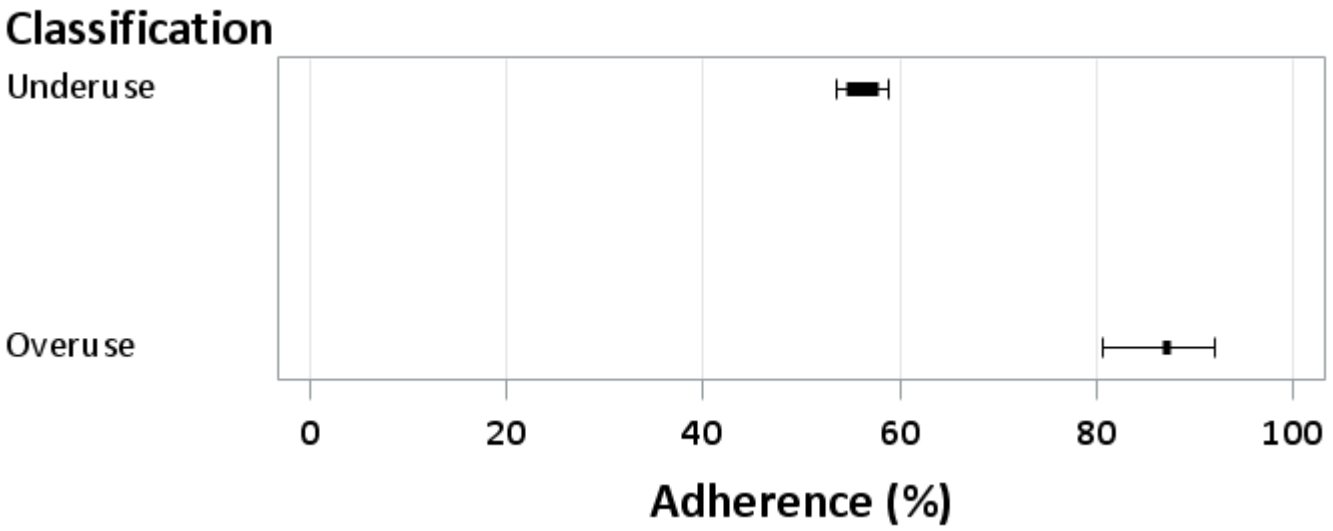

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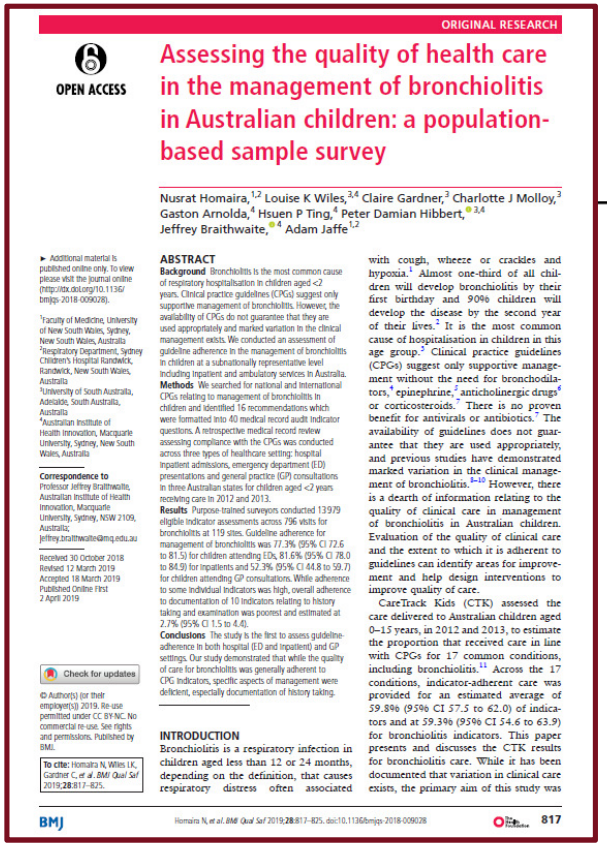

ORIGINAL RESEARCH

OPEN ACCESS

Assessing the quality of health care in the management of bronchiolitis in Australian children: a population-based sample survey

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ABSTRACT

Background Bronchiolitis is the most common cause of respiratory hospitalisation in children aged <2 years. Clinical practice guidelines (CPGs) suggest only supportive management of bronchiolitis. However, the availability of CPGs do not guarantee that they are used appropriately and marked variation in the clinical management exists. We conducted an assessment of guideline adherence in the management of bronchiolitis in children at a subnationally representative level including inpatient and ambulatory services in Australia.

Methods We searched for national and international CPGs relating to management of bronchiolitis in children and identified 16 recommendations which were formatted into 40 medical record audit indicator questions. A retrospective medical record review assessing compliance with the CPGs was conducted across three types of healthcare setting: hospital inpatient admissions, emergency department (ED) presentations and general practice (GP) consultations in three Australian states for children aged <2 years receiving care in 2012 and 2013.

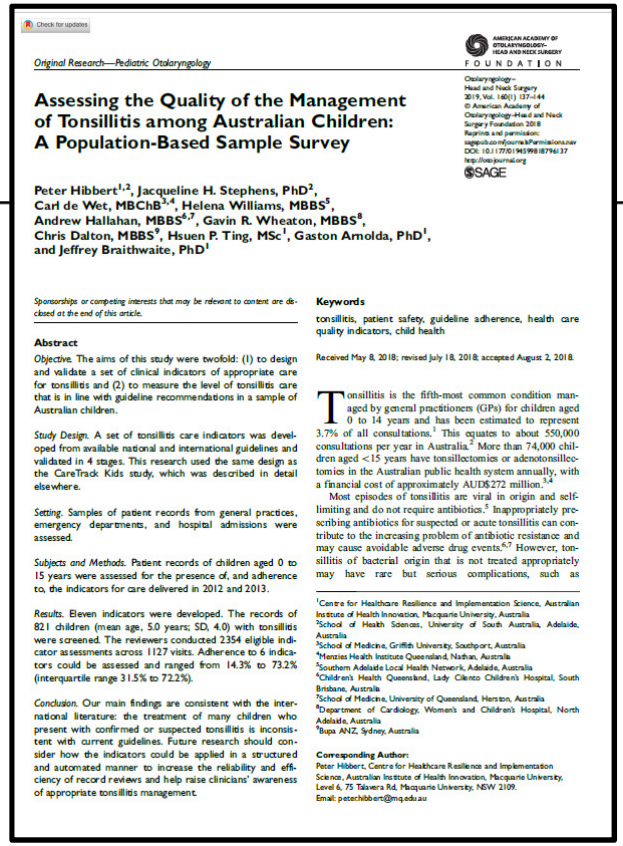
Results Purpose-trained surveyors conducted 13 979 eligible indicator assessments across 796 visits for bronchiolitis at 119 sites. Guideline adherence for management of bronchiolitis was 77.3% (95% CI 72.6 to 81.5) for children attending EDs, 81.6% (95% CI 78.0 to 84.9) for inpatients and 52.3% (95% CI 44.8 to 59.7) for children attending GP consultations. While adherence to some individual indicators was high, overall adherence to documentation of 10 indicators relating to history taking and examination was poorest and estimated at 2.7% (95% CI 1.5 to 4.4).

Conclusions The study is the first to assess guideline-adherence in both hospital (ED and inpatient) and GP settings. Our study demonstrated that while the quality of care for bronchiolitis was generally adherent to CPG indicators, specific aspects of management were deficient, especially documentation of history taking.

INTRODUCTION

Bronchiolitis is a respiratory infection in children aged less than 12 or 24 months, depending on the definition, that causes respiratory distress often associated with cough, wheeze or crackles and hypoxia.[1] Almost one-third of all children will develop bronchiolitis by their first birthday and 90% children will develop the disease by the second year of their lives.[2] It is the most common cause of hospitalisation in children in this age group.[2] Clinical practice guidelines (CPGs) suggest only supportive management without the need for bronchodilators,[3] epinephrine,[2] anticholinergic drugs[4] or corticosteroids.[5] There is no proven benefit for antivirals or antibiotics.[6] The availability of guidelines does not guarantee that they are used appropriately, and previous studies have demonstrated marked variation in the clinical management of bronchiolitis.[1–10] However, there is a dearth of information relating to the quality of clinical care in management of bronchiolitis in Australian children. Evaluation of the quality of clinical care and the extent to which it is adherent to guidelines can identify areas for improvement and help design interventions to improve quality of care.

CareTrack Kids (CTK) assessed the care delivered to Australian children aged 0–15 years, in 2012 and 2013, to estimate the proportion that received care in line with CPGs for 17 common conditions, including bronchiolitis.[11] Across the 17 conditions, indicator-adherent care was provided for an estimated average of 59.8% (95% CI 57.5 to 62.0) of indicators and at 59.3% (95% CI 54.6 to 63.9) for bronchiolitis indicators. This paper presents and discusses the CTK results for bronchiolitis care. While it has been documented that variation in clinical care exists, the primary aim of this study was



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Original Research—Pediatric Otolaryngology

AMERICAN ACADEMY OF OTOLARYNGOLOGY–HEAD AND NECK SURGERY FOUNDATION

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SAGE

Assessing the Quality of the Management of Tonsillitis among Australian Children: A Population-Based Sample Survey

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

Keywords
tonsillitis, patient safety, guideline adherence, health care quality indicators, child health

Received May 8, 2018; revised July 18, 2018; accepted August 2, 2018.

Abstract

Objective. The aims of this study were twofold: (1) to design and validate a set of clinical indicators of appropriate care for tonsillitis and (2) to measure the level of tonsillitis care that is in line with guideline recommendations in a sample of Australian children.

Study Design. A set of tonsillitis care indicators was developed from available national and international guidelines and validated in 4 stages. This research used the same design as the CareTrack Kids study, which was described in detail elsewhere.

Setting. Samples of patient records from general practices, emergency departments, and hospital admissions were assessed.

Subjects and Methods. Patient records of children aged 0 to 15 years were assessed for the presence of, and adherence to, the indicators for care delivered in 2012 and 2013.

Results. Eleven indicators were developed. The records of 821 children (mean age, 5.0 years; SD, 4.0) with tonsillitis were screened. The reviewers conducted 2354 eligible indicator assessments across 1127 visits. Adherence to 6 indicators could be assessed and ranged from 14.3% to 73.2% (interquartile range 31.5% to 72.2%).

Conclusion. Our main findings are consistent with the international literature: the treatment of many children who present with confirmed or suspected tonsillitis is inconsistent with current guidelines. Future research should consider how the indicators could be applied in a structured and automated manner to increase the reliability and efficiency of record reviews and help raise clinicians' awareness of appropriate tonsillitis management.

Tonsillitis is the fifth-most common condition managed by general practitioners (GPs) for children aged 0 to 14 years and has been estimated to represent 3.7% of all consultations.[1] This equates to about 550,000 consultations per year in Australia.[2] More than 74,000 children aged <15 years have tonsillectomies or adenotonsillectomies in the Australian public health system annually, with a financial cost of approximately AUD$272 million.[3,4]

Most episodes of tonsillitis are viral in origin and self-limiting and do not require antibiotics.[5] Inappropriately prescribing antibiotics for suspected or acute tonsillitis can contribute to the increasing problem of antibiotic resistance and may cause avoidable adverse drug events.[6,7] However, tonsillitis of bacterial origin that is not treated appropriately may have rare but serious complications, such as

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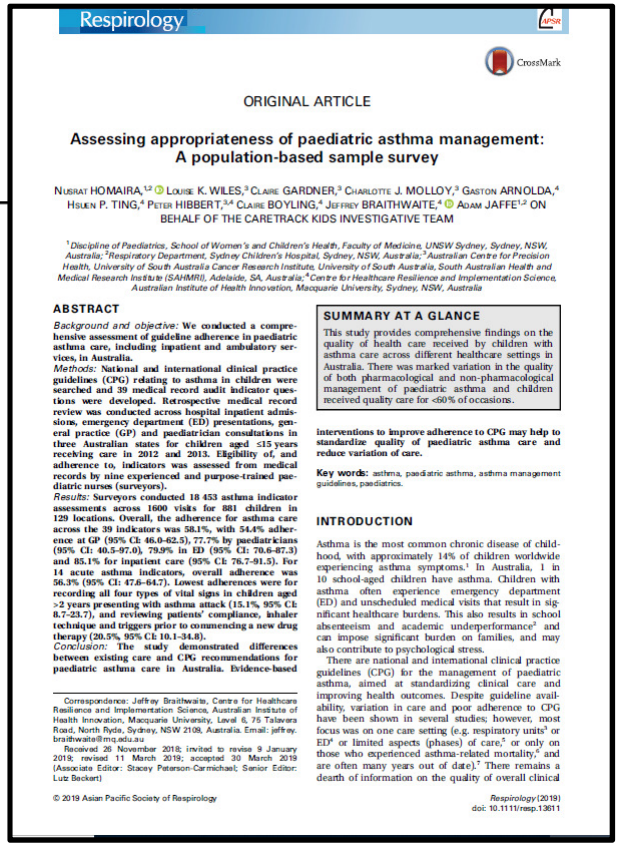

Respirology

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ORIGINAL ARTICLE

Assessing appropriateness of paediatric asthma management: A population-based sample survey

NUSRAT HOMAIRA,[1,2] LOUISE K. WILES,[3] CLAIRE GARDNER,[3] CHARLOTTE J. MOLLOY,[3] GASTON ARNOLDA,[4] HSUEN P. TING,[4] PETER HIBBERT,[3,4] CLAIRE BOYLING,[4] JEFFREY BRAITHWAITE,[4] ADAM JAFFE[1,2] ON BEHALF OF THE CARETRACK KIDS INVESTIGATIVE TEAM

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ABSTRACT

Background and objective: **We conducted a comprehensive assessment of guideline adherence in paediatric asthma care, including inpatient and ambulatory services, in Australia.**
Methods: **National and international clinical practice guidelines (CPG) relating to asthma in children were searched and 39 medical record audit indicator questions were developed. Retrospective medical record review was conducted across hospital inpatient admissions, emergency department (ED) presentations, general practice (GP) and paediatrician consultations in three Australian states for children aged ≤15 years receiving care in 2012 and 2013. Eligibility of, and adherence to, indicators was assessed from medical records by nine experienced and purpose-trained paediatric nurses (surveyors).**
Results: **Surveyors conducted 18 453 asthma indicator assessments across 1600 visits for 881 children in 129 locations. Overall, the adherence for asthma care across the 39 indicators was 58.1%, with 54.4% adherence at GP (95% CI: 46.0–62.5), 77.7% by paediatricians (95% CI: 40.5–97.0), 79.9% in ED (95% CI: 70.6–87.3) and 85.1% for inpatient care (95% CIs 76.7–91.5). For 14 acute asthma indicators, overall adherence was 56.3% (95% CI: 47.6–64.7). Lowest adherences were for recording all four types of vital signs in children aged >2 years presenting with asthma attack (15.1%, 95% CI: 8.7–23.7), and reviewing patients' compliance, inhaler technique and triggers prior to commencing a new drug therapy (20.5%, 95% CI: 10.1–34.8).**
Conclusion: **The study demonstrated differences between existing care and CPG recommendations for paediatric asthma care in Australia. Evidence-based interventions to improve adherence to CPG may help to standardize quality of paediatric asthma care and reduce variation of care.**

SUMMARY AT A GLANCE

This study provides comprehensive findings on the quality of health care received by children with asthma care across different healthcare settings in Australia. There was marked variation in the quality of both pharmacological and non-pharmacological management of paediatric asthma and children received quality care for <60% of occasions.

Key words: asthma, paediatric asthma, asthma management guidelines, paediatrics.

INTRODUCTION

Asthma is the most common chronic disease of childhood, with approximately 14% of children worldwide experiencing asthma symptoms.[1] In Australia, 1 in 10 school-aged children have asthma. Children with asthma often experience emergency department (ED) and unscheduled medical visits that result in significant healthcare burdens. This also results in school absenteeism and academic underperformance[2] and can impose significant burden on families, and may also contribute to psychological stress.

There are national and international clinical practice guidelines (CPG) for the management of paediatric asthma, aimed at standardizing clinical care and improving health outcomes. Despite guideline availability, variation in care and poor adherence to CPG have been shown in several studies; however, most focus was on one care setting (e.g. respiratory units[3] or ED[4] or limited aspects (phases) of care,[5] or only on those who experienced asthma-related mortality,[6] and are often many years out of date).[7] There remains a dearth of information on the quality of overall clinical

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Indicator examples

COMPLIANCE

Condition	Indicator	Compliance
Gastro-oesphageal reflux disease	Avoiding prescription of acid suppression medications on the first presentation of infants presenting with feeding refusal	73%
Asthma	Children with asthma prescribed preventer therapy had a written asthma action plan	47%
Asthma	Children discharged from hospital after an acute asthma episode had a written asthma action plan	92%
Tonsillitis	Children with a sore throat and with no other symptoms or signs of tonsillitis were not prescribed antibiotics	41%
Gastroenteritis	Children who presented with gastroenteritis had their degree of dehydration assessed	63%

CareTrack Kids by type of indicator

Type	No. indicators	% (95% CI)
Assessment of severity	11	21% (15.3, 27.8)
Provision of advice	18	28% (22.5, 32.9)
Referred or transferred	40	68% (49.8, 82.5)
Transferred	14	85% (71.2, 94.3)

Strengths and limitations of the CareTrack studies

- Robust inclusive indicator development
- Comprehensive coverage of all phases of care
- Largely representative
- Provides information on clinician's decision-making and actions

- Convenience sampling of GPs and specialists
- Medical record review – if it is not recorded, it is deemed not to be done
- Inconsistency in medical record review between surveyors
- Time-consuming, laborious, expensive, one-off study

Challenges with delivering evidence-based care

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Clinicians making evidence-based decisions

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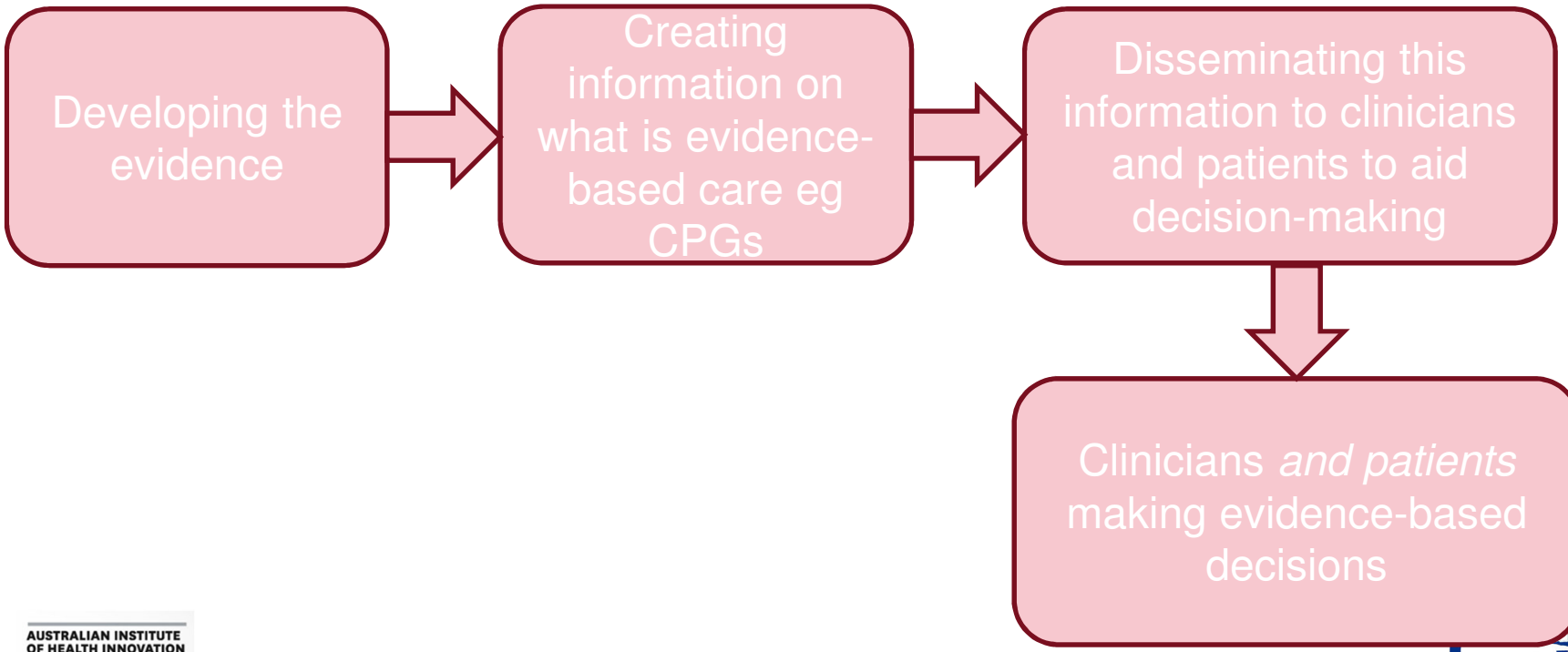
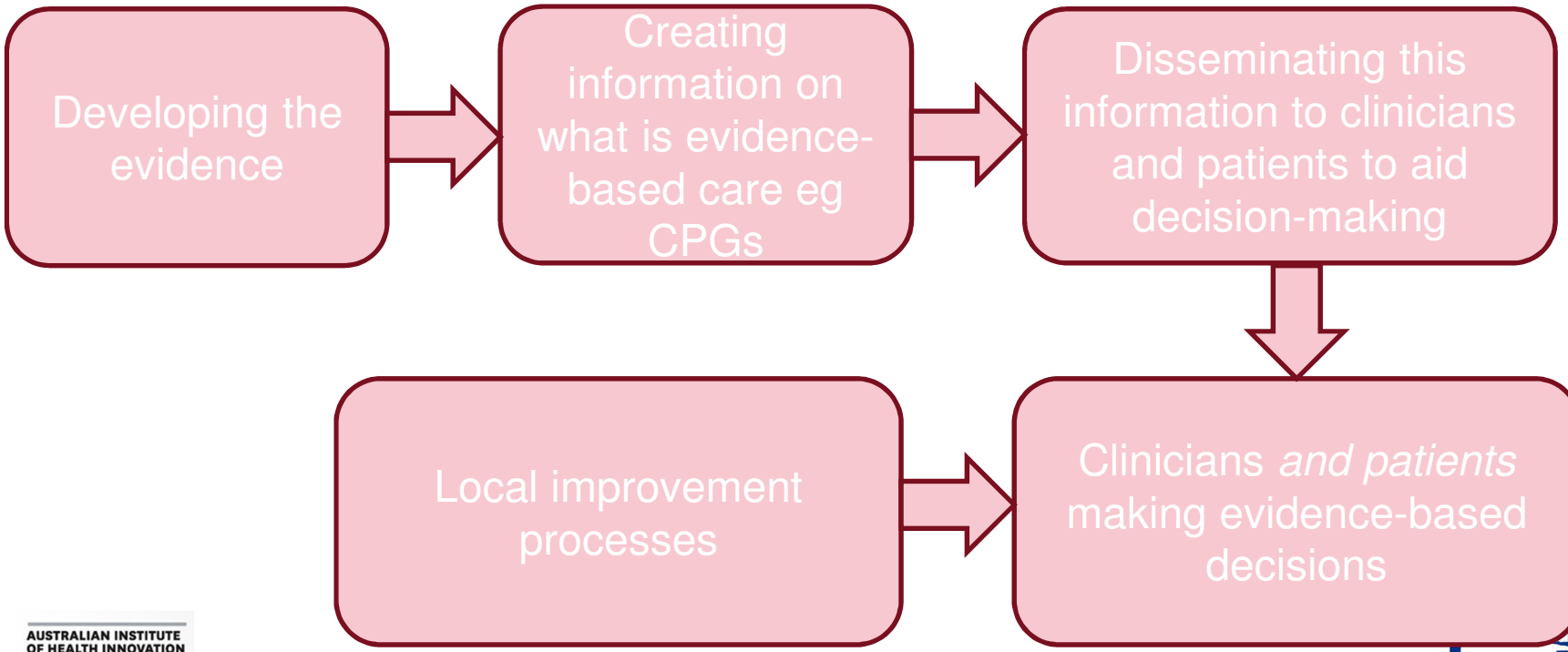
CareTrack Kids

Systems problems with delivering evidence-based care



Systems problems with delivering evidence-based care



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Usability issues with clinical guidelines and indicators

- Duplication and overlap
- Inconsistent structure and content
- Large document size
- Large number of repositories and guidelines
- Out of date
- Conflicts of interest

Runciman 2012

Runciman 2012

Unclear evidence

GASTRO-OESOPHAGEAL REFLUX DISEASE (GORD)

Diagnosis… should include: - diet history - urinalysis - complete blood count - serum electrolytes - blood urea nitrogen - serum creatinine - celiac screening - **upper GI series**	Vandenplas (NASPGHAN) 2009
Upper GI tract radiographic imaging to diagnose GORD is NOT justified	Lightdale 2013

And this ...

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Number of **systematic reviews** published **each day**:

- 11

Number of **randomised trials** published **each day**:

- 75

Bastian et al. PLOS Medicine 2007

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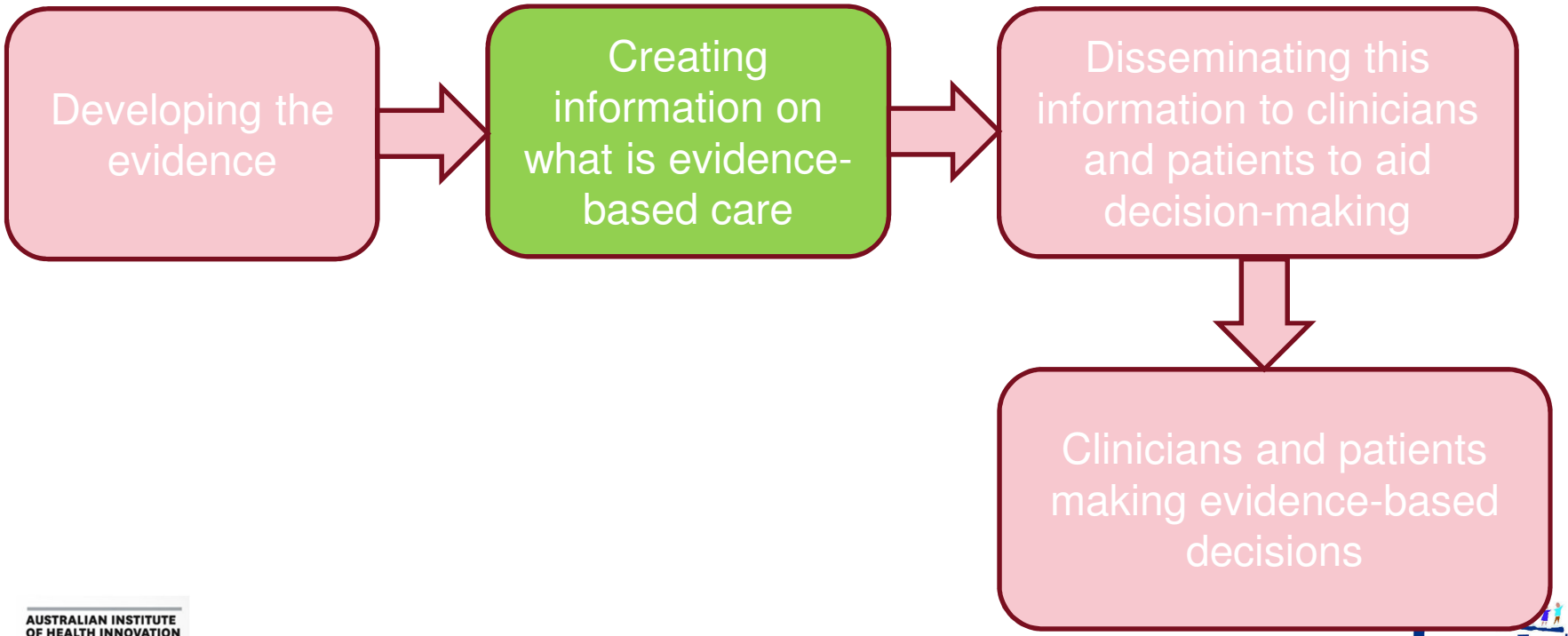

Innovative ways to develop evidence and keep it up to date

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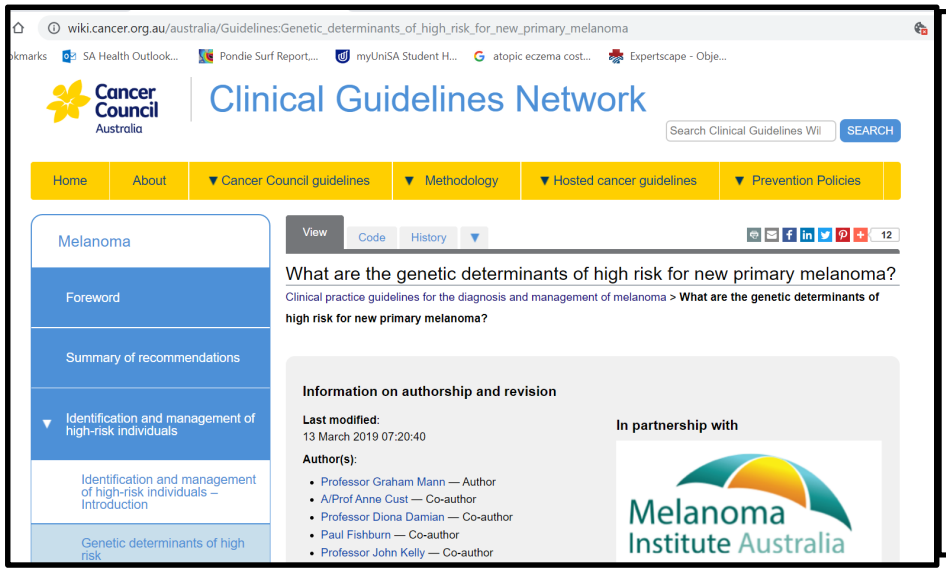
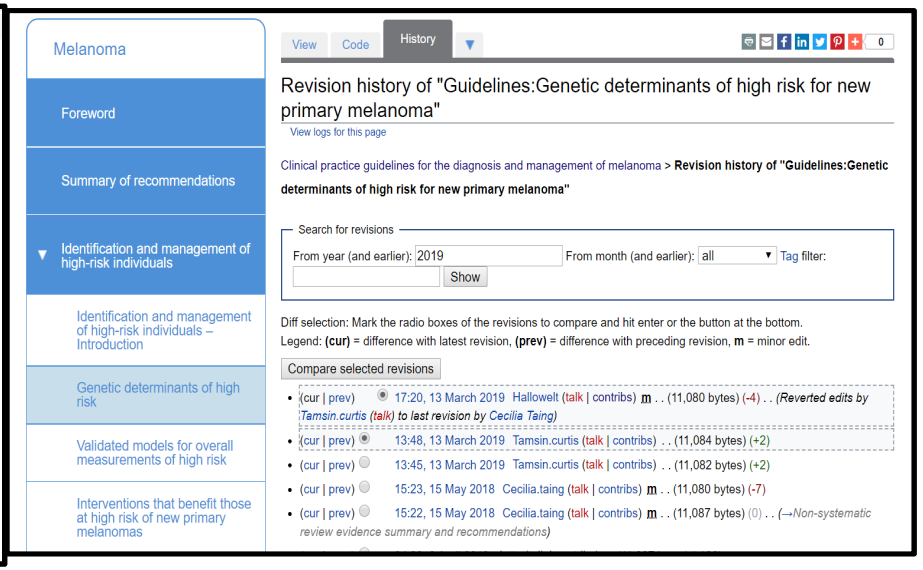
CANCER COUNCIL AUSTRALIA





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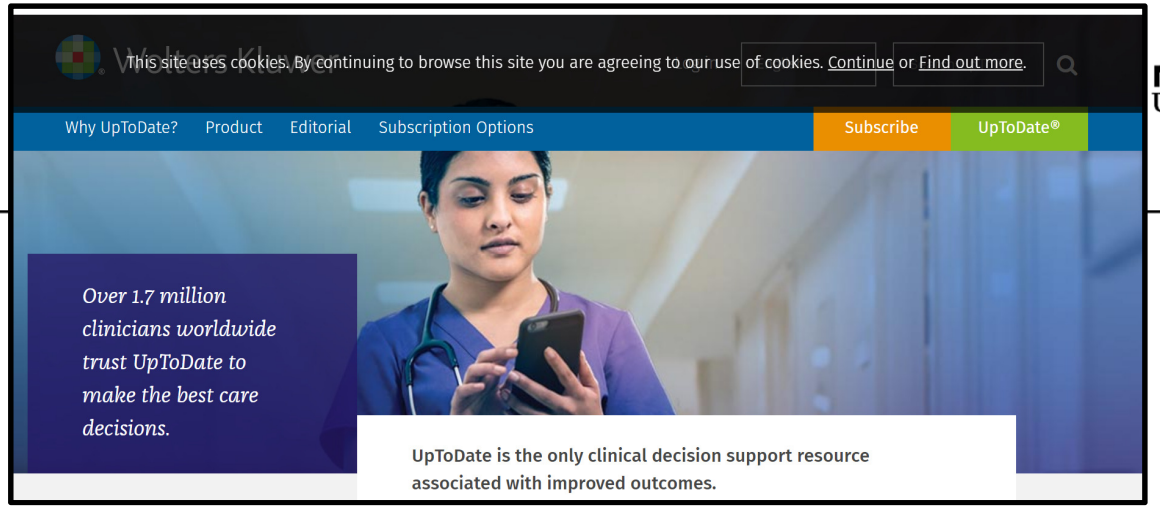
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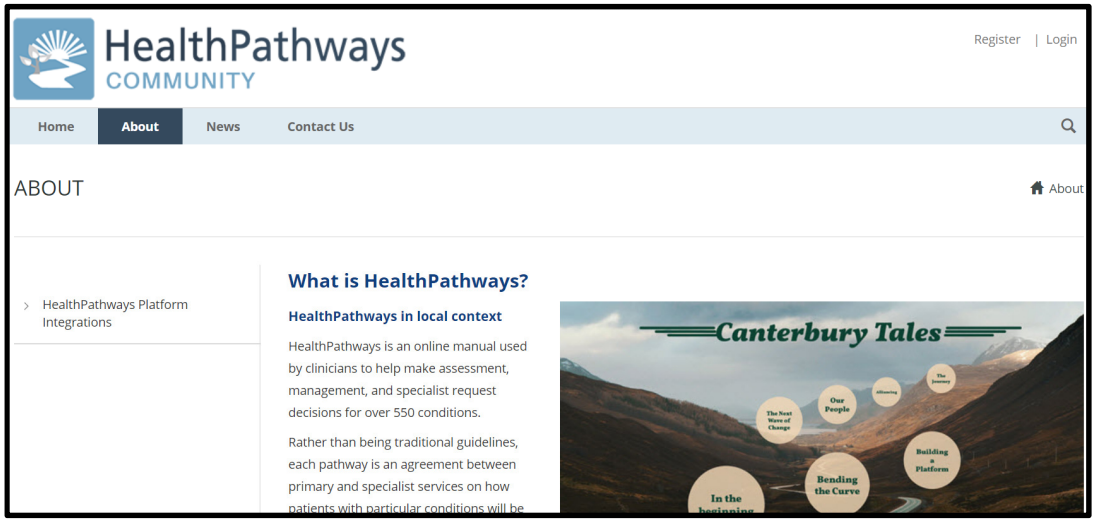
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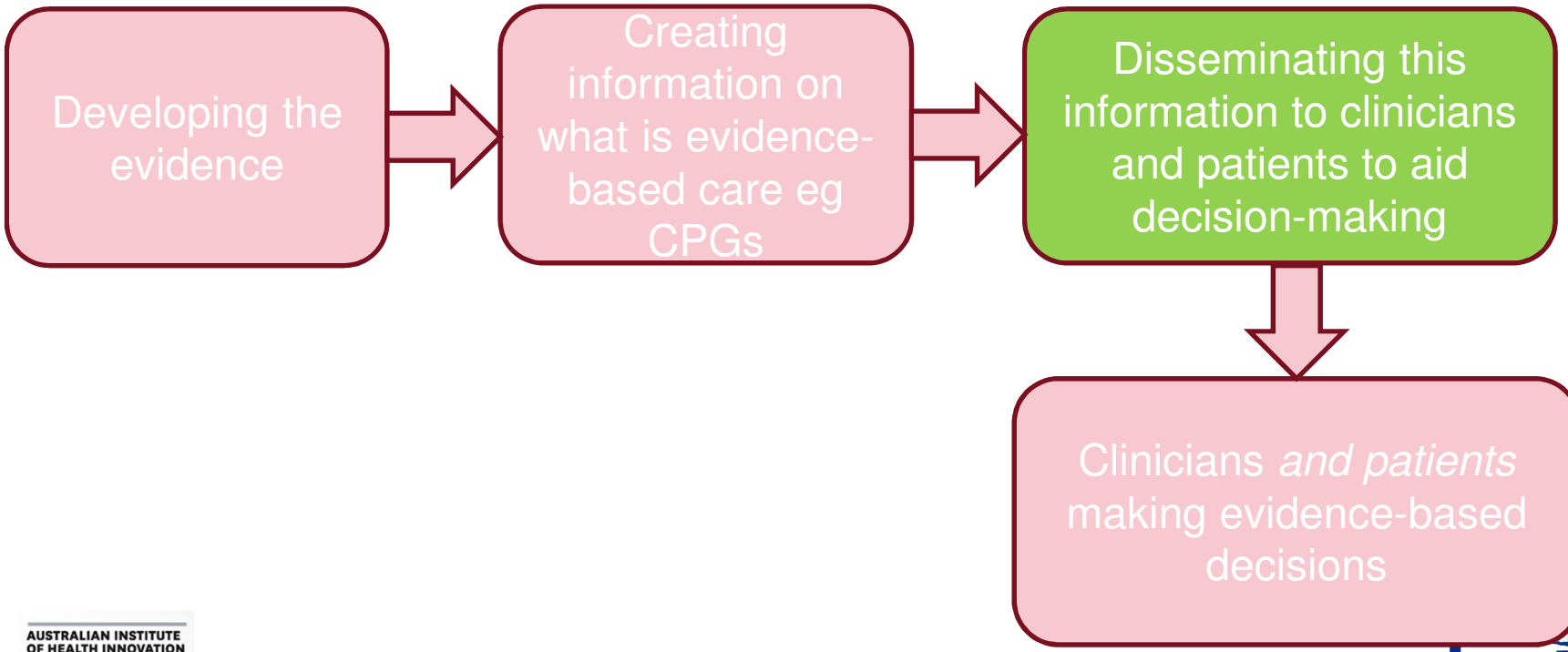
HealthPathways Platform Integrations
What is HealthPathways?
HealthPathways in local context
HealthPathways is an online manual used by clinicians to help make assessment, management, and specialist request decisions for over 550 conditions.
Rather than being traditional guidelines, each pathway is an agreement between primary and specialist services on how patients with particular conditions will be
Canterbury Tales
Our People
Bending the Curve
Building a Platform

Systems problems with delivering evidence-based care



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areTrack Kids

Tools and clinical systems

- Use **tools** such as checklists, reminders, apps, decision or action algorithms, or bundles of care

- Incorporating agreed **tools** into **electronic records** held by clinicians and patients

Tools and clinical systems

- Use **tools** such as checklists, reminders, apps, decision or action algorithms, or bundles of care
- Incorporating agreed **tools** into **electronic records** held by clinicians and patients
- Human factors assessment of usability of e-systems
- Rigorously designed **trials** and qualitative exploration to obtain a progressively better understanding of **what works and why**

Computerised medication alerts

MACQUARIE University

Can reduce prescribing errors because they warn prescribers of possible risks such as allergies, inappropriate doses and drug-drug interactions.

Doctors override computerised alerts, sometimes up to **95%** of the time.

Optimising computerised alerts within electronic medication management systems: A synthesis of four years of research

Melissa T BAYSARI[a,b,1], Johanna I WESTBROOK[a], Katrina RICHARDSON[c] and Richard O DAY[b,d]
[a] *Centre for Health Systems and Safety Research, UNSW Medicine, UNSW, Australia*
[b] *Department of Clinical Pharmacology and Toxicology, St Vincent's Hospital, Sydney, Australia*
[c] *Department of Pharmacy, St Vincent's Hospital, Sydney, Australia*
[d] *UNSW Medicine, UNSW, Australia*

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Heuristic analysis

ASSESSING THE USABILITY OF SYSTEMS

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom (ease of navigation)
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognise, diagnose, and recover from errors
10. Help and documentation

Nielsen 1994

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Patient apps

BEHAVIOUR CHANGE TECHNIQUES (BCTS) FOR ASTHMA

- Behaviour-health link
- Consequences
- Other's approval
- Instructions
- Model-demonstrate
- Self-monitoring
- Feedback
- Teach to use prompts / cues
- Stress management

Original Article

A Systematic Evaluation of Asthma Management Apps Examining Behavior Change Techniques

Rachelle R. Ramsey, PhD[a,b], Julia K. Caromody, PhD[a], Sara E. Voorhees, MS[c], Amanda Warning, MA[a], Christopher C. Cushing, PhD[d], Theresa W. Guilbert, MD, MS[b,e], Kevin A. Hommel, PhD[a,b], and David A. Fedele, PhD[c]
Cincinnati, Ohio; Gainesville, Fla; and Lawrence, Kan

23 apps assessed for BCTs
Each app used ranged from 1 to 11 (mean = 4)

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kiss my Asthma

Asthma Australia

THE UNIVERSITY OF SYDNEY

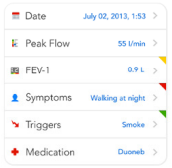
KISS MYASTHMA

The app that helps you put asthma in its place.

AsthmaMD® Track. Control. Live Better.

About Features Statistics Peak Flow Meter Triggers Press Blog FAQ

Why AsthmaMD?



Log on the Go

Easily log your asthma attacks wherever you go. Customize triggers and medications for quicker entry.

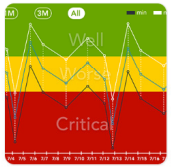
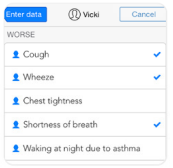


Chart Severity

At-a-glance, graphical view of your PFM and severity.



Benefit Asthma Research

Anonymous, aggregate data will help correlate asthma with environmental factors, triggers and climate change.

Send to Physician

One-step process to send your asthma log and peak flow chart to your physician.

CareTrack Kids

Summary

CARETRACK KIDS

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- We developed nearly 500 indicators of what is evidence-based care for children
- Evidence-based care is delivered to children about 60% of the time in Australia
- Large variation in results for conditions with tonsillitis a priority for improvement
- **Ask:** What is the level and quality of advice being provided to our patients?
- We owe it to our patients and clinicians to test and deliver ways of getting the right information at the right time in the right way on the right platform

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CareTrack Kids

Thank you

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