Centre for Community Child Health

What works to reduce low value care?

November 2016

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Lessons learnt:adult literature (Levitt BMJ 2016)

- Multi-faceted more effective than single interventions
- Need to understand (and then address) unique drivers of low value care for all end-users ie clinicians & patients– don't assume it's all due to lack of knowledge!
- Communication between doctor and patient is key
  - GOR vs GOR**Disease**
- Sustainability a challenge eg clinician education vs. systems based intervention

Lessons learnt: variation in paediatric care

2014 Review for NSW Government

- 16 common conditions
- Inpatient, OP and ED settings
- Most data from North America > UK > Aus
- **Variation in care common**
- **Less variation in effective care** associated with:
  - setting ie children's vs generalist hospitals
  - clinicians ie hospitalists vs non-hospitalists
  - age of clinician ie younger clinicians perhaps more likely to be aware of and adhere to clinical practice guidelines; and;
  - **computer-based electronic order set/clinical decision support, at point of care**.

Hiscock H, Perera P, McLean K, Roberts G. *Variation in paediatric clinical practice: Rapid Review of the Evidence*; 2014.

https://www.saxinstitute.org.au/category/publications/evidence-check-library

10 Commandments for Effective Clinical Decision Support in Imaging (Khorasani et al Am J Radiol 2014)

1. Should be part of a multi-disciplinary QI program
2. Strength of evidence behind it must be transparent
3. Sources of evidence must be diverse and vetted locally
4. Evidence must be current (? RACP role for repository of EVOLVE evidence)
5. Must be brief, unambiguous, and actionable
6. Respect ordering clinician workflow
7. Consequences for ignoring recommendations eg clinician audit & feedback, peer-to-peer consultation to override CDS
8. Target well defined clinical gaps
9. Must be able to measure impact (clinical data + test)
10. Position to improve patient and clinician workflow eg access to MRI schedules at point of MRI request

Low Value Care Systematic Review

Review Question: Which interventions work to reduce clinician ordering of unnecessary imaging and/or pathology tests in children?

Aims:

- describe and examine the comparative effectiveness of various interventions;
- examine the cost-effectiveness of interventions (as reported);
- examine any wider costs/benefits of the interventions (eg. effects on LOS, admissions, cost reductions etc.)

Low Value Care Systematic Review

Registered with Prospero: CRD42016047960

UNIVERSITY of York
Centre for Reviews and Dissemination

NHS
National Institute for Health Research

PROSPERO International prospective register of systematic reviews

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Effectiveness of interventions aiming to reduce unnecessary imaging and pathology tests in paediatric populations: a systematic review

Harriet Hiscock, Rachel Neely, Jason Soon, Andrew Georgiou

Citation

Harriet Hiscock, Rachel Neely, Jason Soon, Andrew Georgiou. Effectiveness of interventions aiming to reduce unnecessary imaging and pathology tests in paediatric populations: a systematic review. PROSPERO 2016:CRD42016047960 Available from http://www.crd.york.ac.uk/PROSPERO_REBRANDING/display_record.asp?ID=CRD42016047960

Review question(s)

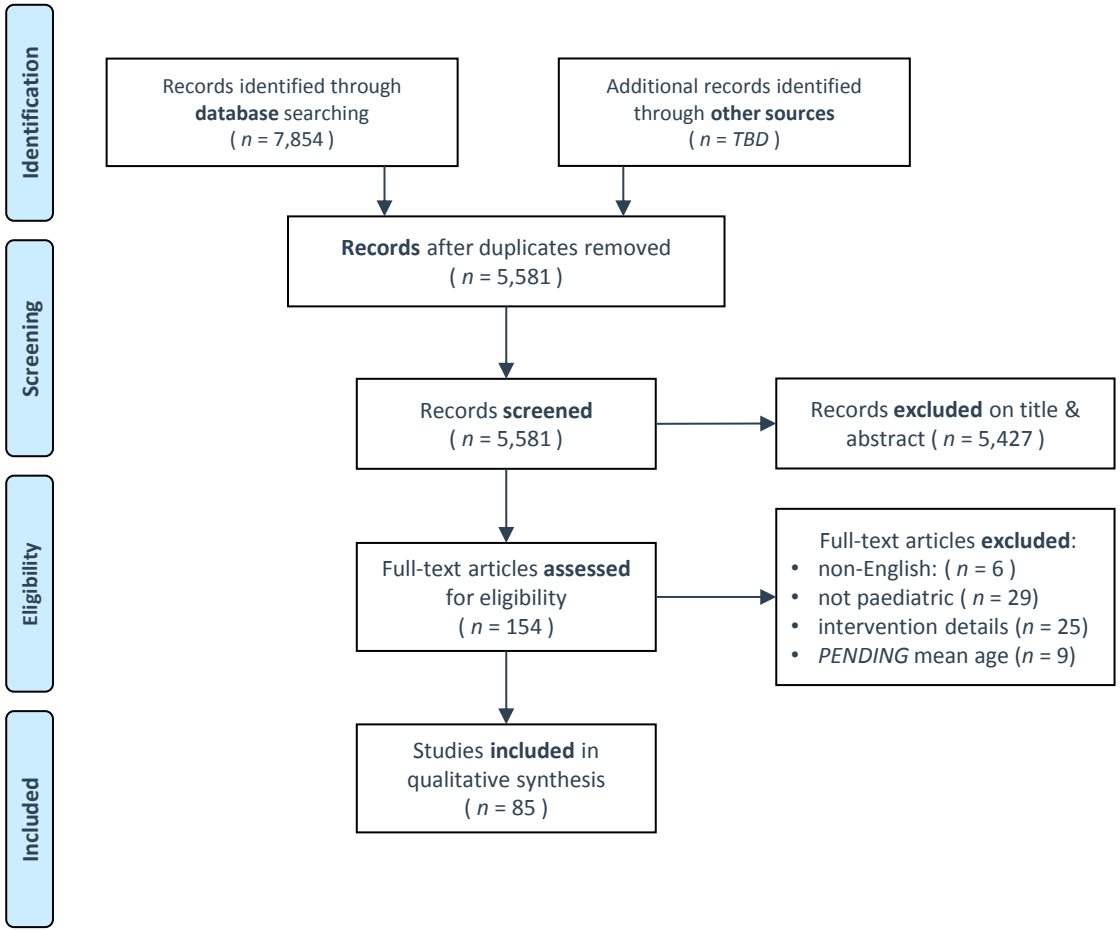
This systematic review is designed to examine the effectiveness of various interventions and associated implementation strategies aimed at reducing unnecessary imaging and pathology tests in paediatric populations. 'Unnecessary tests' are, for example, radiography, CT scan, MRI or routine bloods that are conducted without clinical indication to do so.

Low Value Care Systematic Review

Search Strategy

- **Systematic search**: MEDLINE, EMBASE, CINAHL and Cochrane Library
  - **Dates**: 01/01/1996 - 29/08/2016
  - **Exclusions**: non-English language, adult population, non-intervention, N=1 case reports, or studies with no control group.

- **Grey literature**: eg. Google Scholar; white papers; health services conference abstracts; College's reports (eg. RACP); Choosing Wisely; EVOLVE; and hand searching of reference lists.


Identification
Screening
Eligibility
Included
Records identified through database searching (n = 7,854)
Additional records identified through other sources (n = TBD)
Records after duplicates removed (n = 5,581)
Records screened (n = 5,581)
Records excluded on title & abstract (n = 5,427)
Full-text articles assessed for eligibility (n = 154)
Full-text articles excluded:
non-English: (n = 6)
not paediatric (n = 29)
intervention details (n = 25)
PENDING mean age (n = 9)
Studies included in qualitative synthesis (n = 85)

Low Value Care Systematic Review

Early thoughts on types of interventions*:*

- ***Mostly*: system-based** eg. electronic clinical decision support or computer order entry/procedural changes.
- ***Mostly*: education** eg. lectures, webinars, guideline distribution.
- ***Many*: guideline publication** externally eg. AAP guidelines.
- ***Some*: audit and feedback** eg. clinician or organisation performance is compared to peers.

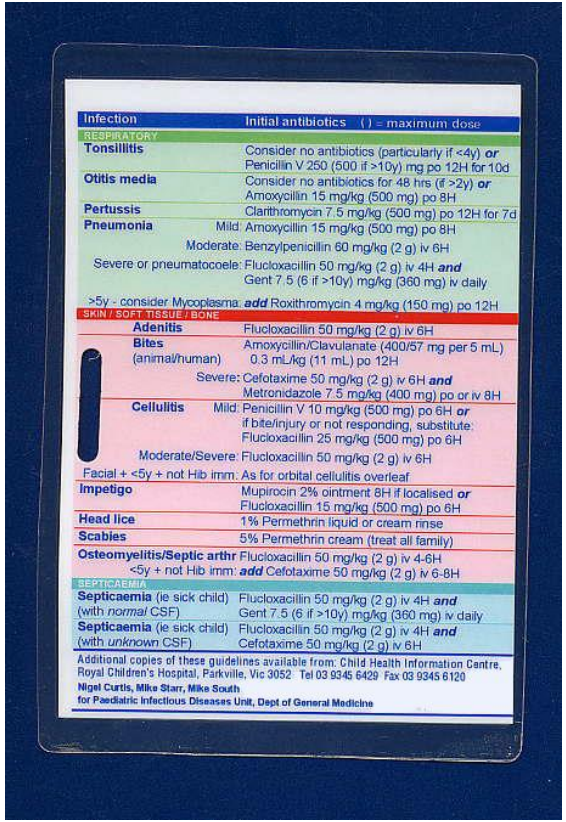
- ***Few***: family and patient education as part of a multi-faceted intervention.
- ***None (so far): incentive or penalty schemes*** eg. reward or punishment for certain ordering practices.

Novel approaches

- Offer alternatives ie “*do do*” not just “*do not do*”
- Could we develop family practice guidelines to compliment our clinical practice guidelines?
- Carefully crafted language (develop with parents)

“Chest x-rays can cause harm to children through radiation. Having a chest x-ray is not going to change what we do today for your child. The best thing to do is…..”

Don’t forget the simple stuff! Antibiotic Guideline Card



Infection	Initial antibiotics ( ) = maximum dose
RESPIRATORY	
Tonsillitis	Consider no antibiotics (particularly if <4y) ***or*** Penicillin V 250 (500 if >10y) mg po 12H for 10d
Otitis media	Consider no antibiotics for 48 hrs (if >2y) ***or*** Amoxycillin 15 mg/kg (500 mg) po 8H
Pertussis	Clarithromycin 7.5 mg/kg (500 mg) po 12H for 7d
Pneumonia Mild:	Amoxycillin 15 mg/kg (500 mg) po 8H
Moderate:	Benzylpenicillin 60 mg/kg (2 g) iv 6H
Severe or pneumatocoele:	Flucloxacillin 50 mg/kg (2 g) iv 4H ***and*** Gent 7.5 (6 if >10y) mg/kg (360 mg) iv daily
>5y - consider Mycoplasma:	***add*** Roxithromycin 4 mg/kg (150 mg) po 12H
SKIN / SOFT TISSUE / BONE	
Adenitis	Flucloxacillin 50 mg/kg (2 g) iv 6H
Bites (animal/human)	Amoxycillin/Clavulanate (400/57 mg per 5 mL) 0.3 mL/kg (11 mL) po 12H
Severe:	Cefotaxime 50 mg/kg (2 g) iv 6H ***and*** Metronidazole 7.5 mg/kg (400 mg) po or iv 8H
Cellulitis Mild:	Penicillin V 10 mg/kg (500 mg) po 6H ***or*** if bite/injury or not responding, substitute: Flucloxacillin 25 mg/kg (500 mg) po 6H
Moderate/Severe:	Flucloxacillin 50 mg/kg (2 g) iv 6H
Facial + <5y + not Hib imm:	As for orbital cellulitis overleaf
Impetigo	Mupirocin 2% ointment 8H if localised ***or*** Flucloxacillin 15 mg/kg (500 mg) po 6H
Head lice	1% Permethrin liquid or cream rinse
Scabies	5% Permethrin cream (treat all family)
Osteomyelitis/Septic arthr	Flucloxacillin 50 mg/kg (2 g) iv 4-6H
<5y + not Hib imm:	***add*** Cefotaxime 50 mg/kg (2 g) iv 6-8H
SEPTICAEMIA	
Septicaemia (ie sick child) (with *normal* CSF)	Flucloxacillin 50 mg/kg (2 g) iv 4H ***and*** Gent 7.5 (6 if >10y) mg/kg (360 mg) iv daily
Septicaemia (ie sick child) (with *unknown* CSF)	Flucloxacillin 50 mg/kg (2 g) iv 4H ***and*** Cefotaxime 50 mg/kg (2 g) iv 6H

Additional copies of these guidelines available from: Child Health Information Centre, Royal Children's Hospital, Parkville, Vic 3052 Tel 03 9345 6429 Fax 03 9345 6120

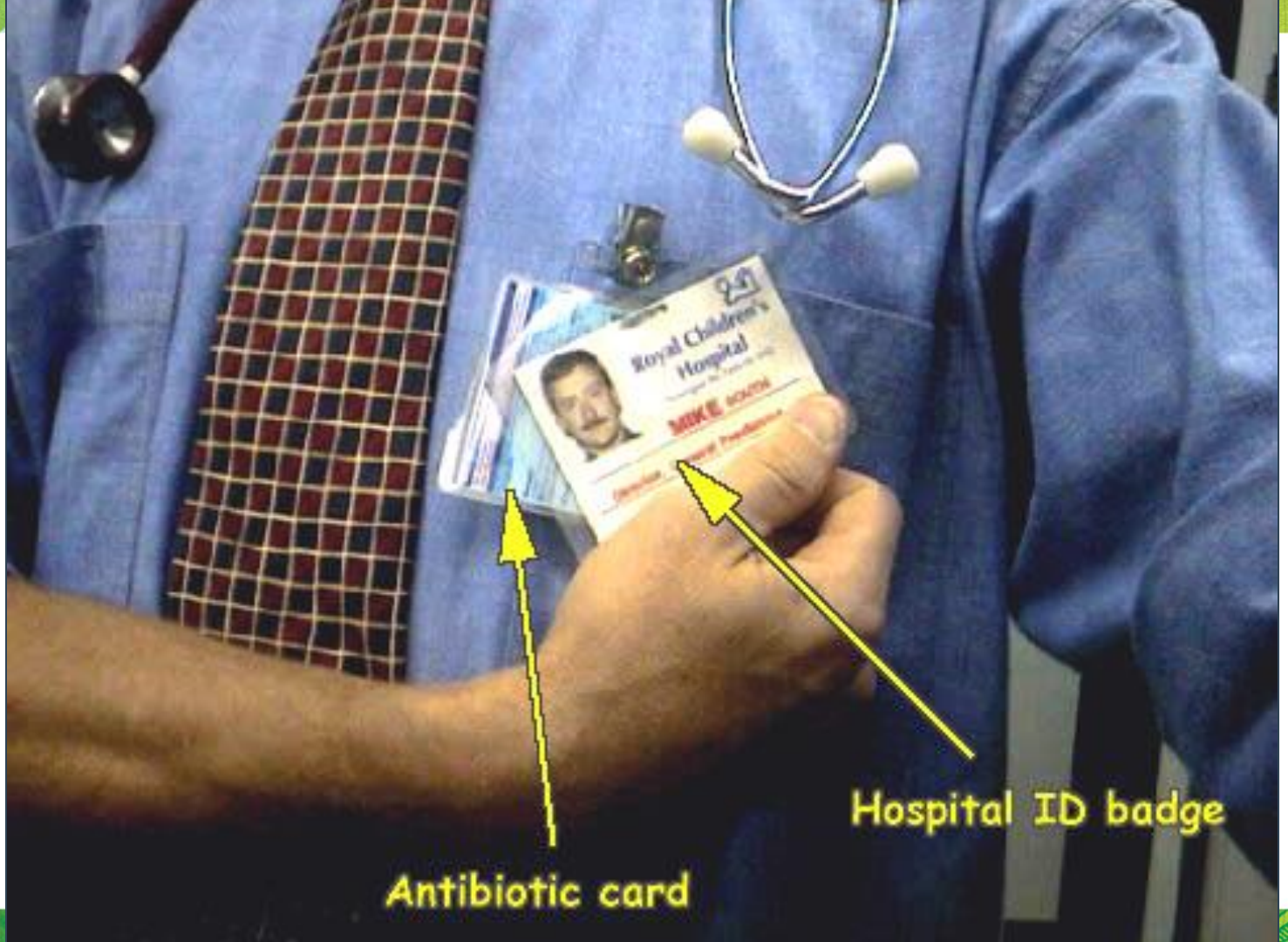
Nigel Curtis, Mike Starr, Mike South
for Paediatric Infectious Diseases Unit, Dept of General Medicine

Courtesy of Prof Mike South, RCH

CONDITIONS ON CARD

Meningitis
Hib prophylaxis
N.meningitidis prophylaxis
HSV encephalitis
Periorbital cellulitis
Orbital cellulitis
Endocarditis prophylax
Acute peritonitis
Ascending cholangitis
Giardiasis
Urinary tract infection

Tonsillitis
Epiglottitis
Otitis media
Pertussis prophylaxis
Pneumonia
Septicaemia
Impetigo
Cellulitis
Bites (animal / human)
Compound fractures
Osteomyelitis
Septic arthritis
Adenitis
Head lice
Scabies


Royal Children's Hospital
Hospital ID badge
Antibiotic card

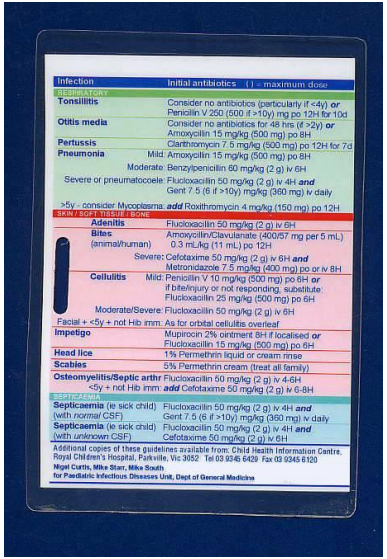
Evaluation

6 months before cards issued

6 months after cards issued

staff not informed of study

"*you might find this useful*"



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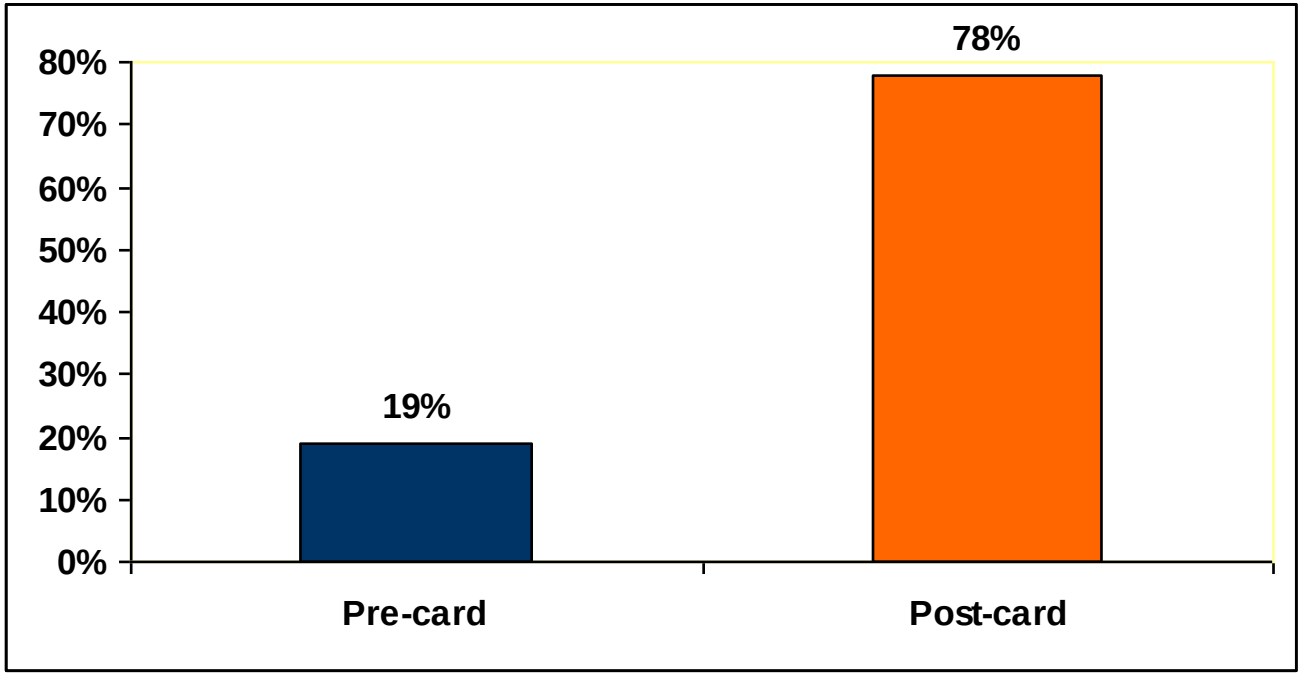
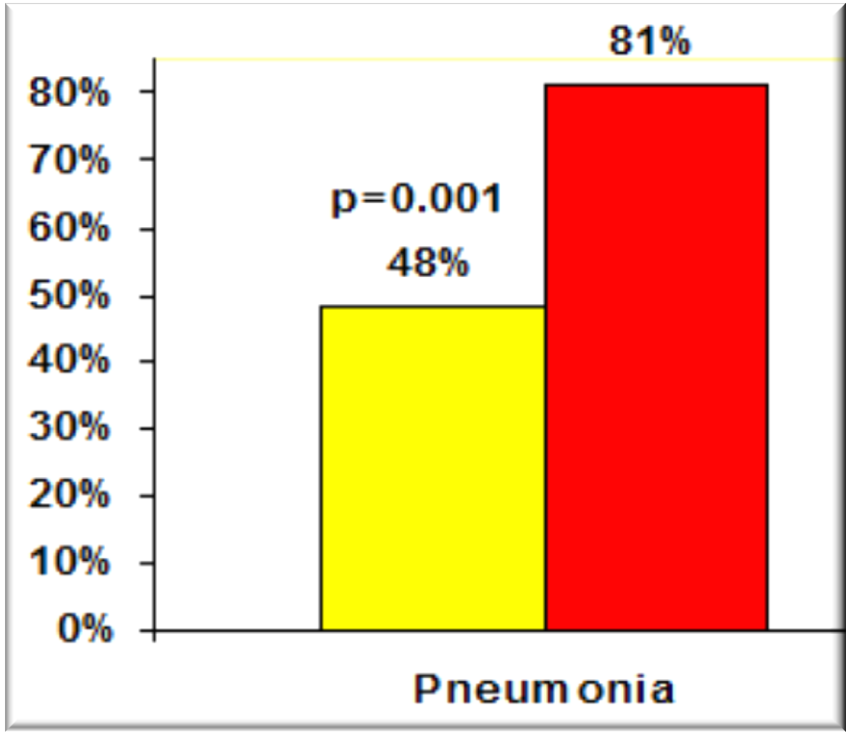
Choice of antibiotic - Pneumonia

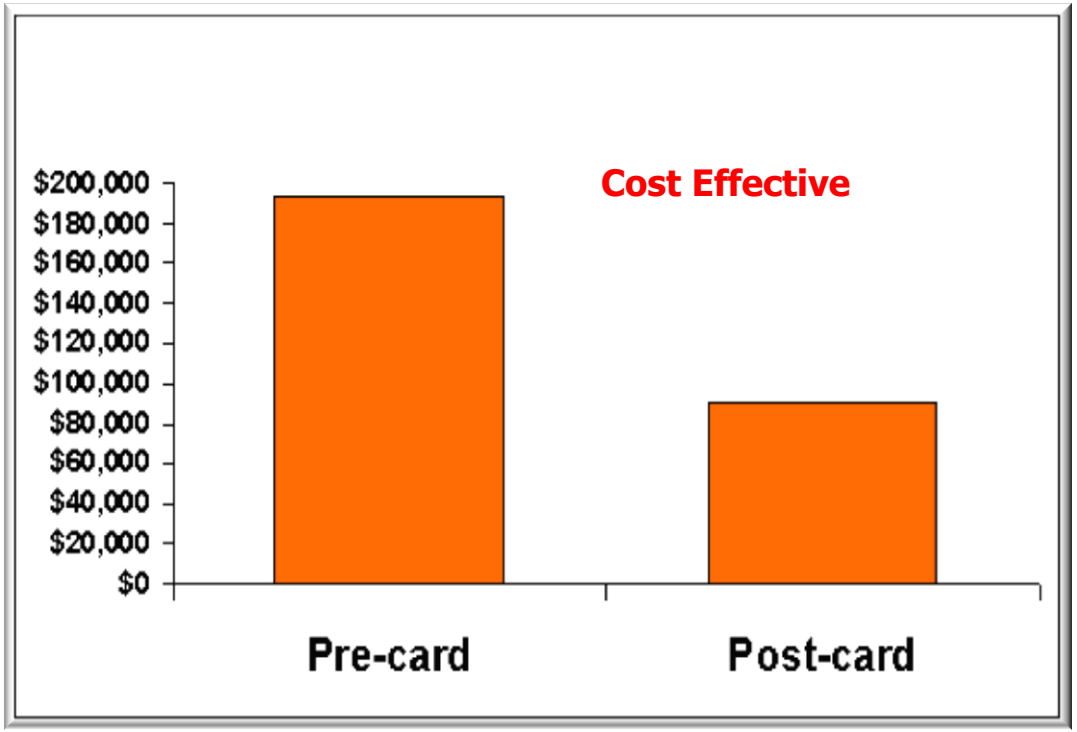


P<0.001

Dose of antibiotic - Pneumonia



Use of 3rd Generation Cephalosporins



J. Paediatr. Child Health (2005) **41**, 107–111

Reduce the rads: A quality assurance project on reducing unnecessary chest X-rays in children with asthma

A Buckmaster[1] and R Boon[2]

[1]*Gosford General Hospital, Gosford, New South Wales, Australia and* [2]*Booth Hall Children's Hospital, Manchester, United Kingdom*

Objectives: To quantify and then reduce the number of unnecessary chest X-rays (CXR) being performed on children

Background

Asthma is among one of the top 5 diagnoses in children admitted to hospital

Chest X-rays are often ordered with limited benefit

Average cost of CXR = $370 US / Australia ~$50

Exposure to radiation (80-100 µGY)

High prevalence of asthma in Australia (2 million children aged 5-14 years)

Australian study - Central coast

Methods

Defined when CXR was unnecessary

- known asthmatic
- Diagnosis of asthma
- Good response to treatment
- N
- N

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ICD

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All r
Pres

Ask Yourself
Is a CXR Necessary in Children?

NOT IF:

Your patient is a known asthmatic

AND

Your diagnosis is asthma

AND

Your patient is responding* to asthma therapy

*A reduced need for nebulisers/spacers over 3 hours given appropriate aggressive therapy on arrival

Table 2 Breakdown of the number of asthma presentations meeting each of the successive criteria for an unnecessary CXR. 6 Months before represents the same **calendar** 6 Months as those in the 6 month period after the education

Criteria	12 months before *n*	6 months before *n*	6 months after *n*
Total presentations with asthma	466	230	197
Total asthma presentations with CXR	260	134	72
Of the above – known asthmatic	232	121	57
Of the above – diagnosis asthma	221	116	57
Of the above – improved	211	109	56
Total unnecessary CXRs	211	109	56

CXR, chest X-ray.

45.3% before vs. 28.4% after
(ARR 16.9%, p<0.001)

Health Services Research Unit

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