

Prescription of cough remedies among children hospitalized with respiratory tract illness.

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Background

- Respiratory tract infections account for almost 20% of under 5 deaths.
- Cough tends to cause **anxiety** to caregivers and reduces the **quality of life** of the patients
- Use of cough remedies which include; mucolytics, decongestants and antitussives is currently not recommended in children
- Associated with **serious adverse reactions** including arrhythmias, behavioural disturbances, respiratory depression and even death

Background

- Unwarranted adverse drug reactions may worsen the disease outcomes.
- Paucity of data on the use of cough medication among children in the region



Objectives

- To describe the commonly prescribed cough medications among children hospitalized with respiratory illnesses in four hospital surveys.
- Describe prescription patterns over time from the surveys
- Describe the signs and symptoms associated with cough prescriptions

Methods

Inclusion

- Children from 1 month to 12 years admitted with **symptoms of cough or with a diagnosis of an upper or lower respiratory tract infection** based on the ICD 10 criteria

Exclusion

Children with a diagnosis of allergy/allergic condition (Rhinitis , Dermatitis)

- We included data from 4 hospital surveys between 2002-2015

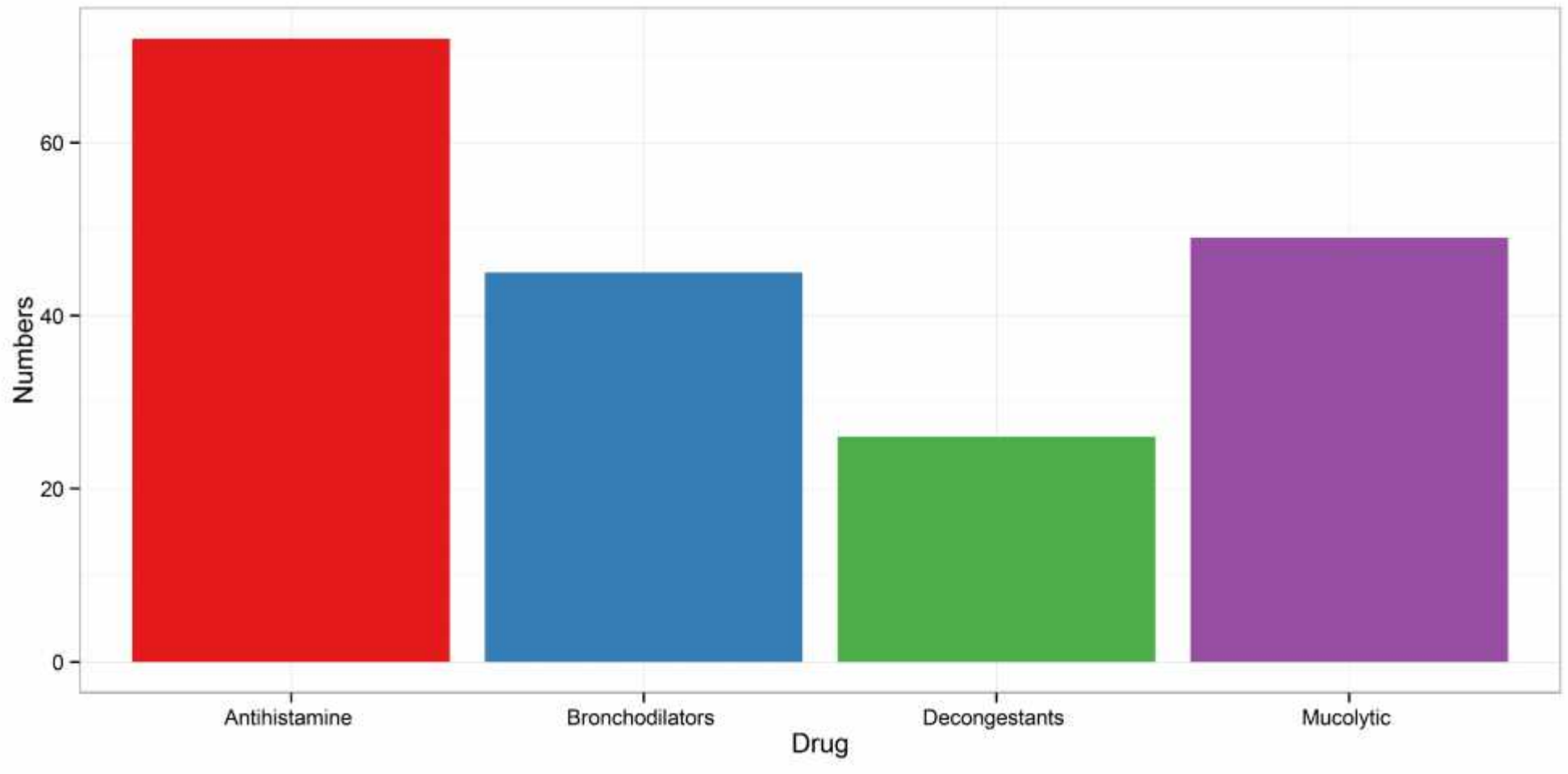
| Type of Medicine | Active Ingredients |
|---|---|
| Antihistamines | Brompheniramine Chlorpheniramine Loratidine Dexchlorpheniramine Diphenhydramine Doxylamine Pheniramine Promethazine Triprolidine Cetirizine |
| Antitussives | Codeine Dextromethorphan Dihydrocodeine Pholcodine Pentoxyverine |
| Mucolytics /Expectorants | Bromhexine Guaiphenesin Ambroxol Ipecacuanha senega and ammonia |
| Decongestants | Phenylephrine Pseudoephedrine oxymetazoline Ephedrine xylometazoline |
| Antipyretic Containing cough medication | Paracetamol |
| Bronchodilator containing medications | Salbutamol Terbutaline Fenoterol |

Results

2002 survey

- Total sample of 383 children across 15 hospital included in the analysis with 155 cough medication prescriptions (40.5%)
- Median Age 12 months (5-28.25)
- Average length of hospital stay 3(2-5)

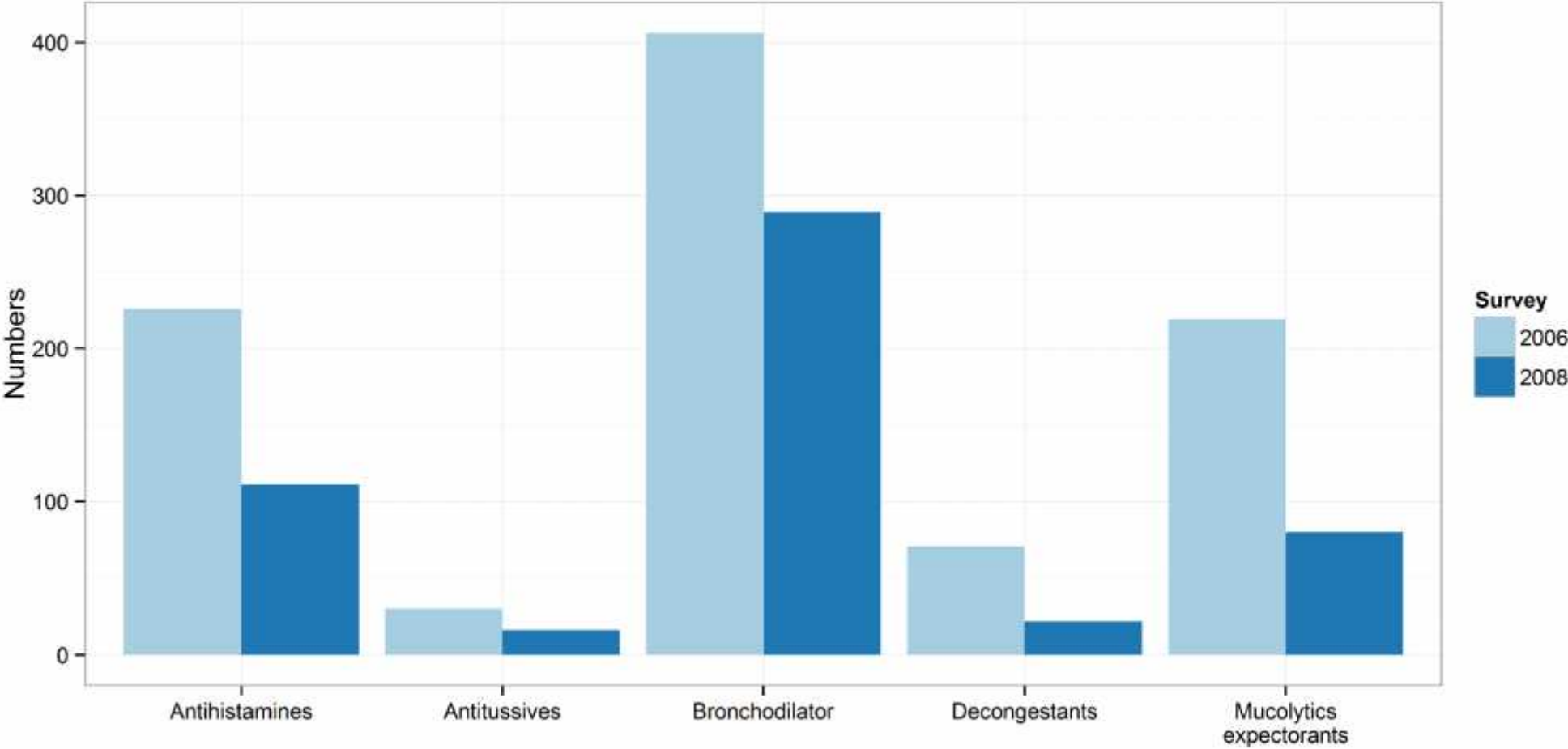
Cough Remedy Prescriptions



8 Hospital Survey

- Sep 2006 – April 2008
- Pre and Post Intervention Survey
- 2006 Pre Intervention Sample size 2166 prescriptions 655 (30.2)
- 2008 Post intervention sample size 2199 prescriptions 425(19.3)

Cough Remedy Prescriptions - 8 hospital Survey



Associated symptoms (Adjusted Odds Ratio)- 8 District hospital Study

- Bronchodilators/Mucolytics
 - Wheeze 10.96(8.86-13.59), Chest Indrawing 1.96(1.62-2.38), Crackles 2.38(1.99-2.86)
- Decongestants
 - Central cyanosis 4.82(1.36-13.26)
- Antihistamines
 - Central cyanosis 2.34(1.15-4.33), Grunting 1.12(0.83-1.50), Crackles 1.64(1.26-2.14)

Associated symptoms (Adjusted Odds Ratio)

| | Bronchodilator/ Mucolytics | Decongestants | Antihistamines |
|------------------|-------------------------------|-------------------------|------------------------|
| Fever | 0.72(0.59-0.90) | 0.97(0.45-2.41) | 1.22(0.87-1.74) |
| wheeze | 10.96(8.86-13.59) | 1.33(0.48-3.16) | 1.29(0.86-1.89) |
| Central cyanosis | 0.22(0.11-0.42) | 4.82(1.36-13.26) | 2.34(1.15-4.33) |
| Chest Indrawing | 1.96(1.62-2.38) | 1.41(0.64-3.09) | 0.82(0.61-1.10) |
| Grunting | 0.86(0.71-1.04) | 1.67(0.80-3.48) | 1.12(0.83-1.50) |
| Crackles | 2.38(1.99-2.86) | 1.07(0.52-2.18) | 1.64(1.26-2.14) |

Sircle Survey

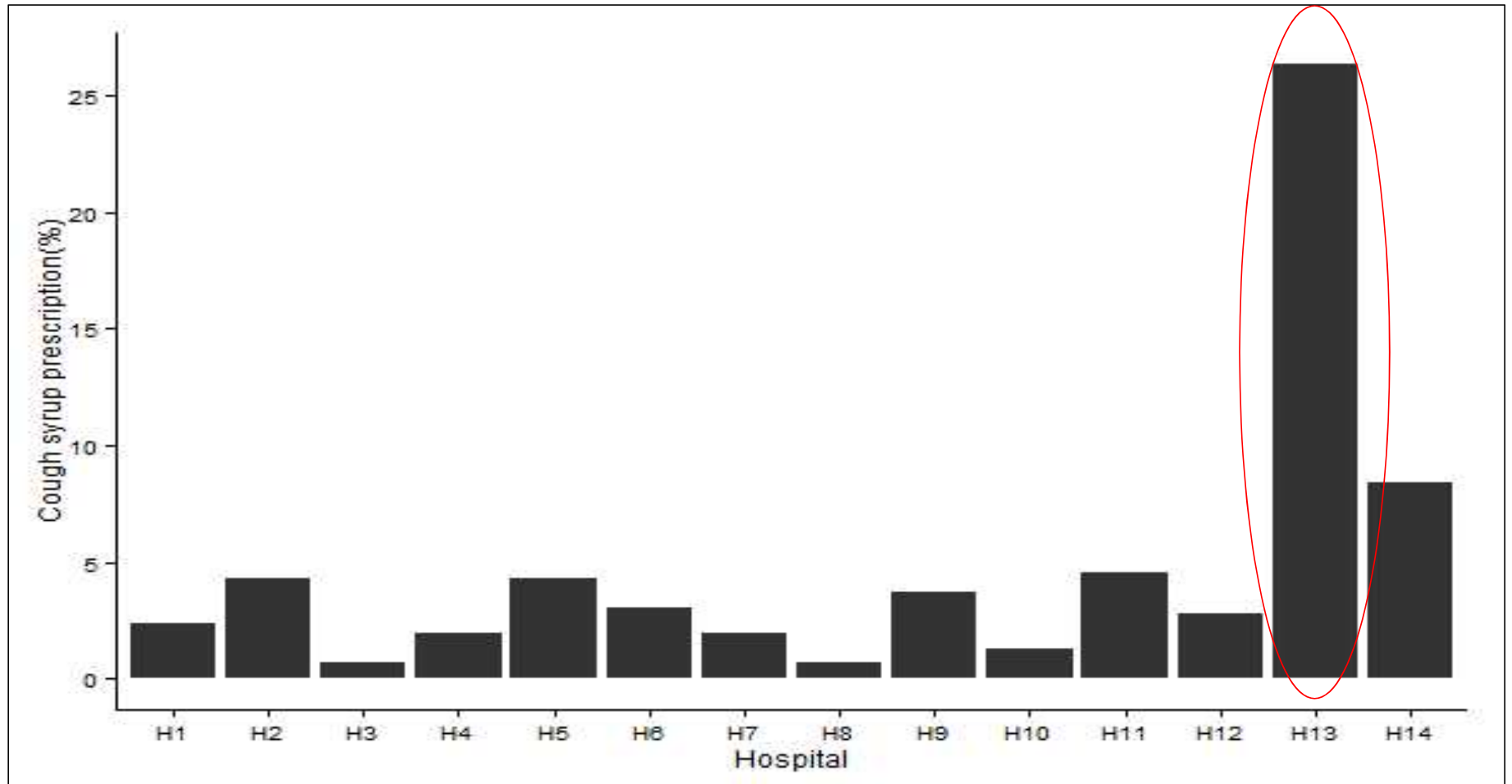
- July 2012
- Total sample of 891 children across 22 hospitals included in the analysis with 85 cough medication prescriptions (9.5%)
- Median Age 14 months (8-27 months)
- Average length of hospital stay 3 days (2-6)

Clinical information Network

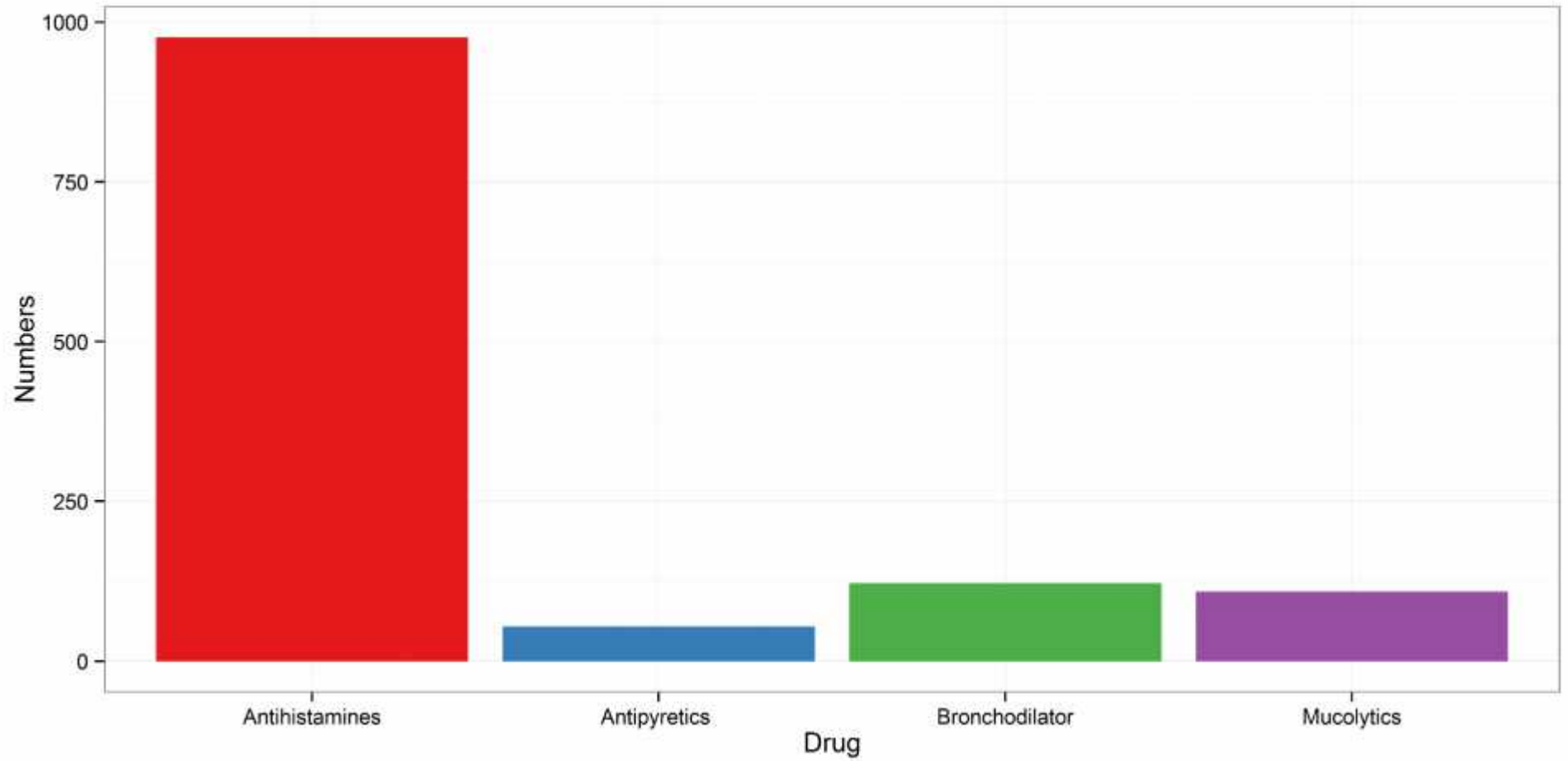
(Sept2013-Nov 2015)

- Total sample of 28369 children across 14 hospital included in the analysis with 1095 cough medication prescriptions (3.9%)
- Median Age 15 months (7-27 months)
- Average length of hospital stay 3(2-5)

Results-CIN



CIN Drugs



Associated symptoms CIN(Adjusted Odds Ratios)

- Bronchodilators/Mucolytics

- Fever 2.16(1.23-4.15)
- Chest Indrawing ,2.26(1.44-3.54)
- Crackles 2.18(1.41-3.39)

- Antihistamines

Wheeze 1.52(1.19-1.92)

Chest Indrawing 1.41(1.19-1.66)

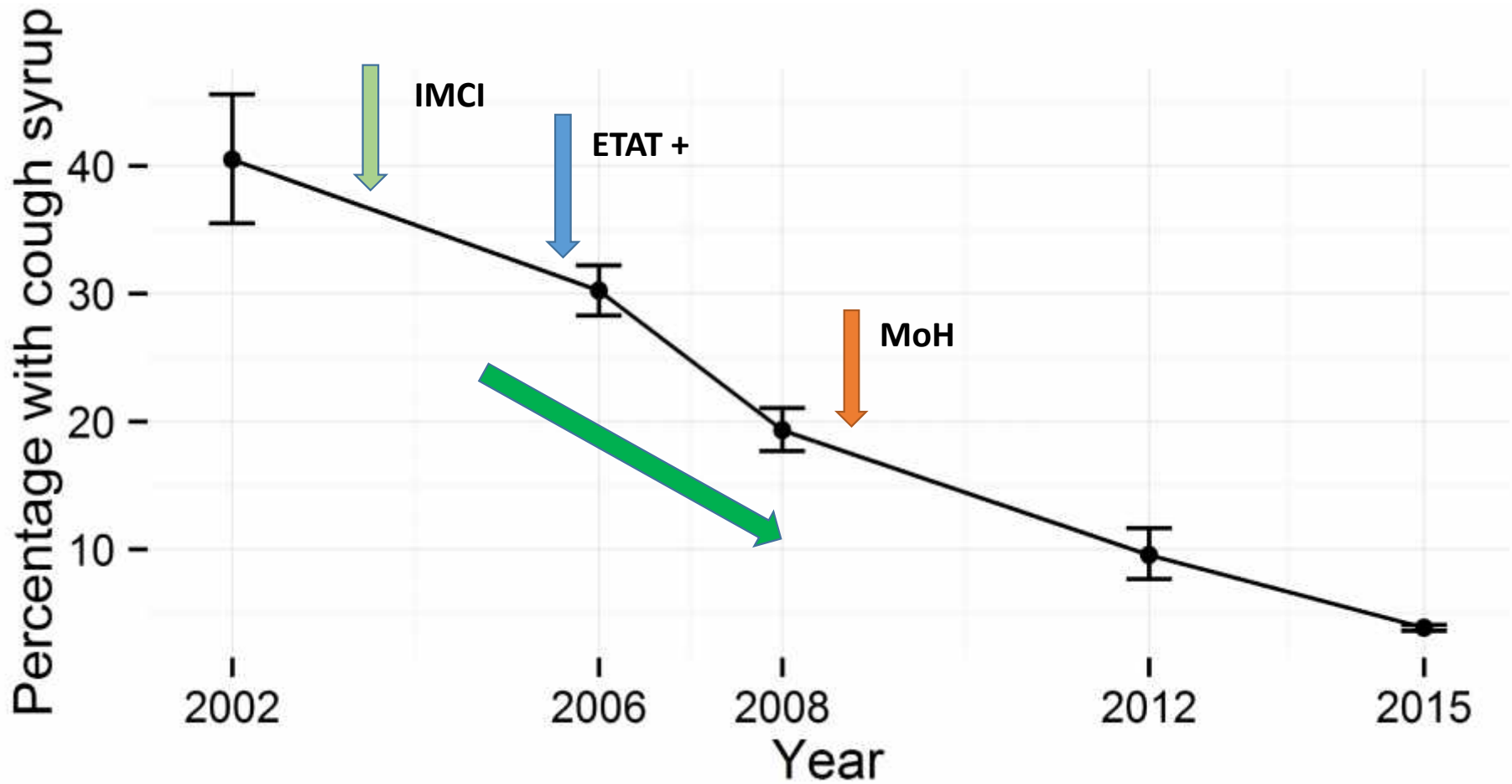
Associated symptoms CIN(Adjusted Odds Ratios)

| | Bronchodilator and mucolytics | Decongestants | Antihistamines |
|-------------------------|--------------------------------------|----------------------|------------------------|
| Fever | 2.16(1.23-4.15) | 1.46(0.38-9.50) | 1.06(0.90-1.26) |
| wheeze | 1.16(0.57-2.12) | 1.91(0.10-11.56) | 1.52(1.19-1.92) |
| Stridor | 1.00(0.24-2.74) | NA | 1.17(0.76-1.72) |
| Central cyanosis | 1.31(0.07-6.11) | NA | 0.46(0.11-1.23) |
| Chest Indrawing | 2.26(1.44-3.54) | 0.32(0.04-1.45) | 1.41(1.19-1.66) |
| Grunting | 0.34(0.16-0.65) | NA | 0.82(0.65-1.02) |
| Crackles | 2.18(1.41-3.39) | 3.02(0.70-10.74) | 1.12(0.94-1.33) |

Results

| Survey (Number of Hospitals) | 2002 Hospital Survey (15) | 8 District Hospital Survey (Pre intervention) | 8 District Hospital Survey(Post Intervention) | Sircle Survey (22) | Clinical Information Network (14) |
|--|--|--|--|-----------------------------------|--|
| Year | 2002 | 2006 | 2008 | July 2012 | Sept 2013- Nov 2015 |
| Sample size | 383 | 2166 | 2199 | 891 | 28369 |
| Cough syrup Prescriptions (%) | 155 (40.47) | 655 (30.2) | 425(19.3) | 85(9.5) | 1095(3.9) |
| Median Age in Months (IQR) | 12(5-28.25) | 12(6-27) | 12(6-24) | 14(8-27) | 15(7-27) |
| Average Length of Stay Days (IQR) | 3(2-5) | 3(2-6) | 3(2-5) | 3(2-6) | 3(2-5) |

Emerging Trends



Summary

- General decline in the prescription of cough mixtures
- Most prescribed are oral bronchodilators and antihistamines

Moving Forward

- Data lacking for outpatient and Over the counter(OTC) prescriptions
- Health education - Clinicians and Care givers

REPUBLIC OF KENYA



MINISTRY OF HEALTH

KEMRI | Wellcome Trust

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