

Pediatric Outpatient Prescription Utilization of Opioid and Non-Opioid Containing Antitussives

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Outline

- Prescription utilization data
- Prescriber specialty
- Office-based physician survey data
- Data limitations
- Summary

Prescription Utilization Data

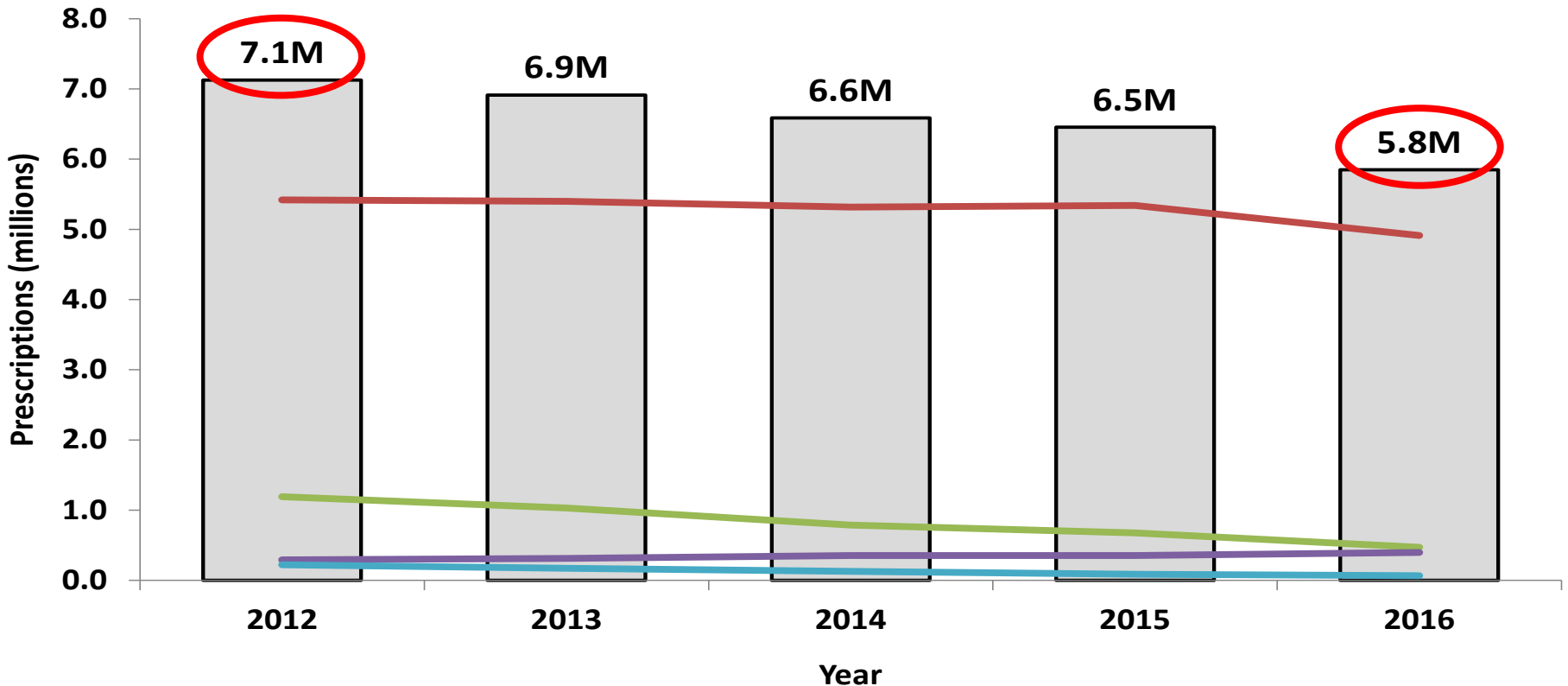
- QuintilesIMS, National Prescription Audit™ Database
- Measures prescriptions dispensed from U.S. outpatient retail pharmacies to patients across all payment methods
- Data are projected from a sample of nearly 90% of total outpatient retail prescriptions to provide national estimates of utilization



Prescription Data: Products Included

- Opioid containing antitussives (OCAs)
 - Hydrocodone containing antitussives (HCAs)
 - Codeine containing antitussives (CCAs)
 - Available OTC, but not captured if sold without a prescription
- Non-opioid containing antitussives (non-OCAs)
 - Dextromethorphan containing antitussives (DCAs)
 - Available OTC, but not captured if sold without a prescription
 - Benzonatate

Total Pediatric Antitussive Utilization

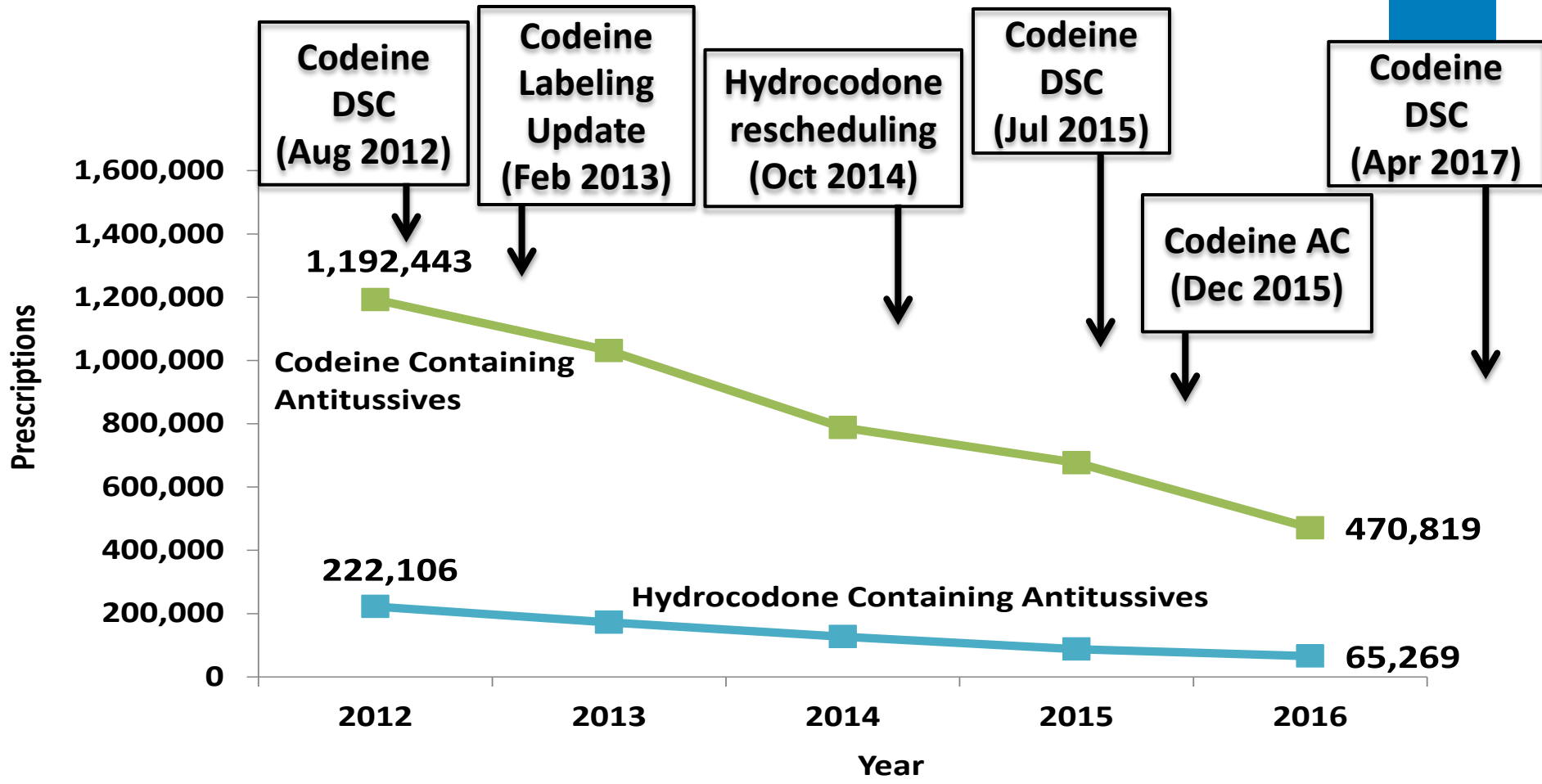


National estimates of total antitussive prescriptions dispensed to pediatric patients (0-17 years*) from U.S. outpatient retail pharmacies

**Patient age groups are inclusive of all patients up to the day before their next birthday. For example, patients aged 0-17 years include patients less than 18 years old (17 years and 11 months).*

Source: QuintilesIMS, National Prescriptions Audit™. 2012-2016. Data extracted June 2017.

Opioid Containing Antitussives

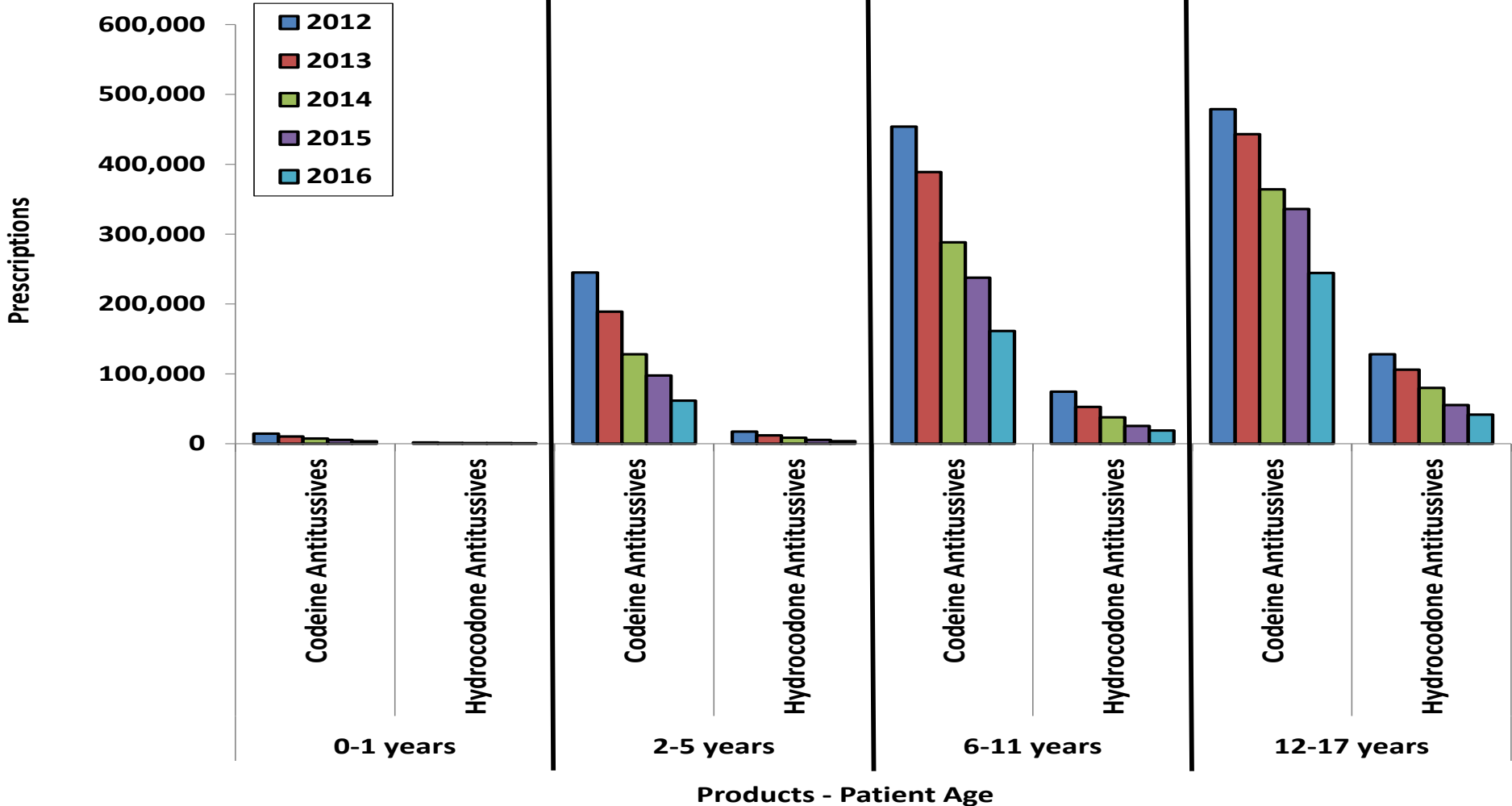


National estimates of prescriptions dispensed for opioid containing antitussives to pediatric patients (0-17 years*) from U.S. outpatient retail pharmacies

*Patient age groups are inclusive of all patients up to the day before their next birthday. For example, patients aged 0-17 years include patients less than 18 years old (17 years and 11 months).

Source: QuintilesIMS, National Prescriptions Audit™. 2012-2016. Data extracted June 2017.

Opioid Containing Antitussives by Age



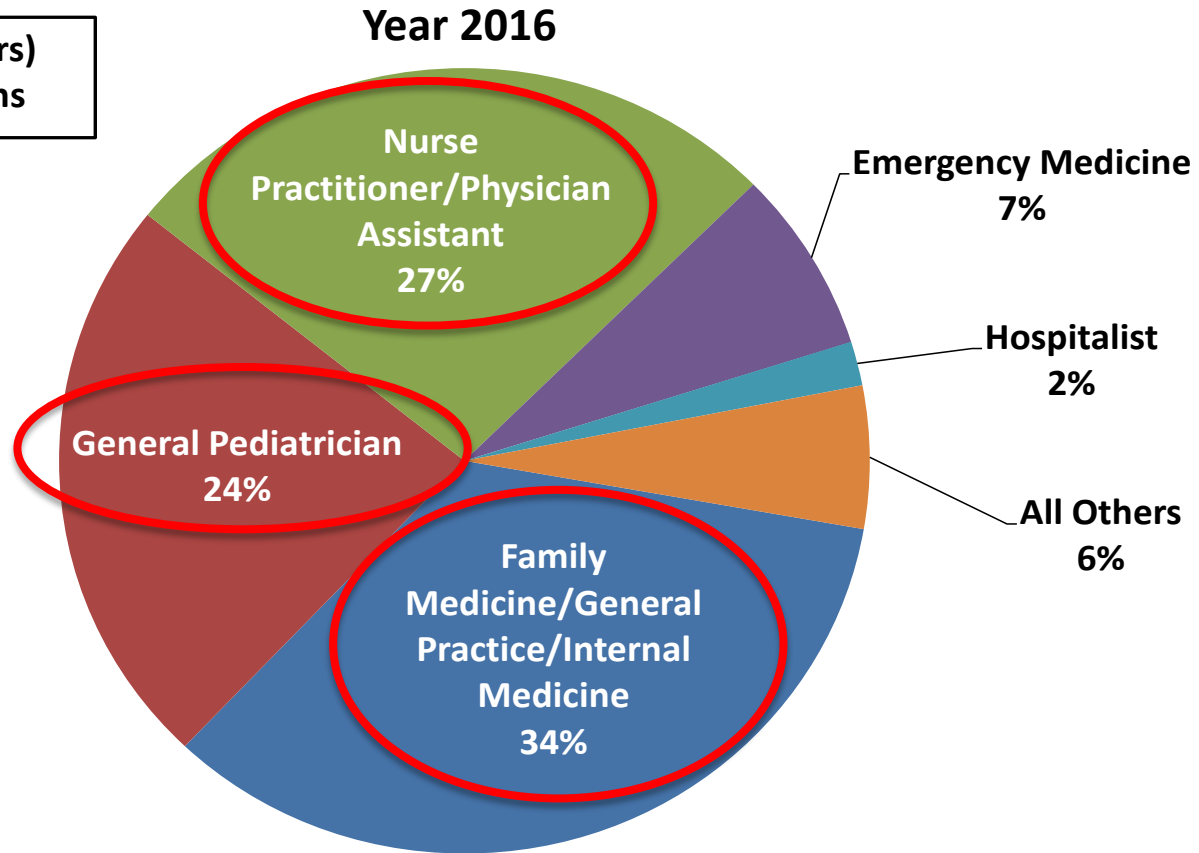
National estimates of prescriptions dispensed for opioid containing antitussives to pediatric patients by patient age from U.S. outpatient retail pharmacies

Source: QuintilesIMS, National Prescriptions Audit™. 2012-2016. Data extracted June 2017.

Prescriber Specialties: *Opioid Containing Antitussives (OCAs)*



Pediatric Patients (0-17 years)
N=536,088 OCA prescriptions



National estimates of prescriptions dispensed for opioid containing antitussives to pediatric patients by prescriber specialties from U.S. outpatient retail pharmacies

Source: QuintilesIMS, National Prescriptions Audit™. 2016. Data extracted June 2017.

U.S. Office-Based Physician Survey Data



- inVentiv Health TreatmentAnswers™ and TreatmentAnswers™ with Pain Panel
- Monthly surveys of 3,200 office-based physicians
- Data are nationally projected to reflect national prescribing patterns
- Data provide insight into prescriber intent

Top Three Products Mentioned for Cough (ICD-10 R05)



	Year 2016
Patient Age	Products
0-1 years	• Budesonide: 27.5% ; Albuterol: 24%; DCAs*: 10%
2-5 years	• DCAs: 34% ; Albuterol: 21%; Budesonide: 11%
6-11 years	• DCAs: 44% ; Albuterol: 21%; Montelukast: 5%
12-17 years	• DCAs: 29% ; Albuterol: 25%; Codeine/guaifenesin: 9%

- Codeine/guaifenesin accounted for 1% and 4% of drug mentions in patients ages 2-5 years and 6-11 years, respectively.
- No mention of hydrocodone containing antitussives in pediatric patients
- Although low, other treatment such as antibiotics and non-pharmacological therapies such as honey and glycerin were also mentioned in pediatric patients

**DCAs refer to dextromethorphan containing antitussives.*

Source: inVentiv Health Research and Insights LLC., TreatmentAnswers™. 2016. Data extracted June 2017.

Limitations

- Outpatient retail dispensed prescription data
 - Dispensing trends may not apply to other settings of care (e.g. inpatient, clinic)
 - OTC sales data are not captured
- Office-based physician survey data
 - Prescribing patterns of subspecialty prescribers in inpatient or clinic settings may not be captured
 - A drug use mention associated with a diagnosis may not necessarily result in a prescription being generated

Summary

- In 2016, ~5.8 million total antitussive prescriptions were dispensed to patients ages 0-17 years, a decrease since 2012
 - Primarily dextromethorphan containing antitussives: 4.9 million prescriptions in 2016
- Use of opioid containing antitussives decreased across all pediatric ages
 - Codeine antitussives: 471,000 prescriptions in 2016
 - Hydrocodone antitussives: 65,000 prescriptions in 2016
- Aside from antitussives, various treatments including antiasthmatics were mentioned for cough relief in pediatric patients



Thank you