

New Zealand children's medicine prescriptions examined for first time

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A study into the pharmaceutical use of 1.4 million New Zealand children has revealed some significant increases in the use of certain prescription medicines, as well as the positive impact of practitioner education.

In a New Zealand-first, researchers from the University of Otago and the Best Practice Advocacy Centre (BPAC) set out to identify trends relating to the use of prescription medicines in children to potentially find possible safety issues, areas of inappropriate prescribing as well as the impact of educational campaigns on appropriate practice.

The research, published in the journal *Pediatric Drugs*, analysed prescription information, logged in the national Pharmaceutical Collection from between 2010 and 2015, of more than 1.4 million children. The average number of prescriptions per child, per year, was 4.5, with prescription rates highest for those under two.

Overall, the number of children using any medicine increased from 69.7 per cent in 2010 to 73.1 per cent in 2015.

The most widely used medicines were antibiotics, drugs related to the nervous system (pain relief), dermatologicals, and respiratory medicine.

Not surprisingly, the most common drug prescribed to children was paracetamol.

The use of methylphenidate to treat attention-deficit disorder, mainly in children older than six, increased by 37.7 per cent. Prescriptions of fluoxetine, an antidepressant, increased by 50 per cent in children over 12 over the five year period.

"We can't say why, but it is possible that depressive illness in children is being better picked up and prescriber confidence and experience with fluoxetine has increased," says David Woods,

Professional Practice Fellow with the University's School of Pharmacy.

There was also a significant increase in the use of ondansetron (an anti-nausea medication), assumed to be for acute gastroenteritis. While this initially surprised the researchers, they found similar trends have been seen in other countries.

Of potential concern was the overall increase in the prescribing of the opioids codeine and tramadol, the latter of which has potential for unintentional overdose. Recent recommendations advise against the use of codeine and tramadol in children. The researchers plan a follow-up study to ascertain if these recommendations are being followed.

On the other hand, the prevalence and use of systemic and topical antibiotics decreased by two and 10 per cent respectively.

"It is accepted that antibiotics in general are over-used and in many cases unnecessary. Our findings may reflect increased awareness of this and evidence-based prescriber education strategies that were instituted during the study period, such as restricting the use of antibiotics for ear and skin infections," Mr Woods says.

Lead author Andrew Tomlin, of BPAC, says the research is important to identify patterns of usage in relation to educational strategies, concerns over potential excessive use, requirement for practitioner education, and for making comparisons with international trends.

It also provides reassurance that there are several strategies in place to monitor the use of medicines in New Zealand.

"Rather than raise undue concerns about the use of medicines in children in New Zealand, the results have identified areas where practitioner response to education and best practice recommendations

appears good," Mr Tomlin says.

"In other areas where [medicine](#) usage has increased, further research is possible to see if these medicines are being used appropriately.

"The results, and associated discussion, may also encourage individual practitioners to review and even question their own prescribing, which is always a positive thing to do."

Along with further research into the area, the researchers believe medicines used by [children](#) need to be monitored on a regular basis in order to evaluate which therapies are effective and which may have harmful consequences.

They also believe the research results signal the need for more focused investigation into the actual reasons for prescribing.

"This study is, in fact, a building block for the development of the techniques of data analytics to monitor the safe and effective use of medicines in all populations," Mr Woods says.

More information: Andrew M. Tomlin et al, Trends in Outpatient Prescription Medicine Use in New Zealand Children 2010–2015: A National Population-Based Study, *Pediatric Drugs* (2018).
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