TITLE: Medical Marijuana for Pediatric Patients: Clinical Effectiveness

DATE: 13 December 2016

RESEARCH QUESTIONS

1. What is the clinical effectiveness of medical cannabinoids in pediatric patients?
2. What is the clinical effectiveness of synthetic cannabinoids in pediatric patients?

KEY FINDINGS

Five non-randomized studies were identified regarding clinical effectiveness of medical or synthetic cannabinoids in pediatric patients.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Filters were applied to limit the search by health technology assessments, systematic reviews, and meta-analyses, randomized controlled trials, and non-randomized studies. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2011 and November 29, 2016. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.
### Table 1: Selection Criteria

<table>
<thead>
<tr>
<th>Population</th>
<th>Pediatric patients (&lt;18 years of age) who require treatment with medical marijuana for a specific medical condition (e.g., attention deficit hyperactivity disorder, autism spectrum disorder, Tourette syndrome, epilepsy [active or refractory], posttraumatic stress disorder, neurodegenerative diseases [e.g., multiple sclerosis, other conditions associated with dystonia and spasticity], non-cancer and cancer-related pain disorders)</th>
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</table>
| Intervention                | Q1: Medical marijuana or medicinal cannabinoids (e.g., tetrahydrocannabinol, cannabidiol)  
Q2: Synthetic cannabinoids (e.g., nabilone)  
Delivered in various formulations (e.g., oil [e.g., Avidel oil], oral, buccal forms, ingestible, inhaled, injected) |
| Comparator                  | Any active comparator;  
No treatment;  
No comparator |
| Outcomes                    | Clinical effectiveness (e.g., clinical benefit, symptom reduction, quality of life)  
Safety (e.g., tolerability, dependence and addiction, withdrawal, psychosis, behavioral changes, memory deficits, sedation) |
| Study Designs               | Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies |

### RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, and non-randomized studies.

Five non-randomized studies were identified regarding clinical effectiveness of medical or synthetic cannabinoids in pediatric patients. No relevant health technology assessments, systematic reviews, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

### OVERALL SUMMARY OF FINDINGS

Five non-comparative, non-randomized studies were identified.\(^1\) In one open-label trial,\(^1\) cannabidiol was added to existing anti-epileptic regimens for patients with severe, intractable, childhood-onset, treatment-resistant epilepsy. Adverse events (AEs) were reported in 79% (128 of 162) of patients in the safety group and severe AEs were reported in 30% (48 of 162) of patients the same group. The most commonly reported AEs were somnolence, decreased appetite, diarrhea, fatigue, and convulsion. The median monthly frequency of motor seizures was reduced from 30 at baseline to 15.8 over the 12 week study period.\(^1\)

Two retrospective chart reviews\(^3,5\) were undertaken to identify oral cannabis extracts used to treat pediatric patients with epilepsy. The average length of use was 11.7 months.\(^3\) A report by parents of a 50% or greater reduction in seizures was observed in 24%\(^3\) and 33%\(^5\) of patients. Somnolence and worsening of seizures were the most commonly reported AEs.\(^3,5\) A retrospective study describing the use of cannabidiol-enriched medical cannabis for children was conducted in Israel.\(^4\) Patients had intractable epilepsy that was deemed resistant to seven or more antiepileptic drugs. A reduction in seizure frequency was reported in 89% (66 of 74) patients,
with 18% (13 of 74) reporting a 75% to 100% reduction. The AEs reported included somnolence, fatigue, and gastrointestinal issues.

One uncontrolled retrospective study examined the use of dronabinol (2.5% oily tetrahydrocannabinol solution) for the treatment of refractory spasticity in home-based pediatric palliative care. An improvement was observed in severe treatment resistant spasticity in 12 of 16 patients. The authors indicated that AEs were rare with vomiting and restlessness each reported by one patient.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies


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APPENDIX – FURTHER INFORMATION:

Descriptive Studies


Ongoing Clinical Trials

Recruiting


Available


Active, not recruiting

Not yet recruiting


Position Statements


Review Articles


Additional References

21. Marijuana legislation must have strong measures to protect kids [Internet]. Ottawa: Canadian Paediatric Society; 2016 Nov 24. [cited 2016 Dec 12]. Available from:


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