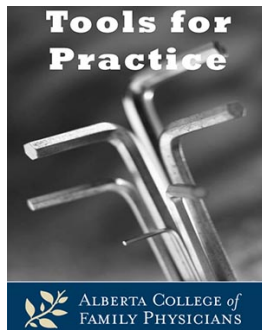


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## AcetaMINophen for Back and Osteoarthritis Pain: Is the effect in the name?

**Clinical Question: Is acetaminophen effective for the management of back pain or osteoarthritis?**

**Bottom Line: Acetaminophen is not efficacious for back pain, and provides no clinically meaningful impact on osteoarthritis. There are many other better interventions for these conditions like: short-term oral NSAIDs for back pain; topical NSAIDs or intra-articular steroids for osteoarthritis; and exercise for both.**

### Evidence:

- All scales out of 100.
- Back pain:
  - One high-quality Randomized Controlled Trial (RCT)<sup>1</sup> of 1,652 primary care acute low back patients randomized to acetaminophen regularly 3,990 mg/day versus as needed  $\leq 4,000$  mg/day versus placebo x4 weeks.
    - No effect on any outcome (time to recovery, pain intensity, disability, function, global symptom change or quality of life) at any time.
  - Five systematic reviews<sup>2-6</sup> (3-10 RCTs,  $\leq 1,825$  patients), mostly acute back pain, acetaminophen.
    - Versus placebo: No effect in acute back pain.<sup>2-4</sup>
    - Versus other treatments:
      - NSAIDs better ( $\sim 7.5$  points) for pain.<sup>5</sup>
      - Amitriptyline or heat wraps better ( $\sim 13$  points) for pain.<sup>6</sup>
    - Only one small study (29 patients) of chronic pain: Likely inferior to NSAIDs.<sup>4</sup>
- Osteoarthritis: Eight systematic reviews (4-15 RCTs,  $\leq 5,986$  patients).<sup>2,7-13</sup>
  - Versus placebo:
    - Pain:<sup>2,7,8,11,12</sup> standard mean difference is 0.13-0.18 (likely equals  $\sim 3-4$  points in 100).
      - Does not meet minimal important difference of 0.37 ( $\sim 9$  points).<sup>14</sup>
      - When average change in pain is not meaningful, it is important to consider if any patients could get meaningful change. However, modeling suggests none will with acetaminophen.<sup>11</sup>
  - Versus NSAIDs:

- Pain: NSAIDs improve pain ~6 points versus acetaminophen.<sup>10</sup>
  - Patient assessed global improvement in pain,<sup>8</sup> NSAIDs better with Number Needed to Treat (NNT)=6.

**Context:**

- Harms: Acetaminophen increases the risk of elevated liver enzymes (>1.5x normal),<sup>2</sup> Number Needed to Harm (NNH)=21.
- Back pain guidelines recommend acetaminophen as 1<sup>st</sup>-line therapy despite inefficacy.<sup>15</sup>
- Osteoarthritis guidelines have recommended both for<sup>16</sup> and against<sup>17</sup> acetaminophen.
- What works best with lowest harms (NNT for pain unless other mentioned):
  - Acute back pain: Staying active help return to work (~3 days sooner),<sup>18</sup> NSAIDs<sup>19</sup> NNT~11, cyclobenzaprine<sup>20</sup> NNT~4 (but often adds little after naproxen).
  - Chronic back pain: Exercise<sup>18</sup> NNT=4-8.
  - Osteoarthritis: Topical NSAIDs (hands and knees)<sup>21</sup> NNT~5, intra-articular corticosteroid injections<sup>22</sup> NNT~4, Exercise<sup>23,24</sup> NNT~4-6.

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