Acute Acetaminophen Overdose

- This guideline is specifically for acetaminophen overdose. Please consider the workup and treatment for co-ingestants separately
- Co-ingestants that slow GI motility (i.e. diphenhydramine or opioids) may require another serum level be plotted on the nomogram. Please call the Poison Control Center (1-800-222-1222) for guidance
- Please call the Poison Control Center for treatment recommendations and reporting purposes (1-800-222-1222)

Acute acetaminophen ingestion < 24 hours?

YES

> 4 hours since time of ingestion?

YES

- Obtain APAP level
- Consider empiric NAC treatment if > 8 hours post ingestion

NO

- Consider activated charcoal if < 2 hours since ingestion
- Obtain 4 hour post ingestion APAP level and baseline liver function tests

NO

Is APAP level above treatment line on Rumack Matthew Nomogram?

YES

- Administer N-Acetyl Cysteine (see treatment protocol on Page 3)

NO

- No significant risk for APAP toxicity
- No treatment necessary

See Page 2

Created by Nik Collins, M.D. and Tami Schaeffer, D.O.
Repeated Supratherapeutic or Unknown Time of Ingestion
Acetaminophen Overdose

- This guideline is specifically for acetaminophen overdose. Please consider the workup and treatment for co-ingestants separately.
- Please call the Poison Control Center for treatment recommendations and reporting purposes (1-800-222-1222).

- Repeated supratherapeutic ingestion?  
  - Acute ingestion but presentation > 24 hours?  
  - True unknown time of ingestion?

  YES

  - Obtain APAP level
  - Obtain baseline LFT’s

  NO

  - APAP overdose workup complete
  - No treatment necessary

  YES

  APAP > 20 or LFT’s elevated?

  NO

  - APAP overdose workup complete
  - No treatment necessary

  YES

  - Initiate 21 hour NAC protocol (see page 3)
  - Just before 12hrs of treatment check APAP level and LFTs

  12 hour APAP level = 0 and LFT’s decreased or stable compared to previous levels?

  YES

  - Treatment complete

  NO

  - Continue NAC treatment
  - Repeat APAP level and LFT’s in 6 hours

1. A repeated supratherapeutic ingestion is one that is greater than 4gm/24 hrs for greater than 24 hours. This usually occurs in the setting of accidental overdose during pain management for a condition such as dental or back pain.
2. An acute ingestion cannot be plotted on the Rumack Matthew Nomogram if greater than 24 hours post-ingestion.
3. A true unknown time of ingestion is one for which there is NO information about time of ingestion (found down, denial of ingestion but APAP on screen, etc.). EVERY effort should be made to assess for time of ingestion.
4. If LFT’s were significantly high on presentation or other findings found consistent with hepatic failure, NAC may need to be continued, call Poison control center for guidance.
21 Hour N-acetyl cysteine (NAC) Protocol
1. 150 mg/kg IV NAC over 1 hour
2. 50 mg/kg IV NAC over 4 hours
3. 100 mg IV NAC over 16 hours
Recheck APAP level and LFTs with 4 hours remaining for acute ingestions, or at designated times on flowchart for non-acute ingestions. If APAP > 0 or LFTs increasing, continue NAC 100 mg/kg over 16 hours until the APAP is 0 and the LFTs are downward trending.

Supratherapeutic Doses
Adults: >4 g/day for >1 day
Children (<6 yo)
0-24 hours: >200 mg/kg/day
24-48 hours: >150 mg/kg/day
>48 hours: >100 mg/kg/day
### Guideline Evidence

**Guideline Topic:** Acetaminophen overdose  
**Author:** Nik Collins, MD, Tammi Schaeffer, MD  
**Date of Creation:** 7/1/14  
**Sugg Update:** 7/1/2016  
**Search Criteria:** Tylenol overdose, treatment  

**Databases:** PubMed, Poisondex  
**Key Guidelines (Dates)** McNeil Pharmaceuticals Guideline  

<table>
<thead>
<tr>
<th>#</th>
<th>Recommendation</th>
<th>Source</th>
<th>Classification</th>
<th>Level of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Obtain APAP level no less than 4 hours after ingestion</td>
<td>Douglas et al, Rumack et al</td>
<td>I</td>
<td>C</td>
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<td>2</td>
<td>Consider activated charcoal if &lt;2 hours since ingestion</td>
<td>Buckley et al, Levy et al</td>
<td>I</td>
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<td>3</td>
<td>Treat with NAC if APAP level above R-M Nomogram</td>
<td>Rumack et al, Tsai et al, Smilkstein et al, Sivilotti et al</td>
<td>I</td>
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<td>4</td>
<td>No treatment necessary for APAP level below R-M nomogram threshold</td>
<td>Rumack et al, Tsai et al, Smilkstein et al, Sivilotti et al</td>
<td>II</td>
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<td>5</td>
<td>APAP level and baseline LFTs if RSTI, ingestion &gt;24h ago, true unknown time of ingestion</td>
<td>Daly et al, Watkins et al</td>
<td>I</td>
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<td>6</td>
<td>Treat with 21 hour NAC protocol if APAP &gt;20, LFTs elevated</td>
<td>Daly et al, Watkins et al</td>
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<td>7</td>
<td>No treatment necessary for APAP level &lt;20 and normal LFTs</td>
<td>Daly et al, Watkins et al</td>
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<td>8</td>
<td>Cease treatment if APAP level = 0 and LFTs decreased or stable after 12 hours of treatment</td>
<td>Sivilotti et al, Bond et al</td>
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Rumack BH, Matthew H.


Recommendation Lit
First level at 4 hours