Case Study Activity: Strategies to Support the Safe Use of Acetaminophen

Case 3: Preventing Therapeutic Duplication With Over-the-Counter Acetaminophen Products

Activity Preview
Acetaminophen is one of the most commonly used drugs for treating pain and fever in the United States and is an ingredient in more than 600 over-the-counter (OTC) and prescription products. Although acetaminophen is considered very safe when used as directed, overdosage can result in hepatotoxicity.

Acetaminophen can be found in OTC single ingredient products for pain relief; multisymptom products that treat cough, cold, flu, and allergy; and sleep aid products. In prescription products, acetaminophen is often combined with opioids such as hydrocodone and oxycodone. More than 200 million prescriptions containing acetaminophen (usually combined with an opioid) are dispensed annually.

Because acetaminophen is available in many OTC products as well as prescription products, patients are often unaware that they are taking more than one product containing acetaminophen. Factors that may contribute to patient confusion include:

- Inclusion of acetaminophen in products labeled “non-aspirin pain reliever.”
- Brand extensions—the inclusion of acetaminophen in products sold under dozens of different brands and generic labels.
- Inclusion of acetaminophen in products used for different indications (e.g., pain, cough and cold, sleep aid).
- The use of “APAP” as an abbreviation for acetaminophen on prescription labels.

Unintentional therapeutic duplication has been shown to contribute to acetaminophen overdose situations. Acetaminophen exposures in the National Poison Data System database for 2000–2007 were analyzed for frequency, treatments, and injury (cases of intentional self-harm were excluded). For non-opioid products, a total of 126,830 cases were identified; 4,674 of those patients (3.7%) experienced some hepatic injury. Use of more than one acetaminophen product occurred in 7.3% of patients.

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In April 2009, the U.S. Food and Drug Administration (FDA) approved revisions for the OTC product labels for acetaminophen with the following requirements:

- “Acetaminophen” must be spelled out in the Active Ingredient section of the Drug Facts label, and it must be highlighted or in bold type.
- A standard liver warning must be included.
- A standard concomitant use warning, alerting consumers not to use the medicine with other (prescription or nonprescription) medicines containing acetaminophen, must be included.

To address confusion regarding the content of acetaminophen in prescription products, the National Council for Prescription Drug Programs (NCPDP) formed the Acetaminophen Best Practices Task Group, which produced the white paper *NCPDP Recommendations for Improved Prescription Container Labels for Medicines Containing Acetaminophen*. These recommendations are intended to make it easier for consumers to: (1) identify if a prescription pain reliever contains acetaminophen, (2) compare active ingredients on prescription and OTC labels, and (3) take action to avoid using two medications with acetaminophen at the same time. The white paper recommendations include:

- Use of complete spelling of acetaminophen and all other active ingredients on the pharmacy labels of all acetaminophen-containing prescription medications (eliminating the use of abbreviations such as APAP, acronyms, or other shortened versions for active ingredients).
- Application of a standardized concomitant use and liver pharmacy warning label for these medications.
- Education to improve awareness about the acetaminophen content of medications.

Pharmacists often see the nonprescription purchases of their patients and thus can play an important role in educating patients about the acetaminophen content of various products and instructing patients to read the labels of OTC products to prevent therapeutic duplication or overdosages. (FDA OTC monograph maximum dosages for acetaminophen are shown in the table below.) In addition, when providing nonprescription product recommendations for patients, pharmacists should carefully screen patients to determine whether they take acetaminophen from other sources, including OTC and prescription products.

**FDA Maximum Dosages in OTC Acetaminophen Monograph**

<table>
<thead>
<tr>
<th>Product Dosage</th>
<th>Maximum Single Dosage</th>
<th>Maximum Daily Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>325 mg per tablet or caplet</td>
<td>650 mg</td>
<td>3,900 mg</td>
</tr>
<tr>
<td>500 mg per tablet or caplet</td>
<td>1,000 mg</td>
<td>4,000 mg</td>
</tr>
</tbody>
</table>

**Case Study**

Ian McKenna is a 58-year-old man who is a regular patient at your pharmacy. He receives a statin to manage his elevated low-density lipoprotein cholesterol level, but to your knowledge he
is otherwise in generally good health. Ian presents at the counter today with a selection of nonprescription sleep aids and multisymptom cough-cold products and he is seeking a recommendation regarding which product(s) to buy.

You begin to address Ian’s request by exploring the conditions that he is trying to treat. He reports having a bad head cold that is making it difficult to sleep at night. He specifically reports having a sore throat, congestion, headache, and a dry unproductive cough for the past 2 days, and denies having a fever.

**Answer to Question 1**

What other information is most important to obtain before making a product recommendation?

- a. Does Ian already use any other products that would duplicate ingredients (e.g., acetaminophen) in the products he is currently considering purchasing?
- b. Chest x-ray results to rule out pneumonia.
- c. Has Ian received his annual influenza vaccine?
- d. Completion of an insomnia questionnaire.

The correct answer is “a.” Because many nonprescription products that are used to treat insomnia and cough-cold contain acetaminophen, it is important to assess whether Ian uses any other products that contain acetaminophen before making a recommendation.

- Answer “b” is incorrect. Chest x-ray results are not required for managing a cough-cold, and none of Ian’s symptoms raise red flags for a more serious condition.
- Answer “c” is incorrect. Although an influenza vaccine could be offered if Ian has not received one this year, this information has no impact on OTC product selection.
- Answer “d” is incorrect. Ian’s difficulty sleeping appears to be directly related to his acute cough-cold complaint and further assessment of insomnia would be appropriate only if the insomnia continues after the current complaint resolves.

You ask Ian several open-ended questions to ascertain his current acetaminophen intake. These questions include:

- “What medicines do you use for pain?”
- “What do you take for headache?” (Note that some patients may not be aware that some products specifically marketed for treating headache, such as Excedrin, contain acetaminophen.)
- “What other pharmacies do you use?” (This question is important to ensure that Ian is not receiving any prescription medications containing acetaminophen from other sources. Labels for prescription opioid/acetaminophen products often abbreviate acetaminophen as APAP, but most patients do not know what this means.)

Ian reports using a store-brand arthritis pain relief product. He walks regularly to maintain his weight and cardiovascular fitness, but recently has been noticing more aches and pains that are slowing him down. Upon further questioning, Ian identifies the arthritis product he uses as one

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that contains acetaminophen 650 mg; he takes two caplets twice daily for a total daily dosage of 2,600 mg acetaminophen.

**Answer to Question 2**

Based on Ian’s report of using an acetaminophen product to treat arthritis pain, what should you tell him about selecting products to treat his head cold and difficulty sleeping?

- a. Ian should not select any other OTC products that contain acetaminophen.
- b. Ian should not use the acetaminophen for treating his arthritis pain while managing his head cold.
- c. Ian needs to carefully select which products to use to ensure that he does not exceed single doses of 1,000 mg acetaminophen, or a total daily dosage of 4,000 mg acetaminophen.
- d. Ian should be evaluated by a primary care provider before making a product selection.

The correct answer is “c.” It is not necessary for Ian to completely avoid a specific source of acetaminophen as long as his total daily acetaminophen intake does not exceed 4,000 mg, and he does not take a single dose in excess of 1,000 mg.

- Answer “a” is incorrect because it is not necessary for Ian to completely avoid a specific source of acetaminophen as long as his total acetaminophen intake does not exceed 4,000 mg per day.
- Answer “b” is incorrect because it is not necessary for Ian to completely avoid a specific source of acetaminophen as long as his total acetaminophen intake does not exceed 4,000 mg per day.
- Answer “d” is incorrect because Ian does not present any red flags that would suggest the need for further evaluation by a primary care provider.

You tell Ian that several of the products that he is considering to manage his cold and the associated difficulty sleeping contain acetaminophen—the same ingredient in the medication he is using to manage his osteoarthritis pain—and explain to him that combined use of the maximum daily dose of both products could harm his liver. Ian states that since he has been in bed sick with the cold, his arthritis has not been bothering him as much. He also states that he would prefer to minimize the number of pills he needs to take rather than purchase several single-ingredient products. You assist him with selecting a combination cough-cold product that contains the following active ingredients in each dose:

- Acetaminophen 650 mg (pain reliever/fever reducer)
- Dextromethorphan hydrobromide 30 mg (cough suppressant)
- Doxylamine succinate 12.5 mg (antihistamine)

You tell Ian that he can take one dose of the product every 6 hours, not to exceed four doses in 24 hours. You explain to him that using the maximum dosage will result in a total of 2,600 mg acetaminophen. He notes that he could still use two of the acetaminophen caplets he uses for pain and still stay under the 4,000 mg limit. You consider that this observation requires a fairly
high level of health literacy on Ian’s part, which leads you to believe that he is cognitively capable of managing his medications and staying under the daily acetaminophen dosage limit if he decides to use the acetaminophen product for his arthritis too. However, you emphasize the importance of not exceeding a daily dosage of 4,000 mg.

Assessing health literacy is a critical step in providing patient recommendations and educational interventions. While some patients may be able to add dosages themselves, others will need you to provide explicit instructions on how many pills to take. Written materials that reinforce the information also can be very helpful.

**Answer to Question 3**

Ian then asks what product he can use to help him sleep at night while recovering from his cold. Which of the following would be the best recommendation?

- a. Use a product that contains diphenhydramine only.
- b. Use a product that contains diphenhydramine and acetaminophen.
- c. Use a product that contains melatonin.
- d. No additional product is needed because the doxylamine has a sedative effect.

The correct answer is “d.” Most nonprescription sleep aids contain a sedating antihistamine (sometimes in combination with an analgesic agent such as acetaminophen). Because the cough-cold product Ian has selected already contains a sedating antihistamine, it is not necessary to add a second one.

- Answer “a” is incorrect because the cough-cold product Ian has selected already contains a sedating antihistamine, making it unnecessary to add a second one.
- Answer “b” is incorrect because the cough-cold product Ian has selected already contains a sedating antihistamine, making it unnecessary to add a second one.
- Answer “c” is incorrect because the cough-cold product Ian has selected already contains a sedating antihistamine, making it unnecessary to add another sleep-inducing product.

**Fast Facts About Acetaminophen**

- Acetaminophen is one of the most commonly used drugs for treating pain and fever in the United States and is found in more than 600 OTC and prescription products.
- More than 200 million prescriptions containing acetaminophen (usually combined with an opioid) are dispensed annually.
- The presence of acetaminophen in a variety of products contributes to inadvertent overdosages.
- Pharmacists play an important role in mitigating risk with acetaminophen.

**References**


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