# Newly Published Acetadote(R) Data Shows Product Can Provide Substantial Cost-Savings for Healthcare Systems

## -- Health economic modeling of total costs to treat acetaminophen poisoning reveals that Acetadote may save between $881 and $2,259 (up to 37%) compared to oral treatment
## -- Cumberland Pharmaceuticals offers online tool to evaluate hospital cost savings

NASHVILLE, Tenn., Dec 01, 2009 /PRNewswire-FirstCall via COMTEX News Network/ -- Cumberland Pharmaceuticals Inc. (Nasdaq: CPIX) announced today that an independently conducted study of Acetadote (*acetylcysteine*) Injection, or intravenous N-acetylcysteine, as a cost-saving treatment for acetaminophen poisoning was published in Volume 12, Number 4 of the peer-reviewed *Journal of Medical Economics,* distributed in December. The study concludes that Acetadote is a less costly treatment regimen than oral N-acetylcysteine in all evaluated scenarios.

The cost differential between the use of oral N-acetylcysteine and Acetadote was shown to range between $881 and $2,259 depending on the time elapsed since ingestion and the decision to manage patients in the intensive care unit (ICU) or the general ward.

"The results of this analysis provide a strong economic argument for treatment of acetaminophen poisoning with Acetadote for substantial cost savings to the healthcare system," said Dr. Albert Marchetti, President and Medical Director of the Medical Education and Research Alliance of America, Adjunct Professor at the University of Medicine and Dentistry of New Jersey, and lead author of the publication. "Using real world data to model best- and worst-case scenarios, Acetadote was shown to be the less costly option in all cases."

A principal difference between oral N-acetylcysteine and Acetadote administration is the time required to complete recommended treatment. Under approved therapeutic protocols, the oral product requires 72 hours to administer compared to 21 hours for Acetadote. Consequently, the use of Acetadote results in shorter hospital stays, which is the primary reason for the substantial cost disparity between the two treatments.

To provide assistance in evaluating potential savings for individual hospitals or other facilities, Cumberland Pharmaceuticals offers an online tool to help medical professionals compare Acetadote and oral treatment using their own data. This economic modeling tool, which may also be downloaded, can be found at www.acetadote.net.

"We have believed for some time now that using Acetadote to treat acetaminophen poisoning offers not only a clinical benefit for patients and their caregivers, but a financial benefit for hospitals as well," said A.J. Kazimi, Chief Executive Officer at Cumberland Pharmaceuticals. "This analysis concludes that for healthcare systems there is a significant difference in the cost of treatment in favor of cost savings with Acetadote."

*Summary Results*

The study found that the estimated total cost associated with oral treatment is $5,817 if a patient presents within 10 hours of ingestion and is treated in the ICU; $3,850 if managed in the ward. By comparison, Acetadote is estimated to cost $3,765 for a similar scenario in the ICU and $2,768 in the ward.

For patients who present from 10 to 24 hours after ingestion, the costs are higher but the differential is slightly diminished. For these patients oral treatment has a total estimated cost of $6,200 in the ICU or $4,233 if managed in the ward. In the same scenario Acetadote is estimated to cost $4,293 in the ICU or $3,296 in the ward.

| Scenario | ORAL PRODUCT | | ACETADOTE | | Differential | | | |
|---|---|---|---|---|---|---|---|---|
| | ICU | Ward | ICU | Ward | ICU | | Ward | |
| Patient presents <10 hours after ingestion | | | | | | | | |
| Base Case | $5,817 | $3,850 | $3,765 | $2,768 | $2,052 | 35% | $1,083 | 28% |
| Best Case | $5,590 | $3,624 | $3,527 | $2,530 | $2,063 | 37% | $1,094 | 30% |
| Worst Case | $6,470 | $4,503 | $4,211 | $3,214 | $2,259 | 35% | $1,290 | 29% |
| Patient presents | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10-24 hours after ingestion | | | | | | | | |
| Base Case | $6,200 | $4,233 | $4,293 | $3,296 | $1,906 | 31% | $937 | 22% |
| Best Case | $5,579 | $4,006 | $3,645 | $2,647 | $1,934 | 35% | $1,359 | 34% |
| Worst Case | $6,783 | $5,053 | $5,169 | $4,172 | $1,614 | 24% | $881 | 17% |

*Background*

The American Association of Poison Control Centers reports that acetaminophen overdose is the most commonly reported poisoning in the United States and has the highest rate of mortality, with more than 100,000 exposures and 300 deaths reported annually.(1) It has replaced viral hepatitis as the most common cause of acute hepatic decompensation and is the second most common cause of hepatic failure requiring transplantation.(2) However, in cases where patients present within 16 hours of ingestion and treatment is administered quickly, catastrophic outcomes are uncommon.(3) Thus, rapid diagnosis and treatment are the keys to patient safety, short hospital stays, and cost management.

The goal of this analysis was to quantify and compare full treatment costs from the provider perspective to manage acute acetaminophen poisoning with either oral N-acetylcysteine or Acetadote in a standard treatment regimen. Clinical data were abstracted from authoritative peer-reviewed publications. Financial data were obtained from a combination of published sources, consultation with respected physicians, and direction from the Contracting and Analysis Department of University Hospital at the University of Medicine and Dentistry of New Jersey. Additionally, a wide-ranging list of consumed resources and related expenses was found in a recently published financial analysis of a patient who suffered various consequences of acetaminophen poisoning.(4) High and low ranges for costs and probabilities were used to compare a base-case scenario with best-case and worst-case scenarios.

The publication can be found online at http://informahealthcare.com.

SOURCE: Cumberland Pharmaceuticals Inc.

*About Acetadote*

Acetadote (*acetylcysteine*) Injection is used in the emergency department to prevent or lessen potential liver damage resulting from an overdose of acetaminophen, a common ingredient in many over-the-counter painkillers. It is the only approved injectable product in the United States for the treatment of acetaminophen overdose. Acetadote is contraindicated in patients with hypersensitivity or previous anaphylactoid reactions to acetylcysteine or any components of the preparation. Serious anaphylactoid reactions, including death in a patient with asthma, have been reported in patients administered acetylcysteine intravenously. Acetadote should be used with caution in patients with asthma, or where there is a history of bronchospasm. The total volume administered should be adjusted for patients less than 40 kg and for those requiring fluid restriction. To avoid fluid overload, the volume of diluent should be reduced as needed. If volume is not adjusted, fluid overload can occur, potentially resulting in hyponatremia, seizure, and death. For full prescribing information, visit www.acetadote.net.

*About Cumberland Pharmaceuticals*

Cumberland Pharmaceuticals Inc. is a Tennessee-based specialty pharmaceutical company focused on the acquisition, development and commercialization of branded prescription products. The Company's primary target markets include hospital acute care and gastroenterology. Cumberland's product portfolio includes Acetadote(R) (*acetylcysteine*) Injection for the treatment of acetaminophen poisoning and Kristalose(R) (*lactulose*) for Oral Solution, a prescription laxative. The Company also recently launched Caldolor(R) (*ibuprofen*) Injection, the first injectable treatment for pain and fever approved in the United States. Cumberland is dedicated to providing innovative products which improve quality of care for patients. The Company completed the initial public offering of its common stock in August 2009. For more information on Cumberland Pharmaceuticals, please visit www.cumberlandpharma.com.

*About Journal of Medical Economics*

*Journal of Medical Economics*, published quarterly, provides economic assessments of novel therapeutic and device interventions. JME also specializes in the publication of studies that determine the effectiveness of medical treatment, involving measurements of therapeutic and/or preventive outcomes. It is one of more than 170 journals published by Informa Pharmaceutical Science. The journal serves an international audience of key opinion leaders and decision makers working within pharmaceutical/biotech companies, major research institutes and universities, healthcare institutions, healthcare consultancies and governmental bodies.

InformaHealthcare.com combines the pharmaceutical, life science and medical journal titles published by Informa Healthcare onto one platform to deliver online content from more than 170 journals. Some of the key journals include: *Free Radical*

*Research, Medical Mycology, Disability and Rehabilitation, Harvard Review of Psychiatry, Leukemia & Lymphoma, International Journal of Radiation Biology, Australian and New Zealand Journal of Psychiatry, Acta Radiologica, Journal of Dermatological Treatment, Clinical Toxicology, the Expert Opinion series, Current Medical Research and Opinion, Critical Reviews Series* and *Journal of Medical Economics.*

*Important Note Regarding Forward-Looking Statements*

This press release contains forward-looking statements that reflect Cumberland's current views with respect to future events, based on what it believes are reasonable assumptions. No assurance can be given that these events will occur. As with any business, all phases of operations are subject to influences outside of the Company's control. Risk factors that could materially affect results of operations include, among others, those factors discussed in Cumberland's Registration Statement declared effective by the SEC on August 10, 2009. There can be no assurance that results or developments anticipated by Cumberland will be realized or, even if realized, that they will have the expected effects. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. Cumberland undertakes no obligation to release publicly any revisions to these statements to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events.

*References*

1) Bronstein AC, Spyker D, Cantilena LR, et al. 2007 Annual report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 25th annual report. Clin Toxicol 2008;46:927-1057.

2) US Food and Drug Administration. Public health problem of liver injury related to the use of acetaminophen in both the over-the-counter (OTC) and prescription (RX) products. Available at: http://www.fda.gov/AdvisoryCommittees/Calendar/ucm143083.htm. Accessed August 25, 2009.

3) Buckley NA, Whyte IM, O'Connell DL, et al. Oral or intravenous N-acetylcysteine: which is the treatment of choice for acetaminophen (paracetamol) poisoning? J Toxicol Clin Toxicol 1999;37:759-67.

4) Ferris M, Hasket M, Pilkington S, Williams M. Financial analysis of acetaminophen suicide in a teen girl. Ped Nurs 2007:33:422-541.

SOURCE Cumberland Pharmaceuticals Inc.

http://www.cumberlandpharma.com