



Results of Cost Analysis Study Presented at ISPOR Meeting Identify Intravenous Patient-Controlled Analgesia (IV PCA) Costs of \$200 to \$240 for Two Days of Post-Surgical Pain Management

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Additionally, Results of Independent Survey Show IV PCA a Burden for Postoperative Care Nurses Both Cost Analysis and Survey Findings Underscore Need for Cost-Effective, Patient and Nurse Friendly In-Hospital Pain Management Innovations

REDWOOD CITY, Calif., June 3, 2014 /PRNewswire/ -- [AcelRx Pharmaceuticals, Inc.](http://www.acelrx.com) (Nasdaq: ACRX), a specialty pharmaceutical company focused on the development and commercialization of innovative therapies for the treatment of acute and breakthrough pain, today announced the results of a cost analysis study that showed the use of intravenous patient-controlled analgesia, IV PCA, can typically cost a health system more than \$200 in opioid drug and IV PCA equipment costs per patient over a typical 2-day postoperative in-hospital stay. These costs do not include the additional healthcare burden of programming errors and other health risks attributable to IV PCA therapy. The findings are being presented at the 19th Annual International Society for Pharmacoeconomics and Outcomes Research (ISPOR) in Montreal, Canada. Researchers concluded that although IV PCA is a 40-year old technology, the cost of the treatment in the postoperative setting is not insignificant, suggesting that newer, cost-effective solutions are warranted.

In the analysis, researchers conducted descriptive review of nearly 12 million patient records to analyze opioid drug and equipment costs of IV PCA during the first 48 hours after total knee arthroplasty (TKA), total hip arthroplasty (THA) and open abdominal surgeries captured within the Premier database of more than 500 US hospitals between 2010 and 2012. A total of 272,443 (2.3%), 139,275 (1.2%) and 195,062 (1.7%) patients had TKA, THA and abdominal surgeries, respectively. Aggregated mean IV PCA/opioid total costs per patient were \$196 (THA), \$204 (TKA) and \$243 (abdominal surgeries).

"The cost of IV PCA is often assumed to be low since it is an old technology and largely utilizes generic drugs," stated Pamela P. Palmer, M.D., Ph.D., Chief Medical Officer and Co-Founder of AcelRx, and one of the authors of the poster. "This analysis highlights that the drug and technology costs alone of IV PCA may be higher than currently perceived. Layering on additional costs associated with pump programming errors, infections due to the invasive route of delivery, nursing time to program and manage IV PCA devices, and adverse events associated with both under- and over-delivery of opioid medication exposes IV PCA as a relatively expensive technology."

In addition to this cost analysis study, a new independent survey of 201 postoperative floor nurses conducted by public opinion and research organization PublicMind of Farleigh Dickinson University, found that about half of the nurses surveyed expressed some concerns with IV PCA treatment, including the need for opioid dosing adjustments, set up and maintenance of the IV pump and adverse event management. In addition to these clinical burdens, 3% of nurses surveyed admitted, that in the last 3 months, despite extensive training and redundant safety measures, they had patients who received the wrong opioid dosage administered through IV PCA. The survey also revealed that 15% of nurses reported IV PCA devices 'frequently' or 'sometimes' stop working and more than one-third said they need to troubleshoot alarms 'frequently' or 'sometimes'.

Commenting on the survey results, Dr. Palmer added, "The patient care burden of IV PCA for postoperative floor nurses, coupled with its treatment and safety limitations creates an environment where the clinical community is increasingly searching for alternative therapy options to better manage acute postoperative pain." Palmer concluded, "AcelRx has developed Zalviso™ with these patient care issues in mind to potentially offer healthcare providers and patients a less burdensome, cost-effective alternative to IV PCA."

About the ISPOR Annual Meeting

The ISPOR Annual Meeting attracts more than 3,000 industry, academic, government, and clinical experts from around the globe to promote the science of pharmacoeconomics and outcomes research and facilitate the translation of this research into useful information for health care decision makers to increase the efficiency, effectiveness, and fairness of health care to improve health.

About AcelRx Pharmaceuticals, Inc.

AcelRx Pharmaceuticals, Inc. is a specialty pharmaceutical company focused on the development and commercialization of innovative therapies for the treatment of acute and breakthrough pain. AcelRx's lead product candidate, Zalviso™, is designed to improve the management of moderate-to-severe acute pain in adult patients in the hospital setting by utilizing a high therapeutic index opioid, through a non-invasive delivery route via a pre-programmed, patient-controlled analgesia device. AcelRx has announced positive results from each of the three completed Phase 3 clinical trials for Zalviso, and has submitted an NDA to the FDA seeking approval for Zalviso in the treatment of moderate-to-severe acute pain in adult patients in the hospital setting. AcelRx plans to initiate a Phase 3 clinical trial for ARX-04, a product candidate for the treatment of moderate-to-severe acute pain in a medically supervised setting, during the second half of 2014. The company has two additional pain treatment product candidates, ARX-02 and ARX-03, which have completed Phase 2 clinical development. For additional information about AcelRx's clinical programs, please visit www.acelrx.com.

Forward-Looking Statements

This press release contains forward-looking statements, including, but not limited to, statements related to the build out of the Company's commercial organization, anticipated approval of the NDA by the FDA, planned initiation of the Phase 3 clinical trial for ARX-04, and the therapeutic potential of AcelRx Pharmaceuticals' product candidates, including Zalviso. These forward-looking statements are based on AcelRx Pharmaceuticals' current expectations and inherently involve significant risks and uncertainties. AcelRx Pharmaceuticals' actual results and the timing of events could differ

materially from those anticipated in such forward-looking statements as a result of these risks and uncertainties, which include, without limitation, risks related to: AcelRx's ability to build an effective commercial organization, AcelRx Pharmaceuticals' ability to receive regulatory approval for Zalviso; any delays or inability to obtain and maintain regulatory approval of its product candidates, including Zalviso, in the United States and Europe; its ability to obtain sufficient financing to commercialize Zalviso and proceed with clinical development of ARX-04; the success, cost and timing of all product development activities and clinical trials, including the planned Phase 3 ARX-04 trial; the market potential for its product candidates; and other risks detailed in the "Risk Factors" and elsewhere in AcelRx Pharmaceuticals' U.S. Securities and Exchange Commission filings and reports, including its Quarterly Report on Form 10-Q filed with the SEC on May 8, 2014. AcelRx Pharmaceuticals undertakes no duty or obligation to update any forward-looking statements contained in this release as a result of new information, future events or changes in its expectations.



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