



Mallinckrodt Presents Health Economic Data Related to Hepatorenal Syndrome at The Liver Meeting® 2017, the Annual Meeting of the American Association for the Study of Liver Diseases

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-- Retrospective analysis shows high U.S. cost burden of hepatorenal syndrome driven by high rates of hospitalizations, readmissions and mortality --

STAINES-UPON-THAMES, United Kingdom, Oct. 23, 2017 /PRNewswire/ -- [Mallinckrodt plc](#) (NYSE: MNK), a leading global specialty pharmaceutical company, today announced the results of an analysis of the clinical and economic burden of hepatorenal syndrome (HRS) in the United States. The data were presented in a poster session at The Liver Meeting® 2017, the annual meeting of the American Association for the Study of Liver Diseases, held Oct. 20-24, 2017 in Washington, D.C.



The study, "The Clinical and Economic Toll Associated with Hepatorenal Syndrome from a Hospital Perspective in the United States: 2009-2015" assessed the real-world clinical outcomes and U.S. hospital costs and resource use of treating HRS. Researchers performed a retrospective, longitudinal analysis of the CERNER HealthFacts® electronic health record (EHR) database covering adult patients hospitalized between 2009 and 2015 with an HRS diagnosis. The study also reviewed clinical staging and laboratory data to assess the impact of the disease. Of the 2,542 patients with HRS in the analysis, 1,571 were male (61.8 percent) and 971 were female (38.2 percent). Real-world hospital costs of HRS treatment in a non-trial setting have not been previously documented prior to this analysis.

"HRS is a serious condition that often requires hospitalizations and is associated with high mortality. As such, patients suffering from HRS represent a significant cost burden for the U.S. healthcare system," said **Tunde Otulana, M.D., Chief Medical Officer at Mallinckrodt**. "Approval of new treatments that can reduce hospital length of stay, hemodialysis and readmissions could potentially reduce the clinical and economic burden of HRS."

The primary cost and clinical drivers for HRS patients included length of stay, hemodialysis, and discharge to a nursing facility. Key findings include:

- Overall, the average length of stay for patients suffering from HRS was 29 days and total hospitalization cost per patient was \$91,504.
- During the initial hospitalization, the HRS mortality rate was 36.9 percent and an additional 8.9 percent of patients were discharged to hospice. Average cost of hospitalization for patients who died was \$106,288 versus an average of \$85,568 for those patients who survived.
- The hospital readmission rate for patients with HRS was 28 percent, of which 12 percent were unplanned readmissions and 16 percent were planned readmissions.
- Patients with unplanned readmissions had an average total cost of care of \$92,154, compared to an average of \$73,616 for patients with planned readmissions.
- Using the Child-Turcotte-Pugh classification for severity of cirrhosis, the average hospitalization cost for patients with class B was \$65,122 per patient, rising to \$103,763 for those patients with class C.
- Average cost per patient increased from \$70,676 for patients with grade 1 to \$112,191 for patients with grade 3 as stratified by the patient's acute-on-chronic liver failure grade, which is determined by a chronic liver failure-sequential organ failure assessment.

Limitations: This study relied primarily on ICD-9 codes in the EHR; coding misclassification could lead to inaccurate case identification. Cost data were available in about one quarter (25.1 percent) of the study patients; hence cost estimates may be less complete. The study results may not be generalizable to all U.S. hospitals though CERNER HealthFacts is one of the largest EHR databases in the country, accounting for over 500 healthcare facilities across the U.S.

The poster is available on the Mallinckrodt [website](#).

About Hepatorenal Syndrome

HRS is characterized by rapid, progressive functional renal failure and has a very poor prognosis, with >80 percent mortality within three months. HRS is a rare syndrome of marked renal dysfunction in patients with cirrhosis, decompensated liver disease and portal hypertension. At present, there are no approved drug therapies for HRS type 1 in the U.S. or Canada. The only curative treatment for HRS type 1 and the underlying end-stage cirrhosis is liver transplantation. However, many patients will not survive long enough to receive a liver transplant.

ABOUT MALLINCKRODT

Mallinckrodt is a global business that develops, manufactures, markets and distributes specialty pharmaceutical products and therapies. Areas of focus include autoimmune and rare diseases in specialty areas like neurology, rheumatology, nephrology, pulmonology and ophthalmology; immunotherapy and neonatal respiratory critical care therapies; and analgesics and hemostasis products. The company's core strengths include the acquisition and management of highly regulated raw materials and specialized chemistry, formulation and manufacturing capabilities. The company's Specialty Brands segment includes branded medicines and its Specialty Generics segment includes specialty generic drugs, active pharmaceutical ingredients and external manufacturing. To learn more about Mallinckrodt, visit www.mallinckrodt.com.

Mallinckrodt uses its website as a channel of distribution of important company information, such as press releases, investor presentations and other financial information. It also uses its website to expedite public access to time-critical information regarding the company in advance of or in lieu of distributing a press release or a filing with the U.S. Securities and Exchange Commission (SEC) disclosing the same information. Therefore, investors should look to the Investor Relations page of the website for important and time-critical information. Visitors to the website can also register to receive automatic e-mail and other notifications alerting them when new information is made available on the Investor Relations page of the website.

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