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Background/Aims: Payments to hospital providers are not solely driven by the resource requirements of individual patients, but also reflect payment policies specific to the health care payer and hospital provider. For example, Medicare adjusts payments to hospitals according to facility and local geographic characteristics that may not be relevant to studies estimating the associations of individual patient characteristics with true costs of care. We developed a method to estimate hospital costs using the diagnosis related group (DRG) payment weights on which Medicare bases hospital payments that reflect patient medical and surgical acuity. Our purpose was to compare cost estimates for hospital stays calculated using DRG payments weights to actual Medicare hospital payments. **Methods:** We used Medicare Provider Analysis and Review (MedPAR) files and DRG weight tables linked to participant data from the Study of Osteoporotic Fractures (SOF) from 1992 through 2010. Participants were women age 65 and older recruited in three metropolitan and one rural area of the United States. Standardized hospital costs were estimated using DRG payment weights for 1,397 hospital stays (assigned 182 separate DRG codes) for 795 SOF participants for one year following a hip fracture. Cost estimates based on Medicare payments included Medicare and secondary insurer payments, copay and deductible amounts. **Results:** The mean (SD) of inpatient DRG-based cost estimates per person-year were \$16,268 (\$10,058) compared to \$19,937 (\$15,531) for MedPAR payments. The correlation between DRG-based estimates and MedPAR payments was 0.71, and 51% of hospital stays were in different quintiles when costs were calculated based on DRG weights compared to MedPAR payments. **Conclusions:** DRG-based cost estimates of hospital stays differ significantly from Medicare payments, which are adjusted by Medicare for facility and local geographic characteristics. These findings also may apply to studies estimating associations of individual patient characteristics with health care costs across multiple payers (such as HMORN members) who have different payment policies based in part on local geographic and health care system characteristics (including contracts between specific payers and hospital providers). DRG-based cost estimates may be preferable for analyses when hospital, payer, and local geographic variation could bias assessment of associations between patient characteristics and costs.

Keywords: Hospital costs; Claims data

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B2-3:

Comparative Effectiveness of a Computerized Algorithm versus a Physician Instituted Protocol to Manage Insulin Infusions after Cardiac Surgery

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Background/Aims: Glucose management after cardiac surgery in our hospital was done using a locally developed paper insulin infusion protocol. Prolonged time to achieve and maintain target blood glucose was common and hypoglycemia was a significant problem. A computerized algorithm for insulin infusion was implemented and compared to the paper insulin infusion protocol. A barrier to effective implementation of this practice change was timed glucose measurements that consumed more nursing time. This was overcome by increasing nursing education and thereby efficiency. Hyperglycemia after meals and rapid glucose changes with glucose altering medications was addressed by adding extra glucose readings to allow the system to adjust the infusion rate. **Methods:** In order to assess the effectiveness of the new system, permission was received from the IRB to perform a retrospective chart review. Data for the paper protocol was obtained from 248 patient records during the time period of 7/1/11 to 12/30/11. Data for the computerized system was obtained from 181 patient records during the period of 8/1/12 to 5/2/13. Primary endpoints were time to achieve target glucose and hypoglycemia occurrence rates before and after intervention. The data was analyzed for time to achieve target glucose using a comparison of means and sample confidence levels for means of normal distributions with unknown variances. **Results:** Mean time to achieve target blood glucose before the intervention was 14.9 hours, and after the intervention was only 4.9 hours. Difference in time to achieve target glucose

was 10 hours ($P < 0.005$ with 99.5% confidence level). Percent of patients with blood glucose $< 40\text{mg}\%$ was 4.45% (11 of 248) and blood glucose $< 60\text{mg}\%$ was 20.6% (51 of 248) before the intervention. With the computerized insulin algorithm, percent of patients with blood glucose $< 40\text{mg}\%$ was 0 and $< 60\text{mg}\%$ was 0.55% (1 of 181). **Conclusions:** The management of postoperative insulin infusions with a computerized algorithm results in significant improvement in patient care delivery with more efficient glucose control, little hypoglycemia, and an average saving of 10 hours of intensive care stay and nursing time. The health economic implications of this finding are being studied.

Keywords: Insulin infusions; Post cardiac surgery

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B2-4:

Variations in the Cost of Ambulatory Care Episodes: An Opportunity for Improvement?

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Background/Aims: Policymakers are exploring bundled payments to providers, but little is known about their application in ambulatory care. As an example, this study examines the cost of acute bronchitis episodes. **Methods:** Data were from electronic health records and claims of a large ambulatory group practice with mixed payment sources. Optum's Symmetry Grouper was used to create episode treatment groups (ETGs) for all services. There were 78,828 episodes of acute bronchitis, cared for by 427 primary care physicians/urgent care centers (PCPs) (1,568 PCP-years) in 2007-2011. Costs included standardized fees for physicians, laboratory/imaging ordered, and specialist services. The grouper extends an episode indefinitely with continuing related services, so we separately considered episodes closed in: (a) 1 day, (b) within 30 days, and (c) those extending beyond 30 days. In a nested model, we focused on lead physician 'effects,' controlling for patient characteristics. **Results:** Of the total episodes, 78% closed in 1 day, 19% closed in 2 to 30 days, and 3% took > 30 days. One-day episode costs were most stable (mean cost = \$77, coefficient of variation (CV) = 0.36), followed by 30-day episodes (mean cost = \$181, CV = 0.56), and longer than 30-day episodes (mean cost = \$268, CV = 0.78). Among 1-day episodes, 21% of the PCP-years (with 166 unique PCPs) had costs significantly below the average. Only 22% of the episodes of these PCPs extended beyond 1 day vs. 32% for all other PCPs ($P < 0.01$), and the costs of their longer episodes averaged \$176 vs. \$205 ($P < 0.01$). Among the 91 PCPs with 2 or more years of significantly lower 1-day costs, 85% (77 PCPs) did not have elevated rates of longer episodes or significantly above average costs for longer episodes. **Conclusions:** Focusing on 1-day acute bronchitis episodes (78% of the total) markedly reduces the variance across episodes, but substantial variation in episode costs across PCPs remains. With some PCPs repeatedly achieving low 1-day costs without evidence of subsequent problems, episode-based payment may lead to improved resource use.

Keywords: Episode-based payment; Cost

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D4-1:

Economic Impact of an Evidence-based Standardized Perinatal Care and Practice Measurement Process: Evidence from a U.S. Integrated Healthcare Delivery System

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Background/Aims: Recent estimates indicate 10-15% of all babies born in the U.S. are admitted to the neonatal intensive care unit (NICU) which along with evidence that coordinated prenatal care is positively correlated with better birth outcomes (fewer low birth weight and premature babies, and fewer infants transferred to NICU's) suggest the potential for improvement in perinatal care quality and cost. The aim of this analysis is to examine the economic impact of an evidence- and guideline-based standardized coordinated perinatal care and electronic health record measurement process (Geisinger Health System (GHS) Perinatal ProvenCare® (PPC)) for both the mother and infant implemented in a large integrated U.S. healthcare delivery