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Background

> Smart pump-electronic health record (EHR) interoperability has been demonstrated to reduce adverse events and increase documentation and billing accuracy.

> Relatively little is known about the impact of interoperability on infusion therapy billing claims and hospital finances.


Methods

> Retrospective cohort study approved by the Institutional Review Board.

> Data were analyzed from patients admitted to Penn Medicine Lancaster General Health who received IV infusions and for whom CPT® coded infusion-therapy billing claims were submitted.

> Data was collected for patients in the emergency department (ED) and in non-ED units (e.g., oncology, neurosurgery, cardiac telemetry, etc.).

> A “patient event” is defined as an ED visit or a non-ED unit admission day.

> The intervention was defined as the use of smart pump-EHR interoperability to auto-document infusion-therapy start and stop times.

> The 2016 pre-auto-documentation group had auto-documentation of start time only, the 2017 post-auto-documentation group had auto-documentation of both start and stop times.

> The primary outcome of the study was the total count of all CPT® codes submitted.

> Secondary outcomes included the individual CPT® codes count submitted and the corresponding Medicare Addendum B dollar amounts.

> CPT® reimbursement rates were converted to annualized amounts.

Results

> This is the first study to document the positive impact of interoperability on CPT® coded infusion therapy billing claims.

> The findings from this study support the use of smart pump-EHR interoperability and expand the benefits beyond patient safety to include improved hospital financial performance through charge capture and billing compliance.

> CPT® code submission count was higher among patients who had auto-documentation of infusion start and stop times evidenced by smart pump-EHR interoperability.

> The annualized increase in value of the corresponding 2017 Medicare Addendum B rates was $1,043,052.

> When divided by study groups, the ED had a $478,980 increase, while the non-ED units had an increase of $564,072 in claims.

> Viewed by admission status, claims increased by $811,712 for inpatients and $251,940 for outpatients.

> Gains demonstrated across units and by admission status suggest these effects may be generalizable to the broad hospital population.

> The net hospital revenue associated with these codes is subject to a highly complex analysis of payer mix, reimbursement contracts, etc. and is beyond the scope of this study.

> These community hospital results may help drive adoption of smart pump-EHR interoperability by providing critical financial considerations.

> Further study is required to confirm and evaluate the implications of these results.

Directions for further study

> Trend of interoperability driven billing improvements over time.

> Financial results of conversion from total manual documentation to auto-documentation of start and stop times.

> Impact of interoperability on documentation of therapies not delivered by the infusion pump.

Acknowledgments

1. Penn Medicine Lancaster General Health
2. (E) Medical Inc.
3. Biogenc, Pvt. Ltd.

Table 1: ED versus non-ED, Medicare Addendum B annual dollar amount change by CPT® code

Table 2: Overall billing impact for IPs and OPs

References

4. Consulting Agreement.
5. No author listed (in parentheses).