

# Decreasing Central Line Entries in the PICU

Monitoring compliance of medication conversions from IV to Enteral in an effort to decrease Central Line-Associated Blood Stream Infections (CLABSIs)

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## 1 Background

There are an estimated 250,000 – 500,000 cases of Central Line-Associated Bloodstream Infections (CLABSIs) per year with 80,000 of these cases in ICUs. The mortality rate is 9-25 percent with an attributable cost of 25,000 -45,000 thousand per episode. This is considered a preventable hospital acquired infection, therefore it is no longer covered by Centers for Medicare and Medicaid Services and hospitals are responsible for this expense. A study in 29 PICUs across the country showed that ideal maintenance practices have a greater effect in reducing CLABSIs than ideal insertion practices. Additionally, experts from the national PICU Children's Hospital Association CLABSI Collaborative suggest that the number of times a central line is accessed increases the risk for infection (Miller et al., 2010).

Expert opinion recommends no more than 10 central line entries per patient per day to reduce CLABSI rates. Converting medications from IV to enteral/po is an easy way to decrease the number of preventable central line entries which is a suspected root cause of CLABSIs (J. Fackler, personal communication, April 1, 2014). Therefore, in an effort to maintain best practice, each month new fellows are given a list of IV medications that have a 1:1 conversion ratio to enteral/po and a check off list to complete after daily rounds. This list includes acknowledgement that all medications with a 1:1 conversion ratio were changed from IV to enteral/po.

For six months, weekly audits were recorded to track the number of central line entries per patient per day. Then the percentage of IV medications that have a 1:1 conversion ratio to enteral/po was calculated to assess the number of preventable central line entries.

## 2 Objectives

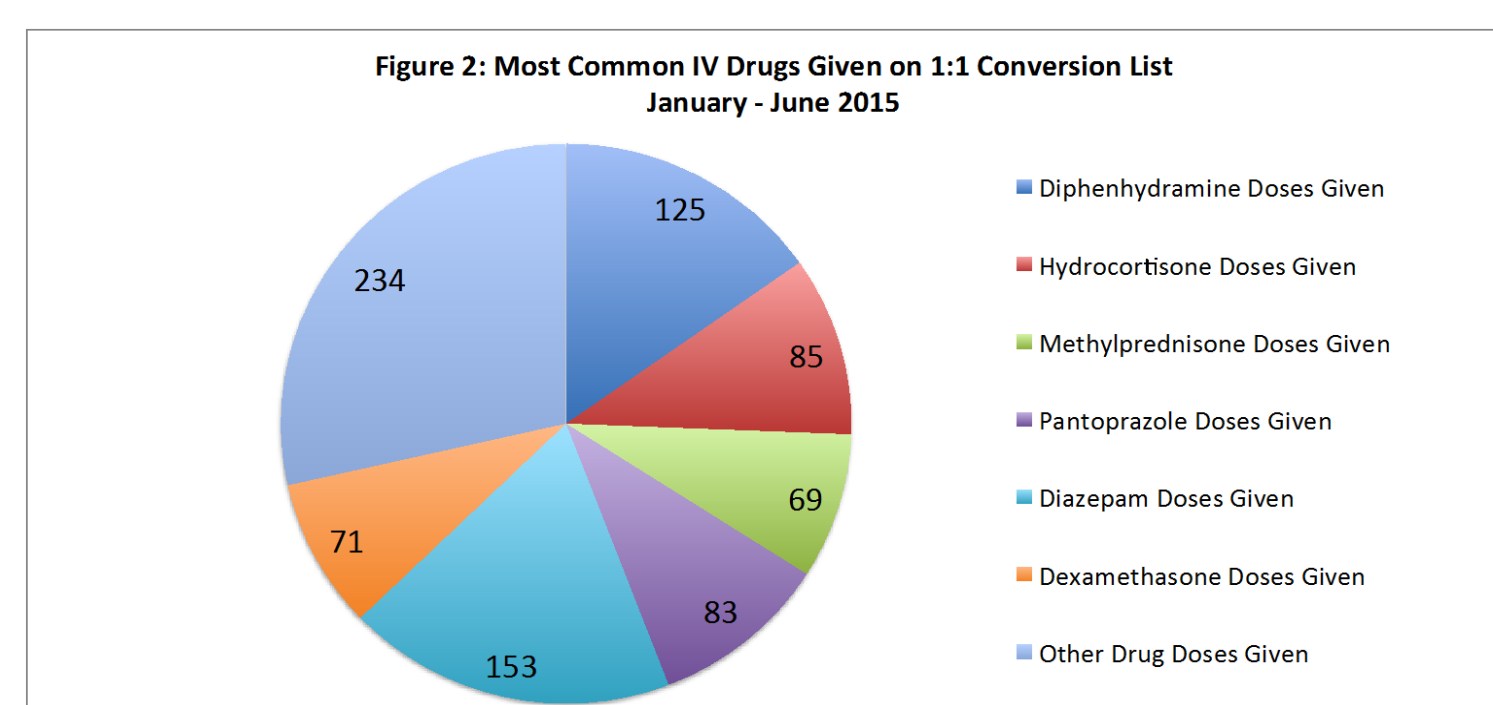
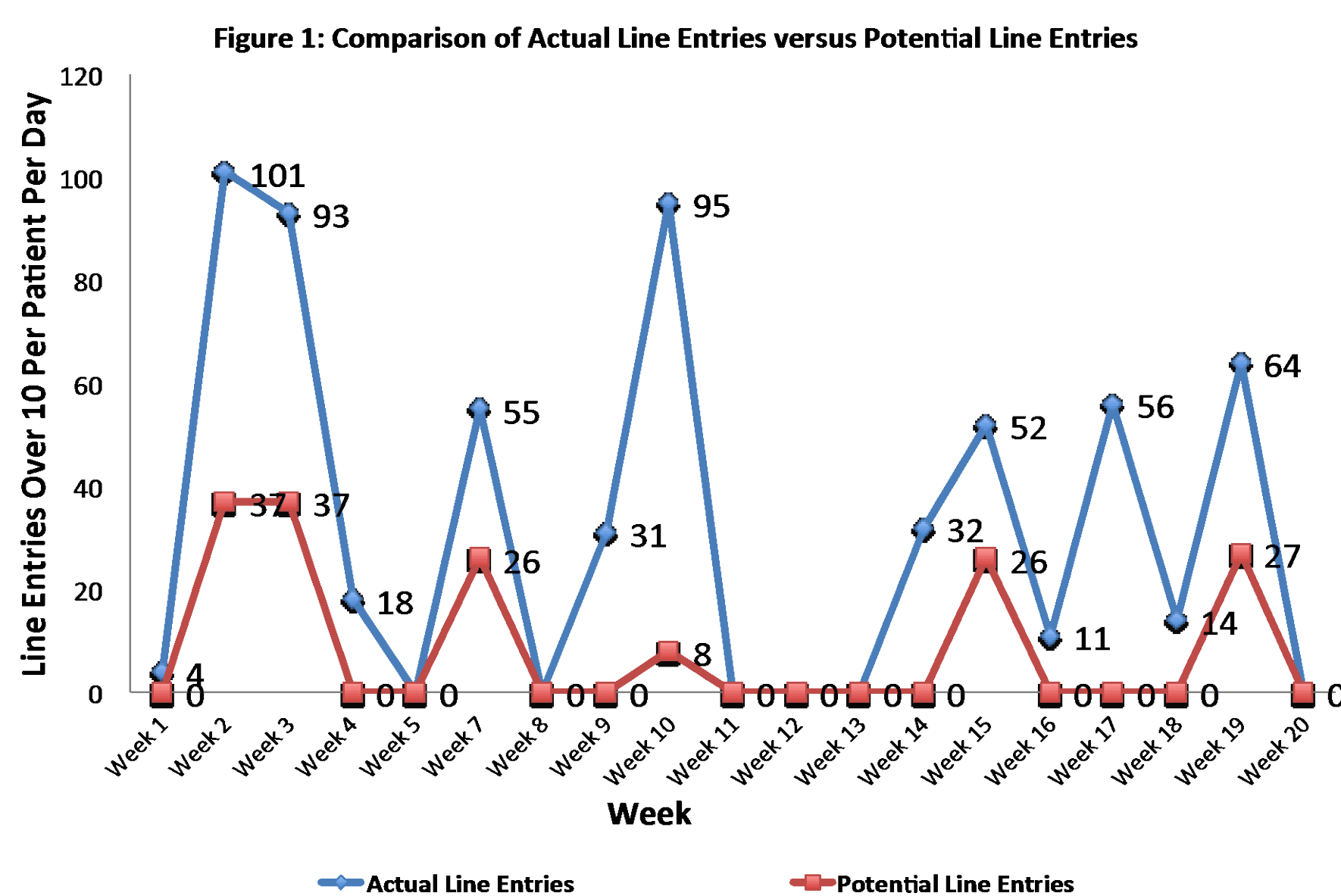
- 1: Decrease number of central line entries.
- 2: Track the number of IV to enteral/PO medication conversions.
- 3: Decrease the number of CLABSIs.

## 3 Methods

Plan, Do, Study, Act

- Plan: Literature review was used for CLABSI evidence based practice and prevention protocols.
- Do: Data collection of number of central line entries from January to June 2015.
- Study: Data was divided based on medical team and entered into compliance report. Performance rates were reported weekly to unit staff.
- Act: Analysis of unit adherence to conversion protocol.

## 4 Results



- Out of the 19 weeks there were only 6 weeks where the the goal of 10 central line entries per patient per day was met (see Figure 1).
- If all medications on 1:1 conversion list were changed from IV to enteral/po there would have been 13 weeks where the goal of 10 central line entries per patient per day was met (see Figure 1).
- Out of the 20 drugs listed on the 1:1 conversion list the six most common drugs not converted from January to June 2015 were Diazepam (n=153) doses given and Diphenhydramine (n=125) doses (see Figure 2).

## 5 Conclusions

- The variation in compliance levels recorded through weekly audits and performance reports suggest room for improvement.
- The medications that are not being converted to enteral/po lead to increased medical costs. For example, a single dose of 3.5mg IV diazepam costs 86.40 dollars in comparison to 2.84 dollars for 10mg enteral/po.
- Continuous weekly auditing is necessary to monitor and report safety compliance among physician teams.

## 6 Future Directions

- Identify barriers to the providers in prescribing enteral/po instead of IV medications. This could include qualitative measures such as surveys, investigating workarounds, frequency of interruptions, and knowledge assessments.
- Trial different interventions such as annual review of CLABSI prevention, current national rates, and education on leading prevention strategies.
- A longer audit is necessary to assess whether there was a decrease in annual CLABSIs and continual quality improvement projects to promote infection-control initiatives (Muto, Herbert, & Harrison, 2005).
- Continue benchmarking, comparisons, quality improvement projects, and public reporting to maintain accountability (The Joint Commission, 2011).
- Create weekly competitions between physician teams with incentives such as lunch tokens, pizza, and unit acknowledgement.

## 7 References

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