

# A Retrospective Quantitative Research Study on Efficacy of Self Logging of Procedures During EM Residency.

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## Introduction

- During postgraduate medical training emergency medicine residents perform a variety of procedures during patient care that must be learned through reading, practical observation, direct supervision execution and ultimately unsupervised execution.
- The quantity of executions is a core competency for graduation and accurate logging of these procedures is helpful in tracking progress and often even a requirement for applications after graduation.
- Many ACGME accredited programs use a company called New Innovations (NI) which has an HTML interface allowing residents to log their procedures.
- One of the popular electronic medical record softwares, Epic, allows for entry in the specific tab for procedures that may later be mined for data analysis.
- This study attempts to use the two softwares to determine how effective residents are in self-logging the procedures they perform or with which they are involved.

## Hypothesis

- It is presumed that the results of the log analysis will reflect a large discrepancy of Epic Procedures performed and the number actually logged in New Innovations.

## Methods

- This is a retrospective quantitative research study using EMR and HTML data entry mining to collect quantitative data for analysis.
- Retrospective data from the HTML server/logging tool New Innovations was collected using their built in reporting function to acquire an accurate list of procedures that were entered by PGY 1 & 2 classes from a single month of residency practice at ISMC, an ACGME accredited Emergency Medicine Residency Program.
- Some core procedures that were analyzed included: Central Venous Access, Dislocation Reduction, Intubation, Procedural Sedation, Thoracostomy Tube Insertion, Laceration Repair, and Art Line Placement.
- The ISMC Residency Program Manager provided data from built in reports from NI software that were tallied using Excel software.
- An Epic Crystal Report was created by the Hospital's IT staff for data collection of Epic Procedure Note Entries.
- Data from one of the residents revealed that he neither logged in NI nor returned results for procedure notes documented in Epic and were excluded from analysis.
- Five of the residents, interestingly all PGY2's, revealed recorded logs from NI but no procedure notes documented in EPIC. These were also excluded from analysis.
- The remaining eight residents had logged NI procedures as well as Epic Procedure Note Entries and were included in the analysis.

**Table 1: Subtotals by Resident and Procedure**

| Res | Consolidated NewInnov List  | Logged in New Innov | Epic Procedure Note Performed | Epic Note w/o Logging NI | Logged in NI w/o Epic Note |
|-----|-----------------------------|---------------------|-------------------------------|--------------------------|----------------------------|
| DB  | Intubation                  | -                   | 1                             | 1                        | -                          |
| DB  | Arterial Access             | -                   | 2                             | 2                        | -                          |
| DB  | Laceration Repair           | -                   | 6                             | 6                        | -                          |
| DB  | Central Venous Access       | -                   | 7                             | 7                        | -                          |
| MG  | Central Venous Access       | 1                   | 8                             | 7                        | -                          |
| MG  | Thoracostomy Tube Insertion | 1                   | 1                             | -                        | -                          |
| DP  | Arterial Access             | 1                   | -                             | -                        | 1                          |
| DP  | Central Venous Access       | 2                   | 7                             | 5                        | -                          |
| DP  | Intubation                  | 2                   | 2                             | -                        | -                          |
| CW  | Central Venous Access       | 12                  | 4                             | -                        | 8                          |
| CW  | Dislocation Reduction       | 2                   | 2                             | -                        | -                          |
| CW  | Intubation                  | 5                   | 5                             | -                        | -                          |
| KC  | Arterial Access             | 2                   | -                             | -                        | 2                          |
| KC  | Central Venous Access       | 10                  | 9                             | -                        | 1                          |
| KC  | Laceration Repair           | 3                   | -                             | -                        | 3                          |
| KC  | Intubation                  | 5                   | 2                             | -                        | 3                          |
| KC  | Thoracostomy Tube Insertion | 2                   | -                             | -                        | 2                          |
| TE  | Arterial Access             | 4                   | -                             | -                        | 4                          |
| TE  | Central Venous Access       | 19                  | 15                            | -                        | 4                          |
| TE  | Laceration Repair           | 1                   | -                             | -                        | 1                          |
| TE  | Intubation                  | 7                   | 9                             | 2                        | -                          |
| TE  | Procedural Sedation         | 1                   | 1                             | -                        | -                          |
| TE  | Thoracostomy Tube Insertion | 2                   | 2                             | -                        | -                          |
| RG  | Central Venous Access       | 1                   | 1                             | -                        | -                          |
| RG  | Intubation                  | 1                   | 1                             | -                        | -                          |
| RG  | Thoracostomy Tube Insertion | 1                   | 1                             | -                        | -                          |
| MW  | Arterial Access             | 1                   | -                             | -                        | 1                          |
| MW  | Central Venous Access       | 3                   | 4                             | 1                        | -                          |
| MW  | Intubation                  | 1                   | 1                             | -                        | -                          |

**Table 2: Totals by Procedure**

| Procedure  | Logged in New Innov | Epic Procedure Note Performed | Epic Note w/o Logging NI | Logged in NI w/o Epic Note |
|--|---------------------|-------------------------------|--------------------------|----------------------------|
| Intubation   | 21                  | 21                            | 3                        | 3                          |
| Arterial Access  | 8                   | 2                             | 2                        | 8                          |
| Laceration Repair                                      | 4                   | 6                             | 6                        | 4                          |
| Central Venous Access                                  | 48                  | 55                            | 20                       | 13                         |
| Thoracostomy Tube Insertion                            | 6                   | 4                             | -                        | 2                          |
| Dislocation Reduction                                  | 2                   | 2                             | -                        | -                          |
| Procedural Sedation                                    | 1                   | 1                             | -                        | -                          |
| <b>Total</b>   | <b>91</b>           | <b>91</b>                     | <b>31</b>                | <b>31</b>                  |
| <b># of Procedures Noted in Epic and Logged in NI:</b> |                     |                               | <b>60</b>                |                            |
| <b>% of Procedures Noted in Epic and Logged in NI:</b> |                     |                               | <b>65.9%</b>             |                            |
| <b># of Epic Notes Performed but not logged:</b>       |                     |                               | <b>31</b>                |                            |
| <b>% of Epic Notes performed but not logged:</b>       |                     |                               | <b>34.1%</b>             |                            |

## Conclusions

- Of the procedures documented by residents in Epic, approximately 66% of the procedures were also logged in New Innovations. While this is higher than expected, it still shows that there is a large amount of procedures that are performed that residents are not logging.
- This is a disservice to the residents and leads NI reports to be undervalued to actual performance.
- Interestingly and unexpectedly, we found that there were actually a number of procedures logged in NI that did not appear to have a supporting procedure note in Epic.
- We speculate that this may be from a number of causes.
- A resident may observe a procedure that is logged appropriately in NI but said resident may not have entered the Epic Procedure Note (EPN).
- A resident may have performed the procedure while the attending or another resident entered the EPN thereby not populating in NI for the proceduralist.
- A possible though hopefully unlikely explanation would be an erroneously entered log in NI.
- Moving forward, by fine tuning and regularly running these Epic Crystal reports, it is possible for residents to increase their percentage of logged procedures.
- One step further - it would be extremely beneficial to get Epic and New Innovations to integrate and automatically log the procedures.