Finding the Hidden Tune Using Pre and Post System Implementation Metrics

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Introduction

November 2008 San Francisco voters approved Proposition A to build a new acute care facility at San Francisco General Hospital to meet state seismic standards1. In May 2016, the 283-bed facility, Zuckerberg San Francisco General Hospital and Trauma Center (ZSFHC), opened its doors to patients offering state of the art care, and utilizing several newly implemented clinical applications and systems2.

Opportunity

“Implementing a new system that involves multiple components/applications is a major task for any healthcare provider. Conducting a pre- and post-implementation study to document the level of success is important, but finding the time, energy, and resources to do this is not done as often as we professionals would like.”(Tyler, 2011) 2

USF Graduate Student Internship provided ZSFHC the resources for a metrics and data gathering during transition when implementing new clinical technologies. Pre Implementation Time Study conducted 2015. Post data gathering in 2016 one month post “go live” with Med Surg focus of study.

Virtual Desktop Image (VDI)

Purpose: to measure systems and clinical applications accessed by single sign on as part of transition to new system.

Study: Information such as the times for “Tap In” (badge access using desktop computer reader), times for completed log in process, whether or not the end users were logging into the system for the first time, typing in either user name or password (Manual), or if the end users were logging into the system via “Tap (Automatic)” were observed and recorded into excel via Google form. From the initial analysis it can be seen that implementation was successful as accessibility improved Post Implementation and speed to log in increased by over 50%. Data findings were reinforced by positive comments recorded from clinical staff stating log in process "was faster" and “easier” than before. This was a significant outcome as the implemented VDI had been modified to include new applications such as Nurse Call, Vitals Segs Integration. In Room Patient Education and monitoring software via Google form before an image already including electronic medical record, medication administration record, enterprise anew, etc., the Post Implementation VDI was not only faster, but the build was also more complex.

Nurse Call

Purpose: to provide baseline metrics for the Pre Implementation Nurse Call system (single push button call light, single over door room light, one master unit at clerks desk and PCAs unit) within the hospital (enhanced pillow speaker, wall unit, bed plug, multi-color over door lights, multiple master console units, software application, integration with wireless phones for RNs and PCAs).

Study: First step in the development of Pre Implementation study design was to gather resources and perform research on previous clinical time studies. Design concepts were determined, based on table 9.2: Comparison of Methods for Capturing User Requirements from Chapter 9: Human Computer Interaction, “Essentials of Nursing Informatics"3. Nurse call questions captured data which included: census, patient call activated (time), patient call answered (time), patient call deactivated (time), time elapsed for patients to contact desired health professional (number for time), patient call answered by (health professional and mode), patient call activated unintentionally (Off or On), reason for patient call (multiple choice), overhead page activated (On or Off), when overhead page de-activated (time), Pre Implementation Results: Initial observed results: Medication, Do Something in Room, Post/Flush/Bathroom and Not Caught highest volume of calls.

Pre Implementation Nurse Call Type were recategoryzed to be comparable to Post Implementation Nurse Call Types.

Pre and Post Results Comparison: Although the overall volume of Nurse calls increased (25%) Post Implementation, the general distribution of Call Type remained the same; with Patient Calls occurring at the highest frequency both Pre and Post. The integration of bed and bathroom station alarms into the Post Implementation Nurse Call system account for almost 1/3 of total Call by Type, within a two hour ‘Reassessment’ period.

Vitals Signatures

Purpose: Pre and Post Implementation vital sign observations were collected as individual data points and analyzed as trends. The median time difference between the time patient vital signs were taken and the time vital sign measurements were manually recorded into the electronic medical record was 1 hour and 15 minutes (1:15:00).

Timeline - Time Vital Signs taken | Time Vital Signs recorded

Nurse Call continued

Pre and Post Implementation Comparison Average Call Response Time: The Average Call Response Time graphs display the number of Nurse Calls and the average response times of RNs or PCAs as the patient’s initial request occurred within a 48 hour period. The y axis displays Numbers of Calls and minutes and seconds. The x axis displays Call Type; * indicating Urgent calls and ** indicating Priority calls, NC indicates the Call Type was not captured. Pre Implementation data shows an average response time greater than 3 minutes for any Call Type. The highest call volume (Patient) with a response time of 2.05 minutes suggests that increased call volume is not indicative of increased response time.

Post Implementation data findings included the measurement of Urgent calls (Service, Staff, Do Something in Room with response time <0.25 seconds. Priority calls (Toilet Access, Bed Out, and Pain) had response time <2.22 seconds. These findings suggest that Nursing staff seemed to be responding quickly to newly implemented Nurse Call types 30 days post “go live”. Call type Water is an example of data skewed by implemented system roles and should be adjusted down from minutes 35 seconds to 35 minutes to 35 seconds to adjust for Nurse Call system call tax. Implemented Nurse Call system routes Water Calls to PCA first, if unanswered for 2 minutes, call is routed to next tier which is RN. The Post Implementation reporting does not account for routed calls only answered calls.

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