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Clinical Guidelines and Performance Measurement

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An analysis of three clinical guideline sets and associated performance measures and their suitability for use as criteria for a clinical decision support system (CDSS).

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Introduction

For this assignment, I researched clinical guideline sets (CGS) and located core measurements that were published by The Joint Commission on their web site. The CGS represent clinical measures that are a collective effort by a variety of stake holders with an aim to improve quality around the focused areas that evolved into a common manual to contain them known as the Specifications Manual for National Hospital Inpatient Quality Measures (NHIQM). As implied by the name, these measures focus on conditions and procedures that are normally treated and measured within an inpatient hospital setting. (The Joint Commission, 2011)

Guidelines play a critical role in improving quality outcomes. Proper guidelines are based on sound evidence based medicine and backed by high quality research. They seek to minimize bias by "systematically identifying relevant evidence on which to base recommendations for practice" (WCPT, 2006) . Their purpose is to "assist practitioner and patient decisions about appropriate health care for specific clinical circumstances" (AGREE, 2010).

Contained herein is an overview of three guidelines and associated respective performance measures and an assessment of their suitability as criteria for a Clinical Decision Support System (CDSS)

CGS1 – Heart Failure (HF)

Guideline Overview

The HF guideline set is comprised of three sub-measures known as "set measures" which include Discharge Instructions (HF-1), Evaluation of LVS Function (HF-2), and ACEI or ARB for LVSD (HF-4). A fourth measure (HF-4) became ineffective on January 1, 2012 that before focused on advice/counseling for adult smoking cessation. Of the three active set measures all seek to improve quality in some way.

The first set seeks improvement through more consistent dispersal of educational materials to the patient or caregiver(s) to ensure for better adherence to exercise, diet and medication regiments. The second and third set measures seek to improve proper diagnosis of left ventricular systolic dysfunction (LVSD) through consistent screening before, during or after an inpatient episode for HF to prescribe the appropriate medication to improve morbidity and mortality rates. All three feed from each other and together offer the potential for improved quality for HF patients. (The Joint Commission, 2011)

For successful outcome to be realized, all require process improvements, as all sets under the guideline fall under the category of being a process. Following the appraisal recommendations by the AGREE organization, with four of the six domain areas considered, this guideline does measure strongly as a high quality measure that would be recommended for use.

Performance Measurement

All set measures under the HF guideline are endorsed by the National Quality Forum (NQF). HF-1 was endorsed as early as May of 2007 and HF-2 and HF-3 as of August of 2009 (National Quality Forum, 2012) .

In examining HF-1 closer, we can see that the Numerator accounts for those patients (or their caregivers) that received documentation concerning written discharge instructions or educational materials that cover six points of applicable information to their care, treatment plans and warning symptoms. The Denominator represents the total number HF patients that were discharged home. Considered inclusionary and exclusionary criteria exist to properly classify candidates within the considered populations for both numerator and denominator along with specific data elements to be considered which guide in determining eligibility for inclusion or exclusion for consideration. Considering both elements, the product of the two represents the measured rate where a higher number signifies improvement. (The Joint Commission, 2011)

The place of use of HF-1 is obvious as it relates to the discharge of a patient from an inpatient episode. The relevant challenges in accurately measuring are in the data inputs. Since measurement is dependent on procedural action it is best executed through required workflows during a patient encounter. Accuracy is also dependent on clinical coding practices, so quality assurance (QA) around these practices would ensure for best results.

Suitability for CDSS

The HF clinical guideline set seems to be solidly based on AGREE principles and well suited for use in a CDSS.

CGS2 – Children's Asthma Care (CAC)

Guideline Overview

The CAC guideline set is made up of three set measures which include Relievers for Inpatient Asthma (CAC-1), Systemic corticosteroids for inpatient asthma (CAC-2), and Home Management Plan of Care (HMPC) document given to patient/caregiver (CAC-3). CAC-1 and CAC-2 consider an additional four considerations under their respective measure set and relate to age categorization levels within the pediatric populations considered. All three measure sets seek to attain improvement through increased rates.

As one of the most prevalent chronic diseases and causes for morbidity among children the CAC clinical guideline sets seek overall to ensure for consistent delivery of treatment and relief to children that suffer. Improvement also seeks to more consistently educate children, parents (or other caregivers) to more effectively treat the condition and where possible prevent it. In the TJC's documented rationale, it is also clear that this chronic condition accounts for a significant expenditure in US healthcare. With measured improvement from the guideline, healthcare spending as it relates to CAC could be significantly reduced and perhaps could be measured separately through economic indicators. (The Joint Commission, 2011)

The CGS for CAC are concise with robust criteria instructions for uniform application and as such rate high when considered under the AGREE II principles and would be highly recommended for use.

Performance Measurement

The three CAC measures were initially introduced in April, 2008 with CAC-1 and CAC-2 being NQF endorsed from the beginning. CAC-3 was initially implemented as a test measure pending NQF endorsement and subsequently received endorsement on July, 1, 2008 for discharges. (National Quality Forum, 2012) (The Joint Commission, 2011).

In examining CAC-3 closer, the evaluation considers a Numerator Statement which includes all Pediatric asthma inpatients' who received relievers during hospitalization. The Denominator Statement considers all pediatric asthma inpatients (age 2 through 17 years) who were discharged with the primary diagnosis of asthma. Together, the two factors provide the overall percentage measure rate. Inclusionary and exclusionary criteria exist which consider relevant data elements to determine the admit/discharge dates, birthdates, reasons for not administering relievers, diagnosis codes and clinical trial indicator. All of the considered data elements help determine eligibility for consideration in the evaluated patient populations. (The Joint Commission, 2011)

The appropriate place of evaluation for CAC occurs at discharge and is classified as a process measure.

Suitability for CDSS

The CAC clinical guideline set seems to be solidly based on AGREE principles and well suited for use in a CDSS but not without considerations. Due to the sub classification of age groups and clinical code assignment, accuracy in the data collection stage of the inpatient episode are of critical importance to automate and be able to produce accurate measure results. I think in the case of CAC measurements that publication would help establish better accountability and targets for other institutions to compare their performance against. Having a comparative measure would encourage improvement naturally and help to achieve reduced morbidity and reduce healthcare expenditures.

CGS3 – Pneumonia (PN)

Guideline Overview

The PN guideline set is made up of five set measures which include (The Joint Commission, 2011)

- ***PN-3a*** - Blood Cultures Performed Within 24 Hours Prior to or 24 Hours After Hospital Arrival for Patients Who Were Transferred or Admitted to the ICU Within 24 Hours of Hospital Arrival.
- ***PN-3b*** - Blood Cultures Performed in the Emergency Department Prior to Initial Antibiotic Received in Hospital.
- ***PN-6*** - Initial Antibiotic Selection for CAP in Immunocompetent Patient
- ***PN-6a*** - Initial Antibiotic Selection for CAP in Immunocompetent – ICU Patient
- ***PN-6b*** - Initial Antibiotic Selection for CAP Immunocompetent – Non ICU Patient

PN-2, PN-4, PN-5 and PN-7 were retired as of January 1st, 2012. All measure sets seek to attain improvement through increased rates. (The Joint Commission, 2011)

As can be interrupted from the PN set measure descriptions, both PN-3 (a & b) are concerned with measuring when blood cultures were performed. PN-3a measures those patients who received care in the ICU and also had a culture performed 24 hours before or after. PN-3b is concerned with when the culture happened with respect to when an antibiotic was administered in the hospital and during the emergency department visit. All variants of PN-6 measure performance on the administration of initial antibiotic regiments to

Immunocompetent patients with Community-Acquired Pneumonia (CAP) within the first 24 hours and in accordance to established guidelines. (The Joint Commission, 2011)

The criteria and considerations for the CGS for PN are robust and exhaustive. It is a high quality measure against all principles considered by the AGREE II instrument.

Performance Measurement

All five of the set measures under the Clinical Guideline Set for PN are NQF endorsed. PN-3a was endorsed on May 15, 2008 and PN-3b was endorsed prior to 3a on May 9, 2007 along with all variations of PN-6. (National Quality Forum, 2012)

In examining PN-6 without it's [a] and [b] parts closer, the evaluation considers a Numerator Statement which includes Pneumonia patients who received antibiotics consistent with current guidelines. The Denominator considers all Pneumonia patients with the distinction of age being over eighteen. The two produce a rate which represents the performance measure. Together, the two factors provide the overall percentage measure rate. Accurate implementation of the measure requires strict adherence of screening to ensure that the exhaustive exclusionary criteria is followed. This would probably be one of the biggest challenges in successfully implementing the measure into a CDSS. Data elements would have to be identified and mined from the administrative data and medical record documents. Improved accuracy would result from electronic sources of data rather than manual entry (The Joint Commission, 2011). As with other measures considered, PN (in all its forms) is reliant upon correct medical coding practices and QA measures around this process would also help.

The appropriate place of evaluation for PN occurs at discharge and is classified as a process measure.

Suitability for CDSS

The PN clinical guideline set seems to be solidly based on AGREE principles and well suited for use in a CDSS but not without the considerations mentioned to ensure for accurate records.

Summary

There are many benefits to Clinical Guideline Sets and performance measures and the thoughtful research based approaches that go into creating them. Their evidence based approach offer promise for accurate means of measuring progress. All that were considered and examined revolve around process to carry them out. As such, they all contain human interaction and are prone error. Using instruments such as AGREE II help ensure for verbose criteria and rules that govern their creation. Endorsement bodies such as the NQF also help ensure that the measures can be carried out through their stringent review of the guideline. It is encouraging to find that as you go about researching a guideline that information is prevalent and readily available for implementation. It suggests that much can be done using CDSS to improve quality outcomes.

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