

Clinical Decision Support: How implementing a CDSS improves operational efficiencies

By Roni H. Amiel

The concept of computerized decision-support is not new. As far back as 1961, it was described as mathematical approach for the diagnosis of congenital heart disease. Although, historically, Clinical decision support systems (CDSS) primarily were focused on diagnostic recommendations, decision-support can be provided by any Computer system that deals with clinical data and medical knowledge to help deliver patient-specific advice.

The work of clinicians is largely about making decisions and problem solving. Often time it bowls down to prioritizing, goal setting, and interpretation of clinical data while reducing risks and variability to patients and costs. A principal goal of healthcare is about decision making.

In today's changing climate and rapidly growing information overload, clinicians are challenged with the interpretation of patient data, mainly because the required expert knowledge in each of many different medical fields is enormous and the information available for the individual patient is multidisciplinary, imprecise and very often incomplete.

This has prompted the need to re-examine the manner CDSS solutions providing means for clinicians to receive a relevant, evidence base, effective and efficient clinical decision making. CDSS is increasingly gaining recognition in healthcare for a being a catalyst for change, the kind of change that can impact quality of care and optimize cost. So where does IT comes in play?

Since we all generally agree that CDSS is software applications that integrate patient data often time with knowledge base that is interrupted to produce patient specific recommendations, assessments, alerts and reminders to actively support practitioners

in clinical decision-making. Computers offer the obvious solution both for the management of information and for its faster retrieval.

Technologists should consider if doesn't exist already to start with establishing a collaborative environment where IT and Clinicians sit together to discuss the pain point, gaps and opportunities. CDSS will not fix a broken process or lack of data input, consistency or integrity, a vital step is to review the current workflows in comparison to evidence based practices and the process that fits best your organization and decide if they are sound or can be optimized. Research literature have shown that:

1. Computer-based decision support is more effective than manual processes for decision support.
2. CDSS interventions that are presented automatically and fit into the workflow of the clinicians are more likely to be used.
3. CDSS that recommends actions for the user to take are more effective than CDSS that simply provides assessments.
4. CDSS interventions that provide information at the time and place of decision-making are more likely to have an impact.

Like with any clinical improvements or transformations initiatives, the approach I recommend is to start with small, systematic with a focused effort. Establish a process for evaluating the clinical opportunities weather you need to calibrate or reengineer, applying CAP (Corrective action plan) process: select your team, identify error or deficiencies, determine root cause, brainstorm for corrective action, perform cost benefit analysis, set realistic deadline, evaluate and monitor progress. If you reach your goal you are **READY TO APPLY TECHNOLOGY!**

Here are my recommendations for identifying, design charteristics associated with a successful CDSS deployment and applicable for third party solutions or an in-house:

1. Decide what relevant data you plan to utilize and setup a data mart (small data repository) away from your operational repository (EHR \ other clinical systems) to eliminate performance bottlenecks.

2. Your data set preferably should include clinical and administrative data, CDSS should serve the entire organization not just clinicians.
3. Establish synchronization schedule for the data to maintain accurate and as near-real time as possible between the EMR \ Clinical systems and your Data Repository.
4. A well designed and deployed CDSS should integrate seamlessly and on a real-time\ near real- time basis with the computerized clinical and management solutions that renders predefined conditions and triggers.
5. CDS should be capable of mining a patient's medical record for relevant information and include such information in its determination-making process. The rules, triggers and conditions must take in considerations variability in data and accordingly responding.
6. Choose a vendor \ solution that help you with determining: CDSS interventions, target areas, type of notifications and user interaction and the analytics that goes with it.

To date adoption rate in healthcare have not been high and while healthcare organization agree on the benefits of utilizing CDSS they continue to put it off. How can we increase adoption rates in healthcare? There are several drivers that can promote further use of a CDS in healthcare:

1. Federal \ State \ Payer initiative that provides incentives for CDSS deployment
2. Technology should integrate more seamlessly with EMR and other clinical systems and the need to make it easy, cheaper and flexible.
3. CIO \ CMIO need to start the “conversation” with clinicians, management and anyone who can support such initiative and take the lead on the “buy-in” a pilot an ultimately organization wide deployment

To gain optimal benefit, technologists and clinicians need to understand its benefits and limitations, and the unique challenges of designing and implementing a CDSS Solution. Those responsible for implementation need to recognize that CDSS requires careful integration into the clinical workflow, which will take effort and involvement on the part of clinicians.

With growing recognition that CDSS holds great potential to improve health and quality and increase efficiency and reduce healthcare care cost it is important that organizations that considering CDSS view it as an intervention requiring careful consideration of its goals, how it is delivered, and who receives it.

I think that at this point in time, the appropriate decision is not whether to design and implement CDSS, but how to design and implement it so that we **make it easy to do the right thing!**