FEATURE ARTICLE

CLINICIAN ATTITUDES, SKILLS, MOTIVATIONS AND EXPERIENCE FOLLOWING THE IMPLEMENTATION OF CLINICAL DECISION SUPPORT TOOLS IN A LARGE DENTAL PRACTICE

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ABSTRACT

Objective
This study assesses dental clinicians' pre- and post-implementation attitudes, skills, and experiences with three clinical decision support (CDS) tools built into the electronic health record (EHR) of a multi-specialty group dental practice.

Methods
Electronic surveys designed to examine factors for acceptance of EHR-based CDS tools including caries management by risk assessment (CAMBRA), periodontal disease management by risk assessment (PEMBRA) and a risk assessment-based Proactive Dental Care Plan (PDCP) were distributed to all Willamette Dental Group employees at 2 time points; 3 months pre-implementation (Fall 2013) and 15 months after implementation (winter 2015). The surveys collected demographics, measures of job experience and satisfaction, and attitudes toward each CDS tool. The baseline survey response rate among clinicians was 83.1% (n = 567) and follow-up survey response rate was 63.2% (n = 508). Among the 344 clinicians who responded to both before and after surveys, 27% were general and specialist dentists, 32% were dental hygienists, and 41% were dental assistants.

Results
Adherence to the CDS tools has been sustained at 98%+ since roll-out. Between baseline and follow-up, the change in mean attitude scores regarding CAMBRA reflect statistically significant improvement in formal training, knowing how to use the tools, belief in the science supporting the tools, and the usefulness of the tool to motivate patients. For PEMBRA, statistically significant improvement was found in formal training, knowing how to use the tools, belief in the science supporting the tools, with improvement also found in belief that the format and process worked well. Finally, for the PDCP, significant and positive changes were seen for every attitude and skill item scored. A strong and positive correlation with post-implementation attitudes was found with positive experiences in the work environment, whereas a negative correlation was found with workload and stress. Clinicians highly ranked a commitment to evidence-based care and sense that the tools were helping to improve patient care, health, and experience as motivations to use the tools. Peer pressure, fears about malpractice, and incentive pay were rated the lowest among the motivation factors.

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Conclusion
This study shows that CDS tools built into the EHR can be successfully implemented in a dental practice and widely accepted by the entire clinical team. Achieving a high level of adherence to use of CDS can be done through adequate training, alignment with the mission and purpose of the organization, and is compatible with an improved work environment and clinician satisfaction.

INTRODUCTION

The simple promise of computerized clinical decision support (CDS) systems is that they will help clinicians to make better treatment decisions thus improving patient care.[1] Ideally, these systems will achieve this goal in less time and with less effort than traditional efforts. The implementation of these systems into existing dental practices is a significant organizational undertaking and presents both opportunities and challenges.[2] Opportunities include an increase in the application of evidenced-based care and an increase in consistent practice among clinicians within the practice. Some of the challenges of implementing these systems include: proper training of clinicians and staff in its use; adaptation of the system to the unique aspects of the practice; the creation of user interfaces that do not over-burden the already busy clinician; and, perhaps most importantly, confronting organizational resistance to change in general. Successful implementation of CDS within a dental practice is by no means a given. Many factors can impact implementation efforts such as the quality of the practice leadership, the receptiveness of clinicians, the preparation and timing of the implementation, proper training in the decision support system introduced, and the congruence between decision support and overall practice philosophy.[3]

Although there is general acceptance and implementation of electronic health records (EHRs) in the dental profession, the functionality of those systems varies widely, and CDS systems are relatively new to the field.[4-6] Although dental clinicians are increasingly comfortable interfacing with computers for data entry and record keeping purposes, the introduction of computerized assistance to their actual treatment decisions brings a new and significant dimension to the practice of dentistry.[7-9] Successful implementation of CDS, and the much-anticipated improvements in patient care and practice efficiency they promise, relies primarily on clinician acceptance and consistent utilization of the systems. To be successful, CDS must provide genuine help to practitioners, making their clinical decisions more reliable, faster, and easier without imposing significant burdens on their time or preferred patterns of practice.[10] This study compares clinician attitudes, skills, and motivations before and after implementation of CDS in a large dental organization and examines the experience with the tools in practice in order to shed light on the effect that implementation of these systems have on the clinical providers work experiences and perceptions.

An earlier study reported on the attitudes and skills of clinicians relevant to the planned implementation of three clinical decisions support tools in a large dental practice.[11] These systems consist of a caries management by risk assessment system (CAMBRA), a periodontal disease management by risk assessment system (PEMBRA), and a risk-based prevention plan called a Proactive Dental Care Plan (PDCP).[11-13] That study identified several predisposing factors that were correlated with positive attitudes toward CDS before implementation, thus creating a baseline from which we could measure post-implementation changes in attitudes, skills and perceptions. This study presents the results of the post-implementation survey of the same clinicians in the same dental practice. The aims of this study are to:

1. Assess changes over time in attitudes and skills about the CDS and the factors that are correlated with these attitudes and skills after implementation.

2. Examine clinician perceptions of their work environment after CDS implementation.

3. Determine the factors that motivate clinicians to use these CDS systems.

Willamette Dental Group (WDG)

WDG is a dental accountable care organization in the Pacific Northwest with more than 50 offices across Washington, Oregon, and Idaho and approximately 500,000 patient visits per year. WDG has a system-wide EHR (axiUm, Exan) and a dental diagnosis-centric workflow using an interface dental diagnosis terminology integrated within the EHR which enables the implementation of standardized CDS for diagnosis.[14-16]

In 2011, the executive team at WDG made the commitment to introduce CDS into its organization for several important reasons: (1) the team believed that CDS would ultimately improve patient outcomes of care; (2) CDS is consistent with the organization's desire to provide care, ie, evidenced based; (3) CDS promised to improve productivity, cost-effectiveness, patient satisfaction, and provide a competitive advantage; (4) state-of-the-art clinical policies and procedures including CDS would improve the working environment of clinicians and thus help to recruit top talent; and (5) CDS fits well with the organization's desire to have consistent interprovider reliability and performance. WDG clinicians had very positive overall attitudes toward the CDS before implementation, which suggested that the organization was particularly well poised for success.[11] Once implemented, analysis of monthly status reports by WDG showed a sustained 98%+ adherence rate to using the