Implementation of Epic Wisdom at School of Dentistry

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ABSTRACT

Epic Wisdom is a new, dedicated dentistry module that operates within existing Epic software applications. The University of Mississippi School of Dentistry is the second dental school in the country to implement Epic Wisdom. The objective of this article is to:

1. Present an overview of Epic Systems, as well as Epic Wisdom and its workflow.
2. Describe the process of implementing Epic Wisdom at our school.
3. Detail our experience implementing Epic Wisdom and other Epic modules, including the challenges we encountered and the lessons we learned.

For us, the most significant benefit of implementing Epic Wisdom was the ability for dental providers within our School of Dentistry to have integrated access to the patient’s electronic health record (EHR) within the University of Mississippi Medical Center and other premises using Epic systems, as well as campus-wide access to dental school documentation.

Currently, approximately half of all dental schools are located within medical institutions that already use Epic Systems. Many schools may consider adopting Epic Wisdom, especially if their parent institution already uses Epic for its EHR database. Doing so could significantly improve interprofessional care, education, and research.
INTRODUCTION

Epic Systems has emerged as the largest provider of electronic health record (EHR) systems for hospitals, academic centers, and other health care facilities.\textsuperscript{1,2} The company is rapidly replacing other EHR vendors in the market, having captured over half of all new large hospital contracts in the United States.\textsuperscript{3}

Generally, Epic software applications (Epic, Verona, WI, USA; \url{www.epic.com}) are able to communicate with other Epic systems, allowing large hospitals and academic medical centers to access one integrated EHR for each patient. Epic Systems provide this service via several interrelated modules that exchange information reliably.\textsuperscript{1} For any large medical center, using one product for medical documentation, billing, and clinical operations is advantageous in several ways. It allows interoperability and access to a patient’s existing record by different providers from multiple clinics and schools. Users can review, document, and update the patient’s progress, increasing the efficacy of standardized documentation between facilities. A fully integrated, electronic record covering all aspects of patient care at all sites is highly desirable and a major benefit for both the patient and institution.

This product offers several other tangential benefits, especially as more and more institutions adopt it. For instance, Epic provides access to one central patient record from any hospital or medical center that uses the system, and it allows health care providers to transmit prescriptions to pharmacies electronically. Epic’s partnership with existing integrated delivery systems, pharmacies, and other organizations increases the efficiency of data exchange between hospitals, physicians, retail clinics, and other healthcare stakeholders. Furthermore, using a single hospital- or campus-wide product standardizes IT support, reduces training costs, provides a uniform user interface, and improves standardization of care across facilities.
Epic Wisdom is a new, dedicated dentistry module developed by Epic. The University of Mississippi School of Dentistry implemented Epic Wisdom in August 2018. The objective of this article is to:

1. Present an overview of Epic Systems, as well as Epic Wisdom and its workflow.
2. Describe the process of implementing Epic Wisdom at our school.
3. Detail our experience implementing Epic Wisdom and other Epic modules, including the challenges we encountered and the lessons we learned.

This could be of value for several types of stakeholders, including dental schools and clinics located in medical centers that currently use Epic Systems.
OVERVIEW OF EPIC SYSTEM

Epic Systems provides an integrated suite of health care software programs that contain the medical records of over half the hospital patients in the United States. In response to an ever-increasing need for accurate documentation and data protection, Epic provides an efficient platform. Epic applications support an array of functions related to patient care, including registration and scheduling, as well as systems for health care providers, laboratory technologists, pharmacists, and insurers. Epic products are tailored to Centers for Medicare & Medicaid Services’ (CMS) documentation guidelines.³

There are several modules within Epic, covering a range of end-user tasks. For example, there is an Epic module for patient scheduling (Cadence), patient registration (Prelude), and revenue cycle (Resolute), as well as numerous modules for various clinical specialties.⁴ These modules provide a tailored workflow and specialty-focused applications.

Epic Systems can also interface with a range of imaging software. One particularly desirable feature of a dental PACS (Picture Archiving and Communication System) is efficient interfacing with other systems.⁵ MiPACS (Medicor Imaging, Charlotte, NC, USA) is one example of a PACS commonly used in dentistry. It is possible to open MiPACS within Epic and then view, import, or export a patient’s medical images. When the patient’s chart is open in Epic Wisdom, clicking on the custom Dental Images tab displays the patient’s images in MiPACS. Radiographs produced via advanced imaging systems such as computed tomography, cone-beam computed tomography, and MRI can also be opened from within Epic. In addition, Epic can interface with speech recognition systems, medical devices, patient education content, user authentication, and analytics programs, as well as several vendor systems.
Epic Systems include predictive analytics and embedded decision support tools to support clinical practice, avoid errors, yield better outcomes, and educate users. For example, while prescribing medications, clinicians will be automatically notified of any indications, contraindications, interactions, or adverse effects based on patient demographics, existing conditions, diagnoses, etc.

Epic is patient-centric. Patients can access both their up-to-date and historical health information via MyChart, Epic’s patient portal. For example, patients can view laboratory findings and treatment notes. They can contact their doctors, request prescription refills, and complete surveys regarding their care. MyChart also enables patients to schedule appointments and pre-register, allowing them to be more proactive and involved in their health care. While MyChart can be beneficial for patients, each patient can opt-out of using this module. Health care providers can see if a patient has opted out of MyChart.

Epic also facilitates independent research, the recruitment of study participants, and the incorporation of study findings into clinical care. Institutional review boards in academic centers have strict policies about electronic health records. Therefore, extracting and utilizing electronic health data from an EHR system for research purposes can be difficult. Epic allows for the effective extraction and utilization of electronic health data for research purposes.6

With an increased focus on telehealth across the wider health care system, Epic interfaces effectively with several specialist referral services, allowing for seamless patient monitoring, peer-to-peer consultation, and ongoing patient care. It supports all lines of business, including group, exchange, Medicare Advantage, Managed Medicaid, and delegated risk. It also provides the means to automate claims processing and premium billing invoicing with a payment system that scales for large and complex member populations.
The Epic Resolute module for revenue cycle allows for paperless billing, online bill payments, self-service payment plans, reliable pre-payments based on estimates, and financial assistance. Resolute can automate revenue and coding to reduce administrative overhead and avoid missing charges, thus increasing total revenue. A patient’s outstanding balances from hospital, physician, and post-acute bills can be consolidated into a single statement, simplifying and improving their financial experience.
OVERVIEW OF EPIC WISDOM

The new Epic Wisdom module has been developed to meet a growing need for robust, paperless documentation and charting in dentistry. Wisdom allows dental and dental hygiene students, residents, and faculty members to have separate login credentials to access the system. This enables each faculty member to approve treatment plans, authenticate findings, cosign charts, and amend student documentation if necessary.

Because Epic is an integrated system, every individual has access to each patient’s chart within their medical institution. Additional security steps can be implemented to limit access and monitor the compliance of institutional policies, subject to an audit by specific compliance staff members who will review whether it was necessary for the user to open the chart.

Like most Epic modules, Epic Wisdom allows for a great deal of customization. The ability to implement a custom build was a large part of the appeal for our school. Some of the features we describe here are unique to our student security and clinic utilization needs.

The Schedule activity can help the user begin their day-to-day tasks. From this screen, the user can view their schedule, as well as the schedule of other users in the department or school. The user can see patient appointments, while the My Schedule feature lists any appointments linked specifically to the logged-in user.

Epic Wisdom allows the user to quickly review demographics, any relevant recent notes, and other basic information for multiple patients within a single window. The user can also open an individual chart and complete any detailed documentation while the patient is present. Epic is an encounter-based system, where the term “encounter” describes a patient care event. Opening an encounter from the schedule initiates the documentation for a face-to-face visit. While the
chart is open, the user can make any required changes to tooth charting, diagnoses, orders, treatment planning, and more. The software automatically tracks which provider made each entry in the patient’s record and when.  

In Basket is a unique, secure messaging system that coordinates communication between health care providers and other staff members. Each user can receive messages about patient results, charts, and other topics. They can also message each other regarding actionable requests. For example, a student can send a treatment plan approval request to a faculty member’s In Basket. A faculty member can then review the patient’s chart and action the treatment plan. Another example is when a patient telephones with a query. The staff member can send a message to the “In Basket” of the treating faculty, enabling a faculty member to respond directly to the staff member dealing with the query. Because messages are automatically routed to the cosigner that the student selects during the encounter, faculty members can cosign students’ treatment notes directly from In Basket. The screen is organized into tabs including chart messages, open encounters, unsigned orders, unanswered emails, or actionable requests, helping facilities to monitor the proper completion of tasks. End-user compliance can be monitored by administrators or supervisors via a weekly “open charts” report.
EPIC WISDOM WORKFLOW

Opening a patient’s chart in Epic Wisdom displays a unique view of the module. Before the visit begins, clinicians can review the patient’s demographic information and documentation from past encounters. Information from outside organizations can also be reviewed if the patient has visited another organization that is part of Epic’s Care Everywhere network. The information can be limited to dental information only or be expanded to include the entirety of the patient’s health care record. Once the patient arrives, visit-specific information is recorded, such as current vital signs, allergies, medications, etc. This information is available for all clinicians to review.

Other information displayed at the top of the screen includes a clear notification of any recorded allergies, language interpretation needs, and the ability to place a “sticky note” reminder that will be viewable only by the user who entered it and no other.

On the left side of the screen are several customizable tabs that can be adjusted in size or sequence, including a usual dentistry workflow. These include Chart Review, which features documented notes and encounters from all health care providers within the medical institution. In other words, notes entered from every health care provider can be reviewed, if necessary, by almost any other provider within the network. Patient media is also stored in Chart Review, including scanned paper or digital documents. Laboratory findings can also be viewed, as well as other findings and information related to the patient’s care. Filters can be used to limit the view to dental information only or a specific provider’s treatment notes. Alternatively, the scope can be broadened to display the entirety of the patient’s health care record.

The next tab is Rooming. This is where the reason for the patient’s visit is documented, as well as their vital signs, allergies, medical and dental history, medications, social history,
smoking status, and any other information that is typically collected during triage. After each section, users can review the data they have collected before clicking “Mark as Reviewed,” which documents the logged-in user’s name and the current date. As with treatment notes, any data entered in the Rooming tab is viewable by other health care providers.

The following tab is Grading, which connects to a third-party assessment package created for the University of Mississippi Medical Center. This package was internally developed at our institution for the purpose of evaluating our students on specific dental procedures completed at the clinic. This is followed by the Dental Images tab. At our institution, clicking on Dental Images opens MiPACS, the database we use to store medical images.

Tooth charting and periodontal charting take place in the Tooth Chart tab. The first step of tooth charting in Epic Wisdom is adding the appropriate permanent or primary teeth. Findings, existing treatments, and planned procedures can be documented with both color and pattern-based visual differentiation. Any documentation made on the tooth chart automatically transfers across to the Treatment Plan tab as a finding and a planned treatment, including the appropriate ADA and CDT codes. An example of this process is illustrated in Figure 1.

Following the completion of initial tooth charting, the user can take a baseline. If the patient’s findings change due to subsequent treatment or other developments, tooth charting can be changed accordingly. Any unaddressed findings are typically labeled with a red color. Therefore, there should be no red surfaces visible once all planned procedures are complete.

When carrying out periodontal charting, the user will not be prompted to measure probing depths, gingival margins, or clinical attachment levels for missing teeth or fixed partial denture pontics. Probing depths greater than 3mm are displayed in red. The presence of bleeding,
suppuration, or mobility can be documented for each tooth. Furcation involvement can also be recorded on a per tooth basis. Free-text typing is possible during periodontal charting, as well as hard tissue charting, allowing the user to add relevant notes if necessary.

After closing the patient’s hard tissue and periodontal charting, the relevant faculty can sign in, review, and approve the student’s charting. This is a custom security feature we requested from Epic. If a faculty member is not available chairside for any reason, there is an option to send the charting for approval via In Basket.

Following tooth charting, the user can enter the diagnosis and specific orders (e.g., laboratory tests, radiographs, medications). From the Visit Diagnoses tab, the appropriate ICD-10 code can be entered (e.g., missing teeth, malocclusion) and may also be linked to the CDT treatment code. For example, if a user diagnoses periodontal disease based on their examination, a referral can be made to periodontics, and the referral clinic can then link the diagnosis to the charge code following the completion of periodontal therapy.

After filling out the rooming, tooth charting, diagnosis, and order tabs, the user can create a treatment plan. The Treatment Plan section of Epic Wisdom is flexible, allowing for comprehensive and/or focal care. Additionally, the treatment plan can be broken up into single or multiple visits. In addition, it can be created from scratch or using a template. An example of a comprehensive dental care plan is illustrated in Figure 2. The initial treatment visit can be delayed if necessary, while each subsequent visit can be spaced out by a desired number of days. This is an especially beneficial feature because it sends specific scheduling instructions to other staff members, as well as acting as a patient management teaching tool for students.
Each treatment plan and visit can be named according to the user’s preferences. For example, a user can plan three treatment options for a large carious lesion on a molar:

1. Three visits covering endodontic treatment and crown placement.
2. Three visits covering extraction and bridge placement.
3. Four visits covering extraction, implant placement, and restoration.

The duration of each visit can be indicated to aid staff in booking appointments. Each option can be saved and named separately, then coded and priced accordingly for patient review. The cost estimate can be viewed by the patient and staff members, including the cost of procedures, any insurance coverage, and the patient’s financial responsibility. After the patient and provider have agreed on a treatment plan, the other options are saved permanently in the patient’s chart, allowing for historical review and/or as a teaching tool for both patients and students. Only a faculty can approve or modify a treatment plan once it has been approved. When a student graduates or a change in provider is necessary for any other reason, the new provider can continue with the patient’s planned treatment.

Adding or amending treatment notes takes place in the Notes section. The user can type their notes using free-text typing, but Epic also provides useful templates for documentation that can be customized to each clinician and faculty’s preferences. These templates can save time, enabling the user to automatically populate certain fields and pull in discreet data documented during the visit. A vast library of templates exists for both general and specialty treatment notes.

The final tab, Wrap-Up, is an optional field, which can be printed if necessary and handed to the patient. This post-visit summary can include all sorts of information such as current vital signs, treatment completed during the visit, subsequent planned treatment, next
appointment, medication list, and any specific patient instructions. To maximize the protection of patient data, Epic only allows printing from a specific printer mapped to each computer.

Once all documentation is complete, the user must click Sign Visit in the bottom right of the screen. Epic analyzes the record, informing the user of any empty data fields such as unreviewed medical history or missing charges. Clicking on these missed tasks takes the user directly to the specific tab they need to view to complete them. Failing to sign the encounter will leave an “open encounter” notification on the In Basket screen. It is also possible to create an addendum by double-clicking the encounter again from the schedule.
OUR EXPERIENCE

The implementation of any new EHR is labor-intensive.\(^8\) Switching to Epic Wisdom was an especially major undertaking for our dental school, as we were an early adopter, but overall, the shift was hugely successful, thanks to the efforts of several stakeholders and various teams. The buy-in by faculty members, staff, and students was nothing short of commendable.

Our implementation was structured to include input from clinical stakeholders and information systems personnel, as well as Epic developers and technical support representatives. Our clinical stakeholders included several dental faculty members across a variety of dental specialties and departments such as periodontics, endodontics, prosthodontics, orthodontics, and oral and maxillofacial surgery. Our clinical stakeholders worked closely with UMMC information systems personnel, which included a project manager, Epic Ambulatory/Wisdom analyst, Epic Cadence analyst, Epic Resolute analyst, Epic Radiant analyst, interface analyst for conversion, Epic Wisdom trainer, and information system leadership, to name a few.

It was critical that we involved clinical stakeholders throughout the implementation, working closely with various Epic analysts. Our clinical stakeholders shared important workflows with analysts to prepare the system to go live. Our designated Epic implementation manager and coordinator worked closely with Wisdom developers during the process. Our internal Epic analysts followed a strict implementation timeline, liaising with the application manager and coordinator throughout the entire project.

One of the most time-sensitive processes included conversion and training. While UMMC internal Epic analysts were customizing the system, Epic’s ongoing support was critical to the project’s success. Following the go-live date, we have continued to work closely with our
designated UMMC Wisdom analyst to optimize the system. We have also seen the implementation of multiple post-go-live enhancements and updates from Epic.

Figure 3 displays our unique implementation timeline. The process of education, groundwork, adoption, testing, and training took approximately 12 months. Our go-live took place in two steps, the first on July 23rd, 2018 and the second on August 6th, 2018. First, we received an upgrade from Epic 2016 to Epic 2018 to facilitate the implementation of Wisdom 2018. During the first week of the go-live period, dental students were absent for their summer break, allowing faculty members the full support of the Epic command center and trained analysts. When students came back for the first week of the Fall semester, several Epic staff were available to provide assistance and guidance. Both Epic staff and local IT support were stationed on-site for the first two weeks of the go-live phase.

The implementation of Epic modules at other institutions have faced their own unique challenges. As predicted, we had difficulties as well, including slightly lowered patient volumes following the go-live date. It was necessary to reduce schedule time while students, staff, and faculty members received training to develop the skills and knowledge required to use the system correctly. As an early adopter of Epic Wisdom, developers were highly receptive and responsive to our user feedback. While some of our requested Wisdom features were developed by Epic, others were placed on hold due to the need for additional local testing, so as to not affect the implementation of other Epic modules at our facility.

While it was possible to transfer most existing treatment notes and patient records from our previous GSD Academic system, some existing or historical data was not converted. Existing treatment plans had to be transferred manually via an “abstract encounter,” which allows the student or faculty to enter tooth charting and treatment plans. After the implementation of Epic
Wisdom, students, staff, and faculty members stopped using GSD because they had become accustomed to the new system and were able to find most if not all the patient data they needed.

Overall, the implementation of Epic Wisdom at our dental school was instrumental for three reasons. First, the school was the last of its kind in the University of Mississippi Medical Center to still be using the GSD Academic system, and adopting Epic Wisdom allowed us to integrate better with other providers within the facility. Second, the implementation of Epic Wisdom allowed students, staff, and faculty members to reap the full benefits of Epic Systems already in use at the center. Third, it has been an educational experience for all users. For example, the students are learning the importance of each unique component of a patient encounter. They are learning what an encounter is and how important it is to document visits from beginning to end. Our students are also learning a great deal about the appropriate level of documentation and what classes as reasonable access to patient data.
CONCLUSIONS

Epic Wisdom is a relatively new dental management system that operates within the Epic suite of software applications. Epic is a commonly used EHR in large health care organizations and academic medical centers. It is highly likely that a medical center or hospital that uses Epic for its main EHR system will consider Epic Wisdom as its module of choice for any dental school or clinic within its facility.

The University of Mississippi Medical Center uses Epic modules for different tasks such as patient scheduling, revenue cycle, patient registration, and hospital clinics. Our use of several Epic modules facilitated the shift to Epic Wisdom at our dental school. There is a vast network of organizations that use Care Everywhere. Given that approximately half of all US dental schools are located within medical institutions that use Epic, many dental schools may consider adopting Epic Wisdom, especially if their parent medical institution already uses Epic Systems for its EHR database. Doing so could improve interprofessional care, education, and research.
Figure 1: An example of building a treatment plan in Epic Wisdom. After documentation on the tooth chart, the unaddressed findings were loaded automatically to the Treatment Plan tab, after which the procedures to plan for each tooth, surface, arch, quadrant can be planned, sequenced in appropriate order, and coded using ADA and CDT codes for treatment.
Figure 2: An example of a completed treatment plan in Epic Wisdom. This comprehensive treatment plan was broken up into multiple visits (preventative care and restorations, followed by a crown preparation and then placement) or can be made from scratch or from templates. The initial visit for treatment was delayed per patient’s preference, and each following visit was spaced out with desired number of days. The length of visits varied as necessary, and the provider type for this treatment was a dental student.
Figure 3: Epic Wisdom implementation timeline, including the process of education, groundwork, adoption, testing, and training.