Preview: HIM4650 : Decision Support and Quality Management in Health Information Management

Syllabus

Course Overview

This course focuses on decision support practices and quality-management techniques used to improve the quality of health care. You will apply decision modeling techniques that incorporate comparative analysis, simulation, optimization, and decision analysis. You will also design quantitative and qualitative support models and evaluate the effect of computerized provider order entry (CPOE) on the quality, safety, and efficiency of managing health care data.

EHR Go

In this course, your assignments will include exercises completed in an EHR simulation called EHR Go. Your instructor will provide you with the information you need to access EHR Go in Unit 1.

You will navigate to each lesson via a link provided in the course room. Direct questions about the content of the lessons and assessments to your faculty member. Direct technical questions about access to, or use of, EHR Go to the EHR Go help desk or phone at 1-877-907-2186.

Capella University is committed to providing individuals with disabilities equal access to University programs and services within the parameters of the law. Capella University offers reasonable accommodations to qualified learners. Those learners needing accommodations should refer to Disability Services information on Campus, e-mail DisabilityServices@capella.edu, or call 888-CAPELLA and ask to speak with a Disability Services team member. Learners using assistive technology or alternative communication methods may contact Disability Services with any access related questions or to request accommodations.

Learners approved for accommodations will receive a Letter of Eligibility for Accommodations from the Disability Services office. Learners need to share this letter with their faculty member to receive the accommodations for which they have been approved. Accommodations need to be set up as early in the class as possible. They cannot be applied retroactively.

This course features a third party resource, EHR Go, which may be difficult to fully access for certain learners using assistive technology or for other reasons. Alternate assessments are available upon request for any learner who has difficulty accessing this resource. Please contact your faculty member for more information.

Note: Learners who want greater contrast on their browser screen while working in EHR Go may install the high contrast extension for Chrome by going to Chrome Settings > More Tools > Extensions – High Contrast and clicking Enable. Also, users can navigate through EHR Go using the tab key to move from field to field (the ctrl+key sequence is not enabled).

Course Competencies

(Read Only)

To successfully complete this course, you will be expected to:

1. Examine analytics and decision support.
2. Apply report generation technologies to facilitate decision making.
3. Apply common performance improvement models.
4. Apply data extraction methodologies.
5. Evaluate data used for medical staff credentialing.
6. Communicate effectively in a professional manner.

Course Prerequisites

Prerequisite(s): HIM4610.

Syllabus >> Course Materials

Required

The materials listed below are required to complete the learning activities in this course.

Integrated Materials

Many of your required books are available via the VitalSource Bookshelf link in the courseroom, located in your Course Tools. Registered learners in a Resource Kit program can access these materials using the courseroom link on the Friday before the course start date. Some materials are available only in hard-copy format or by using an access code. For these materials, you will receive an email with further instructions for access. Visit the Course Materials page on Campus for more information.

eBook

Oachs, P. K., & Watters, A. L. (Eds.). (2016). *Health information management: Concepts, principles, and practice* (5th ed.). Chicago, IL: AHIMA Press. ISBN: 9781584265146.

Library

The following required readings are provided in the Capella University Library or linked directly in this course. To find specific readings by journal or book title, use Journal and Book Locator. Refer to the Journal and Book Locator library guide to learn how to use this tool.

- Aziz, H. A., Bearden, R. L., & Elmi, A. (2015). Patient-physician relationship and the role of clinical decisions support systems. *Clinical Laboratory Science, 28*(4), 240–244.
- Barlow, R. D. (2015). Decision support at work. *Health Management Technology, 36*(7), 6–9.
- Barr, P. (2015). Taking analytics to the next level. *H&HN: Hospitals & Health Networks, 89*(9), 14.
- Bordoloi, P., & Islam, N. (2011). A framework linking knowledge management practices and healthcare delivery performance. *Proceedings of The International Conference on Intellectual Capital, Knowledge Management, & Organizational Learning*, 655–662.
- Boyd, C. E. (2008). How compliance intersects with medical staff issues: Credentialing. *Journal of Health Care Compliance, 10*(2), 11–18.
- Brown, E. (2015, April 20). Digital health data at risk, report warns. *Los Angeles Times*, pp. A9.
- Campbell, R. J. (2013). The five rights of clinical decision support: CDS tools helpful for meeting meaningful use. *Journal of AHIMA 84*(10), 42–47.
- Castillo, R. (2013). Considerations for a successful clinical decision support system. *Computers, Informatics, Nursing (1538-2931), 31*(7), 319–326.
- Chapman, S. (2012). Seeking clinical decision-support standards. *For The Record (Great Valley Publishing Company, Inc.), 24*(18), 14–17.
- Clark, J. S. (2014). Tips for ongoing medical record review. *Medical Records Briefing, 29*(1), 12–13.
- Diana, M. L., Kazley, A. S., Ford, E. W., & Menachemi, N. (2012). Hospital characteristics related to the intention to apply for meaningful use incentive payments. *Perspectives in Health Information Management* / AHIMA, American Health Information Management Association, 1–1h.
- Drake, R., Deegan, P. E., Woltmann, E., Haslett, W., Drake, T., & Rapp, C. A. (2010). Comprehensive electronic decision support systems. *Psychiatric Services, 61*(7), 714–717.

- Emparanza, J. I., Cabello, J. B., & Burls, A. E. (2015). Does evidence-based practice improve patient outcomes? An analysis of a natural experiment in a Spanish hospital. *Journal of Evaluation in Clinical Practice, 21*(6), 1059–1065.
- Evans, R., Elwyn, G., & Edwards, A. (2004). Making interactive decision support for patients a reality. *Informatics in Primary Care, 12*(2), 109–113.
- Fasano, P. C. J. (2013). *Transforming health care.* Somerset: John Wiley & Sons, Incorporated.
- Faunce, T. (2011). Emerging technologies: challenges for health care and environmental ethics and rights in an era of globalisation. In R. Chadwick, H. ten Have, & E. Meslin (Eds.). *The SAGE handbook of health care ethics: Core and emerging issues* (pp. 49–62). London: SAGE Publications Ltd.
- Felkey, B. G., & Fox, B. I. (2011). Pharmacy automation and technology – Information technology and the medication use process. *Hospital Pharmacy, 46*(4), 289–290.
- Finlay, D., Nugent, C., Wang, H., Donnelly, M., & McCullagh, P. (2010). Mining, knowledge and decision support. *Technology & Health Care, 18*(1), 429–441.
- Garg, A., Adhikari, N., McDonald, H., Rosas-Arellano, M., Devereaux, P., Beyene, J., ... Haynes, R. B. (2005). Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: A systematic review. *JAMA: Journal of The American Medical Association, 293*(10), 1223–1238.
- Gibert, K., García-Alonso, C., & Salvador-Carulla, L. Integrating clinicians, knowledge and data: Expert-based cooperative analysis in healthcare decision support. *Health Research Policy and Systems / BioMed Central, 8*(1), 1–16.
- Goodman, K. (2011). Health information technology and globalization. In R. Chadwick, H. ten Have, & E. Meslin (Eds.), *The SAGE handbook of health care ethics: Core and emerging issues* (pp. 117–126). London: SAGE Publications Ltd.
- Guilan, K., Dong-Ling, X., Xinbao, L., & Jian-Bo, Y. (2009). Applying a belief rule-base inference methodology to a guideline-based clinical decision support system. *Expert Systems, 26*(5), 391–408.
- Güiza, F., Van Eyck, J., & Meyfroidt, G. (2013). Predictive data mining on monitoring data from the intensive care unit. *Journal of Clinical Monitoring & Computing, 27*(4), 449–453.
- Hagland, M. (2013). Hot horizons: CMIOs look to the near future. *Healthcare Informatics, 30*(3), 8–18.
- Harle, C. A., Gruber, L. A., & Dewar, M. A. (Winter 2014). Factors in medical student beliefs about electronic health record use. *Perspectives in Health Information Management*, 1–14.
- Hoppszallern, S. (2012). Automated drug alerts. *H&HN: Hospitals & Health Networks, 86*(6), 22.
- Hoyt, R., Linnville, S., Hui-Min, C., Hutfless, B., & Rice, C. (2013). Digital family histories for data mining. *Perspectives in Health Information Management*, 1–13.
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- Karami, M. (2015). Clinical decision support systems and medical imaging. *Radiology Management, 37*(2), 25–32.
- Kowalski, C. (2015). Healthcare moving toward an 'information ecosystem'. *Journal of AHIMA, 86*(5), 54–56.
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- Lefton, R. (2008). Reducing variation in healthcare delivery. *Healthcare Financial Management, 62*(7), 42–44.
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- Lincoln, J. E. (2012). Device software validation considerations. *Journal of Validation Technology, 18*(2), 26.
- Marchant, G. E., Scheckel, K., & Campos-Outcalt, D. (2016). Contrasting medical and legal standards of evidence: A precision medicine case study. *Journal of Law, Medicine & Ethics, 44*(1), 194–204.
- Marder, R. J. (2016). Moving from a punitive to positive culture: Peer review's role in physician performance improvement, patient safety, and risk management. *Medical Staff Briefing, 26*(8), 5.
- Mathioudakis, A., Rousalova, I., Gagnat, A. A., Saad, N., & Hardavella, G. (2016). How to keep good clinical records. *Breathe, 12*(4), 371–375.
- McCool, C. (2013). A current review of the benefits, barriers, and considerations for implementing decision support systems. *Online Journal of Nursing Informatics, 17*(2), 1–6.
- Metzger, N. L., Chesson, M. M., & Momary, K. M. (2015). Simulated order verification and medication reconciliation during an introductory pharmacy practice experience. *American Journal of Pharmaceutical Education, 79*(7), 1.
- Meulendijk, M., Spruit, M., Willeboordse, F., Numans, M., Brinkkemper, S., Knol, W., ... Askari, M. (2016). Efficiency of clinical decision support systems improves with experience. *Journal of Medical Systems, 40*(4), 1–7.
- Mitchell, J., Revere, L., & Ayadi, M. F. (2014). Association of clinical decision support systems on process of care measures and quality outcomes for patients with heart failure. *Academy of Information & Management Sciences Journal, 17*(2), 99–111.
- Morgan, M. W. (2001). Evolution of best practice. *Health Management Technology, 22*(4), 16–21.
- Ng, T., Chew, L., & Yap, C. W. (2012). A clinical decision support tool to predict survival in cancer patients beyond 120 days after palliative chemotherapy. *Journal of Palliative Medicine, 15*(8), 863–869.
- Percival, J., McGregor, C., Percival, N., & James, A. (2015). Enabling the integration of clinical event and physiological data for real-time and retrospective analysis. *Information Systems & E-Business Management, 13*(4), 693–711.
- Perna, G. (2012). The clinical alerts that cried wolf. *Healthcare Informatics, 29*(4), 18–20.
- Raths, D. (2013). In pursuit of the Holy Grail: Scalable, interoperable clinical decision support. *Healthcare Informatics, 30*(8), 16–20.
- Reilly, C. A., & Polifroni, C. (2011). Meaningful use of EHRs. *Connecticut Nursing News, 84*(4), 1–11.
- Reiner, B. (2010). Customization of medical report data. *Journal of Digital Imaging, 23*(4), 363–373.
- Roop, E. S. (2015). The human touch. *For The Record (Great Valley Publishing Company, Inc.), 27*(7), 20–23.
- Ross, A., Feider, L., Eun-Shim, N., & Staggers, N. (2017). An outpatient performance improvement project: A baseline assessment of adherence to pain reassessment standards. *Military Medicine, 182*(5), e1688–e1695.
- Samuels, J. A., & Whitecotton, S. M. (2011). An effort based analysis of the paradoxical effects of incentives on decision-aided performance. *Journal of Behavioral Decision Making, 24*(4), 345–360.
- Schaeffer, J. (2017). CDS systems: Common malfunctions, practical solutions. *For The Record (Great Valley Publishing Company, Inc.), 29*(5), 10–13.
- Schuman, A. J. (2013). Online clinical support: Medical information at your fingertips. *Contemporary Pediatrics, 30*(9), 42–48.
- Shepherd, A. (2011). Decision support: A foundation for success. *For The Record (Great Valley Publishing Company, Inc.), 23*(7), 10–13.

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- Stoltz, P. K. (1996). FOCUS-PDCA. *Today's Management Methods*, 223–244.
- Toth-Pal, E., Wårdh, I., Strender, L., & Nilsson, G. (2008). Implementing a clinical decision-support system in practice: a qualitative analysis of influencing attitudes and characteristics among general practitioners. *Informatics for Health & Social Care, 33*(1), 39–54.
- Troiano, D., Jones, M. A., Smith, A. H., Chan, R. C., Laegeler, A. P., Trinh, L., ... Chaffee, B. W. (2014). The need for collaborative engagement in creating clinical decision-support alerts. *Physician Executive, 40*(3), 71–74.
- Ulrich, B. (2017). Using teams to improve and performance. *Nephrology Nursing Journal, 44*(2), 141–152.
- Vallejo, B. C., Krepper, R., Nora, H., & Fine, D. J. (2012). Converting data into information. *Hospital Topics, 90*(1), 11–15.
- Vawdrey, D. K., Wilcox, L. G., Collins, S., Feiner, S., Mamykina, O., Stein, D. M., & Stetson, P. D. (2011). Awareness of the care team in electronic health records. *Applied Clinical Informatics, 2*(4), 395–405.
- Wager, K. A., Lee, F. W., Glaser, J. P. (2013). *Health care information systems: A practical approach for health care management* (3rd Ed.). San Francisco, CA: Jossey-Bass
- Wan, T. (2006). Healthcare informatics research: From data to evidence-based management. *Journal of Medical Systems, 30*(1), 3–7.
- Waxer, C. (2013). Big data blues. *Computerworld, 47*(19), 14–15, 18–20.
- Weng, S., Wu, T., Blackhurst, J., & Mackulak, G. (2009). An extended DEA model for hospital performance evaluation and improvement. *Health Services and Outcomes Research Methodology, 9*(1), 39–53.
- Zaidi, S. T. R., & Marriott, J. L. (2012). Barriers and facilitators to adoption of a web-based antibiotic decision support system. *Southern Med Review, 5*(2), 42–50.
- Zhang, Y., Fong, S., Fiaidhi, J., & Mohammed, S. (2012). Real-time clinical decision support system with data stream mining. *Journal of Biomedicine & Biotechnology*, 20121–20128.
- Zimmerman, K. (2017). Essentials of evidence-based practice. *International Journal of Childbirth Education, 32*(2), 37–43.

External Resource

Please note that URLs change frequently. While the URLs were current when this course was designed, some may no longer be valid. If you cannot access a specific link, contact your instructor for an alternative URL. Permissions for the following links have been either granted or deemed appropriate for educational use at the time of course publication.

- Anwar, F., & Shamim, A. (2011). Barriers in adoption of health information technology in developing societies. *International Journal of Advanced Computer Science and Applications, 2*(8), 40–48. Retrieved from http://thesai.org/Publications/ViewPaper?Volume=2&Issue=8&Code=IJACSA&SerialNo=8
- Azhar, N. (2013). *Healthcare approaches and tools for performance improvement* [Video]. Retrieved from https://www.youtube.com/watch?v=WInv6uPAm4Y
- British Columbia Organization Development Network. (2012). *Performance improvement – More than just a change in behavior* [Video]. Retrieved from https://www.youtube.com/watch?v=vphTQp_nJ9I

- Carroll, M. (2016). *Plan-do-study-act (PDSA) cycle* [Video]. Retrieved from https://www.youtube.com/watch?v=1hCWdJ_W9Ws
- Centers for Medicare and Medicaid Services. (2014). Clinical decision support: More than just "alerts" tipsheet [PDF]. Retrieved from https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Downloads/ClinicalDecisionSupport_Tipsheet-.pdf
- ClinicalTrials.gov. (n.d.). Clinical trials. Retrieved from http://www.clinicaltrials.gov
- EHR Go. (n.d.). Retrieved from https://ehrgo.com
- Eliason, B., & Crockett, D. (2014). What is data mining in healthcare? Retrieved from https://www.healthcatalyst.com/data-mining-in-healthcare
- Guglielmo, W.J. (2013). Nurse reveals STD patient to girlfriend, man sues. *Medscape Nurses*. Retrieved from http://www.medscape.com/viewarticle/803758
- HealthIT. gov. (2015, March 26). Learn EHR basics. Retrieved from http://www.healthit.gov/providers-professionals/learn-ehr-basics
- HealthIT.gov. (2015, March 28). Advantages of electronic health records. Retrieved from http://www.healthit.gov/providers-professionals/faqs/what-are-advantages-electronic-health-records
- HealthIT.gov. (n.d.). Benefits of EHRs: Improved diagnostic and patient outcomes. Retrieved from https://www.healthit.gov/providers-professionals/improved-diagnostics-patient-outcomes
- HealthIT.gov. (n.d.). Meaningful use definition and meaningful use objectives of EHRs. Retrieved from https://www.healthit.gov/providers-professionals/meaningful-use-definition-objectives
- HealthIT.gov. (n.d.). What is clinical decision support? Retrieved from https://www.healthit.gov/policy-researchers-implementers/clinical-decision-support-cds
- Melnyk, B. M., Gallagher-Ford, L., & Fineout-Overholt, E. (2016). Improving healthcare quality, patient outcomes, and costs with evidence-based practice. *Reflections on Nursing Leadership, 42*(3), 1–8. Retrieved from http://www.reflectionsonnursingleadership.org/features/more-features/improving-healthcare-quality-patient-outcomes-and-costs-with-evidence-based-practice
- Privacy Rights Clearinghouse. (2018). Health privacy: HIPAA basics – A brief history of HIPAA. Retrieved from https://www.privacyrights.org/content/health-privacy-hipaa-basics#hipaa history
- Stowell, S. A., Baum, H. A., Berry, C. A., Perri, B. R., King, L., Mijanovich, T., ... Miller, S. C. (2014). Impact of performance-improvement strategies on the clinical care and outcomes of patients with type 2 diabetes. *Clinical Diabetes, 32*(1), 18–25. Retrieved from http://clinical.diabetesjournals.org/content/32/1/18
- U.S. Department of Health and Human Services. (2003). *OCR privacy brief: Summary of the HIPAA privacy rule - HIPAA compliance assistance* [PDF]. Retrieved from https://www.hhs.gov/sites/default/files/privacysummary.pdf?language=en
- U.S. Department of Health and Human Services. (2015). Covered entities and business associates. Retrieved from http://www.hhs.gov/ocr/privacy/hipaa/understanding/coveredentities/index.html

Suggested

The following materials are recommended to provide you with a better understanding of the topics in this course. These materials are not required to complete the course, but they are aligned to course activities and assessments and are highly recommended for your use.

Optional

The following optional materials are offered to provide you with a better understanding of the topics in this course. These materials are not required to complete the course.

Unit 1 >> Introduction to Clinical Decision Support Systems

Introduction

Clinical decision support (CDS) systems have been a topic of discussion in the health care and research communities for many years. Examples of these systems go back as many as 20 or 30 years. However, while these systems have demonstrated potential, few of them have been implemented in a health care setting.

In this unit, you will begin to explore some of the historical proposals for CDS systems and the vision for them regarding improving patient safety and health care outcomes. You will also have an opportunity to learn about the underlying technologies of a typical CDS system. You will find that the concept of a CDS system is actually multiple solutions and technologies that have the underlying goal of transforming health care data into useful information.

In this unit, you will begin to use an electronic health record system to explore clinical decision support functions and tools.

Learning Activities

u01s1 - Studies

Readings

Textbook

- In your Oachs and Watters *Health Information Management: Concepts, Principles, and Practice* text, read:
  - Chapter 12, "Health Information Technologies," pages 343–384.

Capella Library

- Aziz, H. A., Bearden, R. L., & Elmi, A. (2015). Patient-physician relationship and the role of clinical decisions support systems. *Clinical Laboratory Science, 28*(4), 240–244.

- Campbell, R. J. (2013). The five rights of clinical decision support: CDS tools helpful for meeting meaningful use. *Journal of AHIMA 84*(10), 42–47.
- Mitchell, J., Revere, L., & Ayadi, M. F. (2014). Association of clinical decision support systems on process of care measures and quality outcomes for patients with heart failure. *Academy of Information & Management Sciences Journal, 17*(2), 99–111.
- Morgan, M. W. (2001). Evolution of best practice. *Health Management Technology, 22*(4), 16–21.

Internet

- Centers for Medicare and Medicaid Services. (2014). Clinical decision support: More than just "alerts" tipsheet [PDF]. Retrieved from https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Downloads/ClinicalDecisionSupport_Tipsheet-.pdf
- HealthIT.gov. (2015, March 28). Advantages of electronic health records. Retrieved from http://www.healthit.gov/providers-professionals/faqs/what-are-advantages-electronic-health-records
- HealthIT. gov. (2015, March 26). Learn EHR basics. Retrieved from http://www.healthit.gov/providers-professionals/learn-ehr-basics
- HealthIT.gov. (n.d.). What is clinical decision support? Retrieved from https://www.healthit.gov/policy-researchers-implementers/clinical-decision-support-cds

u01s1 - Learning Components

- Describe the risks and benefits of using CDS systems.
- Describe various CDS functions and related users.
- Describe types of CDS systems.
- Define the concept of patient outcomes.
- Describe the pros and cons of provider use of CDS systems.

u01s2 - Electronic Health Record (EHR) Activities

For assignments in this course, you will assume the role of a data analyst for a health care organization. In this role, you will be responsible for reviewing an EHR system for clinical decision support functions and making recommendations based on your findings. Pay close attention to the instructions about how to submit your assignments in this course. For some assignments, you will submit your downloaded Progress Report as your assignment. For others, you will submit the Word document where you have entered your answers. Others require you to a combine screenshot or a download with your Word document.

During the first unit of the course, your instructor will provide you with the information you need to access the EHR tool. Upon receipt of this information, go to EHR Go and set up your account; if you have an account through another Capella course, use that account. After you log in, you may wish to download the Student Guide and watch introductory videos (both found under *Help* on the home screen of EHR Go) to become familiar with the platform.

During this unit, complete the following lesson and download the results to submit as an assignment:

- EHR Orientation.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186. If you have questions related to the content of the learning activities, please contact your instructor.

This and the other assignments in the course require interaction with EHR Go, an electronic health record program intended to give you hands-on experience. If you have any difficulties accessing this resource to complete the assignment, an alternate assignment may be available. To request this alternate assignment, please contact your course instructor.

Your experience with EHR Go may be improved by the use of assistive technology. If you have any questions about what solutions may be available, please contact Disability Services by e-mail at DisabilityServices@capella.edu, or call 888-CAPELLA and ask to speak with a Disability Services team member.

Note: Learners who want greater contrast on their browser screen while working in EHR Go can install the High Contrast Extension for Chrome by going to Chrome Settings > More Tools > Extensions - High Contrast and clicking **Enable**. Also, users can navigate through EHR Go using the Tab key to move from field to field (the ctrl+key sequence is not enabled).

u01s2 - Learning Components

- Set up access to EHR system.
- Navigate the EHR to gather information.
- Complete orientation to EHR system.

u01a1 - EHR Orientation

Complete the EHR Orientation, and submit your downloaded Progress Report. Your submission will be graded against the following checklist items:

- Access an EHR system.
- Locate patient data and details.

Course Resources

EHR Orientation

u01d1 - Integrating Clinical Decision Support Systems.

Imagine that you are asked to evaluate the benefits of implementing a decision support system that is meant to identify a rare cardiac condition. This would be the first clinical decision support system implemented by the hospital and you want to begin by developing a sound strategy for how the system will integrate with the rest of the IT infrastructure:

- What are the relative advantages and disadvantages associated with the relationship between the developer and the organization?
- If you recommend the implementation, how will you frame the project to protect the hospital if the chief of cardiology chooses to work elsewhere in the future?
- What general considerations related to intellectual property could complicate the use of these systems?

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the responses of other learners and respond to at least one learner who has identified a different approach. Share which approach you prefer and explain why you prefer it.

Course Resources
Undergraduate Discussion Participation Scoring Guide

u01d1 - Learning Components

- Describe various CDS functions and related users.
- Proofread and edit written communications.
- Describe types of CDS systems.

u01d2 - The Five “Rights” of Clinical Decision Support Systems

The framework for clinical decision support focuses on five rights to improve decisions and outcomes. Based on your readings this week, including the AHIMA article on the Five Rights of Clinical Decision Support, explain how the “rights” can contribute to quality healthcare services. Provide at least one example to support your thought.

1. The **right information**,
2. To the **right people**,

3. In the **right intervention formats**,
4. Through the **right channels**,
5. At the **right points in workflow**.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the responses of other learners and respond to at least one post. Discuss points of agreement and disagreement with your posts, and/or evaluate the evidence offered to support those points.

Course Resources
Undergraduate Discussion Participation Scoring Guide
The Five Rights of Clinical Decision Support: CDS Tools Helpful for Meeting Meaningful Use.

u01d2 - Learning Components

- Describe the risks and benefits of using CDS systems.
- Proofread and edit written communications.
- Define the concept of patient outcomes.
- Describe the pros and cons of provider use of CDS systems.

Unit 2 >> Clinical Decision Support Functions and Users

Introduction

A clinical decision support system is essentially an application that analyzes data to assist healthcare providers in making clinical decisions. Most CDS applications or interventions are components of electronic health record systems but can also stand alone. There are also a number of types of clinical decision support systems, including those that support administrative activities, clinical details and protocols, and treatment processes.

In this unit, you will review the types of CDS and the various tools that enhance the decision-making process. You will also have an opportunity to explore the importance of identifying end-users of CDSS and their role in mitigating risks and issues. The ability to understand the connection of appropriate CDS to support organizational goals and stakeholders is conducive to successful CDS implementations.

You will continue to use the EHR tool in the course and incorporate the results into your first assignment, due this unit.

Learning Activities

u02s1 - Studies

Readings

Capella Library

- Hoppszallern, S. (2012). Automated drug alerts. *H&HN: Hospitals & Health Networks, 86*(6), 22.
- Kabachinski, J. (2013). A look at clinical decision support systems. *Biomedical Instrumentation & Technology, 47*(5), 432–434.
    - A CDS system supports clinicians in making evidence-based decisions and diagnoses by providing scenario-pertinent information from patient data in the EHR system. This article discusses how a CDS system can aid the physician in asking questions that are specific to a patient's health and helping avoid errors of omission.
- Kuo, K., & Fuh, C. (2011). A rule-based clinical decision model to support interpretation of multiple data in health examinations. *Journal of Medical Systems, 35*(6), 1359–1373.
- Perna, G. (2012). The clinical alerts that cried wolf. *Healthcare Informatics, 29*(4), 18–20.
- Troiano, D., Jones, M. A., Smith, A. H., Chan, R. C., Laegeler, A. P., Trinh, L., ... Chaffee, B. W. (2014). The need for collaborative engagement in creating clinical decision-support alerts. *Physician Executive, 40*(3), 71–74.
- Vawdrey, D. K., Wilcox, L. G., Collins, S., Feiner, S., Mamykina, O., Stein, D. M., Stetson, P. D. (2011). Awareness of the care team in Electronic Health Records. *Applied Clinical Informatics, 2*(4), 395–405.

Internet

- Centers for Medicare and Medicaid Services. (2014). Clinical decision support: More than just "alerts" tipsheet [PDF]. Retrieved from https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Downloads/ClinicalDecisionSupport_Tipsheet-.pdf
- HealthIT.gov. (n.d.). Benefits of EHRs: Improved diagnostic and patient outcomes. Retrieved from https://www.healthit.gov/providers-professionals/improved-diagnostics-patient-outcomes

u02s1 - Learning Components

- Define various data types and structures.
- Describe the use of CDS systems as a way to improve clinical outcomes.
- Describe various CDS functions and related users.
- Describe the pros and cons of provider use of CDS systems.
- Review the impact of errors in a patient record.

u02s2 - EHR Activity

Use your EHR Go account to access the following lesson:

- The Power of the EHR for CDS.

This activity has been adapted specifically to introduce CDS functions and users, and to address how clinical decision support affects patient outcomes. Review the lesson prerequisites and questions to prepare. You will complete this lesson and download your results for the unit assignment.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186.

u02s2 - Learning Components

- Describe uses of data in clinical decision-making.
- Define various data types and structures.

u02a1 - CDS Functions, Users, and Patient Outcomes

Imagine that you are a newly appointed Data Analyst. To create a solid foundation for the implementation of a CDS system or intervention, you set out to explore CDS functions and CDS users. You must understand the users because they are critical to system acceptance, resolution of system issues, and other performance strategies. This activity focuses on what the EHR can do and explores clinical decision support functions and alert features. In addition, you will see how CDS functions can be used in improving health care outcomes.

Instructions

Complete the activity The Power of the EHR for CDS.

Your completed activity must meet the following criteria:

- Identify the differences between coded and non-coded data entry.
- Identify the differences between structured and unstructured data entry.
- Evaluate the clinical implications of structured versus unstructured data entry in the EHR.
- Describe the functions of CDS systems.
- Describe users of CDS systems.
- Explain how clinical decision support functions contribute to patients' outcomes.

Submission Requirements

- Format: Download and submit your work from the activity.

- Writing: Communicate in writing that is clear and generally free from grammatical errors.

Course Resources

The Power of the EHR for CDS

u02d1 - Gaining Support of CDS Users

You are asked to speak to a group of physicians who are apprehensive about implementing a clinical decision support system. Describe how you might you use the doctors' apprehension to gain their support and participation in the implementation.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. Add any information that might enhance the arguments in the other post(s).

Course Resources

Undergraduate Discussion Participation Scoring Guide

u02d1 - Learning Components

- Understand the impact of user acceptance in the use of CDS systems.
- Describe various CDS functions and related users.
- Proofread and edit written communications.
- Describe the pros and cons of provider use of CDS systems.

Unit 3 >> Decision Support Models & User Acceptance

Introduction

A range of decision support models can be used as the basis for a clinical decision support system. For example, rules-based systems are often the basis for “yes” or “no” kinds of decisions. More complex decision types require more complex methodologies. This week, you will explore the relationship between models and clinical decision support (CDS) systems. The ability to understand this relationship is critical to making the appropriate decision as to how to apply a CDS to accomplish a particular result. It is equally important for those using CDS systems to have a vision of the concepts underlying the systems in order to appropriately interpret the results generated by them.

This unit will explore CDS functions, models, and the importance of user acceptance for successful implementation. If users do not use the system or do not use it properly, the advantages of system implementation may be reduced or eliminated. CDS systems require significant input from the clinical staff, which must create complex and comprehensive use cases to discover system anomalies prior to using the system for healthcare delivery. These clinical staff generally are very busy. If staff are not excited about embracing the system and prepared to invest time in making it successful, then clinical managers must dedicate staff to these activities to closely monitor that they are doing what needs to be done in order to validate the accuracy and integrity of the expert advice provided by the system.

Learning Activities

u03s1 - Studies

Readings

Capella Library

- Drake, R., Deegan, P. E., Woltmann, E., Haslett, W., Drake, T., & Rapp, C. A. (2010). Comprehensive electronic decision support systems. *Psychiatric Services, 61*(7), 714–717.
- Garg, A., Adhikari, N., McDonald, H., Rosas-Arellano, M., Devereaux, P., Beyene, J., ... Haynes, R. B. (2005). Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: A systematic review. *JAMA: Journal of The American Medical Association, 293*(10), 1223–1238.
- Guilan, K., Dong-Ling, X., Xinbao, L., & Jian-Bo, Y. (2009). Applying a belief rule-base inference methodology to a guideline-based clinical decision support system. *Expert Systems, 26*(5), 391–408.
- Kuo, K., & Fuh, C. (2011). A rule-based clinical decision model to support interpretation of multiple data in health examinations. *Journal of Medical Systems, 35*(6), 1359–1373.
- McCool, C. (2013). A current review of the benefits, barriers, and considerations for implementing decision support systems. *Online Journal of Nursing Informatics, 17*(2), 1–6.
- Zaidi, S. T. R., & Marriott, J. L. (2012). Barriers and facilitators to adoption of a web-based antibiotic decision support system. *Southern Med Review, 5*(2), 42–50.
- Schaeffer, J. (2017). CDS systems: Common malfunctions, practical solutions. *For The Record (Great Valley Publishing Company, Inc.), 29*(5), 10–13.

- The article offers information on clinical decision support. CDS technology provides clinicians, staff, patients, or other individuals with knowledge and person-specific information to enhance health and health care.

Internet

- Anwar, F., & Shamim, A. (2011). Barriers in adoption of health information technology in developing societies. *International Journal of Advanced Computer Science and Applications, 2*(8), 40–48. Retrieved from http://thesai.org/Publications/ViewPaper?Volume=2&Issue=8&Code=IJACSA&SerialNo=8

u03s1 - Learning Components

- Discuss importance of standards and guidelines in the use of CDSS and functions.
- Describe the use of CDS systems as a way to improve clinical outcomes.
- Explain how chart information impacts patient care.
- Identify CDS system functions to create data reports.
- Describe types of health data reports that apply data mining techniques.

u03s2 - EHR Activity

Use your EHR Go account to access the following lesson:

- Editing and Extracting Patient Data.

You will complete this lesson and download the results to submit for your assignment in this unit.

The lesson provides an opportunity to edit demographic information in an electronic health record of a patient. You will also go a step beyond editing patient information by reflecting upon how system edits and other functions can influence the availability of information for clinical decision-making.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186.

u03s2 - Learning Components

- Navigate the EHR to gather information.

u03a1 - Editing and Extracting Patient Data

As a data analyst, part of your role will be to identify entry errors in patient records and understand their impact on decision support. In this activity, you will practice editing patient information and reflect on the implications of errors on the availability of patient data for clinical decision support.

Instructions

Complete the activity Editing and Extracting Patient Data. Download your results and submit them as your assignment.

Your submission will be graded according to the following criteria:

- Edit patient information accurately.
- Add a note to explain how editing patient information can affect the extraction of data for clinical decision support.

Submission Requirements

- Format: Download and submit your work from the activity.
- Writing: Communicate in writing that is clear and generally free from grammatical errors.

Course Resources

Editing and Extracting Patient Data

u03d1 - Decision Support Functions and Models

Decision support models vary in their effectiveness for different settings and problems. Write a post in which you discuss the differences between models, including neural networks, rules-based engines, and pattern-recognition systems. Identify what factors make each of the models suitable for solving specific kinds of decision-making problems. Include some of the specific ways each of these models can be used, and explain why one model may be more appropriate for addressing a particular problem.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. In your response(s), provide any additional information that would enhance each other learners' posts.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u03d1 - Learning Components

- Discuss importance of standards and guidelines in the use of CDSS and functions.
- Describe various CDS functions and related users.
- Proofread and edit written communications.
- Understand the use of data mining to support the medical credentialing process.
- Describe the pros and cons of provider use of CDS systems.
- Explain how chart information impacts patient care.

u03d2 - Acceptance with Data

Some providers struggle with using CDS and new technology functions. What are some common CDS data functions used by providers that may encourage or support their use? Consider the ability to edit, extract, and evaluate data. Also provide an example of how the use of data may encourage provider acceptance.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Respond to at least one learner, providing feedback on the points you found most convincing.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u03d2 - Learning Components

- Describe uses of data in clinical decision-making.
- Understand the impact of user acceptance in the use of CDS systems.
- Describe various CDS functions and related users.
- Describe the pros and cons of provider use of CDS systems.

Introduction

Choosing a clinical decision support system can be a challenging task, particularly given the resistance from users. The frequency with which IT projects fail has been the subject of much research and speculation. This is also true of clinical decision support (CDS) systems. The value of using clinical data to identify best practices and high-quality clinical outcomes cannot be denied. Putting this into practice is more difficult than it would appear on paper. A number of issues with implementing CDS systems are specific to the system users. Some CDS systems are developed to support the work of physicians who may not accept guidance from an unknown expert system. You will read about a high rate of physicians rejecting advice offered by a CDS system in favor of the physicians' own experiences and preferences.

This week, you will explore the influence of design and implementation decisions on user acceptance. You will also evaluate some of the factors that play a critical role in improving the possibility that users will accept and integrate the CDS system into daily practice, including the influence of chart completion.

Learning Activities

u04s1 - Studies

Readings

Capella Library

- Clark, J. S. (2014). Tips for ongoing medical record review. *Medical Records Briefing, 29*(1), 12–13.
- Harle, C. A., Gruber, L. A., & Dewar, M. A. (Winter 2014). Factors in medical student beliefs about electronic health record use. *Perspectives in Health Information Management*, 1–14.
    - This study aimed to link individuals' characteristics to their perceptions of EHRs' ease of use and usefulness. Using a questionnaire designed for this study and containing previously validated items, the study team measured and related users' expectations about EHR ease of use and usefulness to their computer self-efficacy, openness to change, personality traits, and demographic characteristics. Also, current and future physicians who rate higher in terms of self-efficacy, openness to change, or conscientiousness may be useful as champions of EHR use among their peers.
- Meulendijk, M., Spruit, M., Willeboordse, F., Numans, M., Brinkkemper, S., Knol, W., ... Askari, M. (2016). Efficiency of clinical decision support systems improves with experience. *Journal of Medical Systems, 40*(4), 1–7.
    - Efficiency, or the resources spent while performing a specific task, is widely regarded as one the determinants of usability. In this study, the authors hypothesize that having a group of users perform a

similar task over a prolonged period of time will lead to improvements in efficiency of that task. Authors conclude that the amount of time users needed to perform similar tasks decreased significantly as they gained experience over time.

- Roop, E. S. (2015). The human touch. *For The Record (Great Valley Publishing Company, Inc.), 27*(7), 20–23.
    - The article discusses the findings of a 2014 study in the "International Journal of Healthcare Quality Assurance" (QA) revealing the higher rate of critical dictation errors that physicians can make than do experienced medical transcriptionists (MTs). Topics mentioned include the resources to combat errors, and the need to strike the right balance between technology tools and proper QA management.
- Toth-Pal, E., Wårdh, I., Strender, L., & Nilsson, G. (2008). Implementing a clinical decision-support system in practice: a qualitative analysis of influencing attitudes and characteristics among general practitioners. *Informatics for Health & Social Care, 33*(1), 39–54.

u04s1 - Learning Components

- Describe the uses of CDS systems in the health care credentialing process.
- Describe various CDS functions and related users.

u04s2 - EHR Activity

Use your EHR Go account to access the following lesson:

- Record Deficiencies.

You will complete this lesson in the document provided and submit the document as your assignment.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186.

u04s2 - Learning Components

- Recognize errors in a patient record.

u04a1 - Record Deficiencies

In this assignment, you will review data in a patient chart in detail and use critical thinking skills to determine what is present, deficient, incorrect, or incomplete in the patient chart. You will also review how chart deficiencies could be caused by the use of CDS systems.

Instructions

Complete the activity Record Deficiencies.

Your completed activity must meet the following criteria:

- Recognize incomplete or missing data in the patient chart.
- Identify potential risks and benefits that might be associated with a CDS systems.
- Recommend potential strategies for maximizing the benefits you identified.
- Recommend potential strategies for minimizing the risks you identified.
- Explain how chart inaccuracies impact patient care and clinical decision-making.

Submission Requirements

- Format: Submit the Word document used to complete the lesson.
- Writing: Write clearly and with few grammatical errors.

Course Resources

Record Deficiencies

u04d1 - Mitigating Acceptance Issues

One of the most critical success factors related to implementing clinical decision support systems is understanding the potential barriers and outlook on user acceptance. Consider these concerns and strategies, and write a post about how a data analyst could mitigate acceptance issues.

- Reasons a provider may not embrace the idea of a decision support system.
- Strategies or ideas that can be used to offset or mitigate those concerns.
- Ways you can ensure that senior management supports the implementation.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. Share what was most helpful in the other post(s) in increasing your understanding of the issues involved.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u04d1 - Learning Components

- Describe the risks and benefits of using CDS systems.
- Describe the uses of CDS systems in the health care credentialing process.
- Explain applications of data mining.
- Describe the pros and cons of provider use of CDS systems.
- Review the impact of errors in a patient record.

u04d2 - Credentialing and Provider Perceptions

Medical credentialing is the process of becoming affiliated with—or maintaining affiliation with—a hospital, healthcare facility, or insurance company. The credentialing process can be tedious, but provides an assurance of provider qualifications and that quality medical practices are being followed. Part of the credentialing process can involve a review of performance based on the use of information systems, documentation standards, ease of use, and professional traits. Some may even refer to the credentialing process as a necessary evil. Using Gruber and Dewar's "Factors in Medical Student Beliefs About Electronic Health Record Use" study, discuss elements of the credentialing process that may influence provider perceptions; and ultimately effective use of CDS functions.

Response Guidelines

Review the responses of other learners and respond to at least one post. Discuss points of agreement and disagreement with your posts, and/or evaluate the evidence offered to support those points.

Course Resources

Undergraduate Discussion Participation Scoring Guide

Factors in Medical Student Beliefs About Electronic Health Record Use.

u04d2 - Learning Components

- Describe uses of data in clinical decision-making.
- Describe the uses of CDS systems in the health care credentialing process.
- Describe various CDS functions and related users.

- Proofread and edit written communications.

Unit 5 >> Data Mining

Introduction

Data mining involves scanning large amounts of data looking for specific patterns, key words, or other repetitive items that can be grouped and analyzed for evidence of potential improvements in health care outcomes and practices. Historically, conducting this kind of research was extremely labor intensive. For example, in order for a researcher to compare a single variable relative to the care of a diabetic patient, the researcher would have to locate and gather a large number of patient charts and redact the chart information into a form appropriate for analysis. The researcher had to proceed in a manner that protected the personal privacy of the patients who were the subjects of the data. As a result, such research was difficult and expensive to pursue.

With the advent of electronic health record systems and clinical decision support (CDS) systems, healthcare professionals can now access large volumes of data that are highly standardized and electronically stored. On the positive side, the effectiveness of data mining in clinical care and research has dramatically increased. On the other hand, the number of ways personal privacy of the data subject can be violated has also increased.

This week, you will be introduced to some of the techniques used in employing data mining as part of the functionality of an EHR or CDS application.

Learning Activities

u05s1 - Studies

Readings

Capella Library

- Fasano, P. C. J. (2013). *Transforming health care*. Somerset: John Wiley & Sons, Incorporated.
  - Chapter 8, "Real Time Learning: Instant Data Mining and Medical Breakthroughs," pages 173–184.
- Finlay, D., Nugent, C., Wang, H., Donnelly, M., & McCullagh, P. (2010). Mining, knowledge and decision support. *Technology & Health Care, 18*(1), 429–441.
  - Decision support systems (DSS) are software entities that assist the physician in the decision making process. Decision support still has significant acceptance issues in clinical routine, but can achieve more prominence, as systems are demonstrated to provide effective knowledge based support. Data mining is often used to provide some insight to a data set and update our accepted knowledge.

- Güiza, F., Van Eyck, J., & Meyfroidt, G. (2013). Predictive data mining on monitoring data from the intensive care unit. *Journal of Clinical Monitoring & Computing, 27*(4), 449–453.
- Karami, M. (2015). Clinical decision support systems and medical imaging. *Radiology Management, 37*(2), 25–32.
    - Clinical decision support systems (CDSS) can help clinicians make correct and timely decisions about patient care, reduce errors, comply with standard treatment and medication guidelines, reduce costs, and ultimately improve the quality of healthcare. An overview of various models is provided with CDSS being a critical part of this process. In the medical imaging chain, from ordered study to communicating results, such systems can help achieve best practices.
- Ng, T., Chew, L., & Yap, C. W. (2012). A clinical decision support tool to predict survival in cancer patients beyond 120 days after palliative chemotherapy. *Journal of Palliative Medicine, 15*(8), 863–869.
    - The purpose of this study was to create a clinical decision support tool to predict survival in cancer patients beyond 120 days after palliative chemotherapy. It concluded that a decision support tool to predict survival in cancer patients beyond 120 days after palliative chemotherapy was created. With further validation, this tool coupled with the professional judgment of clinicians can help improve patient care.
- Reiner, B. (2010). Customization of medical report data. *Journal of Digital Imaging, 23*(4), 363–373.
- Vallejo, B. C., Krepper, R., Nora, H., & Fine, D. J. (2012). Converting data into information. *Hospital Topics, 90*(1), 11–15.
- Wager, K. A., Lee, F. W., Glaser, J. P. (2013). *Health care information systems: A practical approach for health care management* (3rd Ed.). San Francisco, CA: Jossey-Bass. Skillsoft Edition.
    - Read Chapter 6, "Federal Efforts to Enhance Quality of Patient Care Through the Use of Information Technology," pages 217–246.
- Wan, T. (2006). Healthcare informatics research: From data to evidence-based management. *Journal of Medical Systems, 30*(1), 3–7.
- Waxer, C. (2013). Big data blues. *Computerworld, 47*(19), 14–15, 18–20.
- Zhang, Y., Fong, S., Fiaidhi, J., & Mohammed, S. (2012). Real-time clinical decision support system with data stream mining. *Journal of Biomedicine & Biotechnology*, 20121–20128.
    - This research aims to describe a new design of data stream mining system that can analyze medical data stream and make real-time prediction. This paper also describes a clinical-support-system based data stream mining technology; the design has taken into account all the shortcomings of the existing clinical support systems.

Internet

- Eliason, B., & Crockett, D. (2014). What is data mining in healthcare? Retrieved from https://www.healthcatalyst.com/data-mining-in-healthcare
- Stowell, S. A., Baum, H. A., Berry, C. A., Perri, B. R., King, L., Mijanovich, T., ... Miller, S. C. (2014). Impact of performance-improvement strategies on the clinical care and outcomes of patients with type 2 diabetes. *Clinical Diabetes, 32*(1), 18–25. Retrieved from http://clinical.diabetesjournals.org/content/32/1/18

u05s1 - Learning Components

- Explain applications of data mining.
- Understand performance improvement as a strategy.
- Identify relationship between outcomes data and performance improvement.
- Identify data mining as a technique to assist with clinical decision-making.

u05s2 - EHR Activity

Use your EHR Go account to access the following activity:

- Medication Report.

Review the activity to prepare for your assignment in this unit. It will require you to enter and extract information from the EHR lesson as well as answer critical thinking questions based upon your unit readings and the lesson experience.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186.

u05s2 - Learning Components

- Describe the use of CDS systems as a way to improve clinical outcomes.
- Navigate the EHR to gather information.

u05a1 - Data Mining and CDS Functions

In your role as a data analyst, you will respond to the clinical management team's interest in the use of data mining with CDS system functions. *Data mining* is a process of discovering and extracting patterns within a set of data. The main goal of data mining is to transform data into meaningful information, typically for decision-making purposes. Identifying patterns within data can help provide a depiction of the data, as well as predict future behaviors or patterns. This information can be valuable in improving quality of care, reducing costs, and supporting organizational services such as disease management and resource utilization. As the data analyst, consider how to use data mining as a means of ensuring the system is up-to-date and properly functioning.

Instructions

Complete the activity Medication Report. You will enter your answers directly into the Word document and insert your medication report into the document as well. Your completed document must meet the following criteria:

- Create a medication report.

- Describe how EHR CDS functions help create reports based on the patient chart information.
- Describe how data mining can be used to assist with measuring the accuracy and efficiency of clinical decision support systems.
- Explain the role of data mining in generating reports.
- Using a medication report, make a recommendation for EHR-CDS functions, as a tool to support effective clinical decision-making.

Submission Requirements

- Format: Submit your completed Word document including the Medication Report pasted from the EHR activity.
- Writing: Write clearly and with few grammatical errors.

Course Resources

Medication Report

u05d1 - Data Mining and Privacy

While attending a meeting with the executive staff, the chief marketing officer of the organization presents a proposal to purchase and implement a sophisticated data-mining application. The goal of the application will be to identify high-value customers to determine the most effective marketing tools to get them to do business with the organization. Discuss the implications of this proposal and the effect it could have on customer privacy. How would you assure that the marketing activities of the organization are appropriate and properly balance risks and benefits to the organization?

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. Indicate if there are any important risks or benefits missing from the post(s).

Course Resources

Undergraduate Discussion Participation Scoring Guide

u05d1 - Learning Components

- Understand performance improvement as a strategy.
- Proofread and edit written communications.

u05d2 - Predicting Performance

Data mining is a valuable tool that can assist in identifying patterns and trends. It can also be a predictor of performance. Using the Zhang, et al., and Stowell et al. articles, discuss the use of data mining as a predictor or indicator of performance improvement.

Response Guidelines

Review the posts of other learners and respond to at least one post. Advise the writer(s) of an issue he or she did not consider. Include your evidence for the importance of the issue.

Course Resources
Undergraduate Discussion Participation Scoring Guide
Real-time Clinical Decision Support System With Data Stream Mining.
Impact of Performance-improvement Strategies on the Clinical Care and Outcomes of Patients With Type 2 Diabetes

u05d2 - Learning Components

- Explain applications of data mining.
- Understand performance improvement as a strategy.
- Identify relationship between outcomes data and performance improvement.
- Identify data mining as a technique to assist with clinical decision-making.

Unit 6 >> Standards and Guidelines

Introduction

Some who have spent a lifetime working in health care would find a high correlation between the activities of a physician and an auto mechanic. Both roles rely on highly technical diagnostic testing, which is followed by a

great deal of experienced analysis and, finally, creation of a plan of care. Physicians have a considerably higher stake in developing the correct plan of care.

One form of CDS system involves itemizing a set of symptoms and circumstances and then searching the potential range of diagnoses that may be the source of those symptoms. These activities are often associated with a set of guidelines and standards within the organization, and for use of the CDS system.

The high-level concept is to build an application that is capable of integrating the information and identifying a potential diagnosis in the same manner a human expert would use to establish a diagnosis. In this unit, you will explore how standards and guidelines of CDS systems are used to support providers, the role of the medical credentialing process, and associated risks and benefits.

Learning Activities

u06s1 - Studies

Readings

Textbook

- In your *Health Information Management: Concepts, Principles, and Practice* text, read:
  - Chapter 21, "Clinical Quality Management," pages 631–664.

Capella Library

- Boyd, C. E. (2008). How compliance intersects with medical staff issues: Credentialing. *Journal of Health Care Compliance, 10*(2), 11–18.
- Chapman, S. (2012). Seeking clinical decision-support standards. *For The Record (Great Valley Publishing Company, Inc.), 24*(18), 14–17.
  - The article discusses the Health eDecision Project which hopes to establish a standard format for CDS interventions to make it easier for EHR vendors to build the technology into their systems.
- Lefton, R. (2008). Reducing variation in healthcare delivery. *Healthcare Financial Management, 62*(7), 42–44.
- Marchant, G. E., Scheckel, K., & Campos-Outcalt, D. (2016). Contrasting medical and legal standards of evidence: A precision medicine case study. *Journal of Law, Medicine & Ethics, 44*(1), 194–204.
  - A case study is presented which examines what the authors refer to as the contrasting medical and legal standards of evidence in the U.S. as of 2016. Human genetics law and malpractice liability are assessed, along with the medical and legal aspects of a prescribing.
- Mathioudakis, A., Rousalova, I., Gagnat, A. A., Saad, N., & Hardavella, G. (2016). How to keep good clinical records. *Breathe, 12*(4), 371–375.
  - Clinical record keeping is an integral component in good professional practice and the delivery of quality healthcare. In this issue, the author will present the importance of keeping good clinical

records, ways of facilitating this and an overview of legal aspects linked with clinical record keeping.

- Metzger, N. L., Chesson, M. M., & Momary, K. M. (2015). Simulated order verification and medication reconciliation during an introductory pharmacy practice experience. *American Journal of Pharmaceutical Education, 79*(7), 1.
    - This article explores how the use of existing hospital training software can affordably simulate the pharmacist's role in order verification and medication reconciliation, as well as improve clinical decision-making.

u06s1 - Learning Components

- Discuss importance of standards and guidelines in the use of CDSS and functions.
- Describe the risks and benefits of using CDS systems.
- Describe the uses of CDS systems in the health care credentialing process.
- Describe the use of CDS systems as a way to improve clinical outcomes.

u06s2 - EHR Activity

Use your EHR Go account to access the following lesson:

- Verifying Orders.

You will complete and submit the lesson in the this unit's assignment.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186.

u06a1 - Verifying Orders

In this assignment, you will review how clinical decision support functions, such as CPOE, are used to enter medication orders. You will also touch on the consequences of inaccurate CPOE entries and the use of guidelines for order entries.

Instructions

Complete the EHR activity Verifying Orders. Your completed assignment must meet the following criterion.

- Apply EHR and CDS functions to assess potential contraindications and information about warnings and precautions.

Submission Instructions

- Format: Download and submit your work from the activity.
- Writing: Communicate in writing that is clear and generally free from grammatical errors.

Course Resources

Verifying Orders

u06d1 - Role of Standards and Guidelines

Consider these questions regarding the role of standards and guidelines in managing health data:

- How do you imagine standards and guidelines will be used in the next few decades?
- Will widespread implementation of standards allow for the compatibility needed to allow access to large pools of clinical data needed for some kinds of clinical decision support?
- How will the widespread availability of standardized health data impact the kinds of clinical decision support systems that can be created?

Imagine that, in your data analyst role, you are asked to give a presentation on the future role of standards and guidelines in health care. Outline the main points and supporting arguments you would include in your presentation.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. Advise the writer(s) of an issue he or she did not consider. Include your evidence for the importance of the issue.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u06d1 - Learning Components

- Discuss importance of standards and guidelines in the use of CDSS and functions.
- Describe the risks and benefits of using CDS systems.
- Proofread and edit written communications.
- Explain how chart information impacts patient care.
- Review the impact of errors in a patient record.

u06d2 - Medical Credentialing

Medical staff must maintain credentials to assure that they are properly trained and licensed to provide safe medical care. The credentialing process is also used to enforce standards of practice and confirm competent care. Write a post in which you discuss how the medical staff credentialing process may interconnect with the use of CDS systems.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. Note the strongest and weakest points in the other post(s) and offer additional evidence as appropriate.

Course Resources
Undergraduate Discussion Participation Scoring Guide

u06d2 - Learning Components

- Discuss importance of standards and guidelines in the use of CDSS and functions.
- Describe the uses of CDS systems in the health care credentialing process.

Unit 7 >> Legal and Ethical Issues

Introduction

A wide range of potential ethical and legal issues relate to the creation, implementation, and use of clinical decision support (CDS) systems. A frequent type of medical error involves the ordering and administration of medication. There are myriad ways these errors can occur, and some of the professionals responsible for them

will assert that the implementation of an electronic system will not eliminate medication errors completely. However, implementing this functionality will help decrease legal liability and insurance costs by reducing types of medication errors that are currently a problem.

Clinical decision support assists with analyzing and interpreting health data and offering recommendations based on that data. Legal and ethical issues related to the proper use of these systems include the practitioner's ethical responsibility to fully understand the implications of following the recommendations of the software when treating a patient. This week, you will explore some of the legal and ethical benefits and pitfalls associated with using CDS systems. You will also have an opportunity to assess how physicians interact with these systems and functions.

Your assignment includes an EHR activity about the privacy of patient records and the use of data for medical staff credentialing.

Learning Activities

u07s1 - Studies

Readings

Capella Library

- Aziz, H. A., Bearden, R. L., & Elmi, A. (2015). Patient-physician relationship and the role of clinical decisions support systems. *Clinical Laboratory Science, 28*(4), 240–244.
- Brown, E. (2015, April 20). Digital health data at risk, report warns. *Los Angeles Times*, pp. A9.
- Evans, R., Elwyn, G., & Edwards, A. (2004). Making interactive decision support for patients a reality. *Informatics in Primary Care, 12*(2), 109–113.
    - Interactive decision support applications might help patients make difficult decisions about their health care. They lie in the context of traditional decision aids, which are known to have effects on a number of patient outcomes, including knowledge and decision conflict. However, there are ethical challenges, which are discussed in this article.
- Emparanza, J. I., Cabello, J. B., & Burls, A. E. (2015). Does evidence-based practice improve patient outcomes? An analysis of a natural experiment in a Spanish hospital. *Journal of Evaluation in Clinical Practice, 21*(6), 1059–1065.
- Faunce, T. (2011). Emerging technologies: challenges for health care and environmental ethics and rights in an era of globalisation. In R. Chadwick, H. ten Have, & E. Meslin (Eds). *The SAGE handbook of health care ethics: Core and emerging issues* (pp. 49–62). London: SAGE Publications Ltd. ISBN:9781446200971.n6
- Goodman, K. (2011). Health information technology and globalization. In R. Chadwick, H. ten Have, & E. Meslin (Eds.), *The SAGE handbook of health care ethics: Core and emerging issues* (pp. 117–126). London: SAGE Publications Ltd. ISBN:9781446200971n.12
- Hagland, M. (2013). Hot horizons: CMIOs look to the near future. *Healthcare Informatics, 30*(3), 8–18.

    - The article outlines responses of five industry-leading Chief Medical Information Officers (CMIOs), and their diverse perspectives on the challenges ahead in information systems in healthcare.
- Schaeffer, J. (2017). CDS systems: Common malfunctions, practical solutions. *For The Record (Great Valley Publishing Company, Inc.), 29*(5), 10–13.
- Zimmerman, K. (2017). Essentials of evidence-based practice. *International Journal of Childbirth Education, 32*(2), 37–43.

Internet

- Guglielmo, W.J. (2013). Nurse reveals STD patient to girlfriend, man sues. *Medscape Nurses*. Retrieved from http://www.medscape.com/viewarticle/803758
- Melnyk, B. M., Gallagher-Ford, L., & Fineout-Overholt, E. (2016). Improving healthcare quality, patient outcomes, and costs with evidence-based practice. *Reflections on Nursing Leadership, 42*(3), 1–8. Retrieved from http://www.reflectionsonnursingleadership.org/features/more-features/improving-healthcare-quality-patient-outcomes-and-costs-with-evidence-based-practice
- Privacy Rights Clearinghouse. (2017). Health privacy: HIPAA basics – A brief history of HIPAA. Retrieved from https://www.privacyrights.org/content/health-privacy-hipaa-basics#hipaa history
- U.S. Department of Health and Human Services. (2003). *OCR privacy brief: Summary of the HIPAA privacy rule - HIPAA compliance assistance* [PDF]. Retrieved from https://www.hhs.gov/sites/default/files/privacysummary.pdf?language=en
- U.S. Department of Health and Human Services. (2015). Covered entities and business associates. Retrieved from http://www.hhs.gov/ocr/privacy/hipaa/understanding/coveredentities/index.html

u07s1 - Learning Components

- Discuss importance of standards and guidelines in the use of CDSS and functions.
- Understand evidence-based outcomes.
- Describe the pros and cons of provider use of CDS systems.
- Explain how chart information impacts patient care.

u07s2 - EHR Activity

Use your EHR Go account to access the following lesson:

- Risks and Clinical Warnings.

You will complete this activity for the assignment in this unit.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186.

u07s2 - Learning Components

- Discuss importance of standards and guidelines in the use of CDSS and functions.
- Describe the risks and benefits of using CDS systems.

u07a1 - Risks and Clinical Warnings

This activity will explore legal risks and benefits of clinical decision support. You will review clinical alerts as CDS functions, as well as adverse drug reaction reports (ADRs) and how they may be used to establish standards and guidelines for physicians. These reports can also be used to support the medical staff credentialing and re-credentialing process.

Instructions

Complete the activity Risks and Clinical Warnings, in which you consider the actions of a physician, demonstrate documentation in an EHR, and make recommendations for physician performance requirements in relation to using EHR clinical decision functions. The recommendations and standards should coincide with physician order entry, medication warnings, and alerts.

Your completed activity must meet the following criteria:

- Recognize threats to security as it relates to the internet, cybersecurity, and mobile devices.
- Identify when a patient's health information may be shared without written consent.
- Describe strategies for developing new standards and guidelines to protect electronically accessible health information.
- Describe the potential legal benefits, risks, and patient privacy issues in implementing a CDS system.
- Describe the role that clinicians play in overriding information provided by a CDS system.

Submission Requirements

- Format: Submit the Word document including the inserted Progress Report from the EHR activity.
- Writing: Write clearly and with few grammatical errors.

Course Resources

Risks and Clinical Warnings

u07d1 - Protecting Patient Privacy

Consider the following questions:

- What potential legal and ethical issues can occur from improper use of CDS systems?
- How can improper use and the resulting legal and ethical issues be prevented?

For this discussion post, assume you are a data analyst who is visited by the head of the legal department in your health care organization. He recently attended a seminar on the legal implications of using CDS systems. He tells you that user education is missing from current organizational practices. Write a post in which you discuss creative ways that users can be educated to avoid legal and ethical problems that can arise from improper use of CDS system.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners, and respond to at least one post. What did you like most about each learner's approach to the discussion topic?

Course Resources
Undergraduate Discussion Participation Scoring Guide

u07d1 - Learning Components

- Describe the risks and benefits of using CDS systems.
- Proofread and edit written communications.
- Describe the pros and cons of provider use of CDS systems.

Unit 8 >> Data Validation and Meaningful Use

Introduction

The degree of trust users have is a critical aspect in clinical decision support systems. Developing a successful clinical decision support (CDS) system is complex and relies on highly skilled experts and users. However, for the users to reach a certain skill level, there has to be confidence that the system works as intended. For example, success requires a provider capable of working with technical staff to identify the steps in assessing symptoms to reaching a diagnosis; this work translates into effective development and use of the CDS. The

purpose of using EHRs and supporting systems, such as clinical decision functions, is to use with meaning—that is, have meaningful use. If there is meaningful use, providers usually are more accepting of the system.

This week, you will learn how clinical decision applications are used for patient care, data evaluation, and physicial performance. In previous units, you were presented with an issue of user acceptance. This unit will allow you to further explore user acceptance by defining methods of validation testing and confidence in the system, and their relation to meaningful use.

Learning Activities

u08s1 - Studies

Readings

Textbook

- In your *Health Information Management: Concepts, Principles, and Practice* text, read:
  - Chapter 9, "Clinical Documentation Improvement and Coding Compliance," pages 265–290.
  - Chapter 16, "Healthcare Statistics," pages 481–507.

Capella Library

- Barr, P. (2015). Taking analytics to the next level. *H&HN: Hospitals & Health Networks, 89*(9), 14.
  - This article reports that Cedars-Sinai Medical Center is getting ready for the meaningful use of data analytics. Topics covered include the benefits of data analytics for hospitals such as improving care and reducing unnecessary costs.
- Castillo, R. (2013). Considerations for a successful clinical decision support system. *Computers, Informatics, Nursing (1538-2931), 31*(7), 319–326.
- Kowalski, C. (2015). Healthcare moving toward an 'information ecosystem'. *Journal of AHIMA, 86*(5), 54–56.
  - The article discusses how healthcare is moving toward an informatics-driven environment, to become an “information ecosystem.”
- Lehrman, J. (2016). Achieving meaningful use in 2016. *Podiatry Management, 35*(4), 93–100.
  - Topics discussed include 10 Objectives required to achieve Meaning Use in 2016 such as electronic health information protection, and reporting of nine Clinical Quality Measures (CQMs).
- Lincoln, J. E. (2012). Device software validation considerations. *Journal of Validation Technology, 18*(2), 26.
- Marder, R. J. (2016). Moving from a punitive to positive culture: Peer review's role in physician performance improvement, patient safety, and risk management. *Medical Staff Briefing, 26*(8), 5.

- Percival, J., McGregor, C., Percival, N., & James, A. (2015). Enabling the integration of clinical event and physiological data for real-time and retrospective analysis. *Information Systems & E-Business Management, 13*(4), 693–711.
- Raths, D. (2013). In pursuit of the Holy Grail: Scalable, interoperable clinical decision support. *Healthcare Informatics, 30*(8), 16–20.
    - The article discusses meaningful use incentives and their importance to create systems for decision support.
- Reilly, C. A., & Polifroni, C. (2011). Meaningful use of EHRs. *Connecticut Nursing News, 84*(4), 1–11.
- Roop, E. S. (2015). The human touch. *For The Record (Great Valley Publishing Company, Inc.), 27*(7), 20–23.

Internet

- ClinicalTrials.gov. (n.d.). Clinical trials. Retrieved from http://www.clinicaltrials.gov
    - Visit the website and find a clinical trial in your city or state. Explore the details and think about the use of clinical decision support systems to support testing and data validation.
- HealthIT.gov. (n.d.). Meaningful use definition and meaningful use objectives of EHRs. Retrieved from https://www.healthit.gov/providers-professionals/meaningful-use-definition-objectives

Audiovisual Resources

- Azhar, N. (2013). Healthcare approaches and tools for performance improvement [Video] | Transcript. Retrieved from https://www.youtube.com/watch?v=Wlnv6uPAm4Y
- Performance Improvement--more than just a change in behavior [Video] | Transcript. Retrieved from https://www.youtube.com/watch?v=vphTQp_nJ9I
- Plan-Do-Study-Act (PDSA) Cycle [Video] | Transcript. Retrieved from https://www.youtube.com/watch?v=1hCWdJ_W9Ws

u08s1 - Learning Components

- Understand evidence-based outcomes.
- Describe the uses of CDS systems in the health care credentialing process.
- Understand the use of data mining to support the medical credentialing process.
- Identify relationship between outcomes data and performance improvement.
- Review the impact of errors in a patient record.

u08s2 - EHR Activity

Use your EHR Go account to access the following activity:

- Meaningful Use and Provider Performance.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186. You will complete and submit the activity as an assignment in this unit.

u08s2 - Learning Components

- Describe the use of CDS systems as a way to improve clinical outcomes.

u08a1 - Meaningful Use and Provider Performance

This activity has been developed as an introduction to Meaningful Use and its application in the electronic health record. The focus is on the relevance of Meaningful Use to members of the health care team in the hospital setting. Using a chart in the EHR, you will compare the chart to the Core Objectives for Hospital Measures. You will also encounter measures used to establish benefits of clinical decision support and provider performance.

Instructions

Complete the activity Meaningful Use and Provider Performance. Follow directions to complete a table in the Word document and create notes in the EHR. You will save and close your session, then download the Progress Report and insert it into the Word document for submission. Your completed work must meet the following criteria:

- Compare patient charts to the Core Hospital Performance Measures.
- Apply EHR and CDS functions to assess meaningful use and provider performance.

Submission Requirements

- Format: Completed Word document with EHR progress report inserted.
- Write clearly and with few grammatical errors.

Course Resources

Meaningful Use and Provider Performance

u08d1 - Data Validation

In order for a CDS system to effectively assist in clinical decision-making, it must have the confidence of its users. Testing the CDS system can help to overcome user concerns. Consider the following questions, and write a post about strategies for validation testing.

- Describe some of the advantages and challenges associated with testing, types of testing, and steps recommended to ensure proper testing is conducted.
- Address the types of testing critical to a successful CDS system implementation.
- Outline the steps you recommend to ensure that proper testing is conducted and a plan for following up on any potential issues identified through validation testing.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. What did you find most informative about each learner's post?

Course Resources
Undergraduate Discussion Participation Scoring Guide

u08d1 - Learning Components

- Understand the impact of user acceptance in the use of CDS systems.
- Proofread and edit written communications.

u08d2 - User Confidence

Clinical data validation is a collection of activities that confirm the accuracy of clinical data. This process is particularly important in the use of data extracted from health information technologies for clinical trials. After all, clinical data affect treatment decisions, which influences patient care and outcomes. Using the studies and resources in this unit, describe the use of data analytics provided by CDS systems to improve patient care. Provide an explanation to either support or refute the relationship to meaningful use.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. Advise the writer(s) of an explanation he or she did not consider. Include your evidence for the importance of the explanation.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u08d2 - Learning Components

- Describe uses of data in clinical decision-making.
- Describe the use of CDS systems as a way to improve clinical outcomes.
- Define the concept of patient outcomes.
- Identify CDS system functions to create data reports.

Unit 9 >> Incentives and Best Practices

Introduction

A frequent approach to implementing clinical decision support systems is to evaluate the incentives to use the system and the recommended best practices in a setting. The integration of a CDS into an existing system or to support clinical practice can provide an opportunity to improve patient outcomes and reduce errors. There may also be performance incentives for providers who effectively use the system, and may even reduce treatment errors by using the system. Clinical decisions support systems also help to establish best practices that further support the goal of improving patient care, outcomes, and safety. For instance, the use of clinical decision support systems may facilitate the practice of evidence-based medicine to improve health care quality.

Many health care professionals believe that clinical decision support (CDS) systems offer significant benefits to the health care industry. Still, the ability to use these benefits is only beginning to evolve. Many organizations—particularly larger entities with significant resources—have implemented fragments of a CDS system. Few organizations rely on these systems to provide direct care without providing information to an experienced person. Most have found that even these small steps are difficult and resource intensive. In spite of this, because of their potential value, many organizations are willing to spend considerable time trying to make these systems work.

Clinical decision support systems have proven to reduce medical errors and improve health care quality and efficiency. They can also be part of Meaningful Use initiatives in relation to EHRs. CDS have also made great strides in supporting evidence-based medicine as a method of improving clinical outcomes. This Unit will review the incentives provided by CDS as well as best practices established as a result of using CDS and using a CDS as an element to organizational best practices.

Learning Activities

u09s1 - Studies

Readings

Textbook

- In your *Health Information Management: Concepts, Principles, and Practice* text, read:
  - Chapter 15, "Health Information Exchange," pages 449–477.

Capella Library

- Bordoloi, P., & Islam, N. (2011). A framework linking knowledge management practices and healthcare delivery performance. *Proceedings of The International Conference on Intellectual Capital, Knowledge Management, & Organizational Learning*, 655–662.
- Diana, M. L., Kazley, A. S., Ford, E. W., & Menachemi, N. (2012). Hospital characteristics related to the intention to apply for meaningful use incentive payments. *Perspectives in Health Information Management* / AHIMA, American Health Information Management Association, 1–1h.
- Ross, A., Feider, L., Eun-Shim, N., & Staggers, N. (2017). An outpatient performance improvement project: A baseline assessment of adherence to pain reassessment standards. *Military Medicine, 182*(5), e1688–e1695.
- Samuels, J. A., & Whitecotton, S. M. (2011). An effort based analysis of the paradoxical effects of incentives on decision-aided performance. *Journal of Behavioral Decision Making, 24*(4), 345–360.
- Simonian, A. I., & Lam, J. H. (2016). Implementation of clinical decision support rules. *American Journal of Health-System Pharmacy, 73*(7), 436–439.
- Stoltz, P. K. (1996). FOCUS-PDCA. *Today's Management Methods*, 223–244.
- Ulrich, B. (2017). Using teams to improve and performance. *Nephrology Nursing Journal, 44*(2), 141–152.
- Weng, S., Wu, T., Blackhurst, J., & Mackulak, G. (2009). An extended DEA model for hospital performance evaluation and improvement. *Health Services and Outcomes Research Methodology, 9*(1), 39–53.

Internet

- Centers for Medicare and Medicaid Services. (2014). Clinical decision support: More than just "alerts" tipsheet [PDF]. Retrieved from https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Downloads/ClinicalDecisionSupport_Tipsheet-.pdf

u09s1 - Learning Components

- Understand evidence-based outcomes.
- Understand the use of data mining to support the medical credentialing process.

- Identify relationship between outcomes data and performance improvement.
- Review the impact of errors in a patient record.

u09s2 - EHR Activity

Use your EHR Go account to access the following activity:

- EHR and PDCA.

If you need help with your EHR Go account, please contact the EHR Go help desk or phone at 1-877-907-2186. If you have questions related to the content of the learning activities, please contact your instructor.

u09s2 - Learning Components

- Describe the uses of CDS systems in the health care credentialing process.
- Identify relationship between outcomes data and performance improvement.

u09a1 - Performance Improvement and Best Practices

You have been asked to develop an outline for a performance improvement program to support best practices, guidelines, and the use of CDS functions. You will use a performance improvement model to analyze EHR chart accuracy and quality as you prepare your outline.

Instructions

Complete the activity EHR and PDCA.

Your completed assignment should meet the following criteria:

- Retrieve data from a patient chart.
- Describe the relationship between provider performance and patient outcomes.
- Apply the EHR in a performance improvement process.
- Establish the use of EHR CDS functions as a best practice.
- Outline best practices based on application of a performance improvement model.

Submission requirements

- Format: Submit the Word document containing your answers.
- Writing: Write clearly and with few grammatical errors.

Course Resources

EHR and PDCA

u09d1 - Best Practices

The use of clinical decision support systems helps facilitate best practices to improve health care quality. Based on your chosen CDS system or intervention, describe ways in which it can establish best practices for patient outcomes. Support your discussion with examples.

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners and respond to at least one post. Note a potential example each learner did not cover that you feel might be considered.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u09d1 - Learning Components

- Understand evidence-based outcomes.
- Understand performance improvement as a strategy.
- Proofread and edit written communications.

Unit 10 >> Future of CDS and Reflection

Introduction

Throughout the course, you have discovered a variety of clinical decision support (CDS) functions as part of an EHR, as well as how it is developed, implemented, and tested throughout the health care industry. The range of problems CDS functions are created to solve is nearly as broad as the methodology used by these systems to

solve them. For most, it will be clear this work is extremely complicated and important—even dangerous—if not done properly and with great care.

CDS systems may one day make it possible for us to get most of our health care via the Internet. The effect on clinicians is unknown, and the education and skills needed by those involved in CDS creation are still undefined and the subject of research. This week, you will have an opportunity to review the information gathered throughout the course, reflect on the future use of clinical decision support systems, and consider their influence on the quality of healthcare services.

Learning Activities

u10s1 - Studies

Readings

Capella Library

- Barlow, R. D. (2015). Decision support at work. *Health Management Technology, 36*(7), 6–9.
    - This article discusses how information technology helps to drive workflow improvement and clinical decisions.
- Felkey, B. G., & Fox, B. I. (2011). Pharmacy automation and technology – Information technology and the medication use process. *Hospital Pharmacy, 46*(4), 289–290.
- Gibert, K., García-Alonso, C., & Salvador-Carulla, L. Integrating clinicians, knowledge and data: Expert-based cooperative analysis in healthcare decision support. *Health Research Policy and Systems / BioMed Central, 8*(1), 1–16.
- Hoyt, R., Linnville, S., Hui-Min, C., Hutfless, B., & Rice, C. (2013). Digital family histories for data mining. *Perspectives in Health Information Management*, 1–13.
- Schuman, A. J. (2013). Online clinical support: Medical information at your fingertips. *Contemporary Pediatrics, 30*(9), 42–48.
- Shepherd, A. (2011). Decision support: A foundation for success. *For The Record (Great Valley Publishing Company, Inc.), 23*(7), 10–13.
    - The article discusses the use of clinical decision-support systems to lay the groundwork for better and safer care.

u10d1 - The Future of CDS

Using the study outlined in the Hoyt article, discuss the significance of using clinical decision supports to collect data and analyze historical information. How could the use of CDS in this way, influence clinical practices, provider workflow, and future of how we use information obtained from CDS?

Your initial post must use at least one scholarly or health care industry-recognized resource and include an in-text citation and its related reference, both following APA formatting guidelines.

Response Guidelines

Review the posts of other learners, and respond to at least one post. Take the position of opponent, and share with each learner why you disagree.

Course Resources
Undergraduate Discussion Participation Scoring Guide
Digital Family Histories for Data Mining.

u10d1 - Learning Components

- Proofread and edit written communications.

u10d2 - Course Reflections

Based on what you've learned throughout the course, share your insights into how clinical decision support systems will be used to improve patient outcomes and to reduce the cost of healthcare in the future. Discuss the role you believe this technology will play in the healthcare, including the risks and benefits to society of becoming increasingly dependent on this technology as part of the delivery of health care.

Response Guidelines

Review the posts of other learners, and respond to at least one post. Share how each learner has provided new insight to you.

Course Resources
Undergraduate Discussion Participation Scoring Guide