Recommendation for a Health Informatics Standard Occupational Classification

Draft Working Document– Content in this version should not be considered final and/or approved

Request/Recommendation for New Health Informatics SOC

The following groups employing, representing and/or educating health informatics workforce respectfully request the following revision of the Standard Occupational Code:

This draft list of stakeholder categories was identified by a workgroup on 6/13/2014

- CDC and State Departments of Health
- Professional Associations
- Certifying Boards
- Collaboratives
- Health Care Providers
- Federal Agencies
- Human Resource Groups
- Universities and Colleges
- Other Groups

Comment [WU1]: Process/Point person is needed to reach out to various groups for gaining input and/or support for the proposal

SOC Proposal/Recommendation:

Add a new **Broad Category: 29-9020 Health Informatics**
under Major Category 29-0000 Healthcare Practitioners and Technical Occupations, Minor Category 29-9000 Other Healthcare Practitioners and Technical Occupations

Comment [WU2]: This category was recommended by the group on 6/13 because it was health related and not at the technician level. Another option discussed is recommending a modified broad class for the existing Medical Records and Health Information Technicians (29-2071) (Concern that this was under a "technician" minor category.

Will discuss with BLS

Draft – not discussed: Detailed Occupations that could be included and/or illustrated for expansion purposes

- *Health Informatics*
- *Informatics Nurse (See O*Net)*
- *Public Health Informatics (See O*Net)*
- *Bio-medical informatics*

Rationale:
The current SOC does not have an existing classification for the health informatics occupation. Include a sentence on the impact.

Comment [WU3]: Need to include an impact statement. Would like to get input on the challenge of accurately classifying these workers into existing categories and when categorized which SOC they would have been classified to.

Health informatics is a healthcare occupation in which workers apply the science of effective use of data, information and knowledge to support the safe and effective delivery of healthcare and improve health and wellness. Workers apply knowledge, skills and tools enabling information to be collected, managed, used, and shared safely to support the delivery of healthcare and promote health.

Background

With the growing importance and financial investment in information technology (IT) in health and healthcare settings, there is an emerging occupation that draws on the synergies of those with knowledge and skills in both IT (computer science, information science, informatics) and health professions (e.g., medicine, nursing, allied health, etc.). The effective use of IT is recognized by many leading organizations in healthcare as an essential component to leading to what the Institute of Medicine calls the "learning health system" [1].

Description of Health IT Workforce -

The term "**health information technology**" (health IT) is a broad concept that encompasses an array of technologies and processes to store, share, and analyze health information. (The workforce sub-workgroup identified three broad categories for the health IT workforce: (include diagram)

Clinical
Informatics/Analytics
Information Systems

The health IT workforce encompasses skill sets required to ensure that all aspects of hardware, software, analysis, implementation, training, maintenance, and support are addressed for applications that support the delivery of patient-centered care. Spanning the continuum of talent from emerging professionals/early careerists to seasoned executives with decades of experience, health IT professionals are present in acute care IT and unit-based ancillary departments, physician practices, outpatient clinics, vendor settings, or consultancy organizations across cities and towns in both urban and rural settings.

Overall Workforce Data

The healthcare industry continues to grow by leaps and bounds, despite an economic slump. This growth has increased the opportunities for IT jobs within healthcare organizations. These organizations are starting to implement various IT initiatives ranging from Electronic Health Records to financial analysis software and many other technology solutions. These projects require multiple IT resources like Business Analyst, Project Managers, Network Administrators, Software Developers and other IT professionals.

"According to the U.S. Department of Labor, opportunities for medical and health services specialists overall are projected to grow by 16 percent through 2020. One-third the 20 fastest growing careers projected are in the health care field. The federal government's push to computerize all medical records will result in job growth in fields such as medical records technology."

Analysis from Schwartz, 2013 – Health IT-related postings post-HITECH 434,292: Clinical were 207,926; Other Health IT were 226,356. Half attributable to HITECH, remainder historical.

About Health Informatics Occupation

The occupation providing the expertise and leadership in health IT is commonly called health informatics. (Other adjectives appear before "informatics" in other contexts, such as clinical informatics, biomedical informatics, etc., but all generally refer to the discipline working to apply information to improve health and healthcare delivery [2]). While we consider the occupation of health informatics to fundamentally be a health profession, it is not just an extension of one's healthcare field, i.e., a physician, nurse, or allied health professional who is savvy with IT. By the same token, those who work in the occupation of health informatics are not IT professionals or managers who happen to be applying IT skills to health or healthcare settings.

This unique occupation is increasingly valued in healthcare organizations, yet we have little data about the field because it has not previously shown up in federal labor statistics. This does not mean that there is no data to support the case for a standard occupational code (SOC). Last year, for example, an analysis by the Office of the National Coordinator for Health IT analyzed a comprehensive database of 84 million online job postings to find a total of health IT-related 434,282 job postings between 2007-2011, with 226,356 health IT core jobs and 207,926 health IT-related clinical user jobs [3]. The former would contain many who work in the occupation of health informatics.

The importance of the workforce in advancing the adoption of health IT was considered important enough for funding to be allocated for its expansion in the Health Information Technology for Economic and Clinical Health (HITECH) Act, the portion of the American Recovery and Reinvestment Act (ARRA) that provided incentives for adoption of health IT. Of the $30 billion allocated, $118 million was designated for workforce development, resulting in launching or expansion of programs in community colleges and universities, production of curricular materials, and development of competency certifications. Part of the motivation for including workforce development in HITECH was previous research showing a need for over 40,000 professionals as the US moved to advanced levels of IT adoption in healthcare [4].

An additional data point for the uniqueness of this occupation comes from the disciplines of medicine and nursing. Each of these disciplines has certifications of specialization in informatics, with medicine using the term "clinical informatics" and nursing using "nursing informatics." Last year, about 450 physicians successfully passed the first board examination for the subspecialty of clinical informatics [5]. This subspecialty, by the way, is the first to have been designated as a subspecialty of all medical specialties (e.g., internal medicine, surgery, radiology, etc.), further showing it not being limited to one kind of physician (or any other health occupation for that matter).

Likewise, the nursing profession has had a specialization in nursing informatics for over a decade. We are likely to see more certifications, as the American Medical Informatics Association (AMIA) has created a task force to develop an Advanced Interprofessional Informatics Certification that will apply to all

informatics professionals with healthcare doctorates and PhDs in related disciplines. The Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) has started a process to accredit master's degree programs in health informatics and may develop a certification process in health informatics for individuals as well.

Definitions of Health Informatics:

Health Informatics is fundamentally a health profession with most education programs in health-related schools. Those who work in Health Informatics being expertise in IT and health to healthcare organizations in their mission to prevent and treat disease as well as maintain and improve health. Another point backing this assertion is that most Health Informatics programs are in health science schools. Whether it is Health Informatics programs in community colleges or Biomedical Informatics programs in universities, the academic units that house them are almost uniformly in health science colleges and universities.

There are many definitions of health informatics and related terms, but all of them converge on the notion of using *information*, embedded in *technology*, to improve health and healthcare delivery. Here are some definitions of the field from leading professional organizations:

- AMIA – "Biomedical informatics (BMI) is the interdisciplinary field that studies and pursues the effective uses of biomedical data, information, and knowledge for scientific inquiry, problem solving, and decision making, motivated by efforts to improve human health." (http://www.amia.org/presentation/definition-biomedical-informatics)
- American Health Information Management Association (AHIMA) – "Health Informatics (HI) is a science that defines how health information is technically captured, transmitted and utilized. Health informatics focuses on information systems, informatics principles, and information technology as it is applied to the continuum of healthcare delivery. It is an integrated discipline with specialty domains that include management science, management engineering principles, healthcare delivery and public health, patient safety, information science and computer technology." (http://www.ahima.org/careers/healthinfo)
- UK Council for Health Informatics Professions (UKCHIP) – Health Informatics is "the knowledge, skills and tools which enable information to be collected, managed, used and shared safely to support the delivery of healthcare and promote health." (http://www.ukchip.org/?page_id=1512)
- Accreditation Council for Graduate Medical Education (ACGME, referring to the medical subspecialty) – "Clinical informatics is the subspecialty of all medical specialties that transforms health care by analyzing, designing, implementing, and evaluating information and communication systems to improve patient care, enhance access to care, advance individual and population health outcomes, and strengthen the clinician-patient relationship." (http://www.acgme.org/acgmeweb/Portals/0/PDFs/Clinical_Informatics_PRs_RC.pdf)
- Nursing informatics – "Nursing Informatics is a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, and knowledge in nursing practice. The specialty facilitates integration of data, information, and knowledge to support patients, nurses, and other providers in their decision making in all roles and settings through information structures, information processes, and information technology." [6]

- Biomedical and health informatics – "the field that is concerned with the optimal use of information, often aided by the use of technology, to improve individual health, health care, public health, and biomedical research." [2]
- Minnesota Department of Health – Science of the affective use of data, information and knowledge to improve the health of individuals and the community.
- VA Definition - HI is a discipline at the intersection of information science, computer science, and health care that designs and delivers information to improve clinical care, individual and public health can biomedical research. HI optimizes health-related information acquisition, processing, and use using resources and tools that include people and processes; hardware and software; algorithms and data; and information and knowledge.

Gaps in SOC for HIT Workforce Occupations

(SOC Proposal Requirements – New SOCs)

Nature of the Work Performed

SOC Classification Guidelines: Nature of the work performed. What duties do the workers in the occupation perform? Which duties are common to all jobs in the occupation and would therefore appear in the "required duties" statement in the occupation definition (as illustrated in Figure 1). What duties are frequent but not performed by all workers and might be identified in "may" statements in the occupation definition. Are there supervisory or management duties? If so what types of workers are supervised and what types of management activities are performed? For revisions to existing occupations is the work described in the SOC definition accurate and up to date?

Summary of previous discussion – editing is still needed (not final):

- Design, develop, select, test, implement, support, maintain, and evaluate new or modified informatics solutions, approaches to data management and analysis, and decision-support mechanisms to support patients, public health, health care professionals, and their information management and human-computer and human-technology interactions within health system contexts.
- Analyze and interpret patient and organizational, data to improve health systems and services.
- Apply knowledge of computer science, information science, decision-science, cognitive-science, organizational theory and management, clinical science, and informatics theory to health-related practice, education (learning), administration, or research.
- Liaison between clinicians, public health, and systems engineers, analysts, or designers using object-oriented models or other techniques.
- Translate practice information between clinicians, public health, and systems engineers, analysts, or designers using object-oriented models or other techniques.
- Develop strategies, policies or procedures for introducing, evaluating, supporting, maintaining, or modifying information technology applied to health-related practice, administration, education, or research.
- Develop or implement policies or practices to ensure the privacy, confidentiality, or security of health information and other health system data.
- Identify, collect, record or analyze health-related data used for health system improvement.
- Read *(and apply)* current literature, talk with colleagues, and participate in professional organizations or conferences to maintain competencies and keep abreast of developments in informatics and disciplines.

- Provide consultation regarding health information systems use and configuration appropriate to the setting and workflows, i.e., the usability of the technology.
- Disseminate information about the science and practice of informatics to the profession, other health care professions, students, policy-makers and the public.

How the work performed is distinct from other detailed occupations in the SOC -

SOC Classification Guidance: How the work performed is distinct from other detailed occupations in the SOC. Does the same or similar work appear in other SOC occupations? If so, how is the proposed occupation distinct? What changes should be made to existing SOC occupations that have the same or similar work?

Health Informatics Job Titles

SOC Classification Guidelines: Job titles. What job titles are commonly used by workers in this occupation? Are these titles unique to the proposed occupation? Are titles listed in the Direct Match Title File actually in use? Are there other titles that should be included in the file?

- Clinical Informatics
- Clinical Applications Specialist
- Clinical Coordinator
- Clinical Informatics Director
- Clinical Informatics Specialist
- Clinical Informatics Strategist
- Clinical Information Systems Director
- Clinical Trial Data Manager
- Consultant
- Director Clinical Information Services
- Nursing Information Systems Coordinator
- National language processing specialist/Mapping Specialist
- Clinical Data/Health Information Analyst
- Health Informaticist
- Genomics Data Specialist
- Comparative effectiveness research specialist
- User experience designer
- *Will also investigate: and include information from:*
    - *O*NET Public Health Informatician*
    - *Include AMIA's additional job titles*
    - *Look at on-line job boards for:*
        - *HIMSS*
        - *AMIA*
        - *AHIMA*
        - *General workforce*

Indication of the number of jobs or works in the occupation

SOC Classification Principle: Indications of the number of jobs or workers in the occupation. Information on employment size and expected growth is helpful in evaluating the proposed occupation against Classification Principle 9 concerning collectability.

All of the estimates below do not include numbers from the current Standard Occupational Code 29-2071 Medical Records and Health Information Technicians.

a. The Office of the National Coordinator for Health Information Technology published a Data Brief in May 2012 that showed an increase of 199% in health information technology job postings from 4,850 in February 2009 to 14,512 Health IT jobs in February 2012. (1)
b. From 2008 to 2011, employment in Health IT-related occupations in the health delivery system increased by over 50,000 jobs. (1)
c. In February 2012 a state-supported HIT Workforce Needs Assessment study from Texas estimated an additional 10,000 health information technology jobs would be needed by December 2013. (2)

The majority of health information technology jobs not found in SOC 29-2071 are believed to be reported within the Information Technology category, within Healthcare and social assistance. Jobs in this sector and industry are estimated to increase by as much as 50% between 2010 and 2020. One example would be database and system administrators which are estimated to increase by 49.5% by 2020. (3)

Address the Ability to Collect data on the occupation

Collecting reliable and valid data for the health informatics occupation has proven to be extraordinarily difficult. The health informatics-specific estimates listed above were calculated using data either "scraped" from the internet or collected using surveys built from employer interviews. The only data from the Bureau of Labor Statistics reflect standard information technology jobs within the healthcare industry. The estimate of 50,000 added positions nationally was calculated by Dr. Bill Hersh using a research data tracking the level of HIT implementation at all U.S. hospitals. (4) This and other estimates fail to include health informaticists focused on tasks such as clinical data analytics or programming clinical decision support. The only other candidate SOC code is stated to require an associate degree as a maximum. Thus, if one were attempting to utilize readily available data, there is a lack of appropriate career representation from a content perspective and a required education perspective.

From the June 2012 Burning Glass report on the health informatics field "By grouping less-skilled medical records clerk jobs in the same category as health information technician positions requiring postsecondary credentials, the BLS cannot track significant changes in the mix of jobs within that broad occupational category over the last four years, let alone track what is necessary to qualify for those jobs that are emerging." (5)

Types of Employers

SOC Classification Principle: Types of employers. In what industries does this occupation occur? This information is useful in understanding the nature of the work performed as well as evaluating collectability.

- Practitioners – such as office of Physicians and Osteopaths, Dentists, Chiropractors, Optometrist, Chiropractors, Audiologists etc.
- Hospitals – such as medical and surgical, psychiatric and substance abuse, critical access and long term care
- Outpatient Centers – Medical and Diagnostic Laboratories, Ambulatory Surgical Centers, Home Health Services, Other Ambulatory Services
- Nursing and Residential Care Facilities – skilled nursing facilities, residential facilities for persons with disabilities, residential care facilities (assisted living for the elderly).
- Health Industry Related – Public health agencies, health research organizations, pharmaceutical research companies, health industry product vendors.
- Other – Healthcare insurance agencies, benefits management companies; consulting companies; Research and Pharmaceutical companies; EHR vendors

Education and Training

SOC Classification Principle: Education and training. What education and training are typically required for workers to be able to perform this occupation? What types of schools or training providers offer this education or training? How long does the education or training take? What degrees or other credentials are generally required, if any? Identification of specific education and training programs and institutions is helpful.

Section 3016 of the American Recovery and Reinvestment Act of 2009 under Title XIII authorized the creation of a program to assist in the establishment and/or expansion of education programs to train a skilled workforce to ensure the rapid and effective utilization and development of health information technologies (in the Unites States health care infrastructure).1

In 2009, estimates based on the data from the Bureau of Labor Statistics (BLS) and independent studies indicated a shortfall of approximately 51,000 qualified health IT workers would be required over the next few years to meet the needs of hospitals and physicians as they move to adopting an electronic health care system, facilitated by the HITECH Act.3

To meet the need, $118 million was set aside in funding for workforce development programs. As a result of this funding, four initiatives were launched the (1) Curriculum Development Centers, comprising of five universities that were tasked with developing curriculum for the Community College programs, the (2) Community College Consortia, the largest program, focusing on the development and implementation of a six month training program designed to train professionals with a background in health care or IT on the knowledge and competencies required to facilitate health IT adoption and implementation. The community colleges were required to ramp up their training capacity over time in order to train 10,500 professionals per year across the five funded consortia. The five consortia comprised of a total of 82 community colleges, the (3) Competency Exam which assessed the competencies of students and professionals in the field, and the (4) University Based Training which was

designed to provide training for graduate and post-graduate level students. Nine Universities were funded under the grant.

Sustainable programs post-grant exist:

- 63 of the original CCCs and all 9 of the UBTs are continuing health IT educational offerings.
- Developers' materials are still being used by educational institutions, individuals, and others.
- Universities and colleges will charge students for training.
- Some colleges plan to allow students more than six months to complete their training and to focus more on hands-on and virtual lab learning.
- Several colleges are moving the curriculum into existing health IT programs, offering training on a not-for-credit basis or through continuing education, or creating a degree program

According to The Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), health informatics programs focus on information systems, informatics principles and information technology as applied to the continuum of healthcare delivery. Health informatics (HI) graduate programs focus on information systems, informatics principles, and information technology as applied to the continuum of healthcare delivery. Health Informatics graduate programs demonstrate uniqueness by offering varied options for practice or research.

In addition, many CAHIIM accredited programs offer undergraduate education in the Health Information Management. Since the HITECH act, many of these higher education institutions have updated their curriculum to reflect in adoption and meaningful use that EHRs are having in the healthcare workplace. For details see the CAHIIM program website http://www.cahiim.org/accredpgms.asp. In addition, the CAHIIM Accreditation Manual delineates an outline of the process requirements, policies and procedures for programmatic accreditation of the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM). http://www.cahiim.org/policiescurriculum.html

Licensing

SOC Classification Guidelines: Licensing. Are licenses usually required? Identification of specific licenses and licensing agencies is helpful.

Tools and Technologies

SOC Classification Guidelines: Tools and technologies. What tools and technologies are generally used by workers in performing the occupation? Are the tools and technologies mentioned in existing SOC occupation definitions accurate and up to date?

Tools

- Desktop computers
- Liquid crystal display projector — Liquid crystal display LCD projectors
- Medical picture archiving computer systems PACS — Medical image database systems
- Notebook computers — Laptop computers
- Special purpose telephones — Multi-line telephone systems; smart phones

Technologies

- Computerized Provider Order Entry (CPOE)
- Quality improvement and reporting
- E-Prescribing
- Specialized health information software applications (e.g., computer-based documentation systems for point-of-care, computerized physician order entry, coding)
- Mainstream software applications (e.g., spreadsheets, databases, email, Web 2.0, mobile applications)
- Computer based training software — Learning management system LMS software
- Data base user interface and query software — Microsoft Access; Structured query language SQL
- Medical software
- Office suite software — Microsoft Office software Spreadsheet software — Microsoft Excel
- Hardware and communication technologies and formats related to personal health records

Professional or Trade Associations and Unions

SOC Classification Guidelines: Professional or trade associations and unions. Are there professional or trade associations or labor unions related to the proposed occupation? Identification of specific associations or unions is helpful.

How suggested changes will better reflect current occupational structure in the US - Open

(End SOC Proposal Requirements)

Recommendations for Revisions to existing SOCs – (initial suggestions)

Recommendations for Additional Direct Title Matches –

References/Resources

Background and Definitions:

1. Smith M, Saunders R, Stuckhardt L, and McGinnis JM, *Best Care at Lower Cost: The Path to Continuously Learning Health Care in America*. 2012, Washington, DC: National Academies Press.
2. Hersh W, *A stimulus to define informatics and health information technology.* BMC Medical Informatics & Decision Making, 2009. 9: 24. http://www.biomedcentral.com/1472-6947/9/24/.
3. Schwartz A, Magoulas R, and Buntin M, *Tracking labor demand with online job postings: the case of health IT workers and the HITECH Act.* Industrial Relations: A Journal of Economy and Society, 2013. 52: 941–968.
4. Hersh WR and Wright A. *What workforce is needed to implement the health information technology agenda? An analysis from the HIMSS Analytics™ Database*. *AMIA Annual Symposium Proceedings*. 2008. Washington, DC: American Medical Informatics Association. 303-307.
5. Detmer DE and Shortliffe EH, *Clinical informatics: prospects for a new medical subspecialty.* Journal of the American Medical Association, 2014: Epub ahead of print.
6. Staggers N and Thompson CB, *The evolution of definitions for nursing informatics: a critical analysis and revised definition.* Journal of the American Medical Informatics Association, 2002. 9: 255-261.

Education Section:

1. Update on the Adoption of Health Information Technology and Related Efforts to facilitate the Electronic Use and Exchange of Health Information: *A Report to Congress. United States Department of Health and Human Services: The Office of the National Coordinator for Health Information Technology* http://www.healthit.gov/sites/default/files/rtc_adoption_of_healthit_and_relatedefforts.pdf. June 2013

2 Readying the Health IT Workforce for Patient-Centered Team Based Care: Understanding Training Needs: *Department of Health and Human Services: The Office of the National Coordinator for Health Information Technology*
http://www.healthit.gov/sites/default/files/summer_workforce_meeting_paper_508.pdf

Workforce Data:

(1) Furukawa, M.F., Vibbert, D., and Swain, M. (2012). HITECH and Health IT Jobs: Evidence from Online Job Postings. ONC Data Brief. No. 2., May. 1-8.
(2) Fenton, S.H. (2012). HIT Workforce Needs Assessment. Report from Texas State University. February. 1-35.
(3) Bureau of Labor Statistics. (2013) Employment by industry, occupation, and percent distribution, 2010 and projected 2020. Retrieved from http://www.bls.gov/emp/ep_data_occupational_data.htm on December 11, 2013.
(4) Hersh WR and Wright A. What workforce is needed to implement the health information technology agenda? An analysis from the HIMSS Analytics™ Database. AMIA Annual Symposium Proceedings. 2008. Washington, DC: American Medical Informatics Association. 303-307.
(5) Burning Glass Industries. (2012). A Growing Jobs Sector: Health Informatics. June. 1-15.