HEALTH INFO STANDARDS AND TERMS

Project sprint 1

Team Name- The Avengers

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February 6, 2024

Introduction:

For the best possible administration and provision of healthcare, accurate medical coding is essential. The American Academy of Professional Coders (AAPC) claimed in a position paper that "accurate coding is crucial because data extracted from medical record documentation govern CDI [clinical documentation improvement] success, drive physician pay, and keep healthcare organizations operating" (AAPC, 2022). Standardized coding schemes such as CPT and ICD-10-CM also facilitate adequate quality measurement, efficient provider-to-provider communication, and accurate insurer reimbursement levels (AHIMA, 2021).

According to a study in the Journal of AHIMA, lack of investment in coder training and education can propagate inaccurate codes and unreliable data that hinder care improvements and cost control. The authors explain that inaccurate coding can have far-reaching and expensive consequences regarding lost revenue, payment delays, denied claims, and lack of data integrity (AHIMA).

One significant factor linked to the importance of medical coding is the effect of health information technology on patient safety, particularly the decrease in prescription errors and adverse drug reactions. the evolution and significance of medical coding in ensuring accurate documentation, billing, and reimbursement in the healthcare industry (Kapp, 2024).

Use Case E:

A patient aged 65 years consulted a clinician with the chief complaints of headache and has been diagnosed with hypertension. He had no past medical or medication history. He is a chronic smoker for 10 years and is non-alcoholic. Also, had a family history of diabetes mellitus and hypertension. Physical examination was found to be normal. Blood pressure was found to be 190/130 mmHg. The patient was diagnosed with hypertensive urgency and admitted to the hospital. The patient was prescribed 0.2 mg clonidine. The clinician also advised the nurse to record Blood pressure every 4 hours. All the information has been updated in electronic health records. The nurse followed the clinician's notes in EHR and measured the blood pressure accordingly. All the observations should be recorded in nursing notes and updates should be sent back to EHR.

Clinical Concepts:

1)Chief Complaint – Headache

Standard Terminology System	Terminology	Code	Link
ICD-10	Headache	R51	Link
LOINC	Headache	82221-2	Link
ICD	Headache	R51.9	Link
SNOMED	Headache	250644002	Link

Discrete codes in ICD-10 allow for a more precise classification of different forms of headaches by precisely capturing key characteristics such as location, laterality, and chronicity. The Veterans Health Administration's research of headache coding trends shows that ICD-10 offers the best nomenclature for characterizing various headache disorders (Wilkinson et al).

2)Diagnosis - hypertension

Standard Terminology System	Terminology	Code	Link
LOINC	Hypertension	45643-4	Link
ICD-10	Essential (Primary) Hypertension	I10	Link
SNOMED	Hypertensive Disorder	38341003	Link
CPT	Hypertension (appropriate office visit)	99212-99215	Link

In ICD-10, coding for hypertensive illnesses entails choosing the right code based on the unique characteristics that are present and recording the information required to justify the code choice. Accurate and compliance coding requires an understanding of the rules and connections between various hypertension diseases (Beckman, 2014)

3) Past (Medical) Medication History: None

Standard Terminology System	Terminology found	Code	Link
LOINC	Medication use	10160-0	Link
LOINC	Medical records	11503-0	Link
ICD-10	Personal History of medical treatment	Z92	Link
SNOMED	No medical history	160243008	Link

ICD –10 is the most appropriate terminology because “they form your medical records and history”. ICD is primarily used for coding medication history because it provides a standardized system for healthcare providers to classify and record diagnoses, symptoms, and procedures, ensuring accuracy and consistency in medical documentation across different healthcare settings and insurance claims (Understanding ICD-10 Codes: Information for Consumers, 2023).

4) Smoking History: Chronic smoker (for 10 years).

Standard Terminology System	Terminology found	Code	Link
ICD-10	Problems related to lifestyle and tobacco use	Z72.0	Link
LOINC	Tobacco smoking status	77176002 72166-2	Link
SNOMED-CT	Smoker	77176002	Link

SNOMED, as a standard clinical terminology employed in Electronic Health Records (EHRs), providing distinct codes for various types of smokers, including classifications such as Heavy Smoker, Light Smoker, daily smokers, occasional smokers, and more (Giannangelo, 2015).

5) Alcoholic History: Non-alcoholic

Standard Terminology System	Terminology found	Code	Link
SNOMED-CT	Lifetime non-drinker of alcohol (finding	783261004	Link
ICD-10	Abuse Alcohol (non-dependent)	F10.10	Link
LOINC	Alcohol use (Answer – No (not tested), Answer ID – LA20146-9)	74205-6	Link

The International Classification of Diseases, 10th Revision **(ICD-10)** is the most appropriate one. Link. ICD-10 is widely used internationally for coding and classifying diseases, including substance use disorders such as alcoholism. The specific code for alcohol use disorder in ICD-10 is F10, offering a detailed and systematic way to classify and document alcohol-related disorders (World Health Organization, 2016).

6) Family History: Diabetes Mellitus, Hypertension

Diabetes Mellitus

Standard Terminology System	Terminology found	Code	Link
SNOMED-CT	Family history of diabetes mellitus type 2 (situation)	430679000	Link
ICD-10	Family history of Diabetes Mellitus	Z83.3	Link

Hypertension

Standard Terminology System	Terminology found	Code	Link
SNOMED-CT	History of hypertension (situation)	Z82.49	Link
ICD-10	Family history of ischemic heart disease and other diseases of the circulatory system	161501007	Link

SNOMED-CT is a comprehensive and detailed clinical terminology system that allows for the precise and standardized representation of clinical concepts, including family history information. It provides a rich vocabulary that covers a wide range of medical conditions and relationships, allowing for more granular and specific representation of familial relationships and health conditions. SNOMED-CT's hierarchical structure and extensive coding system enable healthcare providers to capture nuanced family history details, facilitating better communication and interoperability in electronic health records. The use of SNOMED-CT for family history documentation aligns with the need for a robust and flexible terminology system that accommodates the complexity of familial health information (Bodenreider, 2004).

7) Physical Examination- Normal

Standard Terminology System	Terminology found	Code	Link
LOINC	Diagnosis Code	Z00.0	Link
SNOMED-CT	Physical exam Narrative	22029-3	Link
ICD-10	General examination of patient (procedure)	162673000	Link

SNOMED CT is advantageous for physical examinations because its detailed clinical terminology allows healthcare professionals to accurately and specifically document findings, ensuring a more comprehensive representation of a patient's physical condition. The granularity of SNOMED CT enables precise coding, facilitating better communication among healthcare providers and supporting improved patient care. (Helwig, 2013)

8) Vital sign: Blood pressure (190/130 mmHg)

Standard Terminology System	Terminology found	Code	Link
LOINC	Elevated blood pressure reading, without diagnosis of hypertension	R03.0	Link
ICD-10	Blood pressure measurement	55284-4	Link

LOINC is preferable for coding blood pressure measurements, as it offers a standardized approach to represent diverse medical observations, including vital signs like blood pressure, within both laboratory and clinical settings. This ensures a systematic and consistent method for documenting and exchanging information related to blood pressure results. (Bodenreider et al., 2018)

9) Medication: Clonidine (0.2 mg)

Standard Terminology System	Terminology found	Code	Link
SNOMED-CT	Clonidine-containing product	62782004	Link

SNOMED CT is a standardized clinical terminology system that facilitates semantic interoperability and provides interpretation for raw medical information (Al-Hablani, 2017).

10) Monitoring: Blood pressure measurement every 4 hours

Standard Terminology System	Terminology found	Code	Link
LOINC	Blood pressure measurement	55284-4	Link
ICD-10	Blood pressure measurement	Z01-3	Link

11) Electronic Health Records: Updated with patient information and clinician notes

Standard Terminology System	Terminology found	Code	Link
LOINC	Electronic health record	75745-0	Link

The concepts were coded using the following terminologies and ontologies:

1. ICD-10
2. LOINC
3. SNOMED

4. CPT

Conclusion:

Standards like ICD, LOINC, and SNOMED are essential for achieving seamless interoperability in healthcare by facilitating accurate and consistent exchange of clinical information across diverse systems and settings (*SNOMED CT, LOINC, and ICD-10 – the Foundations of Semantic Interoperability*, 2023).

"CPT (Current Procedural Terminology) codes are used to describe tests, surgeries, evaluations, and any other medical procedure performed by a healthcare provider on a patient" (Intro to CPT Coding - MedicalBillingandCoding.org, n.d.-b).

ICD-10 (International Classification of Diseases, 10th Revision) is used for recording diagnoses and procedures. It is a global information standard for clinical care and research, and its use enables better disease monitoring, data transparency, and accurate reimbursement and resource allocation in health care (*SNOMED CT, LOINC, and ICD-10 – the Foundations of Semantic Interoperability*, 2023).

LOINC (Logical Observation Identifiers Names and Codes) is a comprehensive database facilitating the exchange and collection of clinical results, encompassing laboratory tests, clinical observations, and patient outcomes, while offering a unified terminology for diverse healthcare settings (*SNOMED CT, LOINC, and ICD-10 – the Foundations of Semantic Interoperability*, 2023).

SNOMED CT (Systematized Nomenclature of Medicine – Clinical Terms) is a thorough clinical terminology designed to encode the definitions of healthcare-related terms, including symptoms, diagnoses, and procedures. It enables semantic interoperability and is cross-mapped with standards such as ICD-10, allowing clinical information to be exchanged across various healthcare systems (*SNOMED CT, LOINC, and ICD-10 – the Foundations of Semantic Interoperability*, 2023).

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