

**Can we improve Quality
measurement through additional
coding and better data aggregation
capabilities?
Is dentistry ready?**

**MOVING PAST
DISRUPTION
TO IMPROVE
ORAL HEALTHCARE**

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Disclosures

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Key Objective for today

- Identify a possible path to improve measures and quality measures within the dental field.

Specifically

- Can additional coding allow for enhanced measure development?
- Explore diagnostic coding
- Explore how broader coding systems might provide better solutions for patients
- How might artificial intelligence methodologies impact measures and measure development

Today's Conversation and Objectives

- Review the pathway/history of why our medical colleagues have advanced measurement well beyond what we have experienced in dental.
- Identify some of the significant barriers facing development of enhanced measures for dentistry
- Discuss the opportunities for improving population health in dentistry through further measure development
- A discussion of one specific mechanism, additional coding, that may help dentistry in enhanced measure development

How expanded coding is being used to improve patient care (and possibly outcomes)

- Initially Medical insurers began relating diagnosis to varying care patterns (procedures) and identified paths that seemed to provide better results (either financially or patient outcomes)
- Care systems adopted dramatically improved Electronic Health Records (EHR's) with the financial assistance of the HiTech act and Meaningful Use incentives (and reporting requirements).
- Enhanced structured data allowed care systems to relate conditions, findings, labs, etc. to provide more personalized care and better results (either financially or patient outcomes)
- Care systems began implementing numerous decision support tools that are now also improving rapidly.

Some significant barriers to dental adoption

- Fear of losing more control to insurers
- Lack of improvement of dental records systems (EDR's) at the speed that medical changed. Incentives and measures in Meaningful Use were not well adopted to dental care. Costly process.
- Lack of training and familiarity with diagnostic coding and adoption of more structured data capabilities.
- Smaller care systems and many individual and small group practices. Cost may be a huge barrier.

The many opportunities with change

- Improved treatment efficiency
- Improved patient outcomes
- Potential to build off current medical approaches and “skip” some steps
- Decision support and improved risk assessment tools.
- Ability to understand medical/dental integration and where to apply it to improve care.
- Ability to broaden our learnings well beyond individual (dental) schools and current CE approaches, including the use of AI

How can we move forward?

- Trust
 - Avoid historical mistakes that medical underwent
 - Avoid historical mistakes thinking dental data was complete
 - Work with trusted entities.
- ADA Data Registry (DERE)
 - Tool and data to limit potential for repeating dental data mistakes
 - Potential for comparative results
 - Future potential to understand current medical/dental correlations
- Dental Quality Alliance
 - Validated measures that allow for comparisons and care improvement

Exercising caution in measure development

- We must continue to recognize that, while we can readily create measures, adoption and acceptance of teachings and care by/for the patient may be as much the result of the teaching capabilities of dental clinicians as it is care delivery itself.
- Additionally, we must exercise caution in creating clinician level measures where patient choices may be significantly influenced by cost of services and patient out of pocket costs. This can apply to both preventive and restorative services.

Healthcare vs Disease care

- “The preventive/corrective approach can only work if the dental clinician is able to nurture the patient’s latent sense of responsibility so (s)he can become independently healthy.”
 - Bob Barkley
- “The medical care system contributes to only 10% of the health care outcomes of individuals”.
 - CDC, NIH
- Major contributor is lifestyle choices followed by the individual’s environment and their heredity.

Next level measures require next level data

- Some ideas to stimulate conversation:
- Next level measures might include:
 - Risk assessment validation and consistency in application
 - Diagnostic consistency
 - Preventive value possibly based on risk
 - Outcomes for specific diagnosis, not necessarily procedures
 - Rising use of AI, but must be cautious in its use for measure development due to issues with equity, limited research to date, etc.

A basic review of what diagnostic codes can do

- Simply, they are a tool to relate why you did to what you did
- In medicine they are regularly used to monitor disease outbreaks
- They can provide detailed information to improve patient communication
- A tool to help better understand best care for individuals and populations
- Improved record keeping, documentation and information exchange

Why aren't they more broadly used in dentistry?

- Training in the use of diagnostic coding is limited
- Only a small number of dentists have regularly used ICD codes, thus a lack of familiarity
- Limited evidence, limited decision support, thus less value seen by clinicians at this time
- Concern about losing control of “professional judgement” due to implementation history in medicine

ICD10 Codes What are they?

- ICD10 is used by almost 200 countries throughout the world
- It is an exceptional reporting tool that has helped prevent or reduce consequences from many disease outbreaks for many years
- ICD10 CM is the version used in the United States and is required for use in reporting on health care claims (if a diagnosis code is required)
- There are many courses and training options available for ICD10 CM
- Limited codes for dentistry, thus limited specificity. Advantage or not?

Why not simply use ICD10 CM?

- Limited documentation for risk assessment or for providing rationale for diagnostic and preventive care, which accounts for approximately 60% of submissions on dental claims. These are also usually the first areas for benefit expansion.
- Limited ability to relate oral and overall health, when compared with other terminologies.
- Possibly limited capabilities when there are multiple dental/medical morbidities and contributing factors

SNODENT AND SNOMED

- Already in use at multiple sites having an integrated medical and dental electronic records system.
 - Growing number of schools that have medical and dental training
 - Some health care systems (often derivatives of HMO's)
 - Beginning to see their use in larger DSO's
 - Allows DSO's to integrate with stand alone medical care systems
 - Complex to duplicate for smaller dental practices.
 - SNODENT is used as the reference terminology with mappings to the common terms used by clinicians
 - Can require new visualizations and input methods to take greater advantage of the capabilities of the SNOMED poly hierarchy
 - Well suited for use with AI

SNODENT

- Capability to develop smaller sets of concepts specific to a specialty (thereby easier to implement and educate) while still enjoying all the benefits of the extensive code set in SNOMED.
- ADA has invested in tools that allow for mapping, developing of subsets, search engines, etc. to assist implementation and use.

SNOMED CT

- ▼ ● SNOMED CT Concept (SNOMED RT+CTV3)
 - ▶ ● Body structure (body structure)
 - ▶ ● Clinical finding (finding)
 - ▶ ● Environment or geographical location (environment / location)
 - ▶ ● Event (event)
 - ▶ ● Observable entity (observable entity)
 - ▶ ● Organism (organism)
 - ▶ ● Pharmaceutical / biologic product (product)
 - ▶ ● Physical force (physical force)
 - ▶ ● Physical object (physical object)
 - ▶ ● Procedure (procedure)
 - ▶ ● Qualifier value (qualifier value)
 - ▶ ● Record artifact (record artifact)
 - ▶ ● Situation with explicit context (situation)
 - ▶ ● SNOMED CT Model Component (metadata)
 - ▶ ● Social context (social concept)
 - ▶ ● Special concept (special concept)
 - ▶ ● Specimen (specimen)
 - ▶ ● Staging and scales (staging scale)
 - ▶ ● Substance (substance)

SNOMED CT browser, SNOMED International

ICD10-CM Hierarchy

2023 ICD-10-CM Codes

- [A00-B99](#) 📖 Certain infectious and parasitic diseases
- [C00-D49](#) 📖 Neoplasms
- [D50-D89](#) 📖 Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
- [E00-E89](#) 📖 Endocrine, nutritional and metabolic diseases
- [F01-F99](#) 📖 Mental, Behavioral and Neurodevelopmental disorders
- [G00-G99](#) 📖 Diseases of the nervous system
- [H00-H59](#) 📖 Diseases of the eye and adnexa
- [H60-H95](#) 📖 Diseases of the ear and mastoid process
- [I00-I99](#) 📖 Diseases of the circulatory system
- [J00-J99](#) 📖 Diseases of the respiratory system
- [K00-K95](#) 📖 Diseases of the digestive system
- [L00-L99](#) 📖 Diseases of the skin and subcutaneous tissue
- [M00-M99](#) 📖 Diseases of the musculoskeletal system and connective tissue
- [N00-N99](#) 📖 Diseases of the genitourinary system
- [O00-09A](#) 📖 Pregnancy, childbirth and the puerperium
- [P00-P96](#) 📖 Certain conditions originating in the perinatal period
- [Q00-Q99](#) 📖 Congenital malformations, deformations and chromosomal abnormalities
- [R00-R99](#) 📖 Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
- [S00-T88](#) 📖 Injury, poisoning and certain other consequences of external causes
- [U00-U85](#) 📖 Codes for special purposes
- [V00-Y99](#) 📖 External causes of morbidity
- [Z00-Z99](#) 📖 Factors influencing health status and contact with health services

From ICD10data.com website

ICD10 CM Caries hierarchy

Codes

- ▶ K02 Dental caries
 - ▶ K02.3 Arrested dental caries
 - ▶ K02.5 Dental caries on pit and fissure surface
 - ▶ K02.51 limited to enamel
 - ▶ K02.52 penetrating into dentin
 - ▶ K02.53 penetrating into pulp
 - ▶ K02.6 Dental caries on smooth surface
 - ▶ K02.61 limited to enamel
 - ▶ K02.62 penetrating into dentin
 - ▶ K02.63 penetrating into pulp
 - ▶ K02.7 Dental root caries
 - ▶ K02.9 Dental caries, unspecified

From ICD10data.com

ICD10 CM Periodontal codes

- Codes
- ▶ **K05** Gingivitis and periodontal diseases
 - ▶ **K05.0** Acute gingivitis
 - ▶ K05.00 plaque induced
 - ▶ K05.01 non-plaque induced
 - ▶ **K05.1** Chronic gingivitis
 - ▶ K05.10 plaque induced
 - ▶ K05.11 non-plaque induced
 - ▶ **K05.2** Aggressive periodontitis
 - ▶ K05.20 unspecified
 - ▶ **K05.21** Aggressive periodontitis, localized
 - ▶ K05.211 slight
 - ▶ K05.212 moderate
 - ▶ K05.213 severe
 - ▶ K05.219 unspecified severity
 - ▶ **K05.22** Aggressive periodontitis, generalized
 - ▶ K05.221 slight
 - ▶ K05.222 moderate
 - ▶ K05.223 severe
 - ▶ K05.229 unspecified severity
 - ▶ **K05.3** Chronic periodontitis
 - ▶ K05.30 unspecified
 - ▶ **K05.31** Chronic periodontitis, localized
 - ▶ K05.311 slight
 - ▶ K05.312 moderate
 - ▶ K05.313 severe
 - ▶ K05.319 unspecified severity
 - ▶ **K05.32** Chronic periodontitis, generalized
 - ▶ K05.321 slight
 - ▶ K05.322 moderate
 - ▶ K05.323 severe
 - ▶ K05.329 unspecified severity
 - ▶ **K05.4** Periodontosis
 - ▶ **K05.5** Other periodontal diseases
 - ▶ **K05.6** Periodontal disease, unspecified

From ICD10data.com

SNOMED Periodontal Disease

Parents

- ▶ ≡ Inflammation of specific body organs (disorder)
- ▶ ≡ Inflammatory disorder of digestive tract (disorder)
- ▶ ≡ Inflammatory disorder of jaw region (disorder)
- ▶ ≡ Periodontal disease (disorder)
- ▲ ≡ Periodontitis (disorder)
- ▲ ● Localized periodontitis (disorder)

● American Academy of Periodontology and European Federation of Periodontology 2017 Classification of Periodontal and Peri-implant Diseases and Conditions localized periodontitis Stage 2 Grade C (disorder) ★ ↗

SCTID: 1149442006

1149442006 | American Academy of Periodontology and European Federation of Periodontology 2017 Classification of Periodontal and Peri-implant Diseases and Conditions localized periodontitis Stage 2 Grade C (disorder) |

en American Academy of Periodontology and European Federation of Periodontology 2017 Classification of Periodontal and Peri-implant Diseases and Conditions localized periodontitis Stage 2 Grade C (disorder)

en AAP/EFP 2017 Classification of Periodontal and Peri-implant Diseases and Conditions localized periodontitis Stage 2 Grade C

Finding site → Periodontal tissues structure
 Associated morphology → Inflammatory morphology

SNOMED CT browser SNOMED Intl.

SNOMED Dental Caries

Parents

▶ ☰ Primary active dental caries extending into dentin (disorder)

☰ Primary active dental caries extending into inner third of dentin (disorder) ☆ ↗

SCTID: 733943001

733943001 | Primary active dental caries extending into inner third of dentin (disorder) |

en Primary active dental caries extending into inner third of dentin (disorder)

en Primary active dental caries extending into inner third of dentin

Finding site → Structure of inner third of dentin
Associated morphology → Primary active caries
Pathological process → Infectious process
Causative agent → Domain Bacteria

SNOMED CT browser SNOMED International

Where might we go from here?

- Limited implementation to gradually educate
 - Possible adoption of the Situational Rule
- Development of visualizations and data structures (standards) to assist electronic dental records systems in moving towards superior clinical records
- Improving data exchange and electronic data transfer that provides benefits for dental clinicians of all sizes
- Working with clinics to advance more data to DERE and use new measures to support dashboards

Key resources

- ICD10data.com free to use code browser
- NLM Meta thesaurus free to use SNOMED CT browser
- SNOWOWL MQ free to use SNODENT browser
- Omahasystems.org free to use outcomes coding
- ADA CDT Companion Guide (fee)
- ADA ICD10 Diagnosis for dental diseases (fee)



Thank you!