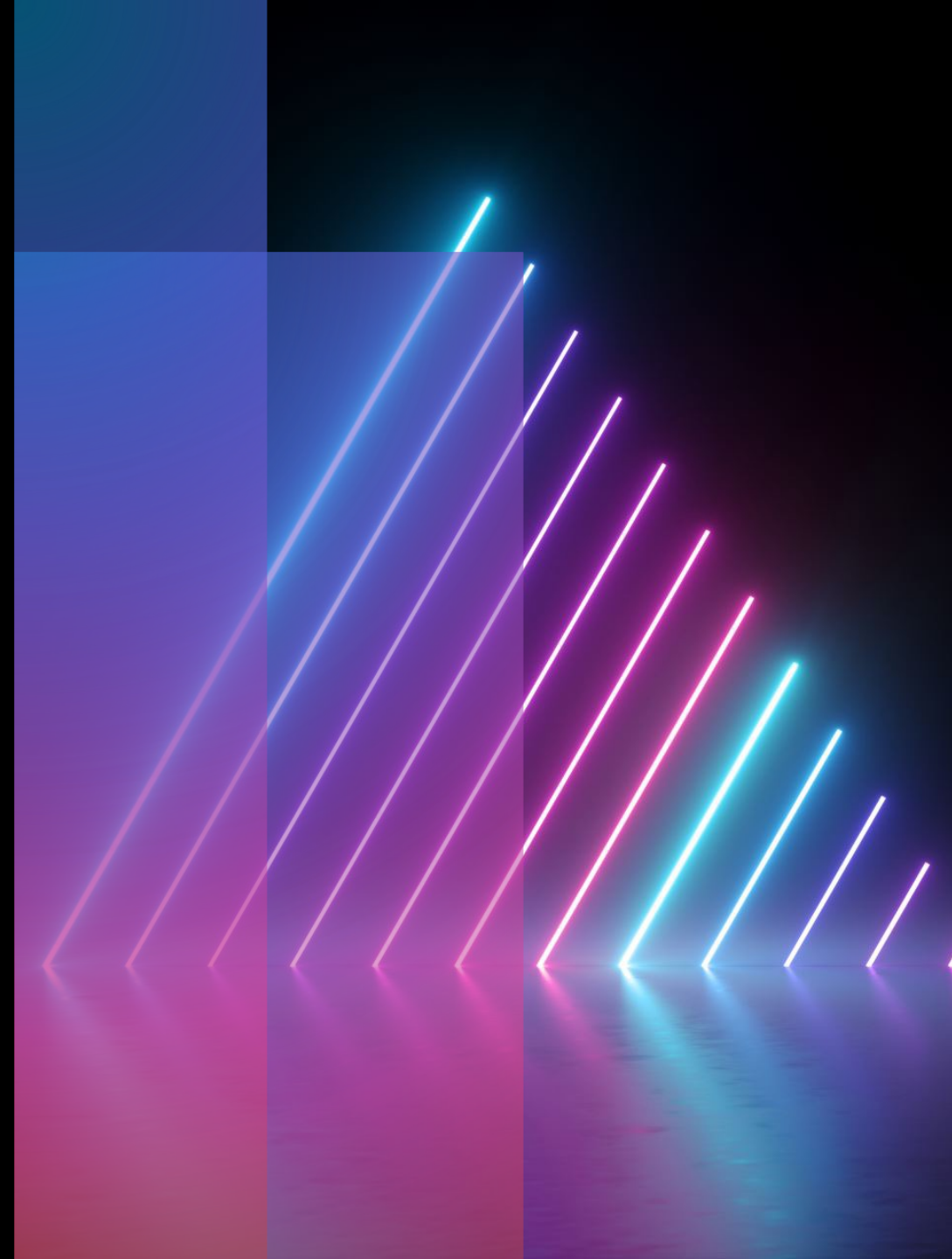


The Evolution of Classifying and Grouping COVID-19 in the US and its Impact on Quality Health Data

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Background

- Classifying COVID-19
 - ICD-10-CM
 - Official coding guidelines (OCGs)
 - Frequently asked questions (FAQs)
- Grouping COVID-19 Inpatient Hospital Stays
 - Medicare-severity Diagnosis Related Group (MS-DRG)

Methods

- Study Steps
 - Step 1: Create scenarios representative of WHO categories
 - Step 2: Select data elements
 - Step 3: Establish date parameters
 - Step 4: Determine key dates
 - Step 5: Assign ICD-10-CM codes and MS-DRGs
 - Step 6: Detect pivot point and cause of a change in code and/or MS-DRG

Diagnosis Category Scenario

During a trip, contact with a COVID-19 positive individual occurred. One week later upper respiratory symptoms developed, and the individual returned home with a fever, sore throat, dry cough, severe wheezing, and worsening dyspnea. COVID-19 test was negative. Seven days later, the individual continued to not feel well, and the fever and cough had persisted. **COVID-19 test was positive.** The individual was hospitalized with a diagnosis of possible pneumonia. Over the next several days the individual's condition worsened despite antiviral therapy and after further testing a diagnosis of **COVID-19 pneumonia** and **acute respiratory distress syndrome (ARDS)** was made. Treatment included mechanical ventilation for 36 hours.

- **Pivot points**
 - **Two code shifts: COVID-19 and COVID-19 pneumonia**
 - **Publication delays and several guideline clarifications**
 - **No MS-DRG change**

Prevention Category Scenario

After having COVID-19 and being very ill, an individual decides to seek immunization against COVID-19. The first dose resulted in no reaction. However, three days after receiving the second dose, the individual presented to the emergency department with acute chest pain and shortness of breath. After admission, several tests were performed, and a diagnosis of myocarditis was made. **History of COVID-19** was documented. COVID-19 as the cause of the acute myocarditis was ruled out. Final diagnosis was **vaccine-related acute myocarditis**.

- **Pivot points**

- **One code shift: History of COVID-19**
- **Publication delays and several guideline clarifications**
- **No MS-DRG change**

Post COVID-19 Category Scenario

An individual with a **history of COVID-19** was hospitalized with shortness of breath and increased heart rate. After further testing a diagnosis of **pulmonary embolism** was made. The record noted the individual had been experiencing persistent “**brain fog**” six months after the initial COVID-19 infection involving **short-term memory loss, confusion, and difficulty concentrating**. The discharge diagnosis was pulmonary embolism and brain fog due to **COVID-19**. Noted also in the record was the **vaccination status** of the patient as one dose of a multi-dose vaccine regimen.

- **Pivot points**

- **Two code shifts: Post COVID-19 and vaccination status**
- **Publication delays and several guideline clarifications**
- **No MS-DRG change**

Discussion

Three Basic Characteristics of High-Quality Data



Completeness



Accuracy



Timeliness

Statement of Principal Findings



Completeness

Impact from ICD
Code Structure



Accuracy

Impact from
Documentation
and Coding
Guidance



Timeliness

Impact from
Implementation
Dates

Timeliness

WHO Release Date(RD) and CDC Response

Condition	WHO RD	ICD-10 Code	Description	CDC RD	ICD-10-CM Code	Description
COVID-19	2/1/20	U07.1	COVID-19, virus identified	4/1/20	U07.1	COVID-19
COVID-19	2/1/20	U07.2	COVID-19, virus not identified			

Timeliness

WHO Release Date(RD) and CDC Response

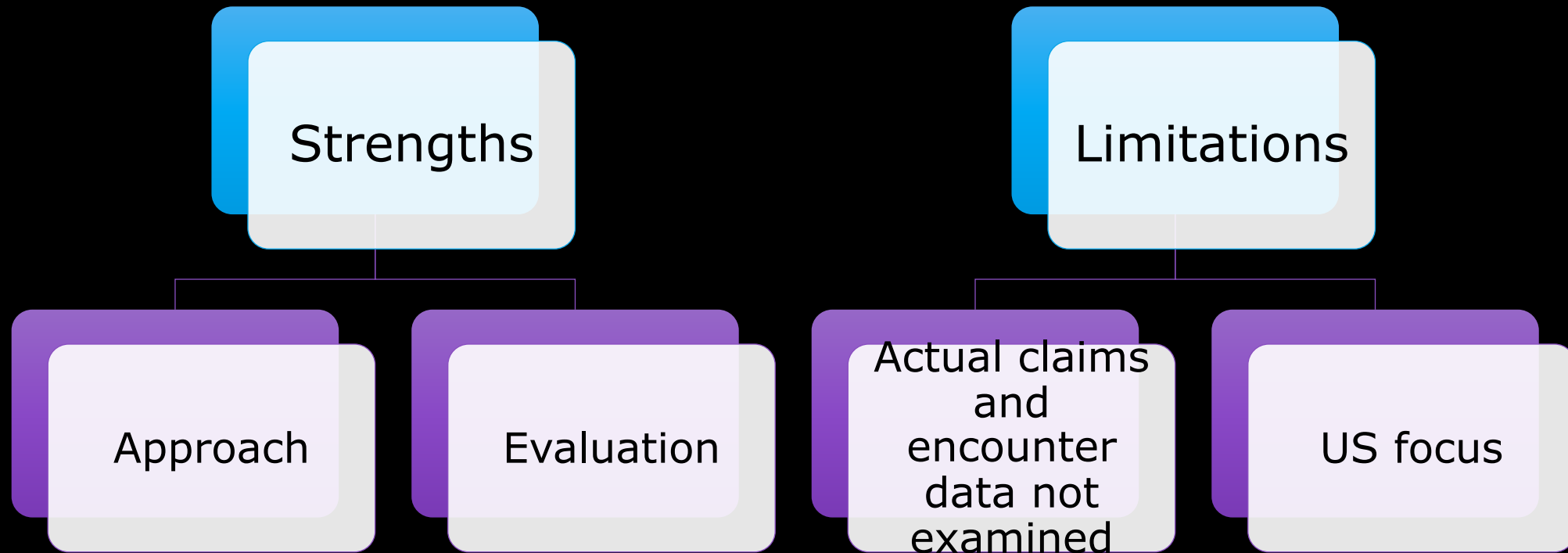
Condition	WHO RD	ICD-10 Code	Description	CDC RD	ICD-10-CM Code	Description
Personal history COVID-19	9/1/20	U08.9	Personal history COVID-19, unspecified	1/1/21	Z86.16	Personal history of COVID-19
Post COVID-19 condition	9/1/20	U09.9	Post COVID-19 condition, unspecified	10/1/21	U09.9	Post COVID-19 condition, unspecified
Multisystem inflammatory syndrome associated with COVID-19	9/1/20	U10.9	Multisystem inflammatory syndrome associated with COVID-19, unspecified	1/1/21	M35.81	Multisystem inflammatory syndrome

Timeliness

WHO Release Date(RD) and CDC Response

Condition	WHO RD	ICD-10 Code	Description	CDC RD	ICD-10-CM Code	Description
Need for immunization against COVID-19	1/1/21	U11.9	Need for immunization against COVID-19, unspecified			
COVID-19 vaccine causing adverse effects in therapeutic use	1/1/21	U12.9	COVID-19 vaccine causing adverse effects in therapeutic use, unspecified		T50.B95A	Adverse effect of other viral vaccines, initial encounter

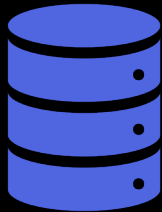
Strengths and Limitations



Interpretation Within the Context of the Wider Literature

ICD-10	Description	ICD-10-CM	Description	ICD-10-CA	Description	ICD-10-AM	Description
U08.9	Personal history COVID-19, unspecified	Z86.16	Personal history COVID-19	U07.5	Personal history COVID-19	U07.3	Personal history of coronavirus disease 2019
U09.9	Post COVID-19 condition, unspecified	U09.9	Post COVID-19 condition, unspecified	U07.4	Post COVID-19 condition	U07.4	Post coronavirus disease 2019 condition
U10.9	Multisystem inflammatory syndrome associated with COVID-19, unspecified	M35.81	Multisystem inflammatory syndrome	U07.3	Multisystem inflammatory syndrome associated with COVID-19	U07.5	Multisystem inflammatory syndrome associated with coronavirus disease 2019
U12.9	COVID-19 vaccine causing adverse effects in therapeutic use, unspecified	T50.B95A	Adverse effect of other viral vaccines, initial encounter	U07.7	COVID-19 vaccines causing adverse effects in therapeutic use	U07.7	Coronavirus disease 2019, vaccines causing adverse effects in therapeutic use

Implications for Policy, Practice and Research



Many use cases for
the coded data



Difficulty associated
with agreement on a
name and definition



Delay in code
adoption

Conclusion

Know pivot points and basis for the shift when using COVID-19 health data

Adoption of ICD-11 and harmonizing ICD coding guidelines has the potential to enhance global comparisons



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