

MedInsight SARS-CoV-2 Analysis Brief

How to Analyze the Impact of COVID-19 Patients on Utilization and Costs

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Caveats

- This presentation is based on the one given informally at the NAHDO Special Edition Web Conference (COVID-19 & Health Data) for the National Association of Health Data Organizations (NAHDO) on March 25, 2020. These materials are only intended to be distributed to the NAHDO web conference participants.
- In performing this work, Milliman relied on information from publicly available sources. We have not audited or verified this information.
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- The opinions provided in this presentation are those of the author(s)/presenter(s) and should not be attributed to Milliman, Inc.

Overview and Purpose

- Background:
 - SARS-CoV-2 is the virus that causes COVID-19. It is sometimes described as “Coronavirus” or “Novel Coronavirus”.
 - It is the 7th Coronavirus; 3 are dangerous
 - It is a mutation of SARS that effectively binds to ACE2 receptors
 - COVID-19 stands for “Coronavirus Disease 2019” and it primarily effects the respiratory system
- Provide guidance on codes and techniques that might be used for MedInsight data analysis of the SARS-CoV-2 virus
- Identify additional possible useful analyses indirectly related to the virus
- Brainstorm the effects of the crisis on U.S. healthcare capacity, utilization, and costs

Identifying SARS-CoV-2 Testing

- The AMA has released a new CPT code to identify testing
 - Released in early March and more specific code under the existing “parent” code of 87471 Infectious agent detection by nucleic acid (DNA or RNA), which may be used when testing for *any* infectious agent.
 - Similar to influenza, there is no code for swabbing for COVID-19. However, providers can report the specimen collection code 99000.

CPT Code	Description
87635	Infectious agent detection by nucleic acid (DNA or RNA); severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Coronavirus disease [COVID-19]), amplified probe technique.

- CMS established two new HCPCS codes for lab testing.

CPT Code	Description
U0001	Coronavirus testing using the Centers for Disease Control and Prevention (CDC) 2019 Novel Coronavirus Real Time RT-PCR Diagnostic Test Panel.
U0002	Validated non-CDC laboratory tests for SARS-CoV-2/2019-nCoV (COVID-19).

<https://www.ama-assn.org/delivering-care/public-health/new-cpt-code-covid-19-testing-what-you-should-know>

Negative test results mean only that the level of SARS-CoV-2 RNA in the sample was not above the limit of detection. We are aware that false-negatives can occur, potentially due to low viral load at early stages of the disease, low amounts of virus in throat and nose for some patients, or technical issues in collection, handling, shipping, or mutation of the virus. The WHO advises that a negative result does not rule out or exclude the possibility of COVID-19.

Identifying Diagnosed COVID-19

- The CDC released a new ICD-10 code on March 18th to be used starting on April 1.

ICD-10 Code	Description
U071	COVID-19

- Until 4/1/2020, the CDC guidance provides the following existing codes.

ICD-10 Code	Description	
B9729	Other coronavirus as the cause of diseases classified elsewhere in conjunction with the code for the reason for the encounter (e.g. pneumonia, acute bronchitis).	
J1289	<i>Other viral pneumonia</i>	For a pneumonia case confirmed as due to the novel coronavirus COVID-19, CDC guidance assigns code J1289 and code B9729.
J208	<i>Acute bronchitis due to other specified organisms</i>	For acute bronchitis confirmed as due to COVID-19, CDC guidance assigns code J208 and code B9729
J40	<i>Bronchitis, not specified as acute or chronic</i>	For bronchitis NOS confirmed as due to COVID-19, CDC guidance assigns code J40 and code B9729
J22	<i>Unspecified acute lower respiratory infection, NOS</i>	For lower respiratory infection documented as associated with COVID-19, CDC guidance assigns code J22 with code B9729
J988	<i>Other specified respiratory disorders</i>	For documented association of COVID-19 with a respiratory infection, NOS, CDC guidance assigns code J988 with code B9729
J80	<i>Acute respiratory distress syndrome</i>	For cases with ADRS due to COVID-19, CDC guidance assigns code J80 and code B9729

- Codes for patients presenting with signs and symptoms, where a definitive diagnosis has not been established:

ICD-10 Code	Description
R05	Cough
R509	Fever, unspecified
R0602	Shortness of breath

Please refer to the CDC guidance below for more comprehensive details

<https://www.cdc.gov/nchs/data/icd/ICD-10-CM-Official-Coding-Guidance-Interim-Advice-coronavirus-feb-20-2020.pdf>

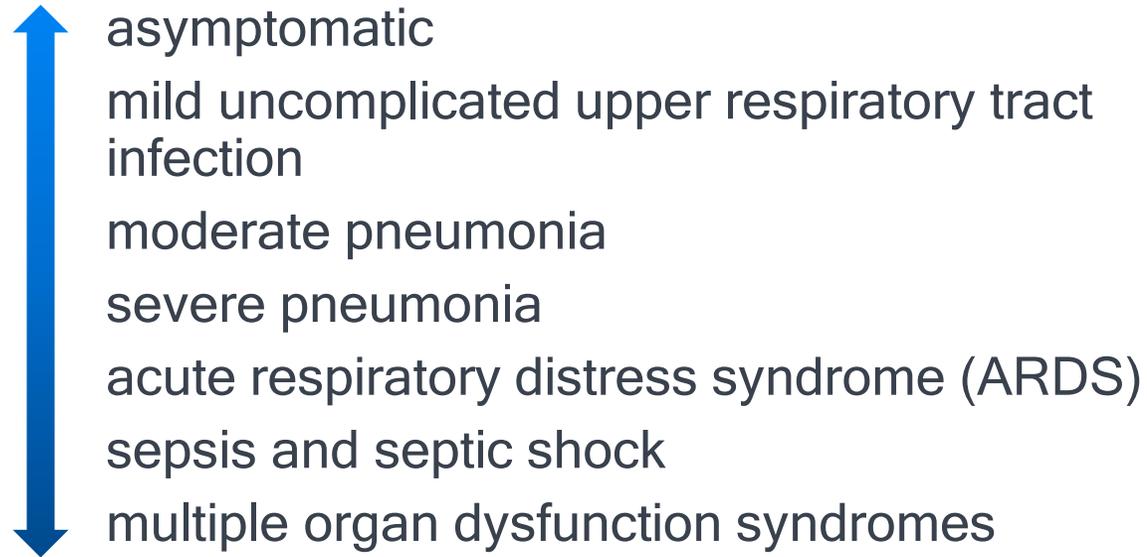
Coronavirus and SARS related codes that are not for use for SARS-CoV-2:

- The first two codes exist for previous outbreaks of coronavirus and SARS.
- The third is not used for SARS-Co-V-2 because the CDC Feb 2020 guidance notes that COVID-19 cases have been respiratory in nature, so are not unspecified.

ICD-10 Code	Description
B972	Coronavirus as the cause of diseases classified elsewhere
B9721	SARS-associated coronavirus causing diseases classd elswhr (SARS-associated coronavirus as the cause of diseases classified elsewhere)
B342	Coronavirus infection, unspecified

Under-recognition of COVID-19

- Testing is not conducted or recommended for 100% of patients.
- Testing cannot have 100% accuracy (false negatives can occur).
- Symptoms of the early stages of the disease are nonspecific, and have a broad range of differential diagnoses. COVID-19 infection appears to have a very varied clinical spectrum:



- Potential delay in claim submissions due to shortage of workers or high demand.
- Long term complications among survivors of COVID-19 are not yet known.

Examples of indirect Diagnoses that may be associated with COVID-19: potentially useful for epidemiological research

- A few diagnoses that have been reported in association with COVID-19 are shown below. Newly recognized associations continue to be reported in case studies.

This list is not exhaustive.

ICD-10 Code	Description
R05	Cough
R509	Fever, unspecified
R0602	Shortness of breath
J1281	Pneumonia due to SARS-associated coronavirus
J1289	Other viral pneumonia
J129	Viral pneumonia, unspecified
J208	Acute Bronchitis
J40	Bronchitis, Not Otherwise Specified
J22	Lower Respiratory Infection
J988	Respiratory infection, Not Otherwise Specified
J80	Acute Respiratory Distress Syndrome (ARDS)
Z20828	Contact with and (suspected) exposure to other viral communicable diseases
R430	Anosmia (loss of smell)

ICD-10 Code	Description
J9600	Acute respiratory failure, unspecified whether with hypoxia or hypercapnia
J9601	Acute respiratory failure with hypoxia
J9602	Acute respiratory failure with hypercapnia
J9620	Acute and chronic respiratory failure, unspecified whether with hypoxia or hypercapnia
J9621	Acute and chronic respiratory failure with hypoxia
J9622	Acute and chronic respiratory failure with hypercapnia
J9690	Respiratory failure, unspecified, unspecified whether with hypoxia or hypercapnia
J9691	Respiratory failure, unspecified with hypoxia
J9692	Respiratory failure, unspecified with hypercapnia
B3324	Viral cardiomyopathy
I469	Cardiac arrest, cause unspecified
N179	Acute kidney failure, unspecified
R6520	Severe sepsis without septic shock
R6521	Septic shock

<https://www.cdc.gov/nchs/data/icd/ICD-10-CM-Official-Coding-Guidance-Interim-Advice-coronavirus-feb-20-2020.pdf>

<https://jamanetwork.com/journals/jama/fullarticle/2763485>
<https://www.nejm.org/doi/pdf/10.1056/NEJMoa2002032>

Comparison to Other Pneumonia Diagnoses

- COVID-19 patients are likely to be much more resource-intensive than other pneumonia, due to severity, ICU, infection control (isolation), longer LOS, and a larger number of outliers.
- A historical look-back can be done to track other pneumonia diagnoses for comparison, to detect unusual prevalence increases that might be related to COVID-19. Here is a partial list of examples:

ICD-10 Code	Description
J13	Pneumonia due to Streptococcus pneumoniae
J14	Pneumonia due to Hemophilus influenzae
J120	Adenoviral pneumonia
J121	Respiratory syncytial virus pneumonia
J122	Parainfluenza virus pneumonia
J123	Human metapneumovirus pneumonia
J150	Pneumonia due to Klebsiella pneumoniae
J151	Pneumonia due to Pseudomonas
J1520	Pneumonia due to staphylococcus, unspecified
J15211	Pneumonia due to Methicillin susceptible Staphylococcus aureus
J15212	Pneumonia due to Methicillin resistant Staphylococcus aureus
J1529	Pneumonia due to other staphylococcus
J17	Pneumonia in diseases classified elsewhere

ICD-10 Code	Description
J153	Pneumonia due to streptococcus, group B
J154	Pneumonia due to other streptococci
J155	Pneumonia due to Escherichia coli
J156	Pneumonia due to other Gram-negative bacteria
J157	Pneumonia due to Mycoplasma pneumoniae
J158	Pneumonia due to other specified bacteria
J159	Unspecified bacterial pneumonia
J160	Chlamydial pneumonia
J168	Pneumonia due to other specified infectious organisms
J180	Bronchopneumonia, unspecified organism
J181	Lobar pneumonia, unspecified organism
J182	Hypostatic pneumonia, unspecified organism
J188	Other pneumonia, unspecified organism
J189	Pneumonia, unspecified organism

Examples of Services That May Change In Utilization

- It is likely worthwhile to monitor overall utilization and cost trends by Milliman Health Cost Guideline (HCG) category. Due to social distancing and lack of availability of providers, trends in some services may go down.
- Additional healthcare services may increase or decrease due to the outbreak. Ancillary services associated with many of these visits would also be affected. This list is not exhaustive.

CPT Codes and Description
Hospital inpatient initial care: 99221, 99222, 99223
Hospital inpatient subsequent care: 99231, 99232, 99233
Hospital observation initial care: 99218, 99219, 99220
Hospital observation subsequent care: 99224, 99225, 99226
Hospital inpatient initial consult care: 99251, 99252, 99253, 99254, 99255
Hospital admit/discharge same date care: 99234, 99235, 99236
Outpatient established office care 99211, 99212, 99213, 99214, 99215
Outpatient, new to office care: 99201, 99202, 99203, 99204, 99205
Outpatient consult care: 99241, 99242, 99243, 99244, 99245
Critical care: 99291 and 99292
Hospital inpatient discharge codes: 99238, 99239
Hospital observation discharge code: 99217
Ventilator management 94656-94657 <i>(cannot be billed same day as any E/M visit or critical care service, so not reliable alone)</i>

CPT Codes and Description
Emergency department visits – 99283, 99284, 99285, 99281, 99282
Office or outpatient visit for a new patient, 99201-99205
Office or outpatient visit for an established patient, 99211-99215
Non-physician telephone services, 98966, 98967, 98968
Online assessment, mgmt services by non-physician, 98969
Office or other outpatient consultations, 99241-99245
Prolonged Service Office Visit, 99354-99355
Prolonged Service Office Visit, 99358, 99359
Telephone Evaluation and Management, 99441-43, G2010
Non-face-to-face on-line Medical Evaluation, 99444
Clinic visit, all-inclusive (FQHC), T1015
Telehealth services, 99213, 99214, with Place of Service code POS 02
Communications-based technology, G2012, G2061, G2062, G2063, 99421, 99422, 99423

Tracking ICU and Ventilator Use and Capacity

- ICUs in certain markets may be under capacity stress during the crisis. You can identify ICUs with the following codes. Total ICU capacity, not COVID-19 specific.

Revenue Code	Description
0200	Intensive Care - General Classification
0201	Intensive Care - Surgical (not COVID-19 specific)
0202	Intensive Care - Medical
0203	Intensive Care - Pediatric
0209	Intensive Care - Other Intensive Care

- Ventilated patients can be identified by the following codes.

ICD-10 Code	Description
0BH13EZ	Insertion of Endotracheal Airway into Trachea, Percutaneous Approach
0BH17EZ	Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening
0BH18EZ	Insertion of Endotracheal Airway into Trachea, Via Natural or Artificial Opening Endoscopic
5A1935Z	Respiratory Ventilation, Less than 24 Consecutive Hours
5A1945Z	Respiratory Ventilation, 24-96 Consecutive Hours
5A1955Z	Respiratory Ventilation, Greater than 96 Consecutive Hours

HCPCS Code	Description
94002	Vent mgmt inpat init day
94003	Vent mgmt inpat subq day
94004	Vent mgmt nf per day

Note: HCPCS codes for ventilator management are not usually reported separately for inpatient. Ventilator management is typically billed as part of daily E/M, or part of critical care services.

A Few Examples of Elective Procedures

- Some elective procedures are likely to decrease. CMS has recommended limiting all non-essential planned surgeries and procedures, including dental, until further notice. The following codes identify a few examples of potentially deferrable elective care. This list is not exhaustive.

CMS recommendation tier	Adult Surgery or Procedure	Examples of CPT codes
Tier 1a: Low acuity surgery / healthy patient – Postpone	Colonoscopy, sigmoidoscopy	45378–45398, 44388-44408; 45442, 45330, 45331, 45332
	Cataract surgery	66820, 66821, 66830, 66982, 66983, 66984, 66985
	Carpal tunnel release	29848
	Cochlear implant	69930
	Gastric bypass	43843, 43845, 43846, 43847, 43771
	Cosmetic surgical procedures	19318
	Breast implants	19324, 19325
	Dental surgery	21010
	Non-malignant mass removal	11403, 11422
Tier 1b: Low acuity surgery / unhealthy patient – Postpone	Upper gastrointestinal endoscopy	49441, 43193, 43202, 43239, 44361, 44377, 44382, 44386
	Endoscopic retrograde cholangiopancreatography (ERCP)	43268, 43269
	Hernia repairs	49491-49651
	Gallstone removal	47562, 47563

Tier 3a and 3b: High acuity - Do not postpone: most cancers, trauma, transplants, cardiac with symptoms, limb-threatening vascular

CMS recommendation tier	Adult Surgery or Procedure	Examples of CPT codes
Tier 2a or 2b: Intermediate acuity surgery / healthy or unhealthy patient – Consider postponing	Knee arthroplasty, and other knee surgery	27447, 27446, 27438, 27440, 27441, 27442, 27443, 27445, 27486, 27488, c1776, 20985, 29879
	Hip arthroplasty, and other hip surgery	27134, 27130, 29914, 29863, 27120, 27125, 27130, 27132, 27134, 27137, 27138, 27090, 27091, 29863
	Shoulder arthroplasty, and other shoulder surgery	23470, 23472, 23473, 23474, 29827, 29806, 29825, 23415
	Arthroscopy	29888, 27405, 27407, 27409, 27427, 27429, 29889
	Spine surgery, e.g. nerve decompression surgery, spinal fusion	62380, 63001, 63003, 63005, 63015, 63016, 63017, 22595, 22600, 22610, 22612, 22614, 27279, 27280, 22630, 22632, 22551, 22552, 22554, 22556, 22558, 22585, 22586, 22633, 22634, 22856, 22858, 22861, 22864
	Kidney stone removal	50080, 50081, 52320, 52325, 52330, 52352, 52353
	Elective angioplasty	92920, 37215, 37216, 37217, 37218, 37236
	Low risk cancer	Clinically determined

CAVEAT: these procedures are not always elective

SARS-CoV-2 Data Analysis

Questions and Discussion