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# Leveraging Hospital Data in the COVID-19 Fight

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## Summary of Updates and Additions

This paper has been updated as of May 28, 2020 (original publication: April 22, 2020). Nimitt explicitly asked for feedback and suggestions on data elements to add to this paper as part of the ongoing response to the pandemic. We are grateful for the large number of responses we received. Content placed within green boxes throughout the document reflect suggestions made about new data elements, feedback to our original recommendations, or resolution of our recommendations. If a recommendation itself is no longer necessary, the text has been grayed out. We also received requests to clarify certain recommendations and provide further explanation about how a specific process might work. That feedback is reflected through edits to the text throughout but is not visually identified. Finally, we have updated the paper to reflect relevant Centers for Medicare and Medicaid Services updates and proposals.

## Overview and Purpose Statement

Data needs within the COVID-19 pandemic are a moving target. Rapid and thorough data collection on COVID-19 is vital for scientists, researchers, public health officials, decision-makers, and the general public. The acquisition of actionable, high-quality data will require strategic thinking and cooperation among many stakeholders, and time is of the essence. Hospital claims possess significant potential as a mechanism to acquire critically important information about patients. However, there is a time lag in these data being available—and an even greater time lag if new data elements are required, which we believe is the case.

This paper discusses steps that can be taken now to collect real-time data on COVID-19 cases. It also outlines steps the Centers for Medicare and Medicaid Services (CMS) can engage in immediately and in partnership with other stakeholder agencies to amend claim values and code sets, provide necessary guidance, and ensure that valid and consistent reporting of data occurs via claims.

Nimitt Consulting is comprised of a team of healthcare experts with professional backgrounds in public health, public policy, hospital and health system management, data analytics, hospital payment system design, and more. We have deep expertise in provider coding, billing, and reporting practices under existing Federal rules and regulations. We routinely work with large data sets—including the Medicare Standard Analytic File (SAF) and the Medicare Provider Analysis and Review (MEDPAR) file—to address important payment policy questions, and conduct analysis to better understand patient outcomes, episodes of care, and cost-effective

care. Understanding the types of information that can and cannot be captured through claims data sets enables us to think critically about what is needed and feasible during the pandemic, while imposing the least possible burden on providers. Please note that the Nimitt team does not include practicing physicians and all of our suggestions should be vetted with an expert clinical team.

In the spirit of collaboration, we offer these insights about how real-time and claims-based data can be collected and used to better understand clinical interventions, resource utilization, and patient outcomes related to the COVID-19 pandemic. While other data, such as certain demographic statistics and payer information, are useful, we are not addressing them in this paper, given that more comprehensive efforts to collect this information are already underway.

The considerations presented here are intended to spark a larger conversation and propel efforts to facilitate data-sharing and collection, so others can use and build off of these initial ideas. This is part of an ongoing national dialogue about how to meet the significant need for "timely, accurate, and reliable data about the health of the US population," including recently published suggestions for building an Information Technology (IT) infrastructure to provide a national backbone (or "spine") to capture the data essential for making decisions during public health emergencies like the pandemic.[1] In the event that the COVID-19 pandemic resolves more quickly than expected, the steps outlined here provide a map for rapid data collection efforts that could be employed in the case of a resurgence and/or other health event requiring real-time clinical monitoring and feedback.

As consultants who collaborate with providers on a daily basis, we understand collection of any new data will raise concerns around administrative burden. We are sensitive to any additional demands that may be placed on hospitals in terms of both capturing this information and updating templates and internal systems to provide the types of data described below. For this reason, we vetted these ideas and discussed the data collection burden with numerous hospital providers; they told us that efforts made now to collect data (real time or, after transaction set changes are put into place, on claims) will ultimately be less resource-intensive than trying to piece together these elements weeks or months later by being asked to abstract information from medical record documentation.

[1] Sittig DF, Singh H, "COVID-19 and the Need for a National Health Information Technology Infrastructure," *JAMA*. Published online May 18, 2020. doi:10.1001/jama.2020.7239.

## Data Tracking Recommendations

It is vital to understand that it takes time to approve, implement, report, and analyze any information for which collection requires modifications and/or additions to the legal health care transaction code and claim data sets. The table below summarizes the data elements that we recommend be collected and tracked in real-time by providers submitting their data now, as well as over time via claims-based data collection.

| *Data Element* | *Real-Time Data Collection* | *Claims Data Collection* |
|---|---|---|
| *Shared mechanical ventilators* | Hospitals submit to CMS | Qualifier on ICD-10-PCS ventilation codes |
| *Shared BiPAP and CPAP machines* | Hospitals submit to CMS | |
| *Duration of time of patients on mechanical ventilation* | Hospitals submit to CMS | Duration on ICD-10-PCS codes, or value code to capture the number of hours |
| *Highest oxygen flow rate* | Hospitals submit to CMS | Value code to report documented highest flow rate |
| *Availability of ECMO machines* | Hospitals submit to CMS | |
| *Use of prone positioning with (or without) ventilation* | Hospitals submit to CMS | ICD-10-PCS code for prone-positioning, and coding guidance to code in conjunction with ventilation |
| *Availability of prone tables* | Hospitals submit to CMS | |
| *Non-respiratory signs and symptoms* | | AHA Coding Clinic guidance that non-respiratory signs and symptoms to be coded in addition to COVID-19 diagnosis |
| *Use of specific therapeutic drugs during inpatient stays* | | NDC numbers for therapeutic drugs to be required on inpatient claims |
| *Hospital facility resources used for telehealth visits* | | Condition code |
| *Tracking patients treated at alternative care sites* | | Put actual alternative care site address on claims |

## Real-Time Data Collection

An effective response to the COVID-19 virus requires the collection of data not only to develop treatments and vaccines, but also to understand how resources are utilized and deployed, to assess outcomes for patients who require hospitalization and receive various interventions, and to identify the appropriate qualifications of interventions used. Accurate knowledge of pandemic-related data will be crucial in the pandemic and post-pandemic assessment periods. CMS began rapid pandemic-related data collection on March 29th, 2020, via a letter to the nation's hospitals.[2] The letter requested hospitals to report data to the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN)—including data on COVID-19 testing, bed capacity, and the status of certain supplies. The NCHS finalized a COVID-19 diagnosis code: U07.1,[3] which allows positive COVID-19 cases to be identified in claims data.

The American Medical Association (AMA), another organization responsible for Health Insurance Portability and Accountability Act (HIPAA) transaction code sets, also quickly implemented changes by issuing new Current Procedural Technology (CPT) codes for coronavirus laboratory diagnostic tests (CPT code 87635) and two antibody tests (CPT codes 86328 and 86769). On April 14th, 2020, CMS also created two new HCPCS codes for clinical diagnostic laboratory tests that use high-throughput technologies to detect virus (U0003 and U0004).[4]

**Recommendation:** *CMS can immediately add additional clinical datapoints to the agency's real-time data reporting requests from hospitals.*

- Although claims that include a diagnosis of COVID-19 can currently be identified, other clinical presentations noted about this disease are not reflected in current coding conventions and transaction sets.
- Using claims to identify these symptoms will allow clearer and quicker analysis of population-level data than studies leveraging Electronic Health Record (EHR) systems, which need to be extracted by vendors and then matched with claims. Currently, most clinical reviews of EHRs are either retrospective or require manual reporting, which can cause delays in understanding best practices. Given the widespread use of EHR technology by hospitals in the United States, with Epic and Cerner being among the top vendors, providers have shared that we should immediately explore how to capture data in the EHR and have EHR logic drive information through electronic billing systems so data can be reported with greater automation, and in a more timely manner.

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[2] Centers for Medicaid and Medicare Services (CMS), *Press Release: Trump Administration Engages America's Hospitals in Unprecedented Data Sharing*, Baltimore (MD): CMS, March 29, 2020 (https://www.cms.gov/newsroom/press-releases/trump-administration-engages-americas-hospitals-unprecedented-data-sharing; https://www.cms.gov/files/document/32920-hospital-letter-vice-president-pence.pdf).

[3] Centers for Disease Control and Prevention (CDC), *New ICD-10-CM Code for the 2019 Novel Coronavirus (COVID-19)*, Atlanta (GA): CDC, April 1, 2020. (https://www.cdc.gov/nchs/data/icd/Announcement-New-ICD-code-for-coronavirus-3-18-2020.pdf; https://www.cdc.gov/nchs/data/icd/COVID-19-guidelines-final.pdf).

[4] Centers for Medicaid and Medicare Services (CMS), *CMS-Ruling 2020-1-R*, Baltimore (MD): CMS, April 14, 2020 (https://www.cms.gov/files/document/cms-2020-01-r.pdf).

**Recommendation:** *CMS can ask hospitals for additional, detailed reporting on the use of oxygen support and mechanical ventilation, including:*

- **Shared ventilator use**: To assess the utilization and outcomes associated with ventilators modified to serve two or more patients, if this is occurring or could occur in the future, since it has been discussed.
- **Length of time on mechanical ventilation**: Currently ICD-10-PCS codes for mechanical ventilation only describe a maximum duration of "greater than 96 hours." Given the reports of COVID-19 patients who need ventilation for much longer time frames, tracking the total number of hours patients remain on a ventilator will be of high value.
- **Highest rate of oxygen flow**: To assess the oxygen needs and outcomes associated with oxygen support for hospitalized patients.
- **Alternate methods for mechanical ventilation:** To assess the effectiveness of Bilevel Positive Airway Pressure (BiPAP) and Continuous Positive Airway Pressure (CPAP) machines being used to treat COVID-19 patients in some cases.
- **Extracorporeal Membrane Oxygenation (ECMO):** ECMO may be used when patients' lungs are not able to absorb oxygen due to illness or damage. Essentially, this machine oxygenates the blood by bypassing the lungs; it provides a higher level of oxygen to the body than the lungs can at the moment. Access to ECMO is limited; this process is resource-intensive; and the procedure is patient-invasive, but it may produce positive outcomes in severely ill COVID-19 patients who are not improving on a ventilator. CMS should track the availability and use of ECMO machines, given their potential role in supporting critically ill patients who are failing mechanical ventilation.

- **Prone positioning**: CMS should track outcomes resulting from changing a patient's positioning while on, or without, mechanical ventilation. Patients are turned incrementally until they are prone, and many clinicians use prone tables to do so. CMS could require providers to track and report the use of this technique as well as the use of prone tables in conjunction with ventilation.

## Claims-Based Data Collection

CMS, the NCHS, the National Uniform Billing Committee (NUBC), and other stakeholders should coordinate efforts and implement specific changes to the formal transaction code sets, as necessary. The following changes to coding practices and data fields on claims are recommended to facilitate the broad capture of the diversity of symptomology associated with COVID-19 patients. This is meant to be a starting point for capturing information to better understand these cases. Over time, as knowledge about these cases increases, additional measures to capturing the severity of COVID cases may develop.

### Coding Signs and Symptoms in Addition to Diagnoses

- **Recommendation:** The *American Hospital Association's (AHA) Coding Clinic forum should remind and encourage coding professionals on the importance of coding both the COVID-19 diagnosis and associated non-respiratory signs and symptoms.*
    - Variations in the constellations of symptoms that present in COVID-19 cases are being identified; robust symptom coding will provide useful epidemiological data when reported in conjunction with the COVID-19 diagnosis code. Currently, coding guideline I.C.18.b instructs that related signs and symptoms of an illness are not reported when a definitive diagnosis has been established. Given the new diagnosis code for COVID-19, non-respiratory signs and symptoms (i.e., bradycardia, tachycardia, loss of taste and smell, gastrointestinal issues, dermatologic and venous sufficiency issues, and other non-respiratory symptoms) are not being coded consistently because they may be attributed to COVID-19 versus another established condition, such as cardiomyopathy. A reminder from the AHA will facilitate the reporting of non-respiratory presentations of the disease, using existing ICD-10-CM diagnosis codes.

      ***NOTE**: This recommendation is grayed out since it is no longer active; see update below.*

**UPDATE:** Our preceding recommendation (published April 22nd, 2020) has been addressed through the publication of guidance. On April 28th, 2020 the American Hospital Association (AHA) and the American Health Information Management Association (AHIMA) updated a Frequently Asked Questions (FAQ) fact sheet on coding guidance for ICD-10-CM for COVID-19. The updated fact sheet includes a question about whether or not to separately code non-respiratory signs or symptoms, since they are not routinely associated with COVID-19. The answer was that, because COVID-19 is primarily a respiratory condition, any other signs/symptoms would be coded separately, unless a definitive diagnosis has been established; the answer was supported by Guideline IC.18.b.

This is a helpful addition to the FAQ and we are grateful to the AHA and AHIMA for publishing this important and timely update. The FAQ can be viewed here: https://www.aha.org/fact-sheets/2020-03-30-frequently-asked-questions-regarding-icd-10-cm-coding-covid-19.

- **Recommendation:** *The NUBC could announce the expanded use of the three existing "patient's reason for visit" diagnosis code fields on institutional claims*.

    - There is currently limited application of these diagnosis fields on institutional claims. They are currently used and accepted by payers for patients who present to the Emergency Department and are not admitted. Expanding the use of these fields will allow collection of more robust data regarding the patient's clinical presentation.
    - For example, if a patient presented with Gastrointestinal (GI) issues and was diagnosed with COVID-19, the information would be captured during the public health emergency. This would be a change from current practice, given that GI symptoms are not normally coded on the final inpatient claim.

## Expanding ICD-10-CM Diagnosis Coding System

**New Recommendation Based on Feedback Received:** *The National Center for Health Statistics should create a code immediately for previous positive COVID-19 infection.*

- In order to capture the patients that return for rechecks every 14 days, a new diagnosis code is necessary. Currently, code Z86.19 (personal history of other infectious and parasitic diseases) could be reported, but it is not specific to COVID-19. A new code should be created in the personal history section of ICD-10-CM.
- The Chapter 21 chapter-specific guidelines state that: "personal history codes explain a patient's past medical condition that no longer exists and is not receiving any treatment, but that has the potential for recurrence, and therefore may require continued monitoring" (I.C..21.c.4). Personal history of infectious and parasitic diseases is located in subcategory Z86.1-. There is room in the code set, either at codes Z86.16 or Z86.17, to add a new code for personal history of COVID-19.
- The personal history of COVID-19 infection code would be used once the infection has resolved, and is relevant to the ongoing care of the patient. For example, when a patient is being seen for treatment of lung cancer and the provider documents history of COVID-19 that is now resolved, the personal history code would be reported.

## Modifying ICD-10 Procedure Coding System (PCS)

**Recommendation***: CMS should modify the ICD-10-PCS Table 5A1 (Mechanical Ventilation) to reflect instances in which a ventilator was shared and capture other important information, including the following:*

- **Shared ventilation**: Currently, there is no qualifier for the 7$^{th}$ character of the code to designate whether a ventilator was shared or the number and/or range of patients sharing a ventilator. We suggest that qualifiers be added to Table 5A1 of ICD-10-PCS to ensure more robust data-collection.
- **Length of mechanical ventilation:** Current ventilation codes have duration ranges that include "Greater than 96 hours" (4 days) as the highest reportable range. Yet, some

COVID-19 patients have been on ventilation for weeks—far longer than is typical. This change could be approached by creating either a new range or an allowance to report specific hours. If CMS decides upon the latter, it will be necessary to modify the language around duration of ventilation codes. It is our understanding that coders already calculate the number of ventilator hours from the respiratory therapy ventilator documentation. Thus, having a specific number of hours or understanding that a new threshold has been reached (i.e., beyond 96 hours) should be straightforward to obtain. Alternatively, discrete fields can be built into electronic medical records where hospital staff can enter the total number of hours—which would further reduce the burden on coders when reporting these additional data. We recommend that the duration in the ICD-10-PCS codes be as follows, pending input from expert clinicians:

1. Maintain: "less than 24 hours" and "24-96 hours,"
2. Modify: Change "96 hours or greater" to the following:
    - "96 – 168 hours" (3 – 7 days)
    - "168 – 240 hours" (7 – 10 days)
    - "240 – 336 hours" (10 – 14 days)
    - "336 – 408 hours" (14 – 17 days)
    - "408 – 504 hours" (17 – 21 days)
    - "504 hours or greater" (more than 21 days)

In addition to mechanical ventilation, pending clinical input, the ICD-10-PCS codes for BiPAP and CPAP may warrant expanding the hours/duration similar to mechanical ventilation as described above. For both, we envision respiratory therapists entering the hours in their documentation and coders verifying the entry. The EHR field that the respiratory therapists complete would then need to populate the appropriate field on the claim.

- **Prone positioning:** CMS should be able to capture the positioning procedure in the respiratory tables 5A0. Since this procedure is used to improve ventilation's efficacy (both for mechanical ventilation and non-invasive ventilation such as from CPAP), coding guidance could state that the code should only be used *in conjunction with* a ventilation code.

**New Data Element Based on Feedback Received:** *Capturing Patients in Isolation.*

- CMS and/or the AHA Coding Clinic could address this issue by instructing providers who are placing patients in isolation to report this as a primary intervention using existing ICD-10-PCS code 8E0ZXY6, which indicates that the intent of the treatment of isolation is to remediate or cure a disorder or disease. Claims data show this code is being used, but inconsistently within and across facilities. Education could increase its use and, given that there is usually an order to place a patient in isolation, coders could locate this relatively easily for coding purposes.

## Tracking the Use of Therapeutic Drugs for Inpatient COVID-19 Cases

**Recommendation:** *NUBC and CMS should announce that hospitals are required to report National Drug Code (NDC) codes for therapeutic drugs on inpatient claims, effective immediately.*

- Knowing exactly what drugs were used for COVID-19 patients will greatly benefit researchers and clinicians alike, as it will provide a better understanding of what drugs were used, when, where, and to what extent they had therapeutic value—all of which will have an immense public health value. Yet, on standard inpatient hospital claims, there is currently no way to see what particular drugs were administered to a patient, unless the drug or therapeutic agent has a unique New Technology ICD-10-PCS code explicitly naming it. This leaves researchers without the ability to count and analyze cases utilizing compassionate use programs; new protocols; the off-label use of certain therapeutic drugs; such as hydroxychloroquine; and, once approved, the use of therapeutics currently in clinical trials. Although clinicians are currently able to report to a clinical data repository (such as Oracle's COVID-19 Therapeutic Learning System, which is open source, and available to record the effectiveness of COVID-19 drug therapies), it still requires separate submission, which results in additional work for hospitals.[5] In contrast, our recommendation of capturing drug therapies administered in the inpatient setting by requiring NDC reporting on claims would not require additional data submission.
- Hospitals currently have the ability to report the NDC codes for drugs and biologics that are administered to inpatients on electronic claims. Hospital systems already report NDC numbers on outpatient claims, so the NDC numbers are available within the system and could be deployed onto inpatient claims. In order to report NDC on inpatient drugs, hospitals would have to update their claim rules to ensure that the NDC data that are already associated with the individual drug charges in their databases would detail (i.e., print) on inpatient claims, as they do on outpatient claims. This is a patient accounting system setting that is typically not difficult to change.
- Currently, some payers require the NDC on inpatient claims for some or all drugs, and providing this detail is consistent with current NUBC requirements that it is optional per the payer. However, due to the value of analyzing what drugs have an impact on COVID-19 cases, making this a requirement would help the assessment.
- Since NDC information is already captured by hospital systems, NUBC and CMS merely need to require it to be reported on all inpatient claims, and payer systems be required to accept and store the additional information.

[5] Centers for Medicaid and Medicare Services (CMS), *Press Release: Trump Administration Champions Reporting of COVID-19 Clinical Trial Data through Quality Payment Program, Announces New Clinical Trials Improvement Activity*, Baltimore (MD): CMS, April 20, 2020 (https://www.cms.gov/newsroom/press-releases/trump-administration-champions-reporting-covid-19-clinical-trial-data-through-quality-payment).

## Utilizing Value Codes

**Recommendation:** *The NUBC could define a new value code that allows hospitals to report the exact number of hours a patient received mechanical ventilation during an inpatient stay. A second value code could also be used to report the maximum oxygen flow recorded during the care episode.*

- Value codes are used to capture a wide variety of information, reported as a single monetary or integer value, which is applicable to a patient case on hospital claims. For example, value codes are used to report the applicable hematocrit and hemoglobin values for a patient who receives an erythropoietin (EPO) injection.

## Utilizing Condition Codes

**Recommendation**: *The NUBC could utilize condition codes on claims to add specificity of the treatment site, including the identification of telehealth visits.*

- COVID-19 has forced a dramatic expansion of telehealth and telemedicine services, both for suspected COVID-19 cases and for many non-emergent services, in order to minimize patient and provider exposure. It is currently difficult, however, to reflect the fact that inpatient care was furnished using telehealth, unless the hospital reports a site origination fee under revenue code 0780. Creation of a condition code to identify telehealth services on *inpatient* claims, along with specification that the number of telehealth sessions provided should be reported as units of service, will allow for more accurate tracking of the volume of cases and facility resources utilized to enable telehealth services. Additionally, thinking should begin now about the need for a condition code or other claim values to report hospital services furnished via telehealth to patients who are not in the hospital (i.e., hospitals without walls).
- With the release of the CMS-5531-IFC on April 30th, 2020, CMS is now allowing hospitals to move hospital services to temporary locations, including patient homes, as long as the hospital can meet Conditions of Participation that have not been waived, and the temporarily relocated hospital departments are not inconsistent with the state or local pandemic plan. This allows hospitals that can meet these conditions to furnish two types of virtual or telehealth services: those solely performed by employed hospital staff, and those for which hospital staff support a telehealth service provided by a physician or non-physician practitioner. In the former group of services, CMS has created a list with examples of allowable services' CPT/HCPCS codes, noting that the list is not exhaustive. While use of audio/visual technology is preferred, audio (i.e., phone only) is allowed when it is documented that audio is the only available option to use with that patient. CMS has not issued instructions that the telehealth revenue code 0780 should be used when billing for these telehealth services. When hospital staff virtually support a physician visit, they are to bill the telehealth site origination fee Q3014 only. While these changes are welcomed and much needed, the recent Interim Final Rule did not mitigate the need for a way to add specificity of the treatment site easily to claims.

## Service Location Guidance

**Recommendation:** *The NUBC could release guidance requiring the service location where COVID-19 patients are treated be reported on the claim.*

- Alternative care sites and temporary hospitals are being set up throughout the country; condition code “DR” (specifying a disaster) will be used on these claims.
- Additional elements of interest include whether there are clinical, cost, and/or patient outcome differences between patients who are treated at a main hospital or other facility versus an alternative care site. Guidance could specify that the actual *address* of the alternative care site be reported as the service location. The presence of condition code “DR” could override any address edits to ensure that claims are not held up due to the presence of an unenrolled service address.
- Similarly, for professional claims reported on the CMS 1500 claim form, guidance from the National Uniform Claim Committee (NUCC) could state that the exact alternative care site location—including the address—is to be reported; in this case the use of modifier -CR could override any address issues with those locations being reported.

## Conclusion

As claims data experts, we are aware that the process of changing claims data collection practices can be lengthy. As professionals who work on a daily basis with hospitals, we are sensitive to adding additional requirements and/or creating unnecessary burdens for facilities. Yet, we believe the best way to gather data quickly is to build off of CMS' existing process to collect hospital data in real-time.

Ultimately, these data are important not just to respond to the pandemic but also to understand resources and outcomes in order to help prepare the healthcare system for any future outbreaks. If we do not engage *now* to abstract information from medical record documentation and simultaneously work to modify transaction set data, we may find ourselves asking hospitals weeks, months, or years in the future to engage in a far more resource-intensive process. And, this latter process is likely to yield far less accurate information that may leave us scrambling to respond in the future.

The ideas and recommendations in this paper are by no means exhaustive. In fact, they should be reviewed and revisited as new information about COVID-19 emerges every day. We recognize that it can be challenging and time-consuming to identify and implement processes to collect data via claims and in real-time. But, given the urgency of this public health emergency as well as possible future ones, we believe it is vital to initiate conversations now about the best data elements to track and work towards collecting them as soon as possible. We invite our colleagues and other stakeholders to build upon these thoughts and contribute your own. Any major updates will be available on the Nimitt website page (https://nimitt.com/covid-19-data-project/).

Our gratitude goes out to all healthcare providers treating patients, and to the researchers and scientists striving to improve diagnostic and treatment options. Finally, we wish to thank the U.S. Department of Health and Human Services, CMS, and the NCHS for their work during this time. We hope this conversation is fruitful, as we all work together in this fight.

*For further discussion, please contact Nimitt Consulting using the contact form at https://nimitt.com/covid-19-data-project/.*

*Special Acknowledgements: Ronald Hirsch, MD, FACP, CHRI; Denise Williams, COC, CHRI, ADN, Revenue Integrity Consultant; Anne Casto, RHIA, CCS, Independent Coding Consultant; Karen Shaw, RHIT, CCS, Inpatient Coding Consultant, and Susan K. Flinn, MA, Business Analyst.*