The CACDIS Connection

JOURNAL OF CALIFORNIA ACDIS CDI CHAPTER

Welcome to the 21st issue of the CA ACDIS journal!

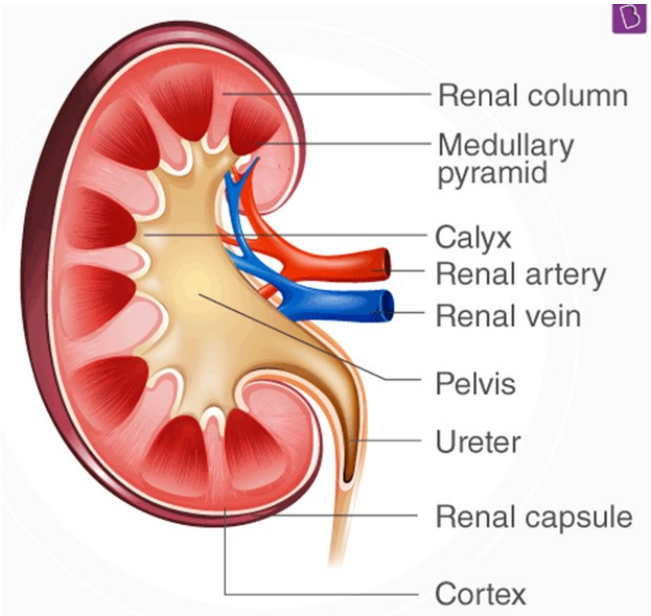
Kidneys & Coding: How to Capture AKI, ATN and CKD from a CDI perspective?

Ann Marie Gould, RN, CCDS, CDIP

Cristy Zielinski, RN, CCDS

www.RN-Link.com

As Clinical documentation specialists (CDS), we perform concurrent reviews to assist the HIM professionals (e.g., coders) to have the most accurate codes for final billing. The goal for accurate coding: to assist the hospitals in achieving financial stability as well as providing high quality care. CDS's educate providers based upon clinical indicators that are used to provide the highest specificity for each diagnosis documented. Whereas providers educate clinical documentation specialists on best practice methods used to formulate a specific diagnosis for each patient within the hospital setting. We also assist the coders to capture complete, concise, and accurate codes based upon diagnosis specificity within the medical record. This leads to a high quality of care for each hospitalized patient.



When reviewing specific diagnoses for high specificity, let's do a deep dive into kidney injury and disease with review of the pathophysiology of the kidney.

Pathophysiology overview of the kidney

(continued on page 2)

Issue 21 Jun 2023

(cont'd from page 1)

The kidney is bean-shaped and is protected by fat, muscles, and ribs of the back. In the diagram above, the kidney is composed of renal columns, medullary pyramids, renal calyces, a renal artery and vein, renal pelvis, ureters, a renal capsule, and cortex. The functions of the kidney include control of blood pressure and promote water balance, excrete waste products, regulate electrolytes, maintain acid-base balance within the body, regular red blood cell production, secrete prostaglandins, synthesize vitamin D into an active form and promote urine function.

Certain risk factors for renal diagnoses may include advanced age, benign prostatic hypertrophy, diabetes, gout, Crohn's disease, hypertension, immobilization, multiple sclerosis, Parkinson's disease, sickle cell disease, spinal cord injury or systemic lupus erythematous, to name a few.
Urine color changes also give the physician the possible cause relating to the patient's symptoms. For example, yellow to milky white urine may indicate pyuria/infection; bright yellow may relate to multiple vitamin preparations, pink to red urine may indicate gross hematuria, menses, or medications as the cause, while orange to amber urine may indicate the patient has a diagnosis of dehydration, fever, and/or excess bilirubin or carotene within the body.

As one can see, many illnesses may be contributed to kidney malfunction/damage.
As a CDS, one needs to be aware of the specific testing that is ordered by the provider(s) and interpret the data based upon the provider's documentation. Now, let's review three diagnoses that CDS's review on a regular basis and most likely need to query the provider for additional documentation.

How to capture Acute Kidney Injury (AKI) within the medical record?

AKI is defined as a sudden drop in kidney function. AKI can be divided into three subclassifications: Prerenal, Intrarenal and postrenal.

- Prerenal AKI – blood flow compromised to the kidney; may be due to trauma, hemorrhage, dehydration and/or hypotension. This is the most common form of AKI.
- Intrarenal AKI – the kidney cells become ischemic, necrotic, or diseased from medication toxicity such as overuse of NSAIDs, infections, leukemias or diabetic nephropathy. This type of injury is more complex and can lead to tubular necrosis.
- Postrenal AKI – an obstruction within the kidney, not allowing the kidney to excrete waste from the kidney to the bladder. This may be seen in patients with kidney stones, neurogenic bladder or surgical complications and is one of the rarest forms of AKI.

What diagnostic criteria is used to diagnosis AKI? The most recognized criteria come from KDIGO – this criterion applies to adults and children:

- Increase in serum creatinine level to > 1.5x baseline, which is known or presumed to have occurred within the prior 7 days; or
- Increase in serum creatinine > 0.3 mg/dL comparing two separate levels, with the second level done within 48 hours or less of the first level: or
- Urine output < 0.5 mg/kg/hour for 6 hours.

This criterion can apply to patients who have CKD and who were never diagnosed with CKD. KDIGO also states that if the baseline serum creatinine is not known, the physicians can use the lowest serum creatinine recorded within the patient's medical record during the hospitalization in order to diagnosis AKI.
Treatment involves IV fluid hydration, serial creatinine levels, investigating underlying cause (e.g., may be due to patient's chronic medication usage) and sometimes a Nephrologist is consulted if the serum creatinine does not improve with IVF hydration.

As a CDS, coding considerations need to be reviewed when patients are diagnosed with AKI. Not only does the CDS validate the criteria used to diagnosis the patient with AKI as per KDIGO criteria, the CDS also needs to be aware of the "code also" note – this instructs coders/CDS to "code also any associated underlying condition." For example, AKI unspecified (N17.9) can also be differentiated into tubular necrosis, cortical necrosis and/or medullary necrosis.
Let's dive into ATN – acute tubular necrosis.

How to capture Acute Tubular Necrosis (ATN) within the medical record?

ATN is defined as acute kidney injury (AKI) associated with a toxic or ischemic injury causing renal dysfunction, which in turn, causes fluid and electrolyte imbalances.
Causes of ATN can include: IV contrast, prolonged hypotension, medications, chemicals and/or toxins.
Diagnostic criteria for ATN:

- Must meet AKI criteria
- Serum creatinine does not return to normal level until > 72 hours
- Urine sodium level is usually > 40 mEq/L
- Fractional excretion of sodium (FeNA) is usually > 2% but can sometimes be < 2%
- Urinalysis does not have any sediment – most times, urinalysis may or may not be ordered

Treatment involves IV fluid hydration, orders for IV Lasix, serial monitoring of serum creatinine levels as well as a Nephrology consult. The reason for Nephrology consult – the patient may need emergent hemodialysis to improve his/her kidney function.

From a CDS perspective, coding the diagnosis of ATN must be scrutinized in order to prevent future denials. All the above criteria should be documented within the medical record. From a coding perspective, specificity of ATN may need to be clarified – is it related to IV contrast? There are different codes associated with ATN – Acute kidney injury with tubular necrosis is assigned to N17.0, whereas AKI with ATN associated with contrast-induced nephropathy codes to N17.0 (ATN) and N14.1 (Nephropathy induced by other drugs, medicaments, and biological substances) as well as T50.8X5A (adverse effect of diagnostic agents, initial encounter).

Did you know: Vasomotor nephropathy codes to ATN? As a CDS, one definitely wants to review the record for this verbiage in order to capture the ATN diagnosis.

How to capture chronic kidney disease (CKD) within the medical record?

CKD can be defined as: "abnormalities of the kidney structure or function that has been present for 3 months or greater, with implications for health" per KDIGO guidelines. The criterion used to diagnosis CKD includes persistent albuminuria, urine sediment abnormalities, electrolyte abnormalities due to tubular disorders, structural abnormalities that are detected on imaging, histological abnormalities noted on pathology reports as well as a history of kidney transplantation. Keep in mind – this criterion must be present for a minimum of 3 months in order for the patient to be diagnosed with any type of CKD.

There are five stages of CKD. These include:

GFR categories in CKD

GFR category	GFR (ml/min/1.73 m^2)	Terms
G1	≥90	Normal or high
G2	60-89	Mildly decreased*
G3a	45-59	Mildly to moderately decreased
G3b	30-44	Moderately to severely decreased
G4	15-29	Severely decreased
G5	<15	Kidney failure

Abbreviations: CKD, chronic kidney disease; GFR, glomerular filtration rate.
*Relative to young adult level
In the absence of evidence of kidney damage, neither GFR category G1 nor G2 fulfill the criteria for CKD.

The last stage of CKD 5 associated with a patient receiving hemodialysis is End-stage renal disease (ESRD). From a coding perspective, CDS' need to keep in mind that there are different codes for each stage, including ESRD:

CKD Stage 1	eGFR ≥ 90	N18.1
CKD Stage 2	eGFR 60-89	N18.2
CKD Stage 3a	eGFR 45-59	N18.31
CKD Stage 3b	eGFR 30-44	N18.32
CKD Stage 4	eGFR 15-29	N18.4
CKD Stage 5	eGFR < 15	N18.5
ESRD (CKD 5 requiring dialysis)	eGFR < 15	N18.6
CKD, unspecified	-	N18.9

When physicians are attempting to diagnosis the patient with CKD, the albuminuria seen on testing, can also be categorized as follows:

Albuminuria categories in CKD

Category	AER (mg/24 hours)	ACR (approximate equivalent) (mg/mmol)	ACR (approximate equivalent) (mg/g)	Terms
A1	<30	<3	<30	Normal to mildly increased
A2	30-300	3-30	30-300	Moderately increased*
A3	>300	>30	>300	Severely increased**

Abbreviations: AER, albumin excretion rate; ACR, albumin-to-creatinine ratio; CKD, chronic kidney disease.
*Relative to young adult level.
**Including nephrotic syndrome (albumin excretion usually >2200 mg/24 hours [ACR >2220 mg/g; >220 mg/mmol]).

In most hospitals, chronic kidney disease (CKD) is part of the patient safety indicators (PSI) quality programs where hospitals can receive incentives based upon the value-based purchasing program for Medicare recipients.

When a patient is diagnosed with CKD, the provider needs to assess additional factors along with the above diagnostic testing. The older adult will experience a decrease in eGFR and increased albuminemia with age; however, if eGFR and albuminemia are persistently low and high, respectively, the older adult will be diagnosed with CKD.

Based upon KDIGO criteria, CKD stage is based upon cause (underlying etiology), eGFR and albuminemia levels. Some of the causes of CKD include:

Table 4 | Classification* of CKD based on presence or absence of systemic disease and location within the kidney of pathologic-anatomic findings

	Examples of systemic diseases affecting the kidney	Examples of primary kidney diseases (absence of systemic diseases affecting the kidney)
Glomerular diseases	Diabetes, systemic autoimmune diseases, systemic infections, drugs, neoplasia (including amyloidosis)	Diffuse, focal or crescentic proliferative GN; focal and segmental glomerulosclerosis, membranous nephropathy, minimal change disease
Tubulointerstitial diseases	Systemic infections, autoimmune, sarcoidosis, drugs, urate, environmental toxins (lead, aristolochic acid), neoplasia (myeloma)	Urinary-tract infections, stones, obstruction
Vascular diseases	Atherosclerosis, hypertension, ischemia, cholesterol emboli, systemic vasculitis, thrombotic microangiopathy, systemic sclerosis	ANCA-associated renal limited vasculitis, fibromuscular dysplasia
Cystic and congenital diseases	Polycystic kidney disease, Alport syndrome, Fabry disease	Renal dysplasia, medullary cystic disease, podocytopathies

Abbreviations: ANCA, antineutrophil cytoplasmic antibody; CKD, chronic kidney disease, GN, glomerulonephritis
Genetic diseases are not considered separately because some diseases in each category are now recognized as having genetic determinants.
*Note that there are many different ways in which to classify CKD. This method of separating systemic diseases and primary kidney diseases is only one, proposed by the Work Group, to aid in the conceptual approach.

From a CDI perspective, documentation of a baseline serum creatinine needs to be established prior to the provider indicating the stage of CKD. If a baseline serum creatinine is unknown, the CDS may use the lowest creatinine during the hospital stay; however, the CDS needs to review the documentation for 'hints' – chronic illnesses, any history of renal disease for patient and/or family members as well as baseline serum creatinine. If a query is sent for the CKD stage and the providers (Attending and/or Nephrologist) are unable to clarify a specific baseline, the query response may be "unable to clinically determine."

Summary

When it comes to any documented diagnosis, the CDS has to look for clues within the medical record to support that specific diagnosis, whether it be AKI, ATN and/or CKD stages. As the old adage goes, "if it's not documented, it didn't happen!" Always remember to review the medical record in its' entirety in order to accurately capture the renal diagnoses based upon the diagnostic workup, treatment and most importantly, the provider's documentation of a specific diagnosis.

References:

- 2023 ACDIS Pocket Guide.
- KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease, Volume 3 – Issue 1 – January 2013.
- Pinson&Tang, 2023 CDI Pocket Guide – 16th Edition.

Sepsis Denials and Appeals

By Maggie DeFilippis, RN, JD, CCDS, CDIP, CCS, CPC

Clinical Documentation Integrity and Appeals Specialist, UCLA Health

Unintended Consequences

The World Health Organization's Third International Consensus Definitions Task Force on Sepsis got together in 2015 to address accurate diagnosis and treatment of Sepsis. Little did they know that their findings would result in a persistent practice of denied reimbursement by payers across the United States for hospitals providing care for patients with sepsis. The intent of the Task Force was to provide a *guideline* for providers to more accurately diagnose and treat patients allowing "earlier recognition and more timely management of patients with sepsis or at risk of developing sepsis". However, the majority of physicians in the United States have *not* accepted this standard. American providers have been concerned that the task force guidelines cast to narrow a net for Sepsis patients, resulting in detection and treatment of Sepsis that is often too late.

Rejected Standards

American physicians have overwhelmingly determined the guidelines the Task Force developed, known as Sepsis 3 or SOFA (Sequential Organ Failure Assessment) were too narrow, blocking early treatment of Sepsis resulting in increased mortality.(1) The standard used in daily practice by the great majority of providers for diagnosing and treating adult Sepsis continues to be the Sepsis 2 or SIRS (Systemic Infectious or Inflammatory Response Syndrome) standard. Also, the CMS standard for providing quality care to patients with Sepsis utilizes only the Sepsis 2 (SIRS) standard.(2)

Seized Opportunities

CMS and commercial healthcare payers pay more in Sepsis claims than they do for any other diagnosis.(3) Of course this also means that healthcare providers' costs for Sepsis diagnoses are also the highest. So, when commercial payers saw an opportunity to limit reimbursement by imposing the Sepsis 3 standard on providers, they seized it. In 2019, UnitedHealthcare was first to redefine the requirements for Sepsis reimbursement using the Sepsis 3 definition.(4) Most commercial payers followed with policy statements requiring validation of Sepsis in the medical record with Sepsis 3 criteria. Now, Sepsis denials are one of the most common types of denials of reimbursement providers face.

Clinical Validation Denials

Clinical validation denials of reimbursement occur when the payer states the medical record documentation does not include clinical evidence under the correct standard to confirm that the patient had the diagnosis for which they treated the patient. While the Official Coding Guidelines Section I.A.19 seems to state this typeof denial is not permitted, payers continue to challenge physician's diagnoses with unqualified review. If providers do not dispute these denials by appealing, payers will increase the number of denials they send.

Fight the good fight

Denials of reimbursement alleging failure of documentation of clinical validation of a diagnosis are particularly challenging to appeal, and these sepsis denials are the most challenging of all. However, it is very important to make sure that care of sepsis patients is reimbursed fully.

- In all Sepsis appeals I often point out the following facts.
  - Look at the specific payer's policy. Many have statements that "physician's documented clinical judgement controls". Some smaller payers do not yet require Sepsis 3 validation. CMS specifically advocates Sepsis 2 validation.

  Statements from the Consensus opinion as reported first in the 2016 article by lead author Dr. Mervyn Singer.(5)

  > ". . . the SOFA score is not intended to be used as a tool for patient management but as a means to clinically characterize a septic patient. Components of SOFA require laboratory testing and may be affected by iatrogenic interventions and thus may not promptly capture dysfunction in individual organ systems . . ."
  >
  > The Sepsis 3 standard is based on "organ dysfunction", not necessarily organ failure, "Organ dysfunction, even when severe, is *not* associated with substantial cell death."
  >
  > "Sepsis-induced organ dysfunction may be occult; therefore, its presence should be considered in any patient presenting with infection. Conversely, unrecognized infection may be the cause of new-onset organ dysfunction. Any unexplained organ dysfunction should thus raise the possibility of underlying infection."

"Nonspecific SIRS criteria such as pyrexia or neutrophilia will continue to aid in the general diagnosis of infection."

"***Neither qSOFA nor SOFA is intended to be a stand-alone definition of sepsis***. It is crucial, however, that failure to meet 2 or more qSOFA or SOFA criteria should not lead to a deferral of investigation or treatment of infection or to a delay in any other aspect of care deemed necessary by the practitioner . . . The task force wishes to stress that SIRS criteria may still remain useful for the identification of infection"

"The task force recommendations should not, however, constrain the monitoring of lactate as a guide to therapeutic response or as an indicator of illness severity. . . . However, the combination of hyperlactatemia with fluid-resistant hypotension identifies a group with particularly high mortality and thus offers a more robust identifier of the physiologic and epidemiologic concept of septic shock than either criterion alone . . . "

- ICD-10-CM considerations

  Official Coding Guidelines I.C.1.d.3. (Sepsis, when qualified as PDX should be PDX)

  Official Coding Guidelines Section I.A.19 (specifically states that "*The assignment of a diagnosis code is based on the **provider's diagnostic statement** that the condition exists. The provider's statement that the patient has a particular condition is sufficient,"*)

  AHA Coding Clinic 4th Quarter 2016 p. 147 ("Coding must be based on provider documentation . . .")

  AHA Coding Clinic 4th Quarter 2017 p.98 (Documentation of Sepsis is enough to code – the specific criteria used does not control coding)

- There are now 2 main, different types of Sepsis cases and each requires a different appeal approach, *if the type of validation is the stated cause of denial*.

  Sepsis denied for failure to document or establish validation using Sepsis 3 criteria

  Determine if patient did meet Sepsis 3 criteria and if so argue the patient did meet the payer's standard. All that is needed are 2 SOFA points in the presence of infection. Documentation of the standard used is not required.

Table 1. Sequential Organ Failure Assessment Score

Variables	SOFA Score				
	0	1	2	3	4
Respiratory	PaO_2/FiO_2: > 400 SpO_2/FiO_2: > 302	PaO_2/FiO_2: < 400 SpO_2/FiO_2: < 302	PaO_2/FiO_2: < 300 SpO_2/FiO_2: < 221	PaO_2/FiO_2: < 200 SpO_2/FiO_2: < 142	PaO_2/FiO_2: < 100 SpO_2/FiO_2: < 67
Cardiovascular (doses in mcg/kg/min)	MAP ≥ 70 mm Hg	MAP ≥ 70 mm Hg	Dopamine ≤ 5 or ANY dobutamine	Dopamine > 5 Norepinephrine ≤ 0.1 Phenylephrine ≤ 0.8	Dopamine >15 or Norepinephrine > 0.1 Phenylephrine > 0.8
Liver (bilirubin, mg/dL)	< 1.2	1.2-1.9	2.0-5.9	6.0-11.9	> 12
Renal (creatinine, mg/dL)	< 1.2	1.2-1.9	2.0-3.4	3.5-4.9	> 5.0
Coagulation (platelets x $10^3/mm^3$)	≥ 150	< 150	< 100	< 50	< 20
Neurologic (GCS score)	15	13-14	10-12	6-9	< 6

According to Sepsis-3, a new (or presumed new) increase in SOFA score above baseline in the presence of infection makes the diagnosis of sepsis. Increasing SOFA scores are associated with incremental increases in mortality.

Abbreviations: GCS, Glasgow coma scale; FiO_2, fraction of inspired oxygen; MAP, mean arterial pressure; PaO_2, arterial oxygen pressure; SOFA, sequential organ failure assessment (score); SpO_2, oxygen saturation

Note, for example, the following patients have 2 SOFA points:
PF Ratio <300 (Oxygen Sat. 91% on RA qualifies for 2 SOFA points.
BP 90/40 and Oxygen Saturation 92% on 2LO2 qualifies for 2 SOFA Points
Patient without other cause with platelet count less than 150 and GCS 14 qualifies for 2 SOFA Points

- Note, Sepsis 3 does *not* technically mandate the "due to" language previously required. The language of Sepsis 3 is that organ dysfunction needs to exist "in the presence of infection".
- Note also that the organ dysfunction can be in the organ effected by the local infection and does not have to be organ *failure*. For instance a patient with Pneumonia is validated under Sepsis 3 criteria as having Sepsis on the basis of 2 Respiratory Dysfunction SOFA factors.
- If the patient does not met Sepsis 3 criteria, use statements from the Consensus article (see above) and the facility's own policy to validate Sepsis based on Sepsis 2 criteria.

- **Sepsis denied for failure to document or establish validation using Sepsis 2 criteria**
  - Describe the validity of Sepsis 2 criteria using statements from the Consensus article (see above) and the facility's own policy and the fact that CMS continues to support Sepsis validation and quality by Sepsis 2 criteria. Emphasize the CMS standard especially in Medicare or Medical patients.
  - Sometimes these patients will qualify for qSOFA (Respiratory rate $\geq$ 22 with GCS <15 and systolic bp < 100) (6) which should be pointed out given that the Consensus article states, "To assist the bedside clinician, and perhaps prompt an escalation of care if not already instituted, simple clinical criteria (qSOFA) that identify patients with suspected infection who are likely to have poor outcomes, that is, a prolonged ICU course and death, have been developed and validated."
  - Describe and attach documentation of at least 2 concurrent SIRS factors (Tmax $\geq$ 101 or Tmin < 96, WBC count $\geq$ 12,000 or 10% bands, or < 4,000, Tachycardia $\geq$ 90 and/or Tachypnea $\geq$21 or pACO2 < 32 mmHg) related to underlying local infection.
  - Include other indicia of sepsis such as variations in differential blood count, procalcitonin elevation and lactate elevation.
  - Include treatment with timely CMS Sepsis protocol (2 antibiotics intravenously, large volume intravenous fluids and obtaining serial measurement of lactate and blood cultures)(7) as described in the CORE1 Sepsis measure.

Of course, good CDI work can always be done to help prevent sepsis denials. It is especially important in cases of Sepsis which are not validated with documentation meeting Sepsis 2 or 3 criteria for the provider to state that it is their professional judgement that the patient has Sepsis the physiological response to which is suppressed by the patient's immunosenescence. Further, a probable or actual local infectious source must also be identified for a diagnosis of Sepsis to be sustained. CDI must also ensure that documentation shows SIRS and/or SOFA response is concurrent and related to the local infection and whether the sepsis was POA.

The use by payers of the discrepancy in Sepsis 3 and Sepsis 2 criteria to deny reimbursement to facilities and providers who have given life-saving sepsis care is not what was intended by the Consensus task force. It is important to fight unwarranted attempts by payers to refuse reimbursement for healthcare services. Appeals, peer review evaluations, arbitrations, statutory efforts and contractual agreements are all important methods of fighting the good fight.

References on next page

References

1. In fact, 5 states have enacted into law the SIRS definition validating Sepsis as the accepted guideline validating Sepsis diagnosis. These laws were all motivated by families who had lost love ones due to failure to diagnose and treat Sepsis early enough. See https://www.cdc.gov/hai/pdfs/sepsis/vs-sepsis-policy-final.pdf. and https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5693309/ and Bone RC, Balk RA, Cerra FB, et al. Definitions for sepsis and organ failure and guidelines for the use of innovative therapies in sepsis. The ACCP/SCCM Consensus Conference Committee. American College of Chest Physicians/Society of Critical Care Medicine. Chest. 1992 Jun;101(6):1644–55 and https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8210984/
2. Even after re-evaluation in 2021and 2022, in the light of reducing antibiotic treatment to prevent superbugs, CMS continues to validate Sepsis basedon Sepsis 2, not Sepsis 3 standard.Sepsis.org/news/the-sep-1-measure-what-is-it-and-how-does-it-impact-sepsis-patients-their-families/#:~:text=“SEP-1”%20is%20shorthand,early%20intervention%20with%20lifesaving%20therapies.
3. https://hcup-us.ahrq.gov/reports/statbriefs/sb261-Most-Expensive-Hospital-Conditions-2017.jsp#:~:text=The%20five%20most%20expensive%20inpatient,half%20of%20aggregate%20hospital%20costs.
4. https://calhospital.org/wp-content/uploads/2019/05/cha_letter_to_uhc_on_sepsis_policy_4.18.19.pdf
5. Singer M, Deutschman CS, Seymour CW, et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016;315:801-810.
6. Comparison of qSOFA score, SOFA score, and SIRS criteria for the prediction of infection and mortality among surgical intermediate and intensive care patients | World Journal of Emergency Surgery | Full Text (biomedcentral.com) reported at https”// wjes.biomedcentral.com/articles/10.1186/s13017-020-00343-y#:~:text=introduced%20the%20quick%20Sequential%20Organ,(SBP)%20<%20100%20mmHg.
7. See https://smrj.scholasticahq.com/article/37707-improving-compliance-with-the-cms-sep-1-sepsis-bundle-at-a-community-based-teaching-hospital-emergency-department

Save the Date

July 26, 2023 11AM-12n PDT

Quality and CDI Webinar

Sponsored by CA ACDIS

Speakers:

Rani Stoddard, MBA, RN, CPHQ, RHIA, CCDS, CCS, CDIP, CRC, CDEO, AHIMA-Approved CDI Trainer

Alma Yap, RN, BSN, CCDS, CDIP, CCS, AHIMA-Approved ICD-10 CM/PCS Trainer

1 ACDIS CEU

Overview Quality Improvement Models and the Plan-Do-Study-Act Cycle

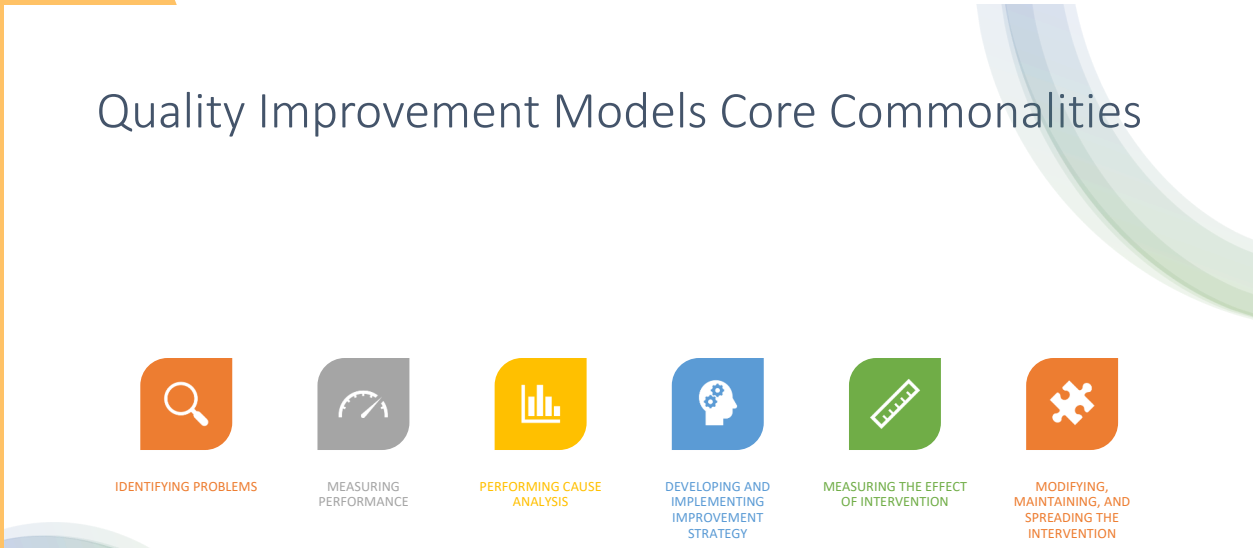
By Ahmad Khan MS, MD, CDIP, LSSGB, CDS UCSD Trauma/Burn Surgery CDS

The National Academy of Medicine in the United States has defined *quality* in health settings as the degree to which healthcare services comply with evidence-based medicine to increase the chance of optimal health outcomes for patient populations. Quality improvement is the design used to systematically improve healthcare services by standardizing the processes and structures, decreasing variations, achieving optimal and predictable outcomes, and improving outcomes for patient populations and healthcare facilities (1).

For many years, it was common practice that healthcare quality efforts were centered on an individual level (e.g., nurses, providers, and other healthcare professionals). Today, the paradigm has shifted from focusing on the individual to making quality improvement a system priority. Healthcare quality professionals analyze the medical data to determine areas that require improvement. Various systems are available that healthcare quality improvement professionals use to make a roadmap for a process. At their core, all quality improvement models are approaches to solving complex problems. Just as a class syllabus guides a student, quality improvement models can formulate the approach to improvement in health systems (1).

Standard quality improvement models in the health system were originally incepted in other industries outside of healthcare. Later they are adopted and adapted for the quality improvement in the health system. Even though these models are named differently, they share the same core principle; (See Figure 1). In architecture, *form follows function*, highlighting the significance of understanding what we are trying to achieve prior to how we will complete it. The same concept applies to healthcare quality, and it is critical to understand the purpose of a goal and effort at the individual, department, and organizational levels. One of the approaches to problem solving that will be elaborated here is the Plan-Do-Study-Act (PDSA) cycle.

Figure 1



Plan-Do-Study-Act Cycle

T Walter A. Shewhart initially created the Plan-Do-Study-Act (PDSA) in the 1920s. Then later, W. Edwards Deming, considered a pioneer in quality, further described the PDSA cycle. A statistics professor and physicist, Edwards Deming always emphasized the significance of practicing continuous improvement and thinking of fabricating as a system. PDSA (Plan, Do Study, Act) is a method that can assist us in learning quickly to assess whether an intervention is working in particular circumstances (2).

One benefit of PDSA is its adaptability and flexibility, leaving the door open for new learning to be built into an experimental process. If problems are observed with the original plan, it can be revised to see if the issue can be resolved. According to Reed and Card, applying the PDSA cycle can provide the opportunity to efficiently achieve quality improvement goals and decrease the waste of resources. On the other hand, some quality improvement projects have reported the failure of the PDSA method in complex issues, and they considered them *too big and hairy* for the PDSA method. Taylor and colleagues argue that the four stages of the PDSA method mirror the classic scientific experimental method: making a hypothesis, collecting data, analyzing data, and making a conclusion. Regardless of how complex an issue is, PDSA method is helpful (4,5).

PDSA Cycle Steps:

Plan

- Understanding the problem
- Making objectives
- Making predictions
- Planning to carry out the cycle

Do

- Providing education and training
- Executing the plan
- Starting analysis of the data

Study

- Evaluating the effects of change
- Comparing results
- Summarizing learned lessons
- Determining changes

Act

- Acting on learned lessons
- Making essential changes
- Pinpointing the gaps
- Carrying out additional PDSA cycles until the objective is achieved

Conclusion

The PDSA cycle and other quality improvement models are commonly used in the health system to improve healthcare quality, solve quality problems, and assist an organization's culture for better outcomes.

References

Joshi, M., Ransom, E. R., Nash, D. B., & Ransom, S. B. (Eds.). (2019). *The healthcare quality book: vision, strategy, and tools*. Chicago, IL, USA:: Health Administration Press.

Deming, W. E. (2000). Out of the crisis (rev. ed.). *Cambridge, MA: MIT Press. DeNicola, L.(2014, May 1). Guide to airline frequent flier programs. Retrieved from http://www. cheapism. com/best-frequent-flyer-programs Durlabhji, SG, & Fusilier, MR (1999) The empowered classroom: applying TQM to college teaching. Managing Service Quality*, *9*, 714.

Reed, J. E., & Card, A. J. (2016). The problem with plan-do-study-act cycles. *BMJ quality & safety*, *25*(3), 147-152.

Coury, J., Schneider, J. L., Rivelli, J. S., Petrik, A. F., Seibel, E., Taplin, S. H., Green, B. B., & Coronado, G. D. (2016). Applying the Plan-Do-Study-Act (PDSA) approach to a large pragmatic study involving safety net clinics. *BMC Health Services Research*, *17*. https://doi.org/10.1186/s12913-017-2364-3

Taylor, M. J., McNicholas, C., Nicolay, C., Darzi, A., Bell, D., & Reed, J. E. (2014). Systematic review of the application of the plan–do–study–act method to improve quality in healthcare. *BMJ quality & safety*, *23*(4), 290-298.

Discount on ACDIS National Membership:

Getting a borrowed issue of the newsletter? Want your own? Want a discount on ACDIS National Membership?

Fill out the Official ACDIS Local Chapter Online Membership Roster to ensure we have your up-to-date information and sign up to volunteer as a speaker or chapter leader! Those who complete the roster form get a special discount code they can use to join ACDIS national.

Here's the direct link: https://www.surveymonkey.com/r/chapter-membership-roster

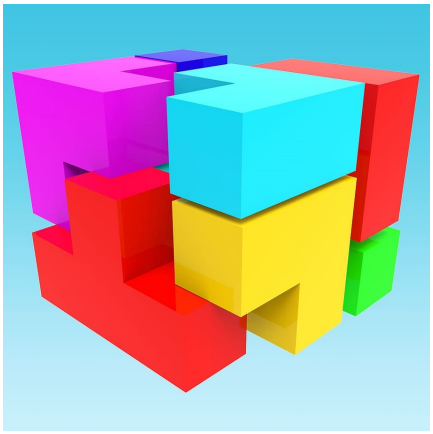
CA ACDIS Annual

On-Site Conference

Friday

Oct 20th

Location TBD



Stay Connected

Connect with us on LinkedIn:

California ACDIS Chapter

Connect at Instagram:

california_acdis

Visit our Facebook page:

https://www.facebook.com/californiaacdis

To support our chapter, please send your donations via PayPal using this link: Paypal.me/CAACDIS

Thank you for your support!

Want to be a featured member of CA ACDIS?

Have a great article and want to get published?

Contact: Analyn Dolopo at adolopo@ucsd.edu

Or Rani Stoddard at stoddardrv@henrymayo.com

California acdis Official Local Chapter