

**Hierarchical Condition Categories (HCCs)** were originally developed as a risk adjustment model that would enable Medicare to forecast costs for Medicare Advantage members for the coming year (by calculating anticipated risk from ICD codes). In a nutshell, HCCs provide a mechanism for adjusting capitation payments to health plans (not providers) according to differences in the total expected health care costs for their plan members each year: higher payments for sicker patient populations, lower payments for healthier populations.

HCCs are now also used to risk-adjust quality and cost measures for the CMS pay-for-performance programs, which have been developed as an incentive to improve health care quality and lower costs. Although hospitals and providers continue to bill and be paid using the same fee-for-service model currently in place (inpatient DRG, CPT code, etc.), fee-for-service payments are adjusted to reward outcomes believed to indicate higher quality care and penalize outcomes thought to indicate lower quality of care. Hospitals and physicians who fail to capture relevant HCCs in their patient documentation may find themselves receiving lower reimbursements.

For example, a hospital's total Medicare DRG operating payments will be reduced by up to 3% if the hospital does not meet expected performance for readmission rates as part of the Readmissions Reduction Program.

**Risk Adjustment Payment Methodologies.** There are a number of risk adjustment payment methodologies, such as inpatient DRGs, CDPS (Medicaid), and DxCG, but the two primary methodologies are the HCCs developed by the Centers for Medicare and Medicaid (CMS-HCC) and by Health and Human Services (HHS-HCC). Managed Medicare (Part C) health plans have been paid by CMS based on the CMS-HCC risk adjustment payment formula since 2004. Managed commercial health plans, as part of the Affordable Care Act, have been paid based on HHS-HCCs since 2014.

0.02-0.05 pH units lower than arterial pH and venous pCO<sub>2</sub> about 3-8 mmHg higher than arterial pCO<sub>2</sub>.

Taking these adjustments into account, providers may apply the usual hypercapnic respiratory failure criteria: arterial pCO<sub>2</sub> >50 + arterial pH < 7.35.

The venous pO<sub>2</sub> cannot be used for hypoxemic respiratory failure or other clinical purposes because it is highly variable and much lower than arterial pO<sub>2</sub>.

### **HYPOXEMIC RESPIRATORY FAILURE**

*Diagnostic criteria:*

- pO<sub>2</sub> < 60 mmHg (SpO<sub>2</sub> < 91%) on room air, or
- P/F ratio < 300 on oxygen, or
- 10-15 mmHg decrease from baseline (if known)

**Important:** P/F ratio and room air pO<sub>2</sub>/SpO<sub>2</sub> criteria are not valid for oxygen-dependent chronic hypoxemic respiratory failure, but pO<sub>2</sub>/SpO<sub>2</sub> criteria are valid for such patients when measured while breathing their usual home O<sub>2</sub> flow rate or higher.

**Acute hypoxemic respiratory failure.** The gold standard for this diagnosis is an arterial pO<sub>2</sub> on room air < 60 mmHg measured by arterial blood gases (ABG). In the absence of an ABG, SpO<sub>2</sub> < 91% measured by pulse oximetry on room air can serve as a reasonable substitute for the pO<sub>2</sub> because SpO<sub>2</sub> of 91% equals pO<sub>2</sub> of 60 mmHg.

These criteria may not apply to patients with chronic hypoxemic respiratory failure (e.g., due to severe COPD), because their room air pO<sub>2</sub> would always be expected to be < 60 mmHg (SpO<sub>2</sub> < 91%). Chronic respiratory failure patients only qualify for home oxygen when their SpO<sub>2</sub> is less than 91% and they are treated with supplemental oxygen on a continuous outpatient basis that is adjusted to keep arterial oxygen saturation above 92%.

## DEFINITION

**Sepsis:** Life-threatening organ dysfunction caused by a dysregulated host response to infection (confirmed or suspected).

**Septic shock:** Persisting hypotension requiring vasopressors to maintain MAP (mean arterial pressure) > 65 mmHg **and** having a serum lactate level > 2 mmol/L despite adequate volume resuscitation.

## DIAGNOSTIC CRITERIA

Organ dysfunction is determined by a 2 point change from baseline of the Sequential (Sepsis-related) Organ Failure Assessment (SOFA) score using six defined organ systems:

Respiratory	PaO <sub>2</sub> /FiO <sub>2</sub>
Coagulation	Platelet count
Hepatic	Bilirubin (total)
Cardiovascular	MAP or use of vasopressor
CNS	GCS
Renal	Creatinine or urine output

SOFA grades organ dysfunction on a scale of 0 to 4 depending on severity (0 = no dysfunction). The baseline SOFA score for any organ system is assumed to be 0 if a patient has no known preexisting dysfunction. Vasopressors include dopamine (DPA), dobutamine, epinephrine, or norepinephrine. See the **SOFA Score table** that follows.

**qSOFA.** Outside the ICU, Sepsis-3 also recommends a bedside clinical approach to identify patients with high risk of adverse outcomes for whom the full SOFA score should be obtained called quick SOFA (qSOFA) defined as the presence of 2 or more of 3 clinical criteria:

- Altered mentation
- Respiratory rate  $\geq 22$
- Systolic blood pressure  $\leq 100$  mm Hg.

## COMORBID CONDITIONS

### HCC

Y (YES) if CMS-HCC

### SOI

Default SOI  
APR-DRGs

### ICD-10

Codes listed do not include all codes available for the diagnosis,  
only the least specific code to meet the MCC/CC status

**Bold** = MCC

MCC / CC	HCC	SOI	ICD-10
Acute coronary insufficiency/occlusion	Y	2	I248, I240
Acute coronary syndrome (ACS)	Y	2	I249
Acute kidney injury (AKI)	Y	3	N179
Acute tubular necrosis (ATN)	Y	4	<b>N170</b>
Anemia, acute blood loss		2	D62
Angina, unstable	Y	2	I200
Atelectasis		1	J9811
Atrial fibrillation, persistent	Y	2	I481
Atrial flutter	Y	2	I4892
Anxiety, alcohol induced	Y	1	F10180
Bacteremia		3	R7881
Bipolar disorder: manic or depressed, mild	Y	1	F3110 F3131
Bleeding, GI		2	K922
Bleeding, rectal/anal		1	K625
Blood in stool (melena)		1	K921
BMI ≤ 19.9		1	Z681
BMI ≥ 40	Y	2	Z6841
Brain compression/herniation	Y	4	<b>G935</b>
Brain death		4	<b>G9382</b>
C. Difficile enteritis		3	A0472
Cachexia (cachetic)	Y	2	R64
CAD of bypass graft		2	I25810
Cancer, lung	Y	1	C3490
Carcinomatosis	Y	2	C800
Cardiac arrest (dc'd alive)	Y	4	<b>I469</b>
Cardiomyopathy	Y	2	I429
Cellulitis/abscess		1	L0390