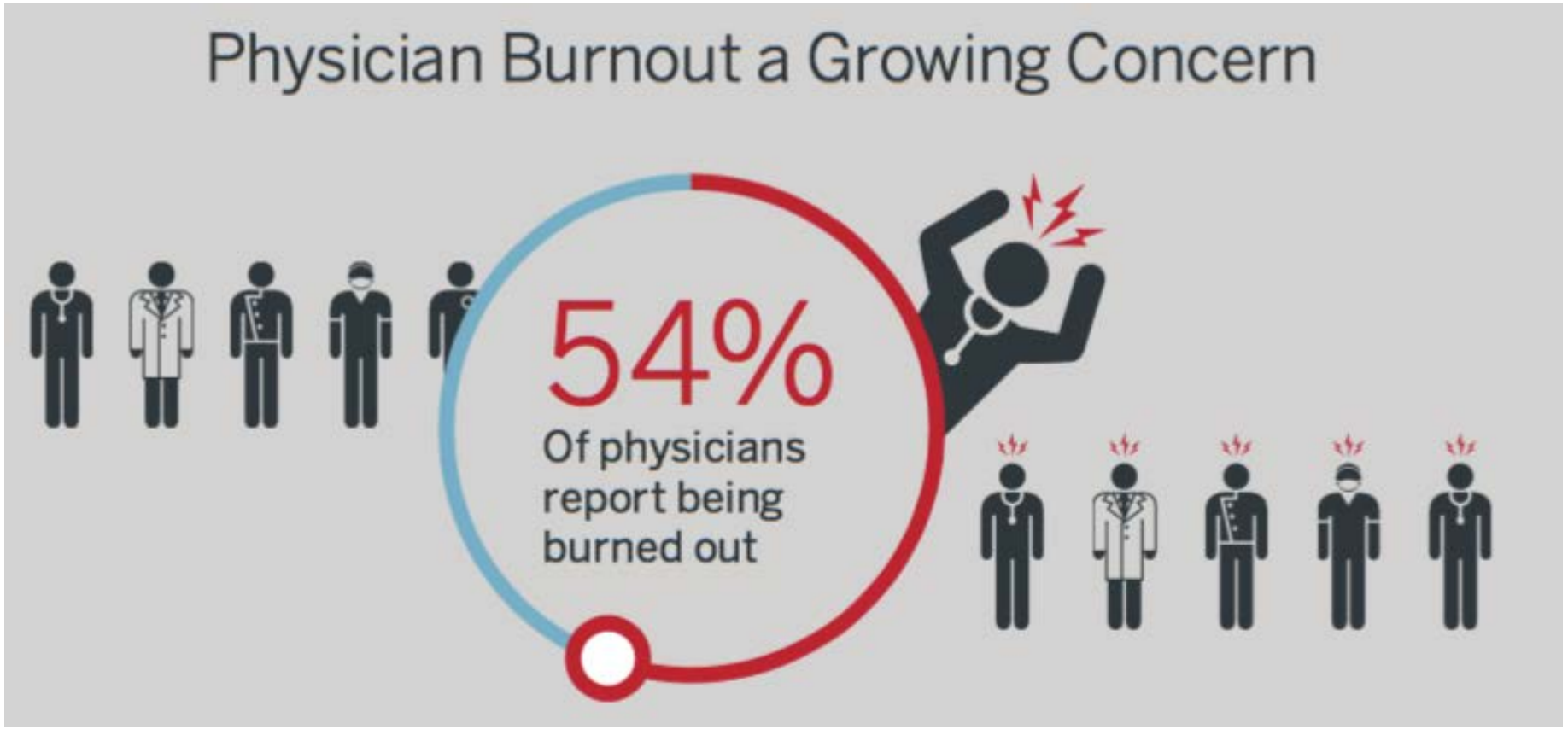
Utilizing Natural Language Understanding to Identify CDI Opportunities

Outpatient CDI and HCC's: Their Impact on the CDI Specialist

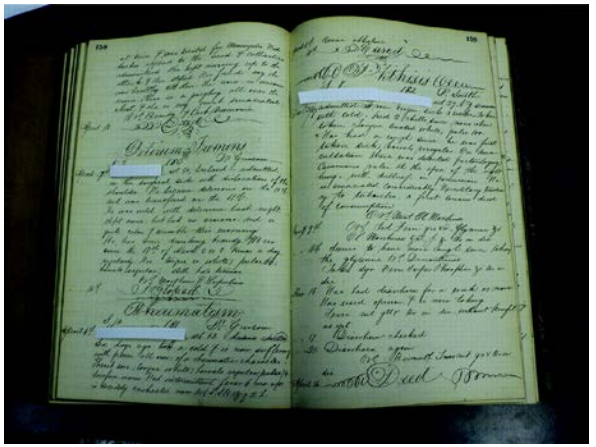
The Cost of Technology

Rules of Engagement



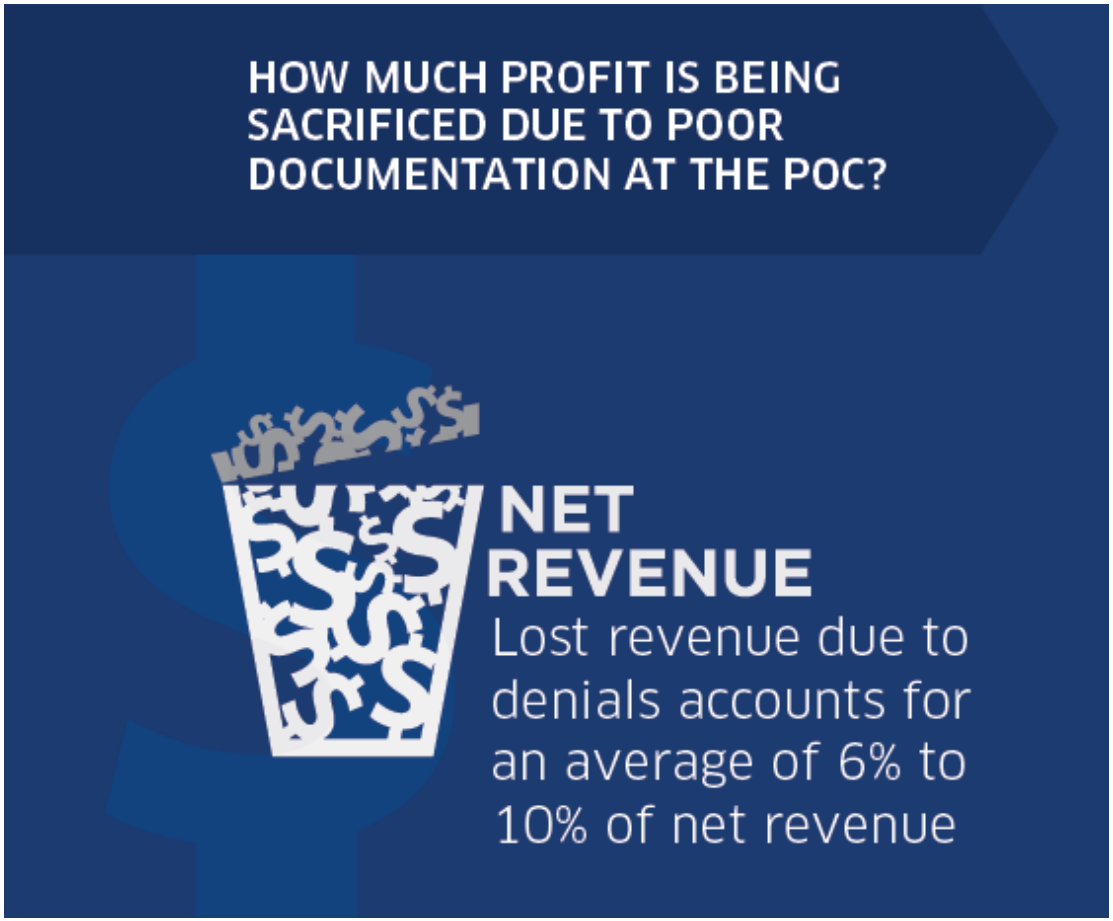
Evolution of the Medical Record

- In 1752:
  - Single consolidated record of **observations**
  - Noted the **care and treatment** provided
  - Helped to **improve care** with historical story
  - **Communication** for healthcare workers



- Today:
  - **Quality of care**
  - **Population Management**
  - **Reimbursements**
  - **Research**

Financial Impacts of Documentation



** United States Government Accountability Office. "Data on Application and Coverage Denials." March, 2011*

Other Impacts

UPMC Presbyterian Shadyside

Overview | Rankings & Ratings | Doctors | Contact Info | News & Resources

Scorecard: Heart failure

Rating *High Performing*

11% of hospitals rated in this condition were high performing.
High-performing hospitals exceeded expected standards of care.

What goes into this rating:

Survival

Survival 30 days after admission, adjusted for patient risk.

Significantly better than expected

Score: 9

Significantly better than expected: 9-13 out of 13

West Penn Hospital

Overview | Rankings & Ratings | Doctors | Contact Info

Scorecard: Heart failure

Rating *Average*

83% of hospitals rated in this condition were average.
Average hospitals met expected standards of care.

What goes into this rating:

Survival

Survival 30 days after admission, adjusted for patient risk.

As expected

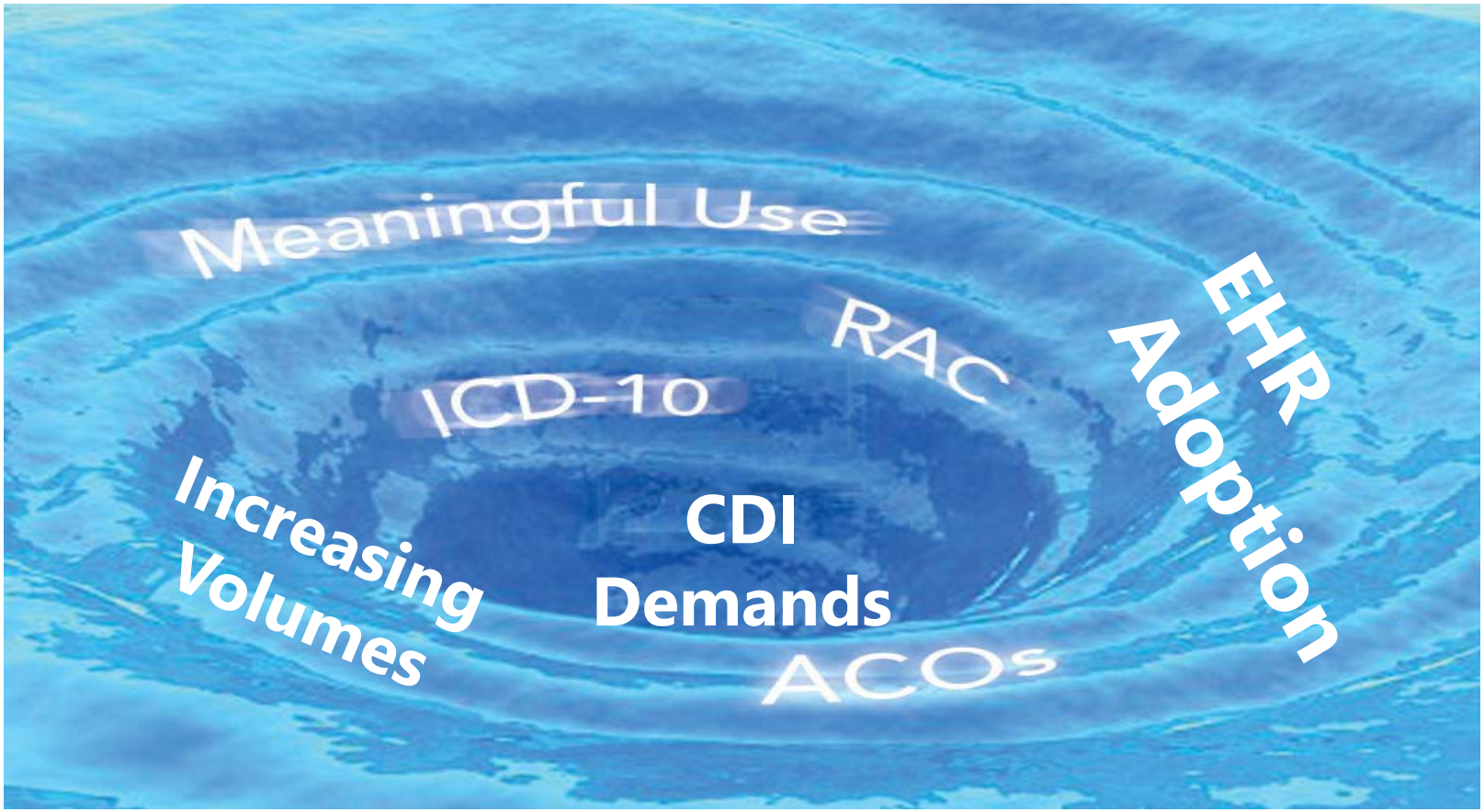
Score: 7

As expected: 7 out of 13

U.S.News & WORLD REPORT

mModal

The Perfect Documentation Storm



The Documentation Dilemma

MRN: 000000
DOS: 09/11/2009

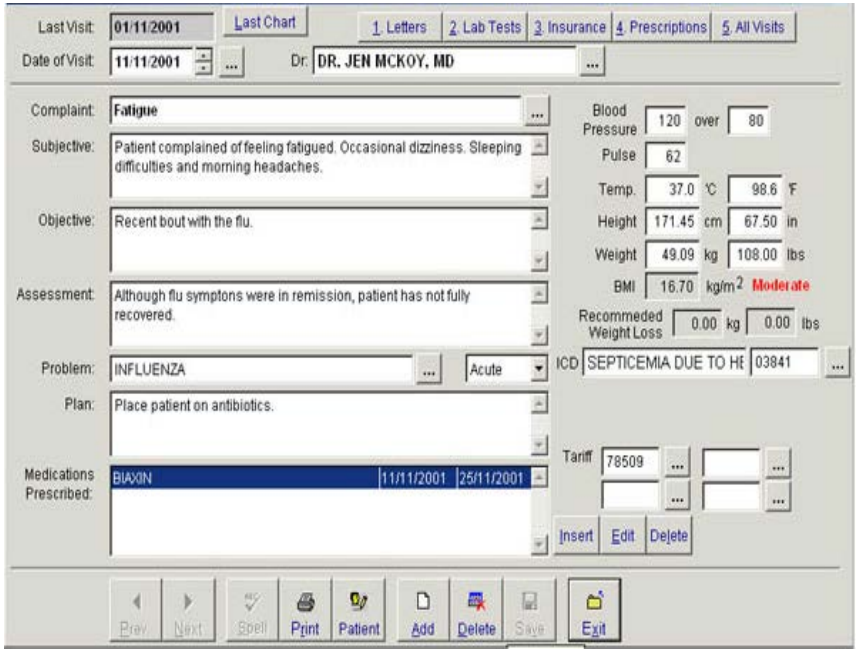
CHIEF COMPLAINT:
Patient is a 25 year old woman complaining of feeling frequently fatigued. She reported also occasional dizziness, sleeping difficulties and morning headaches.

OBJECTIVE:
Recent bout with the flu.

PHYSICAL EXAMINATION:
Vital signs are normal with a blood pressure of 120/80, pulse 62, temperature 98.6 degrees, weight 108 pounds.

ASSESSMENT:
Although flu symptoms were in remission, patient has not fully recovered yet.

PLAN:
Place patient on Biaxin for the next two weeks. The patient will call us if there is no improvement, any worsened or new symptoms.



Narrative Documentation

Unstructured notes

- Very expressive – tells the patient "story"
- More meaningful & useful to physicians
- But difficult to reuse in order to drive systems for patient care, reimbursement and population reporting

EMR Direct Data Entry

Structured and encoded information

- Enables MU, decision support and direct billing
- But can result in lower documentation quality (overly structured templates, cut & paste,…)
- May negatively affect physician productivity, patient detail and overall care

The Other Challenge

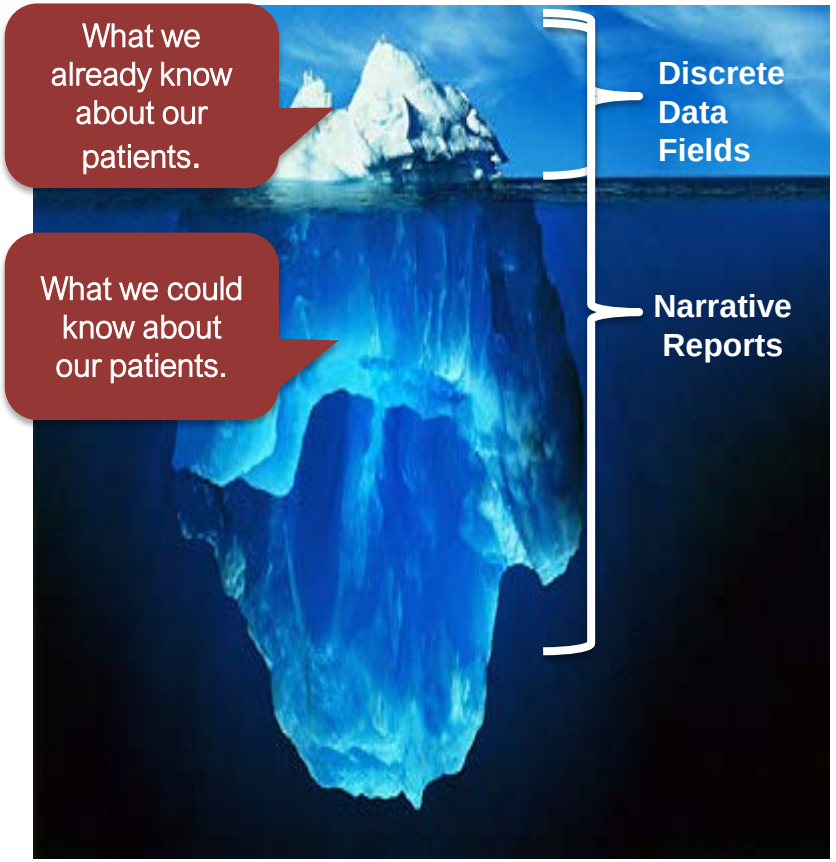
Data used by abstractors are often found in dictated reports or free form progress notes, not as structured data in the electronic health record. And it has been the experience of our members that without making the entire record structured, discrete data or having mature text recognition software in place, one cannot extract all the data needed on every patient to create accurate quality metrics.”

--College of Healthcare Information Management Executives (CHIME)*

New Opportunities for Finding & Organizing Data

Natural Language Understanding (NLU) applied to clinical documentation, coding, text data mining, and clinical decision support will provide significant and lasting strategic & financial benefits.

- **Facilitate quality care delivery**
- **Feed information from previous care encounters**
- **Change care pathway through patient involvement**
- **Promote accurate and timely clinician documentation**
- **Reduce administrative costs through efficiencies**



NLP vs. NLU

CDA III

Past Medical History

…. likes to run a couple of miles a week his past medical is significant for insulin-dependent diabetes mellitus that he has had since 1997 and a history of migraines and some asthma

Past Surgical History

…past surgical history is significant for cholecystectomy

Current Medications

..medications include lantus Humalog and Topamax

Allergies

…allergies are no known drug allergies….

acuity.code	CHRONIC
acuity.codeSystem	2.16.840.1.113883.3.21.42.Acuity
code.code	666c058b-3738-4dd5-9f2d-236f0f09d047
code.codeSystem	2.16.840.1.113883.6.96
code.codeSystemName	SNOMED-CT
code.displayName	Insulin dependent diabetes
certainty.code	CERTAIN
certainty.codeSystem	2.16.840.1.113883.3.21.42.Certainty
temporality.code	PRESENT
temporality.codeSystem	2.16.840.1.113883.3.21.42.Temporality

NLU

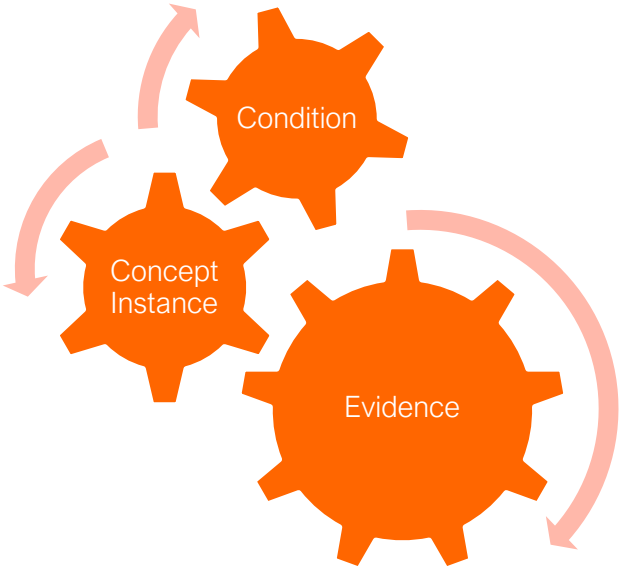
1. Term Matching
2. Term Coordination
3. Scoping
    a) negation, certainty
    b) temporality
    c) subject
    d) context

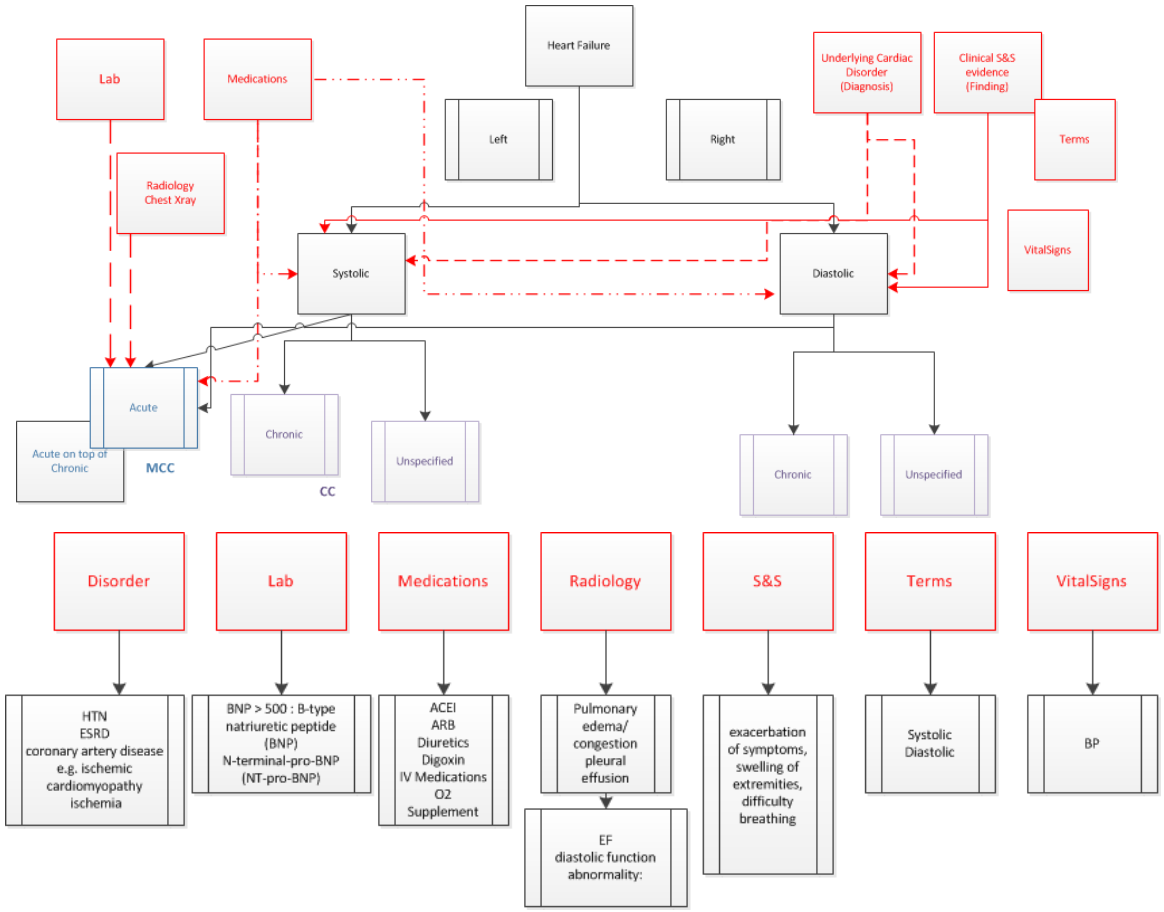
How does the technology know what the words mean?

- "Heart attack treated with Bayer."
- Subject: Heart attack
- Verb: treated
- Preposition: with
- Preposition Object: Bayer

- Must get translated to this:
- Subject: 22298006
  (SNOMED-CT Myocardial infarction)
- Verb: treated
- Preposition: with
- Preposition Object: 1191
  (RxNorm Aspirin)

SNOMED Based Information Model





M*Modal ValueSets

Encounter Level Reasoning

Encounter level:

a) Finding evidence
b) Reconciliation
c) Contextualization

ED document
Reason for study: ….cough, shortness of breath,….
rule out pneumonia.
…

Pneumonia certainty = rule out

Chest X-ray
Findings:

Sentence level inference
"There were hazy opacities in the lower lobes" →Localized infiltrate
Report level inference
Localized infiltrates → Probable pneumonia

Laboratory:
….. Sputum culture shows streptcocci….

Encounter Level: Strept. Pneumonia

Putting the Pieces together

Anemia

PURPOSE	Identifies documentation where there is evidence of anemia, without explicit mention of type of anemia.
PROBLEM	Documenting more specificity surrounding anemia allows for proper patient care and meets ICD-10 standards.

EVIDENCE	Supporting evidence of Anemia includes:
	• Hemoglobin ≤ 10
	• Hematocrit < 32
	• Transfusions
	• For blood loss anemia
	  ○ Abnormal Hemoglobin and Hematocrit
	  ○ Documentation of blood loss
	  ○ Transfusion was given

✓✗ Fully Documented/Document Deficiency

1	There is explicit documentation or evidence of anemia without mention of type.
2	Explicit mention of neutropenia without documentation of type of neutropenia. (ICD-10)
3	Evidence of blood loss anemia with no explicit documentation of anemia due to blood loss.

Innovation in Technologies…Why not Healthcare Documentation?

Outpatient CDI and Hierarchical Condition Categories (HCCs)

Why Outpatient CDI?

- HCC Payment Model
  - The Hierarchical Condition Category (HCC) model is the heart of the Centers for Medicare and Medicaid Services (CMS) methodology for determining capitated payments for the Medicare Advantage program, other Medicare, and payer programs. This model identifies individuals with serious or chronic illness and assigns a risk factor score to the person based upon the individual's health conditions, identified through the diagnoses submitted by providers.
    - HCCs audits have shown most hospitals and OP clinics under report HCCs
    - Most organizations initially focusing on diagnoses such as: Diabetes, morbid obesity, depression, and dependence
    - Physicians that perform point-of-care coding must be well educated in HCC specificity
- Not all HCCs are OP situations
  - Some diagnoses that trigger HCC payments are only treated in an inpatient setting
  - These HCC diagnoses may not be the principal diagnosis, and many aren't on the CMS CC/MCC list
  - Analyze the HCC tables to ensure you are capturing the 42% of conditions that map to an HCC but are not classified as CCs/MCCs

Shifting from Inpatient to Outpatient: HCC's

- 79 HCC categories - "bucket" patients into those categories based on their demographic data and the ICD-10-CM diagnosis codes
- HCC capture, along with patient demographic data, comprises the Risk Adjustment Factor (RAF) score, which communicates the health severity.
- The formula for established MA members is: RAF = Sum of HCC weights for each member + the age/sex/demographic + Medicaid status adjustment.
- HCCs must be captured/re-captured every calendar year in order to be factored into that patient's annual risk score and payment.
- Hierarchies are imposed to ensure that a person is credited with the most severe manifestation of related diseases
  - i.e. diabetes with an acute complication has a higher weight than diabetes without complications – similar to CC's and MCC's in the DRG system*****
    - ***Not every CC or MCC is an HCC**

Present Approach

Analyze one year of post ICD-10-CM outpatient claims to identify, quantify, and prioritize outpatient services that would benefit from CDI involvement

- Hierarchical Condition Categories (HCCs) capture
- Unspecified codes
- Technical and clinical denials
- Medical necessity denials

Perform interviews and on-site visits to understand process and root cause

Sample Data Analysis

- Compare overall E/M levels reported to optimal benchmarks. Drill down to the service line and individual physician level.
- Analyze E/M levels to HCCs billed to identify potential areas of under- or over documentation and coding
- Average cost per beneficiary to HCC to evaluate physicians cost vs. severity of illness

Assessment

Determine if chart review is necessary

- Based on interviews and visits, do you still need to review charts to determine root cause?

Based on assessment findings, determine:

- What OP CDI methodology should be implemented
- Cost/benefit analysis
- Potential ROI

Report findings

Current Challenges

- Provider organizations are facing several challenges as they plan for HCC coding and documentation:
  - Provider engagement, education, and incentive alignment
  - Impacts to workflow and efficiency
  - Insufficient or incomplete medical record documentation in the EHR
  - EHR disconnect and poor problem list utilization
  - Incorrect coding
  - Inferior or non-existent HCC-specific analysis and prioritization

Future Forward

- Due to the volume of visits, OP CDI must look beyond traditional concurrent review and query processes and instead:
  - Leverage EMR technology and data analytics to drive process improvement
  - Employ process improvement and change management techniques to produce results

- OP CDI needs to be multifocal. The staff must have a broader revenue cycle focus and be strategic thinkers.
- Understand OP coding rules and billing regulations
- Be able to analyze and monitor metrics, perform root cause analysis, comprehend the strategic use of data, interpret regulations, create education, and communicate to large and small groups
- Understand hospital technology and how it can be used to improve the documentation and coding process to promote long-term monitoring/process improvement

Implementing an OP CDI Solution

- Define program goals and population
  - ED and infusion areas? (charge capture risk)
  - Radiology? (medical necessity risk)
  - All vs. some owned physician practices?
- Staffing decisions/budget
  - RN and/or OP coder?
  - Data analyst?
  - Build job descriptions.
- Recruitment of staff
  - How many and what mix?
  - Identify internal resources in the clinics.

Implementing an OP CDI Solution, Cont.

- Performance monitoring metrics/dashboard creation
  - What decision support tools are available?
  - What data is available?
  - How can distribution and education be automated?
- HCC education and training plan
  - Education to train OP and IP CDI staff
  - Targeted education for physicians
  - Updates due to coding, HCC, and other rule changes
- EMR/workflow optimization
  - Analyze tools used for POS coding and determine best methodology

Provider Engagement Strategy

Review EMR “favorites lists” to ensure choices support accurate code assignment

- Give provider-specific feedback and education
  - Articulate the WIFM
- Share baseline measures with problematic physicians, showing how they compare to their peers and what they can do to improve
- Recognize and celebrate improvements

Provider Office Setting Strategies

- Greatest volume of HCC gaps is in the physician office
- The majority of opportunity requires CDI clarification
- Ensure coding is accurate, complete, & consistent
- Think beyond evaluation & management (E/M) & chief complaint (CC)
  - ✓ Ensure members are seen at least once annually
- New patient & annual wellness visits are a great opportunity to capture chronic non-resolving diagnoses
- Eradicate medical record deficiencies

Tools

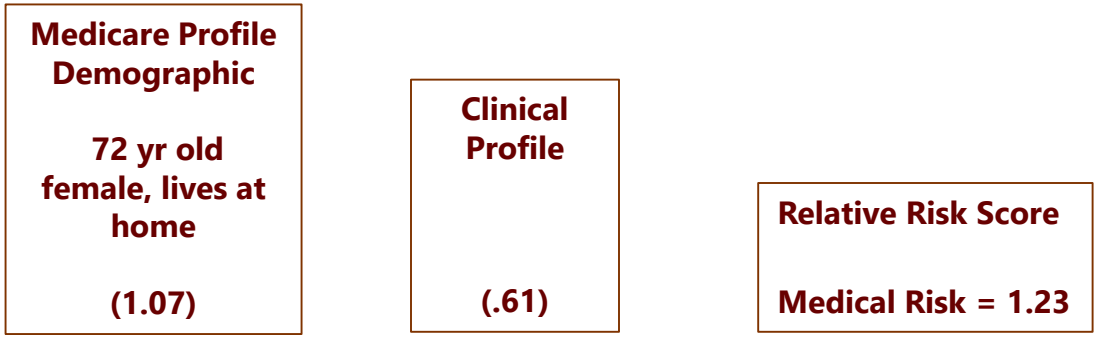
- Paper document placed inside a medical record indicating historical yet non-resolving chronic illness risk-adjusted diagnoses for recapture (e.g., COPD) when impacting the encounter
- An alert in an EHR of historical risk-adjusted diagnoses for recapture
- Favorites/preference lists in EHR
- Voice recognition technology at the point of care that alerts providers when they have documented a potential risk-adjusted diagnosis that might require more specificity to map to an HCC or to a higher- weighted HCC

Successful Outpatient CDI Programs

- An OP CDI program must be an all-encompassing and data-driven solution that addresses the impact of deficient documentation and coding across the entire billing continuum.
- OP CDI must leverage all available people, processes, and technologies to enhance provider workflow and drive results.
- Provider organizations use HCC coding information to form a more accurate picture of their patient populations, better manage patients' chronic conditions, and demonstrate cost-effectiveness.

Example of Risk Adjustment Reimbursement to a MAP……

- Combines demographic and clinical information
  - Demographic info includes age, reason for Medicare, and community status
  - Clinical information represents health status
  - Patients who have ESRD (end stage renal disease) are assigned an additional factor
- Example of Payment to a Medicare Advantage Plan



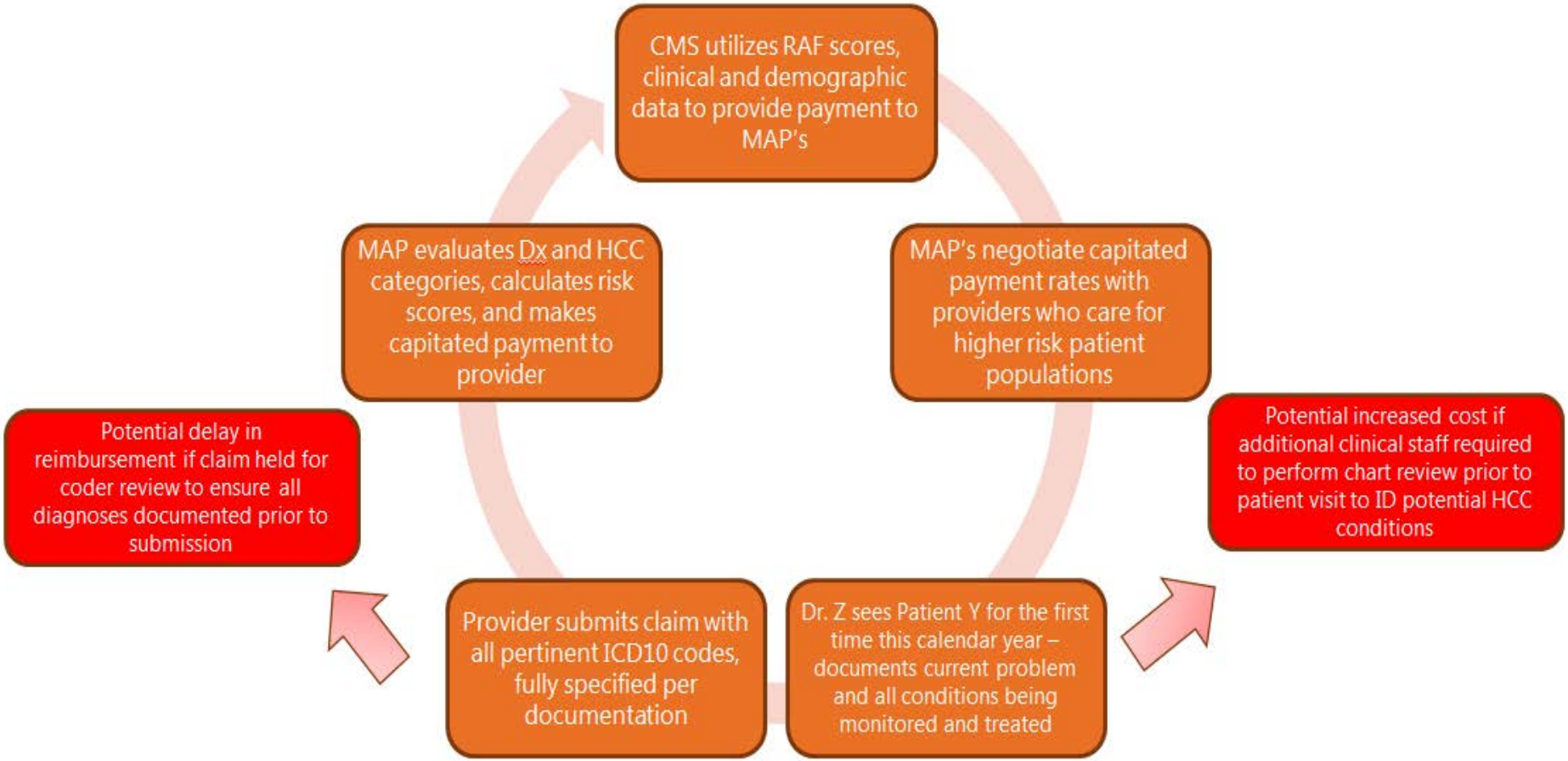
Medicare advantage premium = $16

CMS per month/per member payment (demographic) = $208

CMS risk adjustment factor (DM with renal comp, CKD and CHF) = $785

Total Payment to MA plan per month = $992

Life Cycle of Risk Adjustment



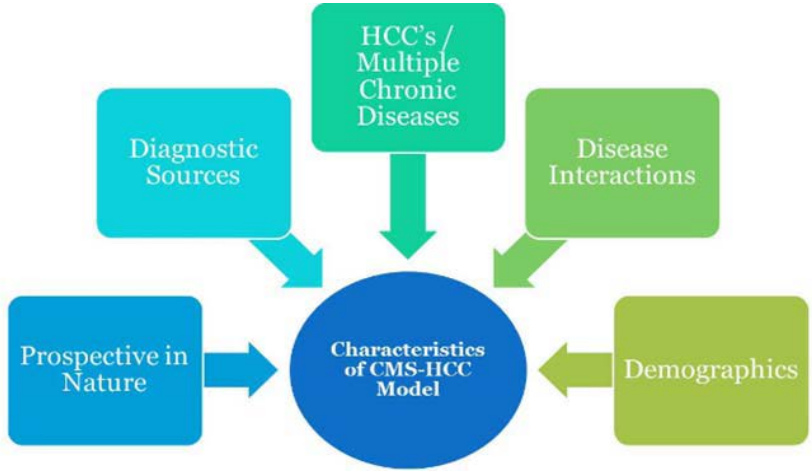
The Difference between MS-DRG's and HCC's

MS-DRG's

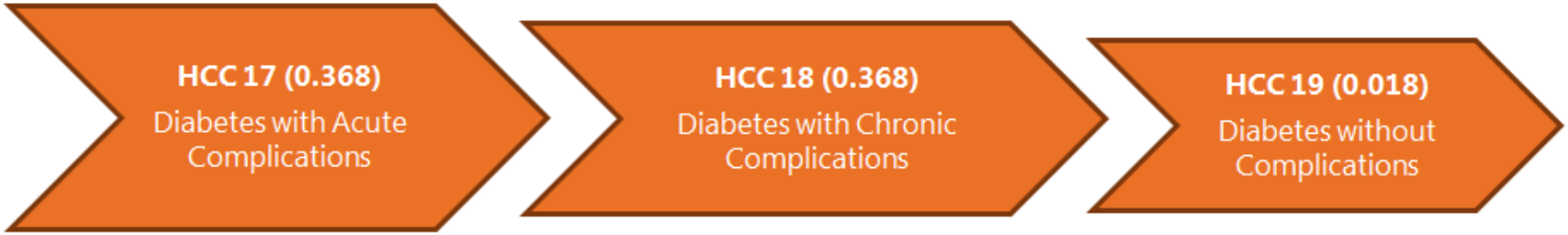
- Only 1 assigned per Inpatient Discharge
- Sequencing is a critical component
- Procedures can impact assignment

CMS-HCC's

- More than 1 HCC can be assigned per encounter
- Not all diagnoses map to an HCC
- Procedures not included



Hierarchy of Diabetes



HCC 17	HCC 18	HCC 19
DM (types 1 or 2 or induced) with • Coma or • Hyperosmolarity or • Ketoacidosis	DM (types 1 or 2 or induced) with Nephropathy; CKD; other kidney complication; retinopathy; cataract; neuropathy; other neuro complication; peripheral angiopathy; neuropathic arthropathy; dermatitis; ulcer; periodontal disease; hyperglycemia; hypoglycemia without coma	DM (types 1 or 2) with No complications

Importance of Documentation for Outpatient

No Chronic Conditions Documented		Chronic Conditions Documented, Not Fully Specified		Chronic Conditions Documented, Fully Specified	
76 year old female	0.437	76 year old female	0.437	76 year old female	0.437
Medicaid eligible	0.151	Medicaid eligible	0.151	Medicaid eligible	0.151
Acute UTI (N39.0 – no HCC)	0.0	Acute UTI (N39.0 – no HCC)	0.0	Acute UTI (N39.0 – no HCC)	0.0
DM not documented	0.0	DM (E11.9, HCC 19)	0.118	DM w/ PVD (E11.51, HCC 18)	0.368
CHF not documented	0.0	CHF (I50.9, HCC 85)	0.368	CHF (I50.9, HCC 85)	0.368
No Condition Interactions	0.0	Interaction DM and CHF	0.182	Interaction DM and CHF	0.182
RAF Score	**0.588**		**1.256**		**1.506**

$5,644 **$12,057** **$14,457**

***Assuming the CMS Annual Base Rate is $9,600**

Condition Types/Diagnoses that map to CMS HCC's

- High-cost medical conditions (heart disease, current cancers, hip fractures)

  * Highest weighted diagnoses are HIV, sepsis, opportunistic infections & cancers

- Acute, chronic, status codes, etiology & manifestation

  * e.g. = Hip fracture, COPD, status amputation of great toe, diabetic neuropathy

- Common conditions, rare conditions, conditions that can be cured, non-curable, congenital and acquired

  – Must be current & impact the encounter in terms of requiring either **m**onitoring, **e**valuation, **a**ssessment, or **t**reatment (MEAT)

Documentation Requirements for Eligible Reporting

- Diagnoses must be documented
  - Coders cannot interpret labs or assume a diagnosis based on prescribed meds or MD orders

- Diagnoses should be documented to the highest level of specificity
  - Increases the likelihood of the condition mapping to a higher-weighted HCC (Example: Diabetes)

- Diagnoses must be documented in a document coders are permitted to code from
  - i.e. can't code *current* conditions from problem lists, medical history, or super bills
  - can't use documents that could propose "rule out" diagnoses – i.e. labs or x-rays

- Supporting clinical documentation for all reported diagnoses (M.E.A.T)

  Monitor - Signs, symptoms, disease progression or regression

  Evaluate - Review of test results, medication effectiveness, response to treatment – i.e. "stable," "improving," "exacerbation," "worsening," "poor"

  Assess - Ordering tests, discussion, review records, counseling

  Treatment - Referral, medication(s), planned surgery, therapies

Documentation from an Outpatient Encounter

75 y/o female presents for ankle sprain and follow-up

Assessment and plan:

1. Ankle sprain—ice, avoid NSAIDs due to CKD. Check BMP.
2. Colon cancer—s/p colectomy and liver bx. Following with heme/onc for chemo.

   Check CBC, LFTs.
3. Type 2 DM—insulin adjusted.
4. CAD—CP at rest, cardiology eval, increase beta blocker.
5. Hypertension—continue current meds.

HCC Weights and Expected Reimbursement

Factor/diagnosis	HCC	HCC weight
75 year old female	Demographics	0.437
C18.9 Malignant neoplasm colon	11 – Colorectal, bladder and other cancers	0.317
E11.9 Type 2 DM	19 – Diabetes without complications	0.118
N18.9 CKD	---	0
I20.8 Angina	88 – Angina pectoris	0.141
S93.402A Ankle sprain	---	0
Total Risk		1.013
Expected cost/reimbursement		$7200.00

Improved Documentation

Documentation with greater specificity from that same outpatient encounter

75 y/o female presents for ankle sprain and follow-up

Assessment and plan:

1. Ankle sprain—**acute**, ice avoid NSAIDs due to CKD. Check BMP.
2. Colon cancer **with liver mets** — **active**, s/p colectomy and liver bx. Following with heme/onc for chemo. Check CBC, LFTs.
3. Type 2 DM **with diabetic CKD 4** —**stable**, insulin adjusted.
4. CAD — **unstable angina**, **active**, cards referral, increase beta blocker.
5. Hypertension — **stable**, continue current meds.

New HCC Weights and Expected Reimbursement

New Diagnosis	HCC	HCC weight
75 year old female	Demographics	0.437
C18.9 Malignant neoplasm of colon	11 – colorectal, bladder and other cancers	xxxx
C78.7 Secondary neoplasm of liver	8 – Metastatic cancer and acute leukemia	2.484
E11.22 – Type 2 DM with diabetic CKD	18 – Diabetes with chronic complication	0.368
N18.4 – CKD	137 – CKD severe Stage 4	0.224
I20.0 Unstable angina	87 – unstable angina and other acute ischemic heart disease	0.258
S93.402A Ankle sprain	000	0
Total risk		**3.771**
Expected cost/reimbursement		**$26,379.00**

Thank you

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