BPM+ Health Spotlight:
ACEP Covid19 ED Score & Disposition

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Any view or opinion expressed in this presentation are solely the author's.

Outline

- Background & Credits
- Methodology
- Model Walkthrough

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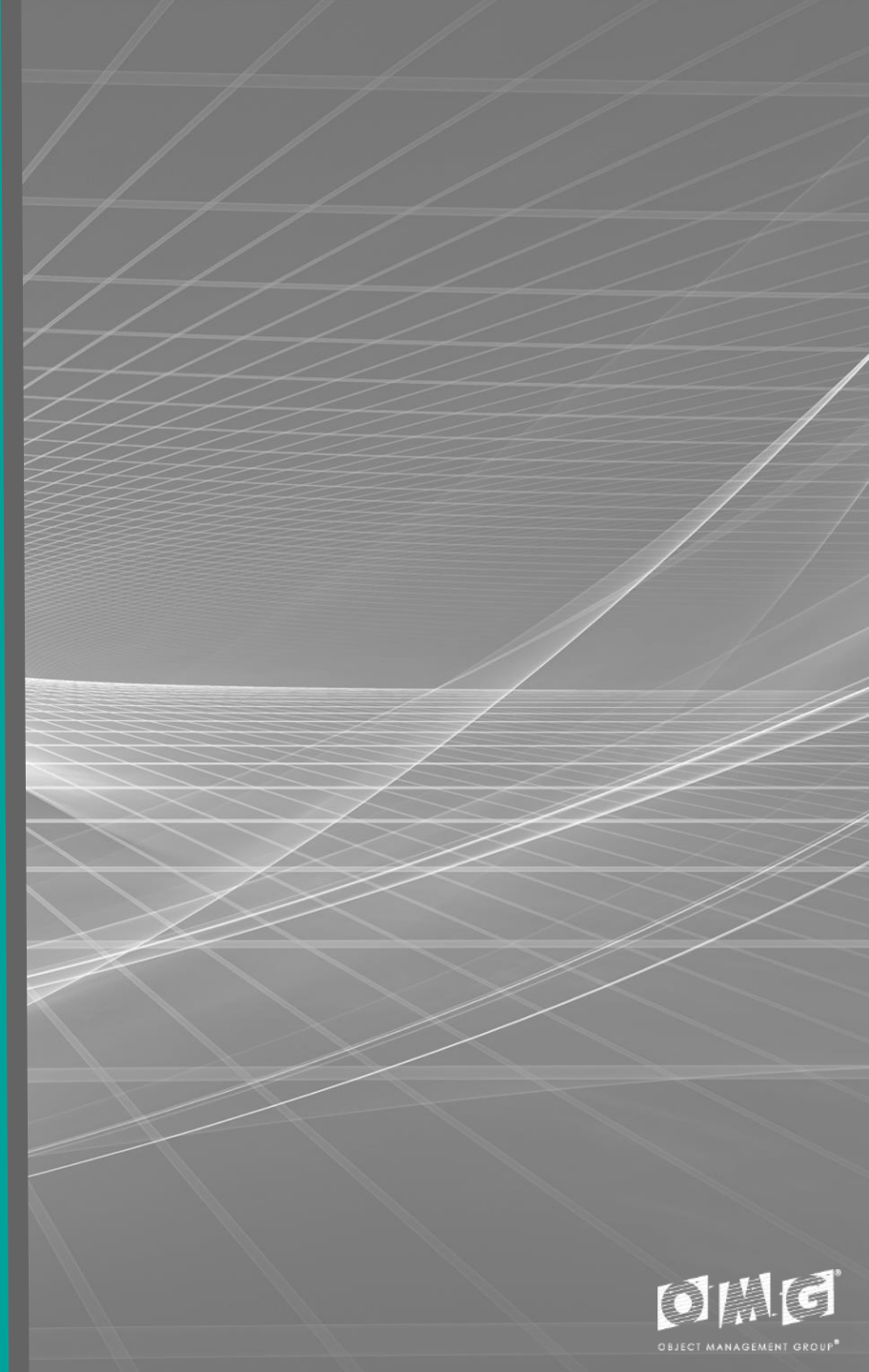
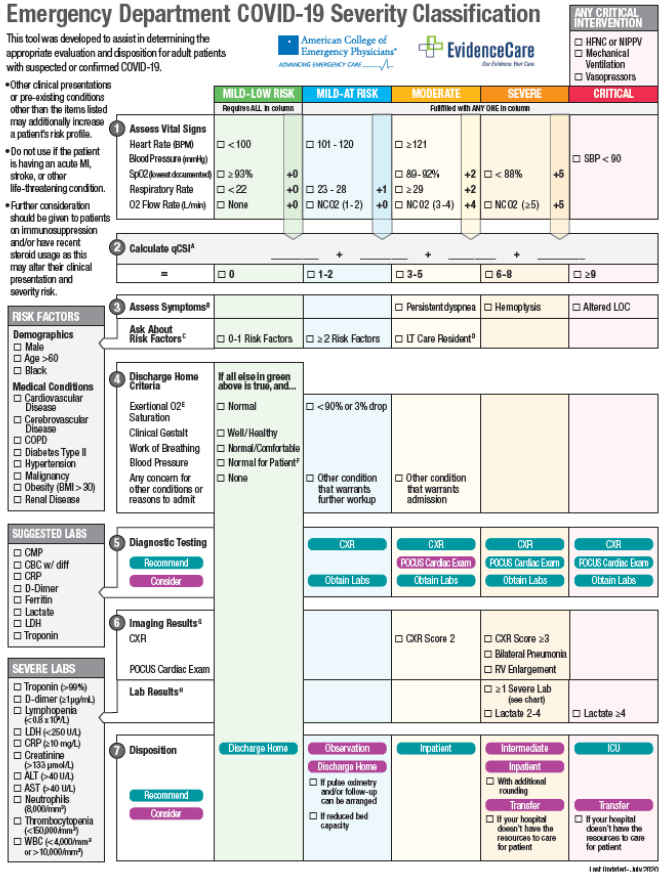
Background & Credits



ACEP ED Covid-19 “Scoring” Tool

- Developed by ACEP in collaboration with EvidenceCare
  - Tool available here
  - Announcement & Credits



Emergency Department COVID-19 Severity Classification

This tool was developed to assist in determining the appropriate evaluation and disposition for adult patients with suspected or confirmed COVID-19.

American College of Emergency Physicians — EvidenceCare

- Other clinical presentations or pre-existing conditions other than the items listed may additionally increase a patient's risk profile.
- Do not use if the patient is having an acute MI, stroke, or other life-threatening condition.
- Further consideration should be given to patients on immunosuppression and/or have recent steroid usage as this may alter their clinical presentation and severity risk.

	MILD–LOW RISK (Requires ALL in column)	MILD–AT RISK	MODERATE (Fulfilled with ANY ONE in column)	SEVERE	CRITICAL
1 Assess Vital Signs					
Heart Rate (BPM)	☐ < 100	☐ 101 - 120	☐ ≥ 121		
Blood Pressure (mmHg)					☐ SBP < 90
SpO2 (lowest documented)	☐ ≥ 93% +0		☐ 89 - 92% +2	☐ < 88% +5	
Respiratory Rate	☐ < 22 +0	☐ 23 - 28 +1	☐ ≥ 29 +2		
O2 Flow Rate (L/min)	☐ None +0	☐ NC O2 (1-2) +0	☐ NC O2 (3-4) +4	☐ NC O2 (≥5) +5	
2 Calculate qCSI[A]					
=	☐ 0	☐ 1-2	☐ 3-5	☐ 6-8	☐ ≥ 9
3 Assess Symptoms[B]			☐ Persistent dyspnea	☐ Hemoptysis	☐ Altered LOC
Ask About Risk Factors[C]	☐ 0-1 Risk Factors	☐ ≥ 2 Risk Factors	☐ LT Care Resident[D]		
4 Discharge Home Criteria	If all else in green above is true, and...				
Exertional O2[E] Saturation	☐ Normal	☐ < 90% or 3% drop			
Clinical Gestalt	☐ Well/Healthy				
Work of Breathing	☐ Normal/Comfortable				
Blood Pressure	☐ Normal for Patient[F]				
Any concern for other conditions or reasons to admit	☐ None	☐ Other condition that warrants further workup	☐ Other condition that warrants admission		
5 Diagnostic Testing		CXR / Obtain Labs	CXR / POCUS Cardiac Exam / Obtain Labs	CXR / POCUS Cardiac Exam / Obtain Labs	CXR / POCUS Cardiac Exam / Obtain Labs
6 Imaging Results[G] CXR			☐ CXR Score 2	☐ CXR Score ≥ 3 ☐ Bilateral Pneumonia ☐ RV Enlargement	
POCUS Cardiac Exam					
Lab Results[H]				☐ ≥ 1 Severe Lab (see chart) ☐ Lactate 2-4	☐ Lactate ≥ 4
7 Disposition	Discharge Home	Observation / Discharge Home ☐ If pulse oximetry and/or follow-up can be arranged ☐ If reduced bed capacity	Inpatient	Intermediate / Inpatient ☐ With additional rounding / Transfer ☐ If your hospital doesn't have the resources to care for patient	ICU / Transfer ☐ If your hospital doesn't have the resources to care for patient

RISK FACTORS

Demographics
☐ Male
☐ Age >60
☐ Black

Medical Conditions
☐ Cardiovascular Disease
☐ Cerebrovascular Disease
☐ COPD
☐ Diabetes Type II
☐ Hypertension
☐ Malignancy
☐ Obesity (BMI > 30)
☐ Renal Disease

SUGGESTED LABS
☐ CMP
☐ CBC w/ diff
☐ CRP
☐ D-Dimer
☐ Ferritin
☐ Lactate
☐ LDH
☐ Troponin

SEVERE LABS
☐ Troponin (>99%)
☐ D-dimer (≥1 µg/mL)
☐ Lymphopenia (< 0.8 x 10^9/L)
☐ LDH (<250 U/L)
☐ CRP (≥10 mg/L)
☐ Creatinine (>135 µmol/L)
☐ ALT (>40 U/L)
☐ AST (>40 U/L)
☐ Neutrophils (8,000/mm³)
☐ Thrombocytopenia (<150,000/mm³)
☐ WBC (<4,000/mm³ or >10,000/mm³)

ANY CRITICAL INTERVENTION
☐ HFNC or NIPPV
☐ Mechanical Ventilation
☐ Vasopressors

Recommend / Consider

Last Updated: July 2020

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C19 *Digital* Guidelines Working Group

- Part of a broader Covid-19 response team : https://c19hcc.org/

Focus:

Agile Translation of evidence-based
(Covid19) guidelines into “computable” forms

  - *“L2” to “L3”*

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“Clinical Practice Guideline on FHIR”

- Initiative companion to BPM+ Health
  - http://build.fhir.org/ig/HL7/cqf-recommendations/

Clinical Knowledge Engineering Methodology

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[[BPM4+Health Languages, Tools and Principles]]

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FHIR Implementation Guide

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Acknowledgements

- C19 Digital Guidelines Working Group
  - Brian Fengler – EvidenceCare (SME)
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  - Stephen White – Bookzurman (Knowledge Engineering)
  - Robert Lario – U. of Utah (Knowledge Engineering)
  - John Svirbely – Trisotech (Knowledge Engineering)

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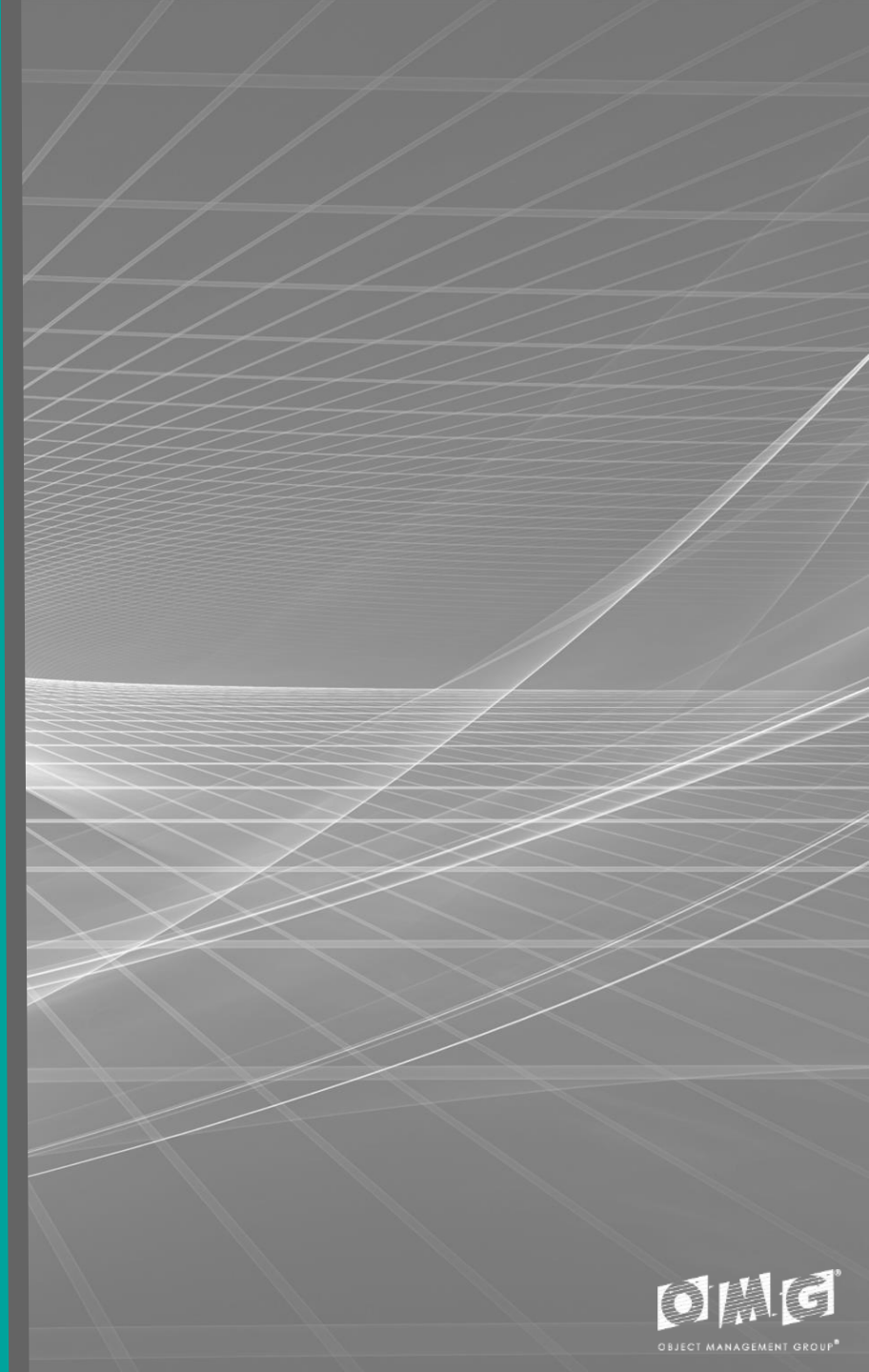
Methodology



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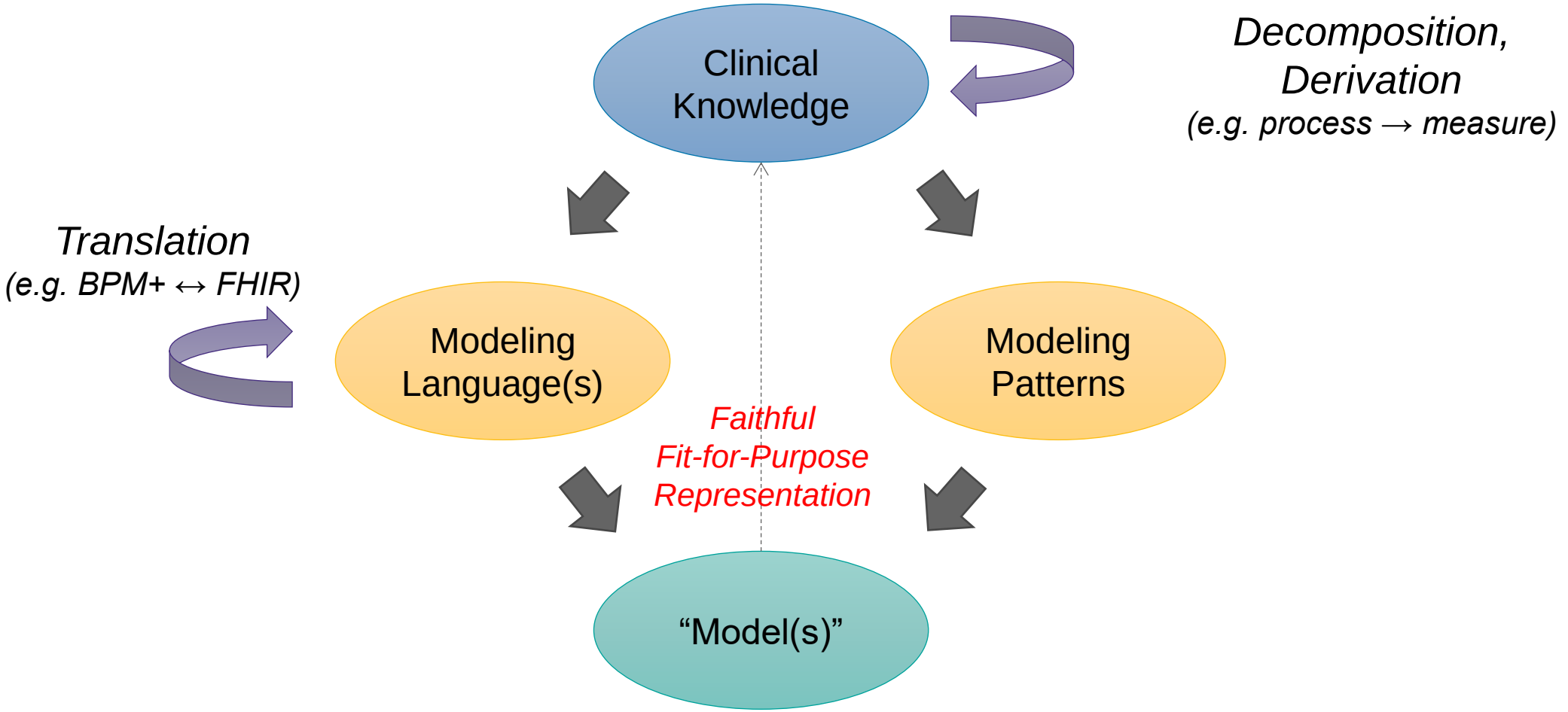
Approach: Problem / Knowledge First



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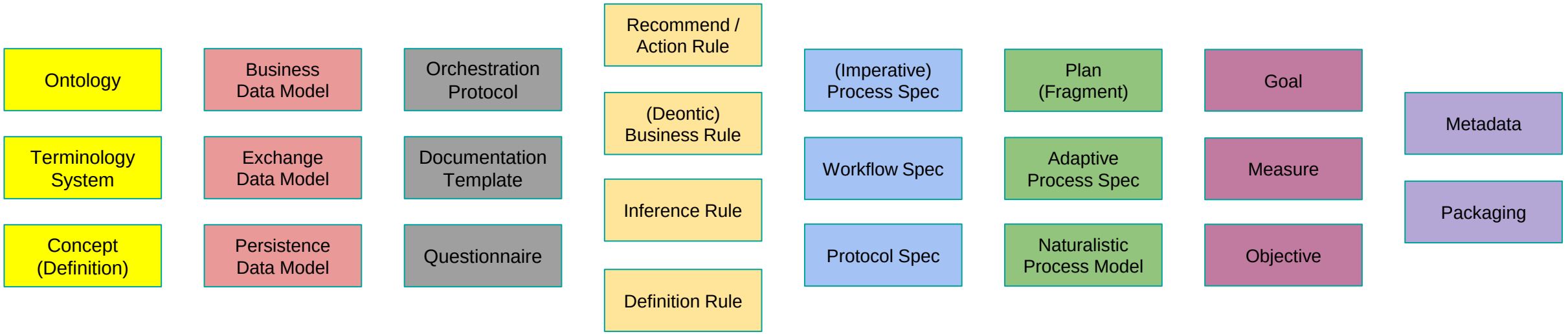
Knowledge “Assets” – Extended Semantic Spectrum / Ladder



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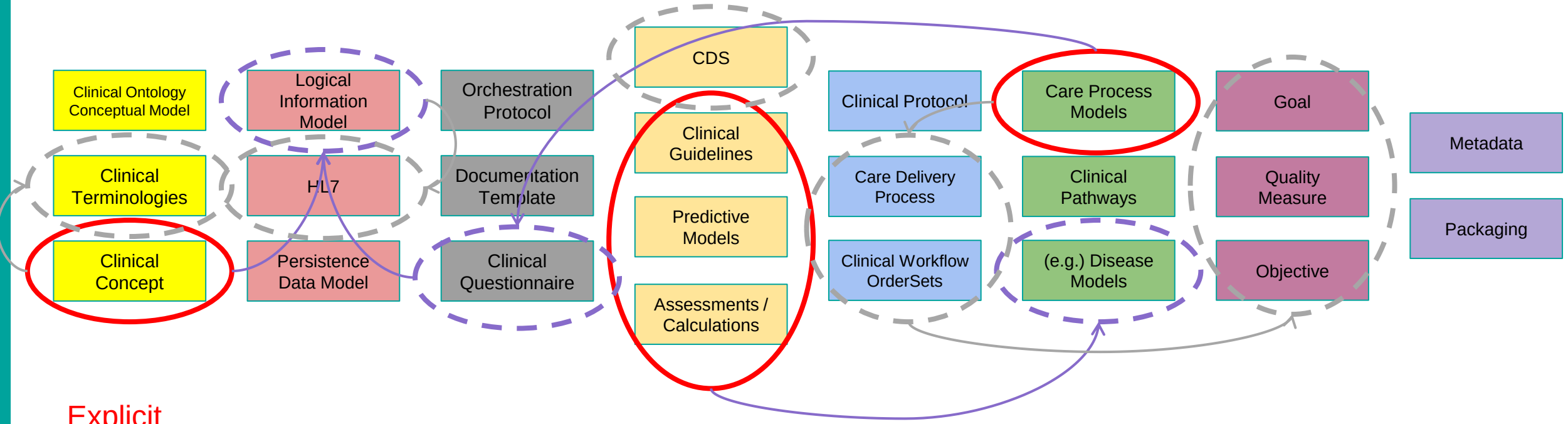
Knowledge “Assets” – Clinical Perspective



Explicit
Implicit
Implementation

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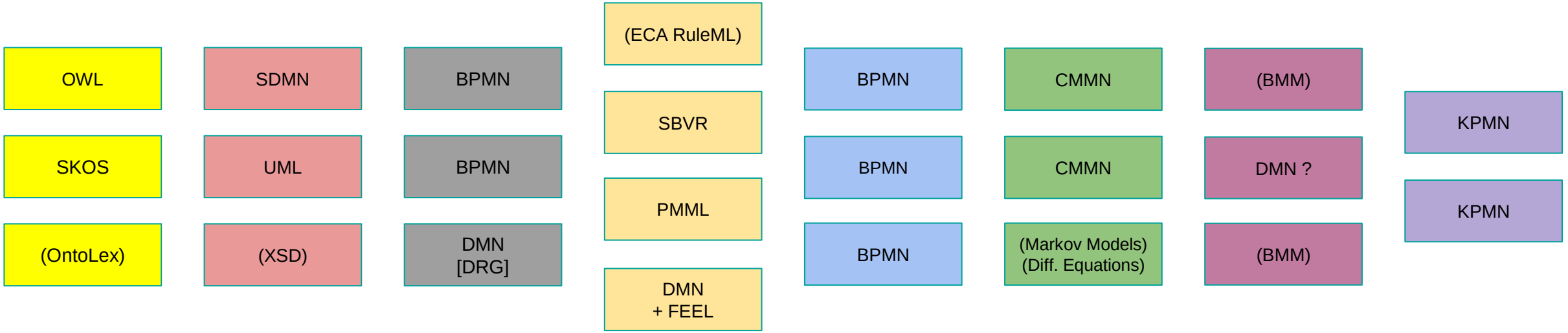
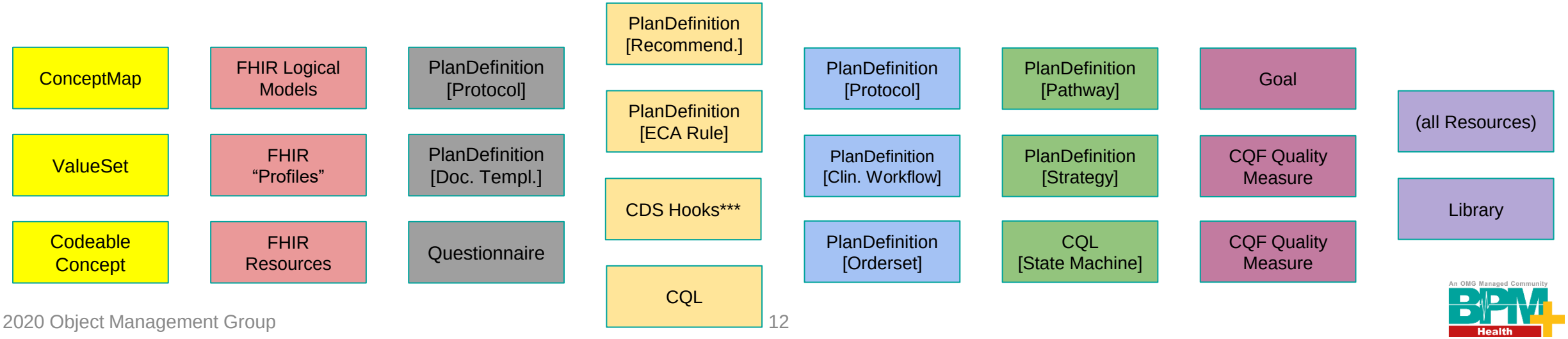
Knowledge “Assets” – Representation Perspective (approx.)





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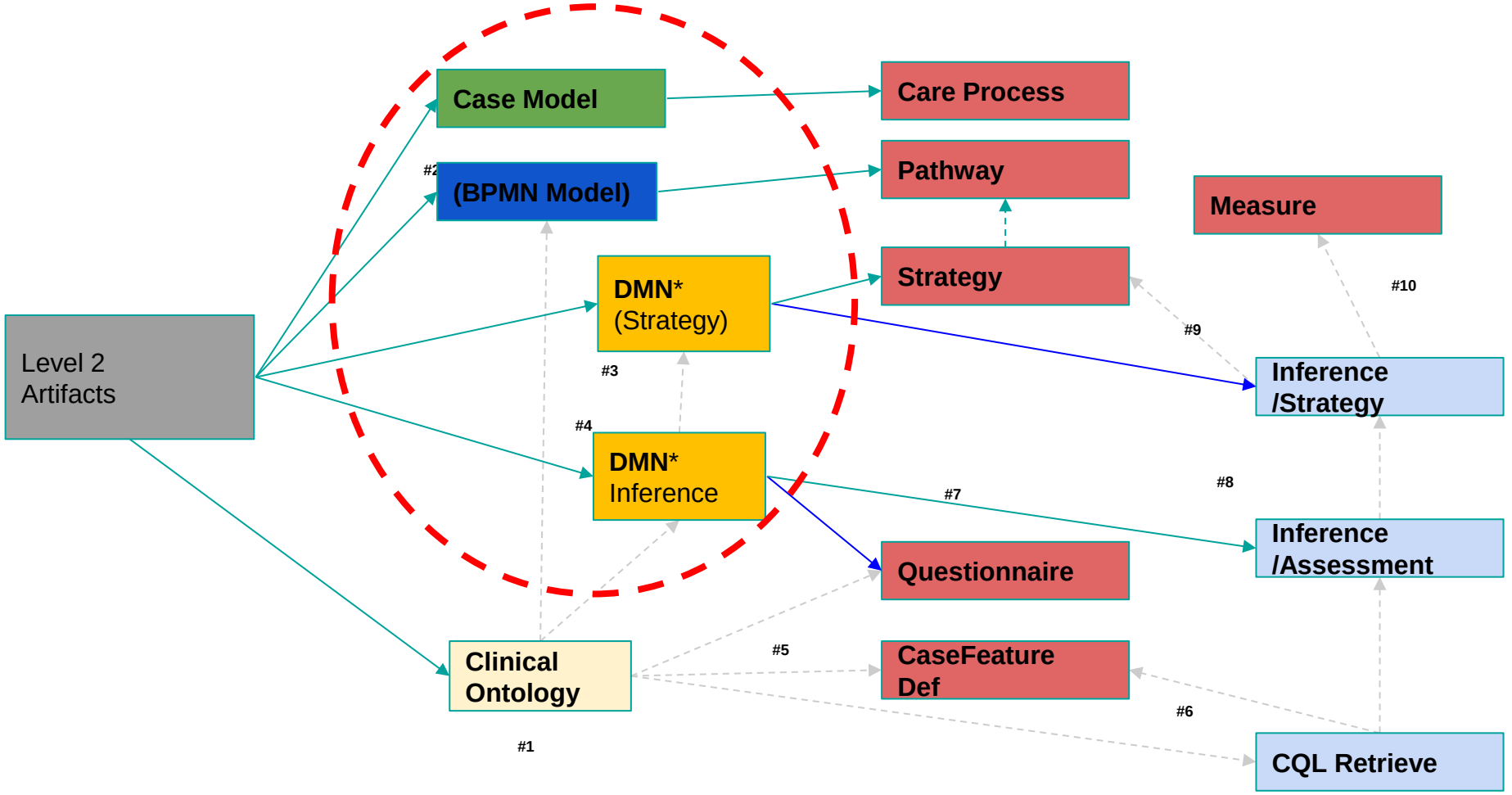
ED Model Application



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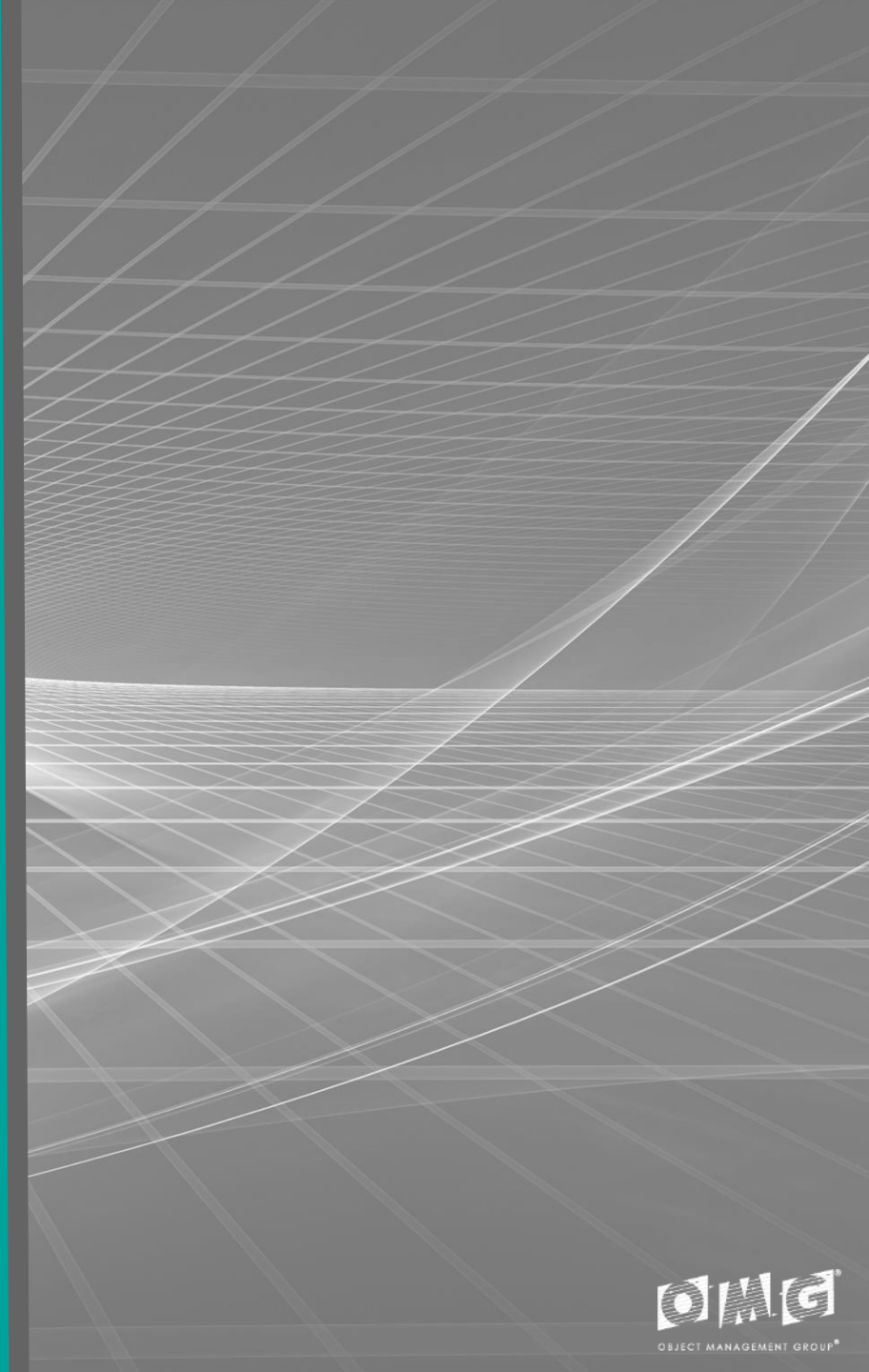
Model Review



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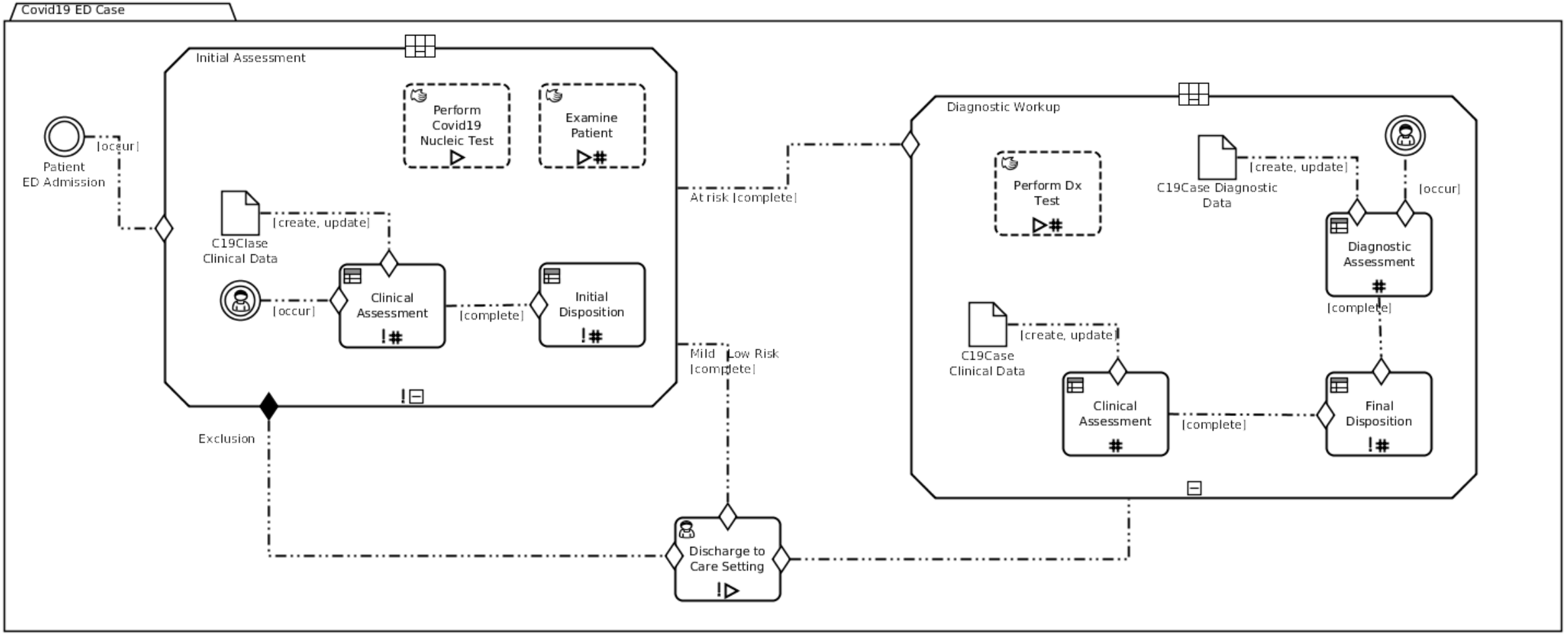
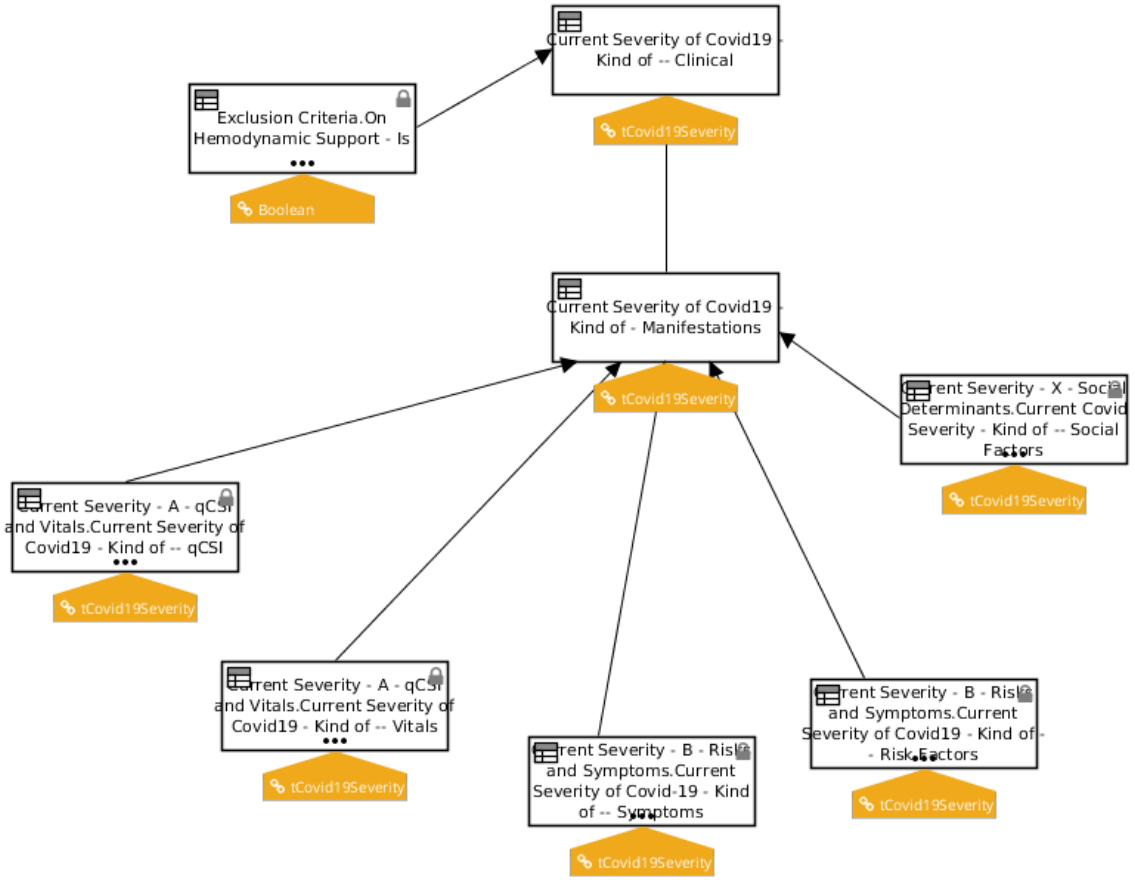
Case Model


Covid19 ED Case
Initial Assessment
Perform Covid19 Nucleic Test
Examine Patient
Patient ED Admission
|occur|
C19Clase Clinical Data
|create, update|
|occur|
Clinical Assessment
|complete|
Initial Disposition
At risk |complete|
Mild |complete|
Low Risk
Exclusion
Diagnostic Workup
Perform Dx Test
C19Case Diagnostic Data
|create, update|
|occur|
Diagnostic Assessment
|complete|
C19Case Clinical Data
|create, update|
Clinical Assessment
|complete|
Final Disposition
Discharge to Care Setting

Decision Model (Example)



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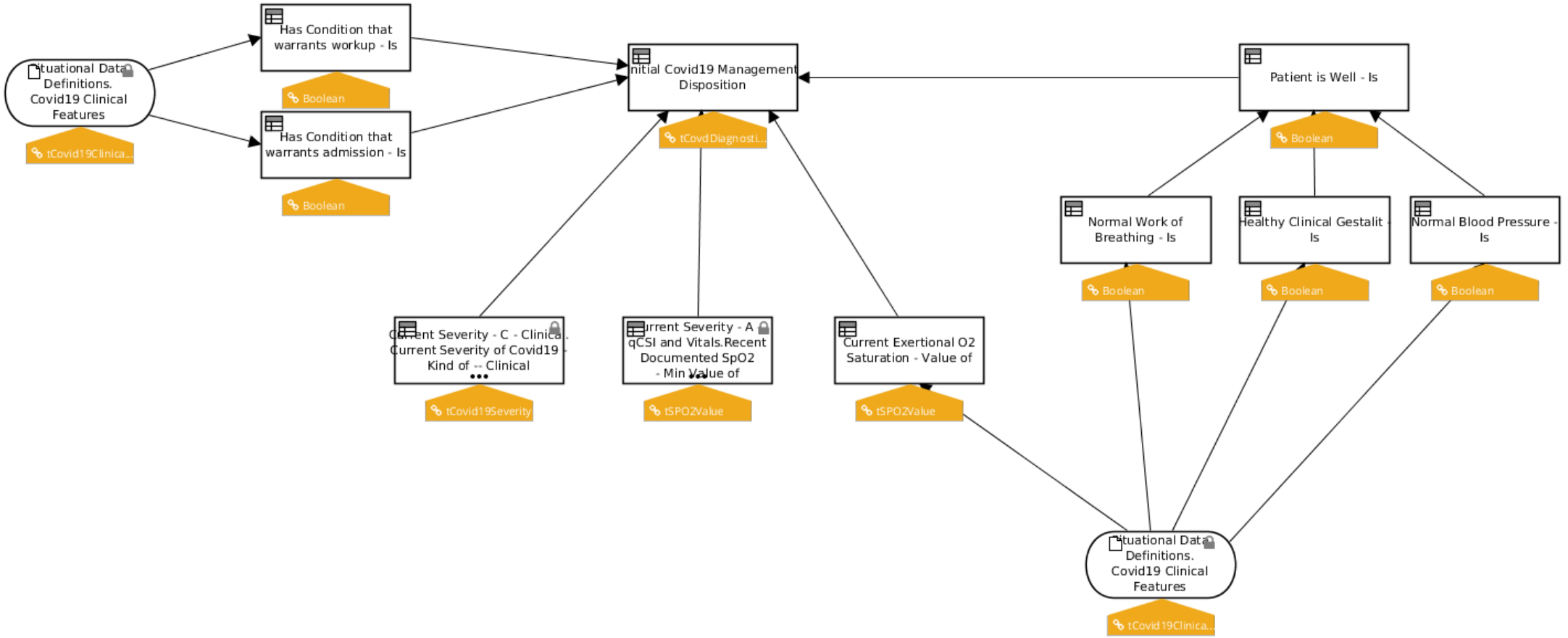
Decision Model (Example)



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About OMG


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International standards development organization


225+ specifications


325+ member organizations worldwide


11 specifications ratified as ISO standards

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