August 11, 2016

**Object Pseudocode for three demo “Interpretation” objects with Python payloads**

1. Prostate Cancer Risk Interpretation Object:

*The Prostate Cancer Risk object generates 3 outputs. All 3 of outputs can be inputs to one Prostate Cancer Risk Interpretation Object.*

**Inputs to prostate cancer risk interpretation object:**

INPUT 1: Percentage Chance of No Prostate Cancer

INPUT 2: Percentage Chance of Low-grade Prostate Cancer

INPUT 3: Percentage Chance of High-grade Prostate Cancer

**Outputs from prostate cancer risk interpretation object:**

General output: Generate this summary statement in sentence form:

“This gentleman has a [INPUT 1] % chance of having no prostate cancer, a  
 [INPUT 2] % chance of having low-grade prostate cancer, and a [INPUT 3] %  
 chance of having high grade prostate cancer.”

Patient-specific additional output: Add a second sentence using a conditional.

If [INPUT 3] > 3% then append string above with

“RECOMMENDATION: Consider a prostate biopsy.

A prostate biopsy is indicated because the chance of having high-grade   
 prostate cancer is greater than 3%.”

else append the string above with

“RECOMMENDATION: A prostate biopsy is not indicated.

Because the risk of high-grade prostate cancer is low, a prostate biopsy  
 is not indicated. Watchful waiting and reassessment of risk after one year  
 are advised.”

1. 3-Year Hepatocelluar (Liver) Cancer Risk in those with Hepatitis B Interpretation Object:

*The 3-Year Liver Cancer Risk object generates one output.*

**Input to liver cancer risk interpretation object:**

INPUT 1: Percentage Chance of Developing Liver Cancer over the next 3 years

**Outputs:**

Patient-specific output:

If [INPUT 1] < 0.2% then

“TREATMENT RECOMMENDATION:  
No antiviral treatment for Hepatitis B is indicated at this time.   
MONITORING RECOMMENDATION:

Every 3 to 6 months, monitor and reassess liver function (ALT),   
Hepatitis B e Antigen status (HBeAG), and Hepatitis B DNA virus copy counts  
(HBV-DNA).”

else if [INPUT1] ≥ 0.2% AND < 1% then  
  
“TREATMENT RECOMMENDATION:  
Consider a liver biopsy or a non-invasive liver fibrosis assessment and treat  
Hepatitis B with antiviral medications if moderate or greater inflammation or  
fibrosis are detected.

MONITORING RECOMMENDATION:   
Every 3 months monitor and reassess liver function (ALT),   
Hepatitis B e Antigen status (HBeAG), and Hepatitis B DNA virus copy counts  
(HBV-DNA).”

else if [INPUT 1] ≥ 1% AND ≤ 30%

“TREATMENT RECOMMENDATION:

Antiviral treatment is recommended.  
 MONITORING RECOMMENDATION:

Monitor the impact and effectiveness of antiviral treatment every month  
 by reassessing liver function (ALT), Hepatitis B e Antigen status (HBeAG), and  
 Hepatitis B DNA virus copy counts (HBV-DNA). If improvements are apparent,  
 consider changing the monitoring frequency to every 3 months.”

else

“A 3 year risk of hepatocelluar cancer of more than 30% may indicate a   
 problem with the risk scoring calculation itself. Check all patient data  
 and reassess hepatocellular risk to confirm.   
  
 Assuming that the risk is more than 30%, which is very high, then antiviral  
 treatment is highly recommended.

TREATMENT RECOMMENDATION:

Antiviral treatment is recommended.  
 MONITORING RECOMMENDATION:

Monitor the impact and effectiveness of antiviral treatment every month  
 by reassessing liver function (ALT), Hepatitis B e Antigen status (HBeAG), and  
 Hepatitis B DNA virus copy counts (HBV-DNA). If improvements are apparent,  
 consider changing the monitoring frequency to every 3 months.”

1. 6-Year Lung Cancer Risk Interpretation Object:

*The 6-Year Lung Cancer Risk.*

**Input to liver cancer risk interpretation object:**

INPUT 1: Percentage Chance of Developing Lung Cancer over the next 6 years

**Outputs:**

Patient-specific output:

If [INPUT 1] > 1.35% then

“RECOMMENDATION: Consider lung cancer screening.

This person’s 6-year risk of lung cancer is [INPUT 1]%. Because the chance is  
 greater than 1.35%, engaging in a process of shared decision making about lung  
 cancer screening should be considered, during which other factors, including the  
 health status and disposition of the individual, should be taken into account.”

else

“RECOMMENDATION: Lung cancer screening is not advised.

This person’s 6-year risk of lung cancer is 0.35%. Because this chance is lower  
 than 1.35%, lung cancer screening is not indicated as the risk of lung cancer  
 screening exceeds its likely benefits.”