A second opinion

Lexical AI for Patient-Centered Clinical Diagnoses

Why?

The Diagnostic Procedure

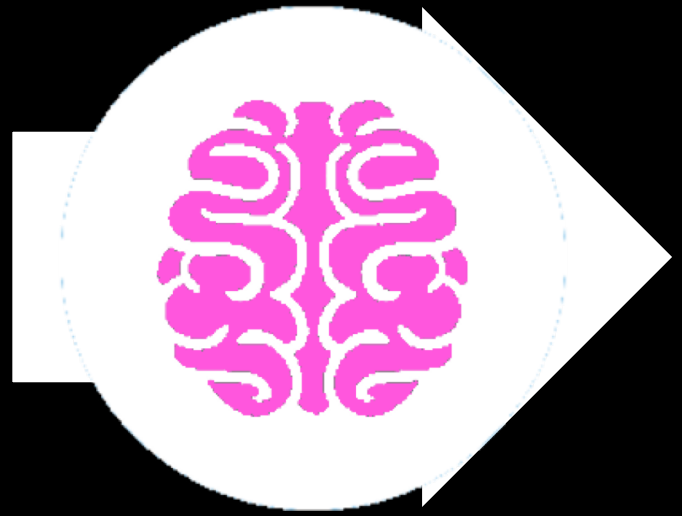
Inputs:

Perceived Symptoms

Patient Chart

Biometrics

Human interpretation of medical models



Outputs:

Prescription(s)

Lifestyle Recommendations

The Lexical AI Procedure

Inputs:

Explained Symptoms

Patient Chart

Allergies

Biometrics

Medical Models

Patient History

Sync4Science Data

Public medical databases

Immediate recommendations

All current prescriptions

Family medical history

Genetic predispositions

Outputs:

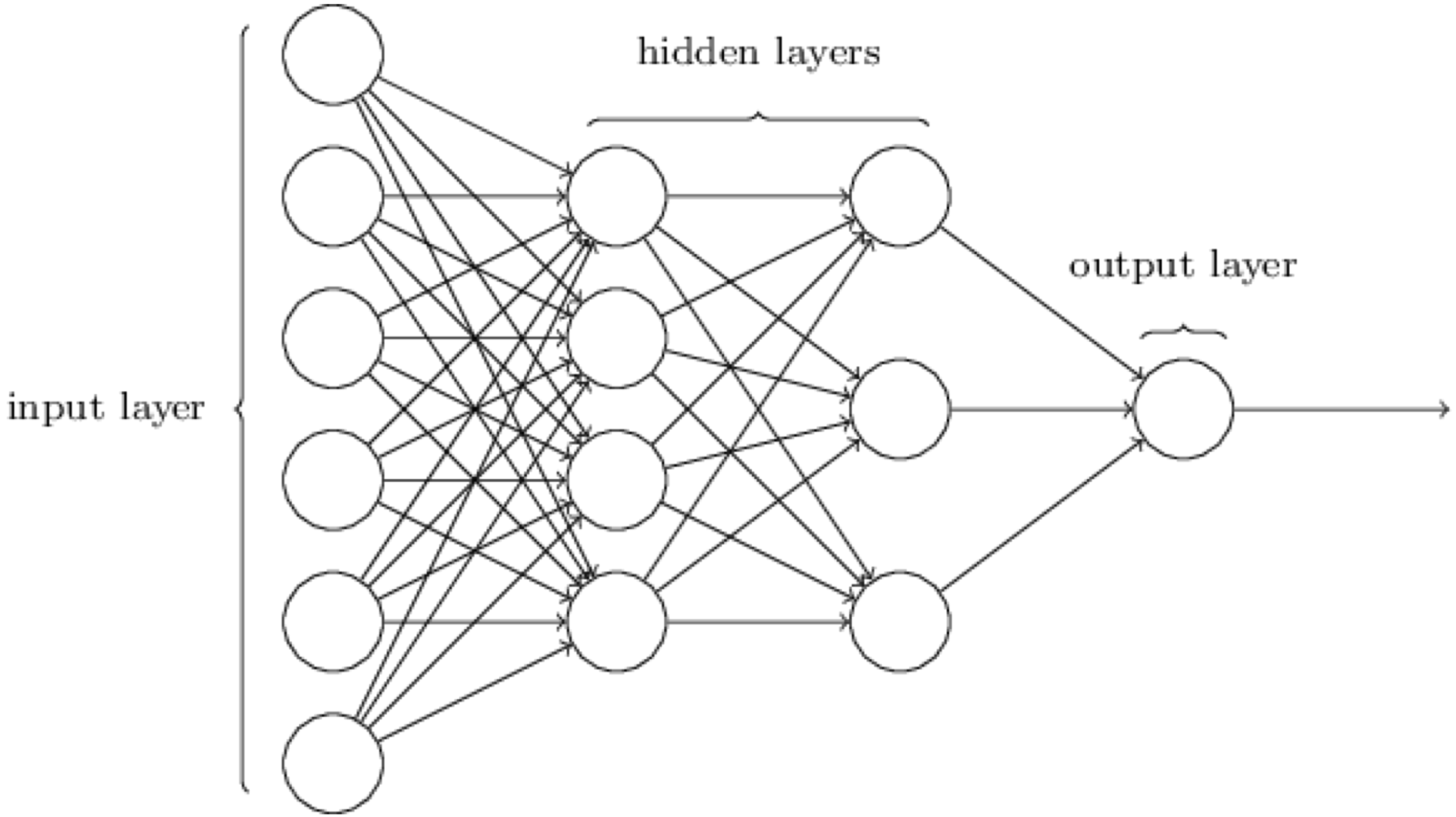
Prescription(s)

Lifestyle Recommendations

Post-examination feedback

Concepts

Artificial Thought



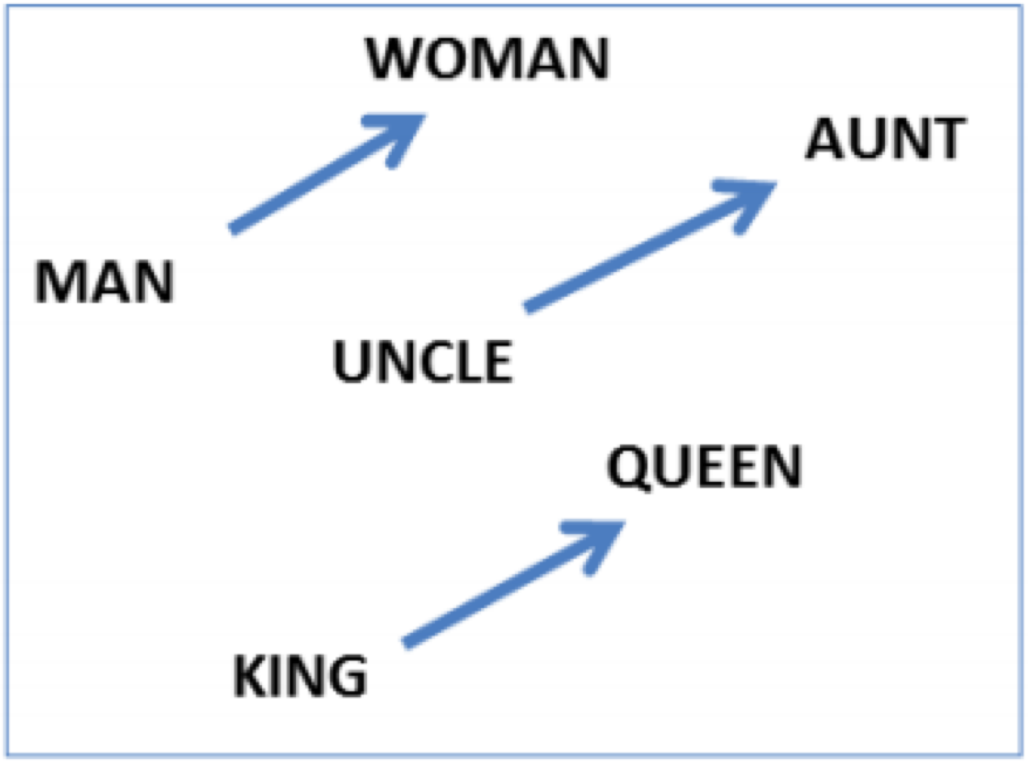
Keras

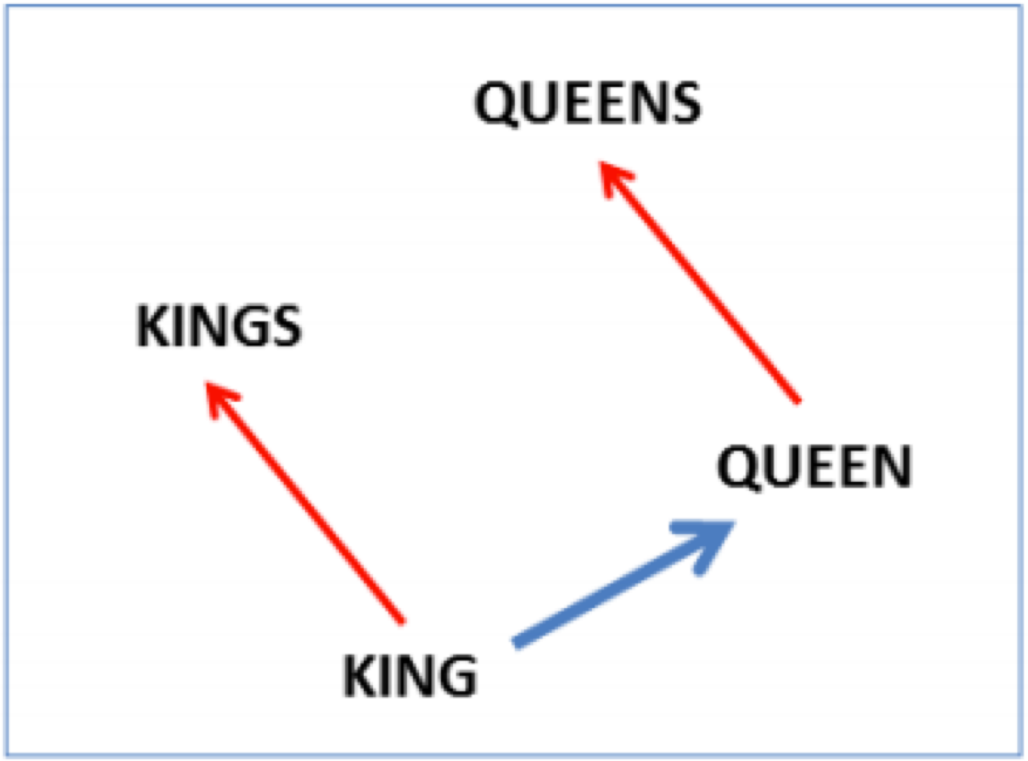
```
input_encoder = Sequential()
input_encoder.add(Embedding(input_dim=vocab_size, output_dim=64))
input_encoder.add(LSTM(64))

question_encoder = Sequential()
question_encoder.add(Embedding(input_dim=vocab_size, output_dim=64))
question_encoder.add(LSTM(64))

model = Sequential()
model.add(Merge([input_encoder, question_encoder], mode='concat'))
model.add(Dense(128))
model.add(Activation('softmax'))
```

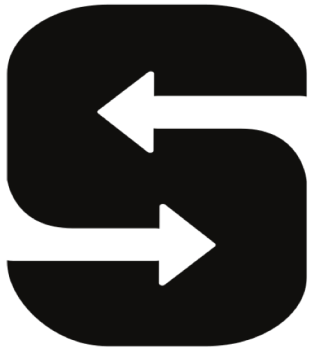
Word Vectorization





(Mikolov et al., NAACL HLT, 2013)

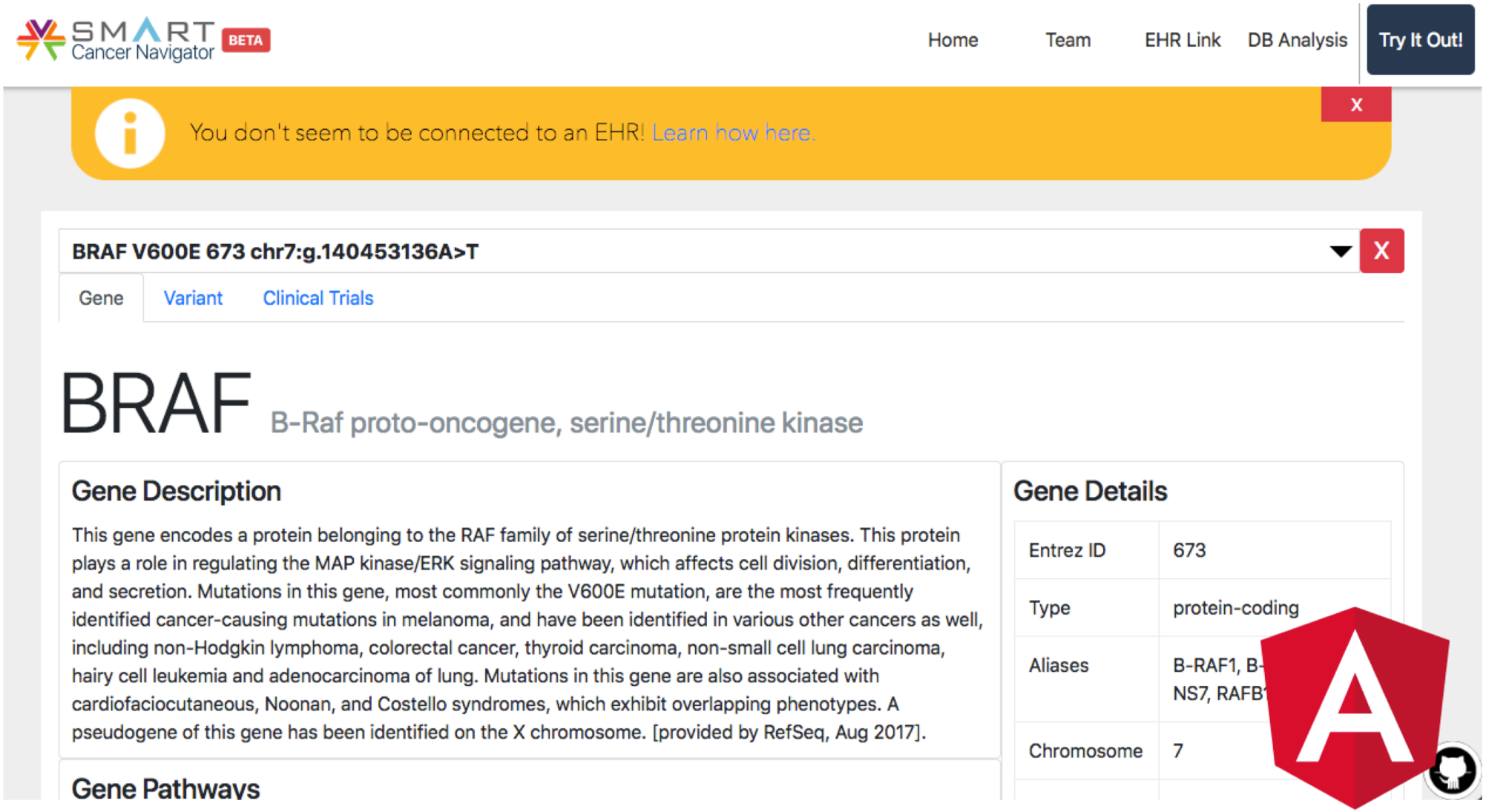
Patient Data



SYNC FOR SCIENCE

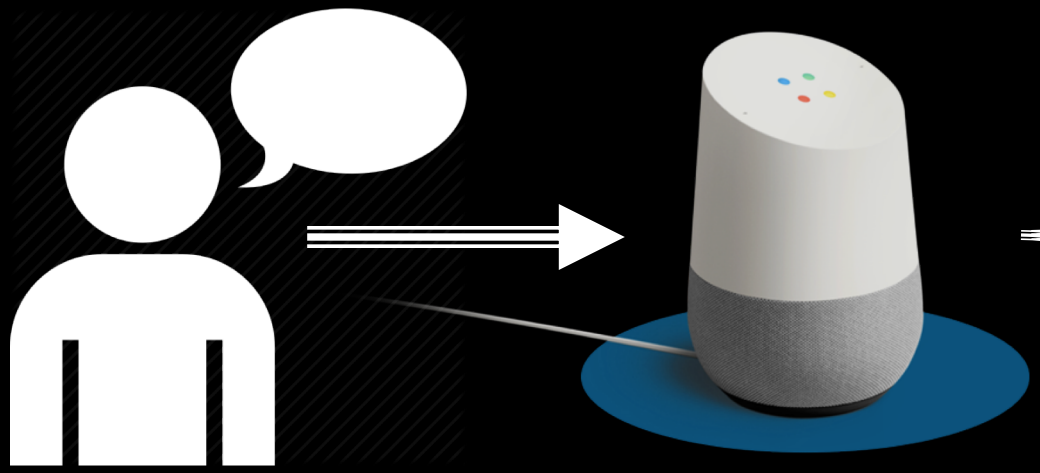
SMART

Employing Past Work



Cohesion

Lexical Flow



Interpretation of Symptoms

Wrist pain, hypertension, nausea

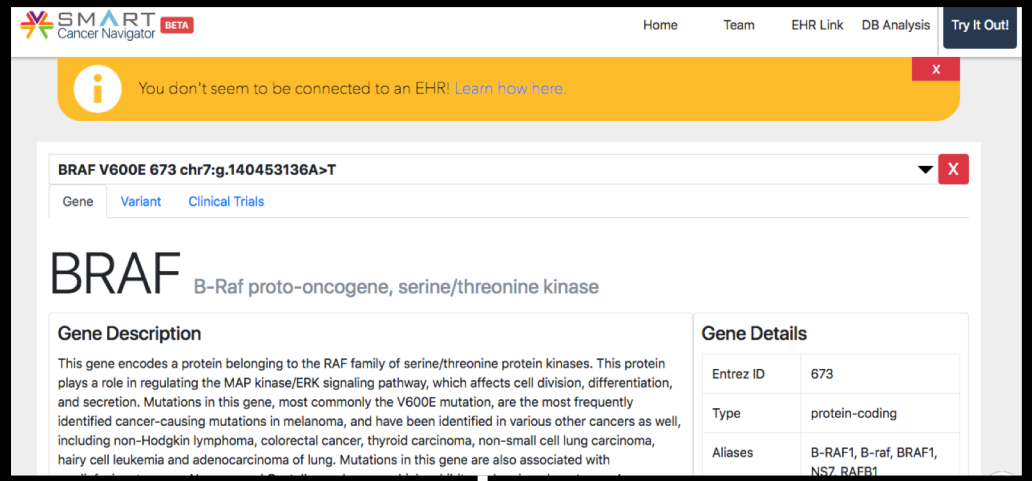
Interpretation of Sentiment

Hurts badly, mild annoyance, frustrating cough

Patient Data Cross-Reference

Current prescription is known to rarely induce anxiety attacks, family history of sodium deficiency

GUI Flow



Genomic Databases

MyCancerGenome, CIVIC, dgiDB

Clinical Trial Databases

Relevant clinical trials might be useful as a further extension of our work, given that we can cross-reference patients' symptoms with available trials.

FHIR Reference

Patient-relevant data and SMART CDS hooks return responses

Thanks!

Any Questions?