

OSEHRA INNOVATION WEBINAR SERIES

Today's Presentation:
Using TRM Approved
Software to Load Synthetic
Patients into VistA for Testing

Thank you for joining.

This presentation will begin shortly.

August 27, 2019

Welcome to the August Innovation Webinar

Using TRM Approved Software to Load Synthetic Patients into VistA for Testing



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OSEHRA



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Manager, Certification and Testing
OSEHRA

What are we showing?



We will:

- **Create realistic Synthetic Patient data in FHIR v4 format**
- **Visualize the FHIR data**
- **Import the patients into VistA**
- **View the imported patients in CPRS**

TRM Components



- **What is the TRM?**
- **Components**
 - Git
 - Java (JDK, not JRE)
 - Google Chrome
 - Intersystems Caché

Project Rationale



- **Testing Medical Applications (including EMRs) is difficult without good data**
- **“Anonymized” patient data used for testing is easily re-identifiable**
- **A better solution is needed!**

Project History (1/3)

- **DXC Technology (now Perspecta) contacted OSEHRA in August 2017 for recommendations and help**
- **Open Source Project Group established November 2017**
 - Technical Workgroup under VA Contract
- **Looked at various synthetic data generation projects**
- **MITRE's Synthea (<https://synthetichealth.github.io/synthea/>) was the most promising**

Project History (2/3)



- **Synthea (Ruby) started in April 2016**
- **Converted to Java in July 2017**
 - Mainly due to speed issues with Ruby

Project History (3/3)



- **Project Group Achievements**
 - Anemia & Hypertension models
 - Synthea Patient Visualizer
 - VistA KIDS build that loads the Synthea FHIR data
 - Synthea Generator UI (Docker based) (not on TRM)

Project Main Sponsors & Developers



- **Perspecta (previously DXC)**
- **George Lilly from WorldVistA**
- **OSEHRA**
- **MITRE**
- **Patrick Redington in Reminders Working Group**
 - PCE Standardization
 - Tester for VistA FHIR Loader

Components We Will Demo

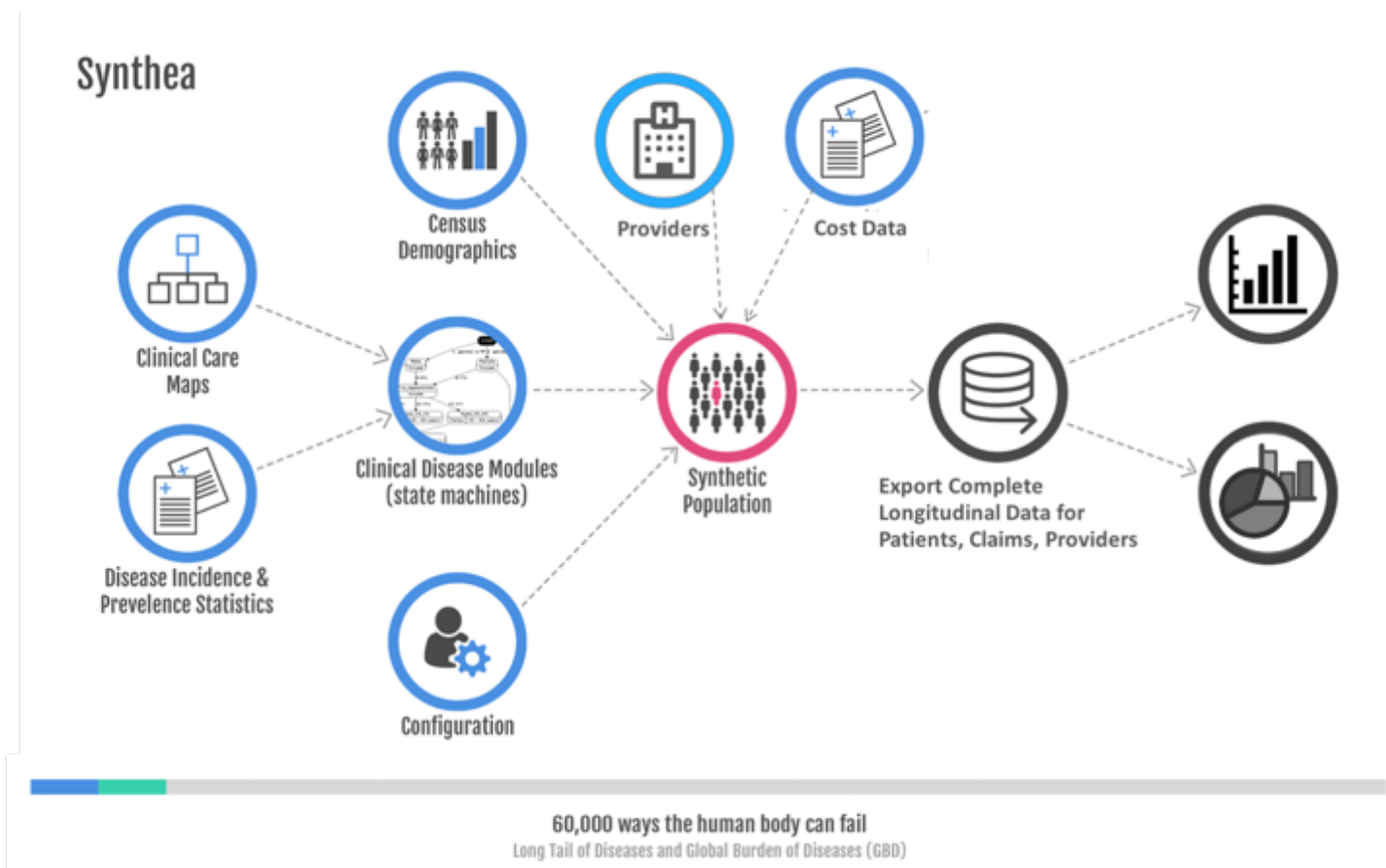


- **MITRE's Synthea (TRM TID 11506)**
- **Synthea Patient Visualizer (Website)**
- **PCE Standardization KIDS Build**
 - VistA Software in Development
- **VistA FHIR Data Loader (TRM TID 14171)**
 - Includes VistA Data Loader, sponsored by Johns Hopkins University

MITRE's Synthea (1/2)

- <https://synthetichealth.github.io/synthea/>
- **Uses Census Data as Baseline Input**
- **Uses a Generic Module Framework (GMF) to generate synthetic patients**
 - Each module is a disease model progression by time
 - Each patient is simulated independently from birth to present day
- **New modules continuously being added**
- **Synthea outputs in FHIR (2,3,4), CCD-A, CSV, or Text**

MITRE's Synthea (2/2)



Synthea Patient Visualizer (1/2)



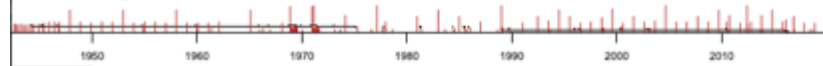
- <https://github.com/OSEHRA-Sandbox/SyntheaPatientViz>
- Web page that uses D3 JavaScript library to display Synthea data in a longitudinal format
- Developed by OSEHRA's Joe Snyder

Synthea Patient Visualizer (2/2)

OSEHRA Synthea Viewer

Select synthetic patient file:

Select date range to view:

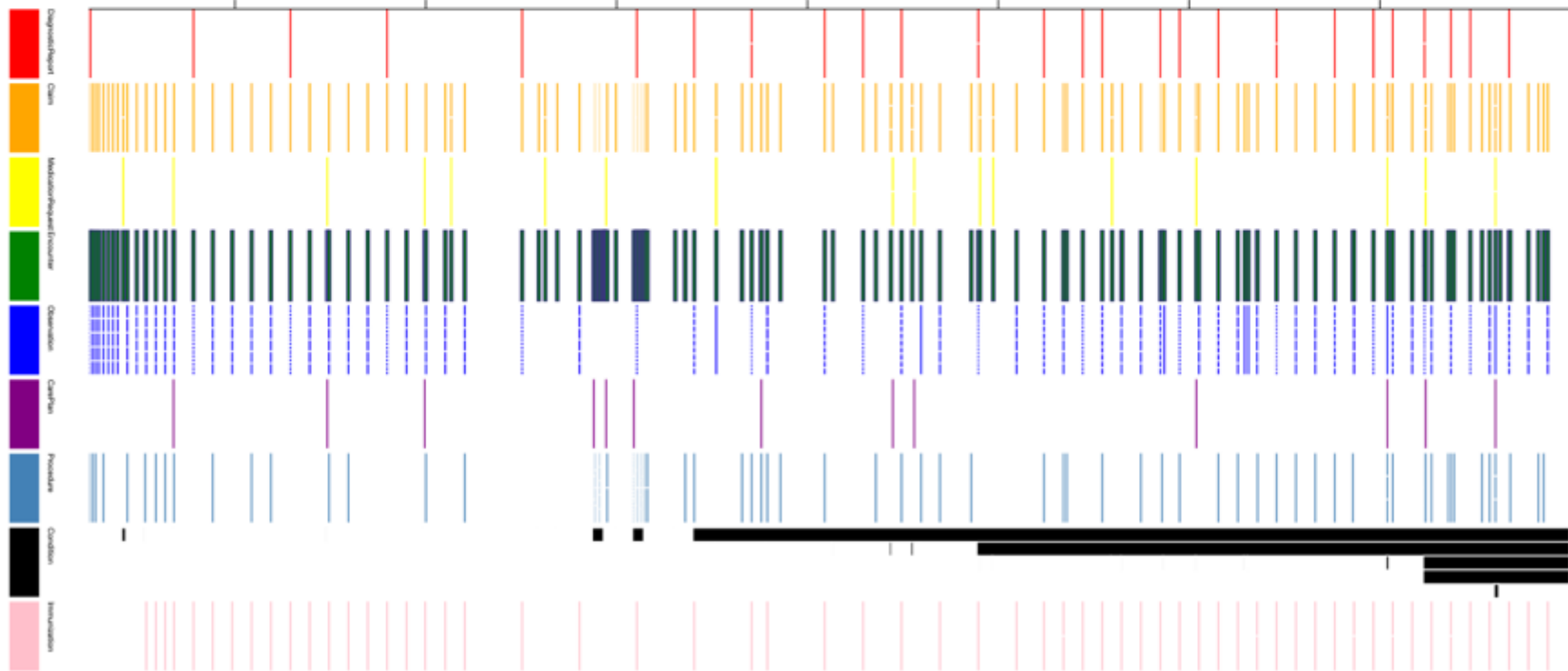


Reset

Patient Information

- name: Mrs. Michael314 Parker433 (nee Thiel172)
- gender: female
- birthDate: 1942-04-30
- address:
 - 852 Bernier Track Winchester, Massachusetts 01890

Color Legend



PCE Standardization 1.0

- <https://code.osehra.org/journal/journal/view/1607>
- **Developed by Patrick Redington in the VA to upgrade the PCE Package**
- **Basis for future standardized content**
 - Standardized and coded
 - Education Topics, Exams, and Health Factors
- **Standardized data supports**
 - Interoperability, Improved clinical decision support, Analytics, Meaningful Use, Joint Legacy Viewer, Creation of synthetic patients for test databases
- **We use the T5 version**

VistA FHIR Data Loader



- <https://github.com/OSEHRA/VistA-FHIR-Data-Loader/tree/vaready>
- Developed by Perspecta, George Lilly, and OSEHRA's Sam Habel
- Loads any FHIR DSTU3 or R4 data into VistA

Demo Software Prepared



- **Windows 10 VM (TID 31)**
 - Git (TID 6396)
 - Java 1.8 JDK (TID 5161)
 - Intersystem Cache 2014 (TID 10)
 - VistA FOIA CACHE.DAT 2019-08
 - VistA CPRS 1.0.31.118 (31A-Win10)
 - Vitals DLL (GMRV*5.0*38)

Demo FOIA VistA Preparation



- **Recompile Routines**
- **Fix NULL device**
- **Fix Taskman Parameters (#14.7)**
- **Repoint Current Tasks in 14.5 to correct VOL/UCI**
- **Fix HFS Device**
- **Fix Primary HFS Directory**
- **Set-Up XWB Broker so it will start with Taskman**

Demo Steps



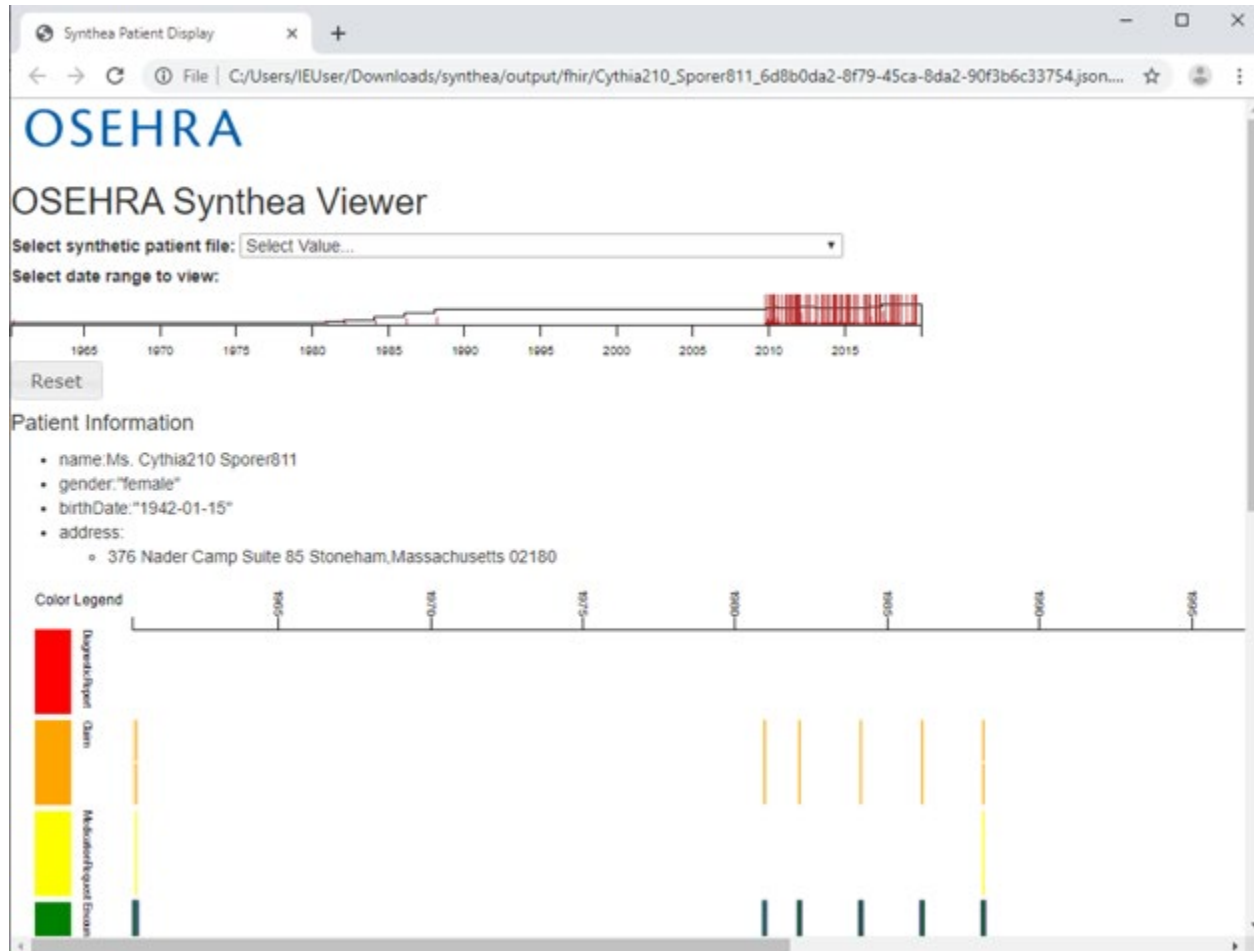
- **Start VistA**
- **Connect CPRS**
- **Install KIDS builds**
 - PCE STANDARDIZATION 1.0 T5
 - VistA FHIR Data Loader 1.0
- **Connect CPRS, login, and show no patients**
- **Download Synthea**
- **Create 10 patients**
- **Visualize 10 patients**
- **Import patients into VistA**
- **View patients in CPRS**

Some Screenshots

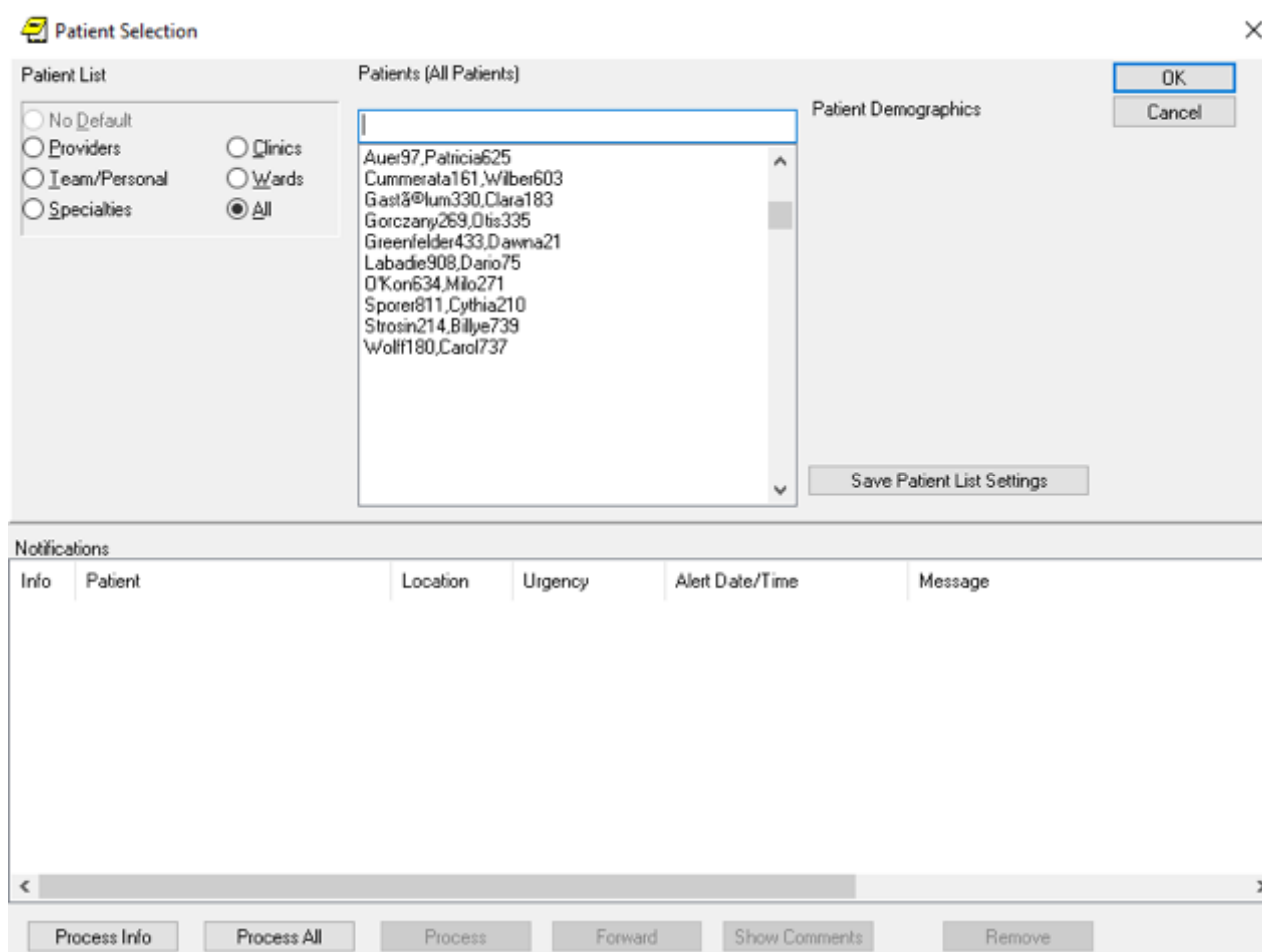
```
MINGW64:/c/Users/IEUser/Downloads/synthea/output/fhir
od_allergies.json
Loading module C:\Users\IEUser\Downloads\synthea\build\resources\main\modules\ve
teran_substance_abuse_conditions.json
Running with options:
Population: 10
Seed: 1565805534193
Provider Seed:1565805534193
Location: Massachusetts
Min Age: 0
Max Age: 140
5 -- Clara183 Gastilum330 (10 y/o F) Chicopee, Massachusetts
6 -- Carol737 Wolff180 (11 y/o F) Medford, Massachusetts
4 -- Dario75 Labadie908 (19 y/o M) Chicopee, Massachusetts
7 -- Otis335 Gorczany269 (39 y/o M) Taunton, Massachusetts
3 -- Wilber603 Cummerata161 (51 y/o M) Marlborough, Massachusetts
2 -- Milo271 O'Kon634 (36 y/o M) Winthrop, Massachusetts
8 -- Billye739 Strosin214 (44 y/o F) Danvers, Massachusetts
1 -- Cythia210 Sporer811 (77 y/o F) Stoneham, Massachusetts
9 -- Patricia625 Auer97 (54 y/o F) Eastham, Massachusetts
10 -- Dawna21 Greenfelder433 (36 y/o F) New Bedford, Massachusetts
{alive=10, dead=0}

BUILD SUCCESSFUL in 2m 18s
4 actionable tasks: 4 executed
```

Some Screenshots



Some Screenshots



Some Screenshots

VistA CPRS in use by: Provider,Unknown Synthea (localhost)

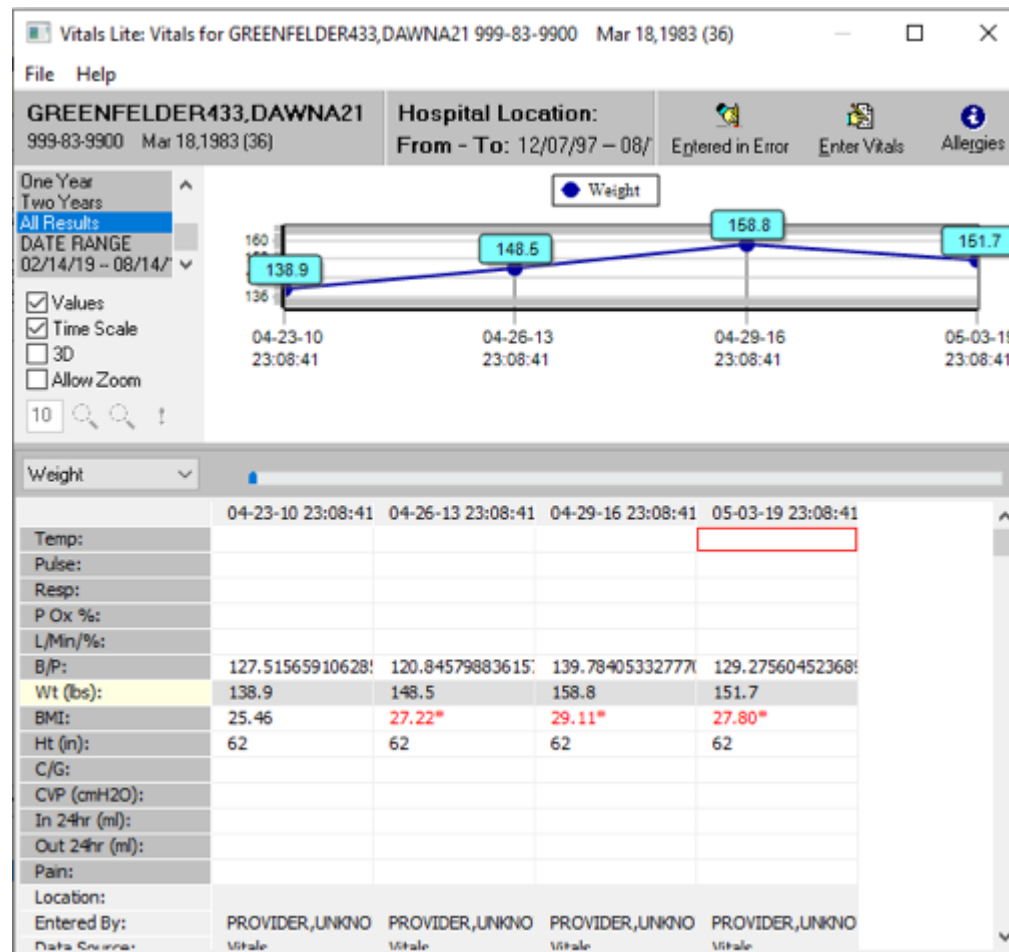
File Edit View Tools Help

SPORER811,CYTHIA210 (OUTPATIENT) GENERAL MEDICINE Aug 01,19 04:44 No PACT assigned at any VA loc VisteWeb No Postings
 999-91-6567 Jan 15,1942 (77) Provider: PROVIDER.UNKNOWN SYNTHEA Flag Remote Data

Active Problems	Allergies / Adverse Reactions	Postings
Miscariage In First Trimester (SCT 19169002) Type 2 Diabetes Mellitus (SCT 44054006) Hypertriglycendemia (SCT 302870006) Microalbuminuria Due To Type 2 Diabetes Mellitus (SCT : Acute Bacterial Sinusitis (SCT 75496004) Polyp Of Colon (SCT 68496003) Coronary Arteriosclerosis (SCT 53741008)	No Allergy Assessment	No Patient Postings Found.
Active Medications	Clinical Reminders	Due Date
No Active Medications Found	No reminders due	
Recent Lab Results	Vitals	Appointments/Visits/Admissions
No Orders Found.	T 100.2 F Aug 12,2016 04:44 (37.9 C) BP 109.6/194.2/85.0/45.0/67.7/77.7/207.3/205.1/49.1/81.8/Aug 01,2019 04:44 HT 63 in Aug 01,2019 04:44 (160.02 cm) WT 157.9 lb Aug 01,2019 04:44 (71.62 kg) BMI 28.03 Aug 01,2019 04:44	Aug 01,2019 04:44 General Medicine Action Required Jul 11,2019 04:44 General Medicine Action Required Jun 13,2019 04:44 General Medicine Action Required Apr 11,2019 04:44 General Medicine Action Required Dec 13,2018 03:44 General Medicine Action Required

Cover Sheet Problems Meds Orders Notes Consults D/C Summ Labs Reports

Some Screenshots



Limitations



- <https://github.com/synthetichealth/synthea/issues>
- <https://github.com/OSEHRA/VistA-FHIR-Data-Loader/issues>
- **The projects are young, and have some ways to go to mature**
- **The results are already very good**

VPE v15.2

- **If you attended last month's Webinar, we have two new updates**
 - VPE 15.X is now on the TRM
 - VPE v15.2 will be released soon
- **VPE 15.2 new features/fixes**
 - Tag/Offset display on Routines
 - Date format for routine save updated to latest SAC
 - Caché Terminal Syntax Highlighting Fix
 - XINDEX runs on buffer copy not saved copy
 - PROMPT >> doesn't timeout anymore
 - Better Upgrade Instructions
 - ESC-G AND ESC-R bug fixes

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Questions?

Please use the chat or Q&A feature to submit your questions.



OSEHRA INNOVATION WEBINAR SERIES

Thank you for joining today's presentation.

We hope you will join us next month
for our September Webinar.