Fall 2019 - Atlanta - Clinician-on-FHIR

Introduction

There is plan to hold a Clinician-on-FHIR day (Friday 20 September) at the September 2019 Atlanta HL7 Workgroup Meeting.

Useful Resources

Tools:

clinFHIR Graph Builder (use this for building scenarios for each track)

ClinFHIR (use this to launch the Graph Builder (second tab: <<Experimental Modules>>) - see demo video)

Demo video

ConnMan - for Atlanta CoF event (Do not use)

FHIR Blog

Planning

September 2019 Clinician-on-FHR planning confluence page

Tracks

The following tracks are proposed to be featured at the September 2019 Clinician-on-FHIR day:

1. Care Coordination, dynamic care planning, guidelines/protocol, CQF - clinical quality framework
2. Emergency Care (Screening)
3. Pediatric Care (Special Health Care Needs)
4. Medication Management
5. Clinical Assessment/Problem List

Clinical-on-FHIR Event Friday 20 September 2019, Atlanta Clinician-on-FHIR Event - Clinical Storyboard

(ClinFHIR/ConnMan preparation: add the patient and clinical data below in the tools for us to use as needed. Note which servers will be used especially - CoF Sandbox R4 and ???. Also need to add the pediatric patient for Mike Padula's track,)

Mrs. Patricia (Pat) Chess, a 42-year-old full time office assistant, was involved in a road accident while driving through a busy intersection after work. Her car was struck on the driver's side by a pick-up truck running a red light.

Pat was trapped in the car for 2 hours while emergency crews worked to extract her from her car. She was conscious and responsive at all times. The paramedics set up IV fluids to treat shock and IV analgesia during her extraction. She was taken by ambulance to the nearest trauma hospital and presented to emergency with multiple injuries.

Pat was assessed by Dr Ernie Medy, the ER physician. On presentation Pat was tachypnoeic with a RR of 29, SpO2 of 93% on 15Lpm O2 via a trauma (non-rebreather) mask. She had decreased breath sounds on the right, a BP of 90/50, in significant pain (9/10), and her GCS was 13.

She had numerous superficial abrasions on her face, arms and chest

Initial trauma "work up" investigations (abdominal, peripheral, and chest and spinal X-rays and CT) showed a closed undisplaced comminuted fracture left mid shaft femur, fracture left ribs 6-7 with spleen and liver contusions. No fracture vertebrae detected.

She was admitted and prepped for surgery for an open reduction and internal fixation of her femoral fracture and for an exploratory laparotomy for her abdominal injuries.

The preoperative assessment by the anaesthesiologist, Dr Carmen Guess, showed that Pat is a smoker, has a BMI of 34, otherwise, no significant contraindication for general anaesthesia.

She doesn't participate in any daily physical exercise apart from incidental activity through work and home.

Relevant medical/health history:

- Smoking history: average 10 cpd/17 years
- Hypercholesterolaemia: diagnosed in 2009
- Hypertension: diagnosed in 2010
- Ischaemic heart disease in 2015
- She was diagnosed with Type 2 DM in early 2019 and is still working with her diabetes management team to control her blood sugar levels and manage her body weight

Medications:

- Antihypertensives
- Cholesterol lowering medication
- Oral hypoglycaemics
- Oral contraceptives

Clinician-on-FHIR Tracks

This storyboard uses a common theme for the following Clinician-on-FHIR tracks:

- Care coordination
- Emergency care
- Clinical assessment

Track 1: Dynamic care planning & care coordination

Track leads

Emma Jones

George Dixon

Clinical scenarios/storyboard

Can the Dynamic Care planning pick up on the MVA patient described in the Clinical Assessment below?

This track will be focused on clinical discussion around the workflows rather then much work in ClinFHIR or ConnMan this time.

Track 2: Emergency care

Track leads

Laura Heermann

Clinical scenarios/storyboard

Consider adding the ED part to the Clinical Impression piece here.... have the same patient that comes in from the MVA and do the multiple screenings for that patient? Could include the SDoH items?

Focus on Nursing Triage - screenings and then look at the clinical impression for the abdominal issues and liver contusion.

Consider pain management - opioid use.

Track 3: Children with Special Health Care Needs

Track leads

Michael Padula

Clinical scenarios/storyboard

A 6 month-old ex-25wk preterm infant with h/o bronchopulmonary dysplasia, complex device needs

- 6 month-old with post-hemorrhagic hydrocephalus (PHHC) s/p ventriculoperitoneal shunt (VPS), bronchopulmonary dysplasia (BPD) home on nasal cannula oxygen (1/4Lpm 100% oxygen)
- s/p Nissen and g-tube: gastric-tube feedings: Neosure with additives 85 mL bolus q 4 hour during day, continuous feeds 25mL/hr for 10 hours overnight
- presents to (non-primary) Emergency Department with fever & respiratory distress

- *Encounters (scenarios):*
- Discharge from hospital
- -document device characteristics (~~tracheostomy~~, g-tube, VPS), problems (diagnoses), procedures (surgeries), feeding regimen, etc...
- -medications: chlorothiazide, KCl, Poly-Vi-Sol with Iron
- Primary Care Physician appointment (could fold this care plan into the hospital discharge)
- -capture contingency plan
    - BPD: If respiratory distress - check x-ray, consider diuretics (furosemide)
    - Hydrocephalus: If fontanelle tense and/or head circumference increased - pump shunt, consider imaging (x-ray shunt series or MRI)
    - Fever: If febrile, consider aspirating shunt for CSF evaluation
- -capture primary and subspecialty providers
- -show care in medical home (capture details, preferences) --> how care plan is developed
- Infant presents to outside Emergency Department with Respiratory Distress and Fever
    - Vital Signs: T 38.9 C, RR 75, HR 145, BP 90/50, POx 92% on 1.5Lpm NC (up from baseline 1/4 Lpm)
    - Labs: Notable for hyponatremia (Na 130), WBC 24K (8% bands, 70% Neutrophils, 12% Lymphoctyes), Hgb 9.0, PLTs 120K
    - Assessments:
        - G-tube site: redness and induration with granulation tissue at 3 o'clock (CIMI wound)
        - Resp Distress: tachypneic, subcostal retractions, rales
        - Fontanelle: full, mildly tense with some redness tracking along shunt site
- -review devices, problems, medications, and contingency plans

Resources: Patient, Condition, Procedure, Medication, CareTeam, CarePlan, NutritionOrder, Observation, ClinicalImpression

Track 4: Medication management

Track leads

Melva Peters

John Hatem

Clinical scenarios/storyboard

Discussions during this Connectathon will focus on any of the Pharmacy resources, but more attention will be placed on the new Medication Knowledge resource and the topic of Medication Lists.

Pharmacy resources: MedicationRequest, MedicationDispense, MedicationAdministration, MedicationStatement, Medication, MedicationKnowledge

Track 5: Clinical assessment

Track leads

Stephen Chu

Clinical scenarios/storyboard

Day 1 post-operative scenario

Subjective:

- Pat reports pain 4/10 at rest and 8/10 with movement and cough over her chest wall and
- abdomen. Her left lower limb pain is 3/10 at rest and 7/10 with movement

Objective:

- Pat is resting in bed with 15 degrees head up, slumped position
- She is drowsy, but co-operative when awake

Attachments:

- Indwelling catheter, IV, patient control analgesics line, drains from her laparotomy (liver and spleen) operation

Vital signs:

- BP 108/62 mmHg, HR 115 bpm RR 25 br/m, mild cyanosis (lips, finger and nail beds)

Respiratory:

- SpO2 96%, high flow nasal prongs 40 L/min flow, FiO2 0.35
- Breathing Pattern: shallow, poor basal expansion, no paradoxical movement
- Cough: Weak, Moist, Ineffective, watery to mucoid sputum
- Cough and deep breathing limited by pain 8/10
- Auscultation: Decreased breath sound throughout left lung, coarse crackles left base, fine crackles left base

Neurovascular:

- Calves soft, non-tender, not swollen
- Homan's sign: negative
- Capillary return R=L=<2sec
- No pins and needles or numbness

Temperature:

- 37.6C (99.68F)

Laboratory:

- Hb 80, haematocrit: 33%, PT 15 seconds; INR: 2.0, RBC: $3.0x10^{12}$/L, WBC 3.3 x 10^{9}/L, Platelets 140 x 10^{9}/L/mcL

Radiology (x-ray chest):

- Interstitial pulmonary infiltrate left middle and lower lobes

Differential diagnoses:

- Pulmonary contusion
- Bronchopneumonia/aspiration pneumonia
- Pulmonary embolism

> Will add a case re: patient in MVA who sustained fractured ribs (6 and 7) and fractured femur with surgery to insert hardware in femur. Post op- dropped sats, increased SOB, cyanosis, abnormal ABG and increased pain.... will include ED assessments, that confirmed the impression of the fractured ribs and fractured femur. Will also include clinical assessments and clinical impression, will look at fatty emboli, pneumonia, will end with dx of contusion of the lung. Will include observation, procedure, condition and clinical impression, diagnostic request, diagnostic impression resources. Will add the clinical workflow and the resources to be used (including suggested data to be used in the scenario) but to keep enough flexibility for those doing the testing. (need to be sure to add the demographics, age, gender, etc.... Is this an existing patient in the EHR? existing data available? - on not... mention the SDoH - but don't need to make it more complex with that data, include a smoking history, or diabetes for the other tracks?)
