

MITRE / FLUX NOTES **CONCEPTS v15.4 - Medications & Note authoring**

DANIEL REEVES, EDWIN CHOI, JUHAN SONIN, 31.Jan.2019



I

MEDICATION VIZ SPECIFICATION

Medications Spec

16 pt body black

16 pt body gray

12 pt body black

dot: 8 px diameter, state gray

PACLitaxel

180 mg/m² 5 cycles



labels: 10 pt body gray.

route
oral route

- units are omitted from graphic
- range bar is in front of typical value hash
- drop shadow is removed from dots

16 pt warning text red

dot: warning red

axis: 130 px x 0.5 px, #C2C2C2

range bar: 4 px height, line gray

hash: 1 px x 8 px, #979797

placement: lowest element and highest element are 10 px from left and right edge of axis.

PACLitaxel

600 mg/m² 5 cycles



route
oral route

as distance from max increases, the dot gains a thicker second ring:

max < value < 4 max : no ring

4 max < value < 10 max : 1 pt ring

10 max < value : 2 pt ring

Tamoxifen

1800 mg/m² 5 cycles



route
oral route

dosage range and typical value known. Dosage range is non singular (max > min)

Tamoxifen

5000 mg/m² 5 cycles



route
oral route

Aromasin

0.25 mg 1 per day



route
oral route

As three values compress, the labels will overlap and become illegible.

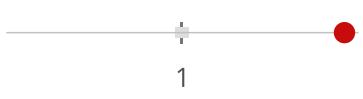
- When text boxes overlap, shift min value and max value apart.

- If they still overlap, omit typical value label.

- If they still overlap, omit minimal value (for low prescription, omit maximum value)

Ibuprofen 400 mg tablets

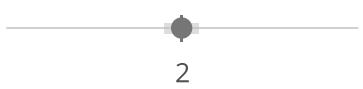
4 tablets



route
oral route

Acetaminophen 325 mg tablets

2 tablets



route
oral route

Dosage range is singular (max = min). The range bar adopts a fixed size that peaks out a couple pixels beyond the circle in each direction.

Lisinopril 20mg tablet

1 tablet TID as needed

dosage range unknown



route
oral route

Lisinopril 20mg tablet

2 tablet TID as needed

dosage range unknown



route
oral route

dosage range is unknown. The bar is omitted, and a small text is placed above line. (In the future, depending on how often this appears, the text may be omitted)

Note: pending decision on coloring in this case. Do we use red since it could be dangerous? We don't know the dosage range, and the value does not equal the typical value.

PACLitaxel

180 mg/m² 5 cycles



route
oral route

Typical range is missing. The has and number is omitted.

hydrocortisone 2.5% ointment

1 g BID as needed

dosage range unknown

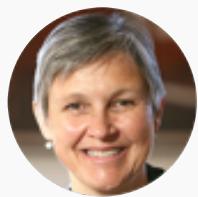


route
topical route

Both are missing.

2 SEPARATION of DATA from AUTHORING

- logically and spatially separate the process of generating new documentation (right hand side) from that of viewing existing data and resources (left hand side).
- support different types of documentation (imaging, notes, labs...)
- permit the user to view old notes while composing new notes



Dr. Jraker299 referred ms. Debra24 Hernandez98Aj due to pain in left breast. Dr. Jraker299 is ms. Debra24 Hernandez98Aj's primary care physician for 12 years.

Summary

Summary



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diagnostic mammogram on 4 October 2013 revealed a 2 cm mass in the right breast at 7 o'clock and an

Labs

Disease status

Medication

Pathology

Treatment options



PEND: add more mockup patient record sections



clear

 clinical notes 47 imaging 11 laboratory 4 PRO 23

Sort by most recent ▾

+ Search filters

47 previous notes

2 Aug 2017

Clinical follow-up

Dr. Free2 Will

Dana Farber Cancer Insti...

20 Jun 2017

Clinical follow-up

Dr. Free2 Will

Dana Farber Cancer Insti...

14 May 2017

Clinical follow-up

Dr. Free2 Will

Dana Farber Cancer Insti...

8 May 2017

Clinical follow-up

Dr. Free2 Will

Dana Farber Cancer Insti...

8 May 2017

Clinical follow-up

Dr. Free2 Will

Dana Farber Cancer Insti...

View 10 more clinical notes

Clinical follow-up

signed by: Dr. Free2 Will

signed date: 2 Aug 2017

source: Dana Farber Cancer Institute

Reason

REASON FOR VISIT:

Follow-up for Gastrointestinal stromal tumor

Oncology Hlstory

ONCOLOGY HISTORY:

Ihanos Tnfinity6 is a 57 year old white Male presenting with abdominal pain. He has been feeling sharp pains in his stomach. CT scan showed large upper abdominal mass that seemed to be rising from gastric wall. 6cm along greatest curvature. Underwent endoscopic biopsy which was non-deterministic. CT-guided biopsy revealed GIST with 15 mitosis/50 hpf. Surgery confirmed GIST. 20 mitoses/50 HPF. Surgical margins negative. Final tumor size 8cm. Adjuvant imatinib starting 16 May 2016.

HPI

HISTORY OF PRESENT ILLNESS:

Experiencing mild headaches and skin rashes.

Assessment

ASSESSMENT:

toxicity headache grade 2 . toxicity diarrhea grade 2 . toxicity fatigue grade 2 . toxicity Rash maculo-papular grade 2 . disease status complete response

Plan

PLAN:

Continue imatinib. Take ibuprofen as needed for headaches and use hyrdrocortizone for rashes. Follow-up in 6 months.

ROS

Exam

Procedures

Idea:
Sidebar contains annotations on structured data from this note?

PEND: format this note to match correct sectioning!



clear

clinical notes 47

imaging 11

laboratory 4

PRO 23

Sort by most recent ▾

+ Search filters

47 previous notes

2 Aug 2017

Clinical follow-up

Dr. Free2 Will

Dana Farber Cancer Insti...

24 Jul 2017

Radiology Report

Dr. Radi O. Logy

Over the Rainbow

24 Jul 2017

CT of thorax with contrast

Dr. Radi O. Logy

Over the Rainbow

24 Jul 2017

Lab results



ordered: Dr. Free2 Will
to: Quest Diagnostics

20 Jun 2017

Clinical follow-up

Dr. Free2 Will

Dana Farber Cancer Insti...

CT of Thorax with Contrast

ordered: Dr. Free2 Will date: 24 Jul 2017
radiologist Dr. Radi O. Logy

Data about scan

Value

Key

Value

Key

Value

Key

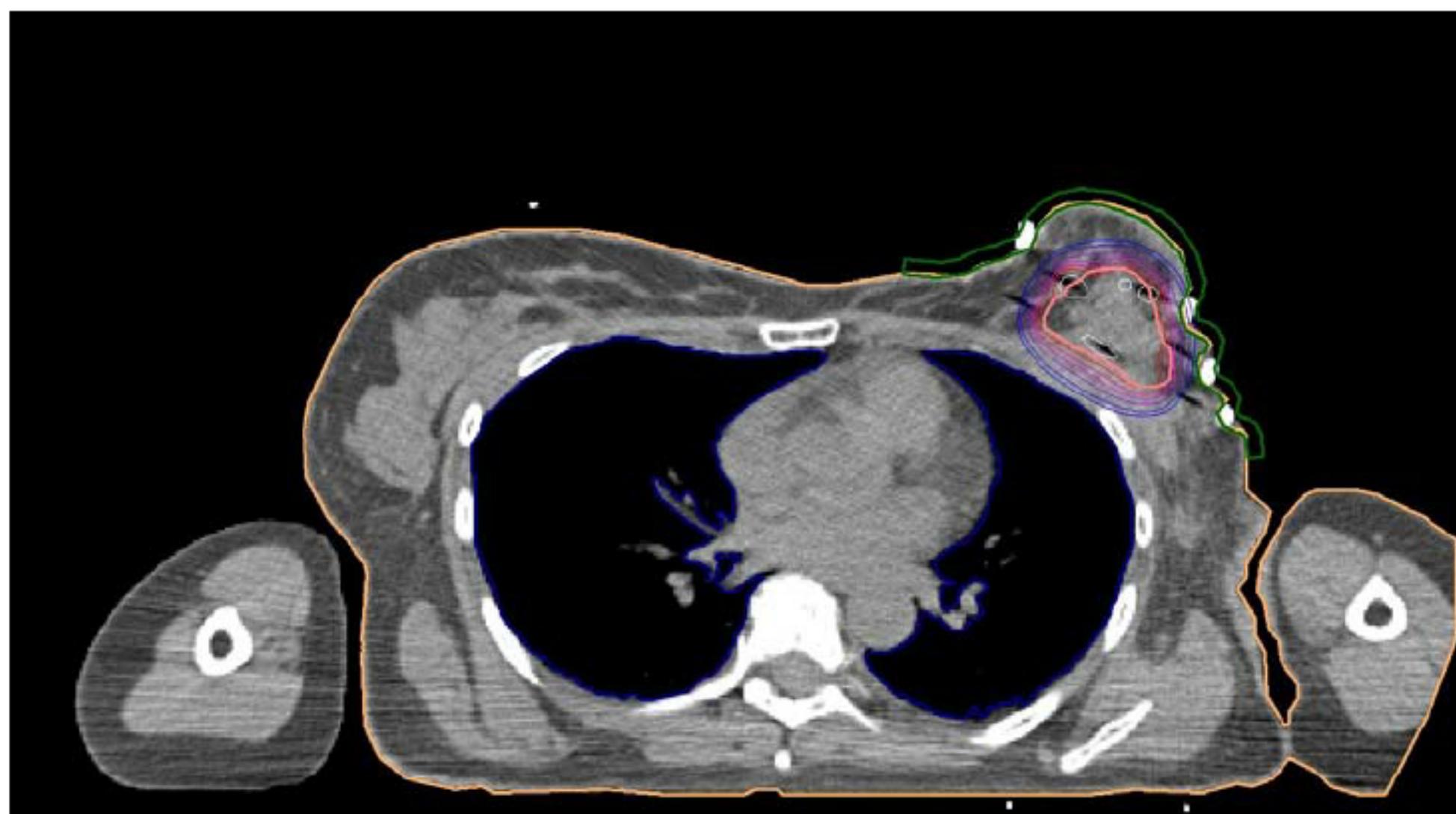
Value

Key

Value

Key

Value



3

AUTHORING WORKFLOW

- authoring tools are organized in a right hand toolbar (add/switch notes, write, notepad, POC, issues)
- actions related to starting or continuing a note are collected under a single mode. From there you can make a new note, select an unfinished note, or modify templates.
- template selection is incorporated into the create new note workflow.
- the user opens edit mode to see the note in progress. Here she finds tools for editing the note.
- in this concept, the POC is navigationally situated *above* the notes themselves, where it collects data for all open notes. This decision is meant to, in part, start a conversation to work out the use case for multiple open notes.

Date of birth
5 Apr 1967 (51)Admin. sex
FemaleLocation
Boston, MAROID
12345432312Language
English

Condition

invasive ductal carcinoma of breast ▾

Debra24 search...



Dr. Jraker299 referred ms. Debra24 Hernandez98Aj due to pain in left breast. Dr. Jraker299 is ms. Debra24 Hernandez98Aj's primary care physician for 12 years.

+ New note

Summary

Summary



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diagnostic mammogram on 4 October 2013 revealed a 2 cm mass in the right breast at 7 o'clock and an

No notes currently in progress

Edit templates

Clinical follow-up

designed by
Dr. Free2 Will, Feb 2017

Initial consult

designed by
Dr. Free2 Will, Apr 2016

> Edit snippets

Procedures

Vitals

Labs

Disease status

Medication

Pathology

Treatment options



Date of birth
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Reason for Visit

Follow-up for @condition

Oncology History

@oncohist

HPI

@hpi

Assessment

<toxicity> <disease status>

Plan

Select a template for your new note

blank note

Last used

Clinical follow-up

designed by
Dr. Free2 Will, Feb 2017

Suggested

Initial consult

designed by
Dr. Free2 Will, Apr 2016

Other

Initial consult

designed by
Dr. Free2 Will, Apr 2016

Initial consult

designed by
Dr. Free2 Will, Apr 2016

Initial consult

designed by
Dr. Free2 Will, Apr 2016

Cancel

Date of birth
5 Apr 1967 (51)Admin. sex
FemaleLocation
Boston, MAROID
12345432312Language
English

Condition

invasive ductal carcinoma of breast ▾

Debra24 search...



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+ New note

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Continue a note in progress:

today
Clinical follow-up

Dr. Free2 Will
Dana Farber Cancer Insti...

▼ Edit templates

Clinical follow-up
designed by
Dr. Free2 Will, Feb 2017

Initial consult
designed by
Dr. Free2 Will, Apr 2016

> Edit snippets

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Date of birth
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Summary

Procedures

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Labs

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Treatment options



Progress note

signed by: Dr. Bran24 Michel09A

B / U ≡ 1/2

source: Dana Farber Cancer Institute

signed date: 10 April 2018

Reason for Visit

Follow-up for @condition



Search shortcuts

Templates

Shortcuts

Patient
@patient
@age
@gender
@dateofbirth
@name
...

Oncology History

Ihanos Tnfinity6 is a 57 year old Male. Patient was diagnosed with Gastrointestinal stromal tumor on 10 Aug 2016. Stage IIIA T3 N0. Mitotic rate high. Primary tumor size 8 cm. High grade or poorly differentiated. KIT exon 11 mutation+, PDGFRA-. Patient underwent Endoscopic Biopsy on 24 Jul 2016 which was non-diagnostic.

Assessment

Plan

ROS

Exam

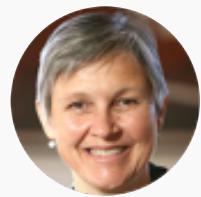
Procedures

[Delete note](#)

1 incomplete

3 Placeholder

[Sign note](#)

Date of birth
5 Apr 1967 (51)Admin. sex
FemaleLocation
Boston, MAROID
12345432312Language
EnglishCondition
invasive ductal carcinoma of breast

Debra24 search...



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- Reason
- Onco Hist
- HPI
- Assess
- Plan
- ROS
- Exam
- Proce...

Progress note

signed by: Dr. Bran24 Michel09A

B / U

source: Dana Farber Cancer Institute

signed date: 10 April 2018

Reason for Visit

Ella Ortiz111 is a 43 year old Female following up on Invasive ductal carcinoma of breast on 29 Jan 2019 . Ms. Ortiz111 had a breast cancer follow up .

Oncology History

Ella Ortiz111 is a 43 year old Female. Patient was diagnosed with Invasive ductal carcinoma of breast on 06 Nov 2016. Breast cancer diagnosed in Right breast. Stage IA T1c N0 M0 disease. Primary tumor size 1.6 cm. Histological grade High grade or poorly differentiated. Estrogen receptor was Negative. Progesterone receptor was Positive. HER2 was Positive. Patient underwent Mammography on 28 Oct 2016 which showed unremarkable views of the right lower outer quadrant; however only an indeterminate lymph node in the right axilla, 13 mm, was apparent. Patient underwent Diagnostic ultrasonography on 06 Nov 2016 which revealed a mass at 7 o'clock measuring 1.6 cm, indeterminate right axillary lymph nodes, measuring 1.4 cm with the cortex of 3 mm - indeterminate, and another measuring 12 mm with cortex of 4 mm - indeterminate. Patient underwent Core needle biopsy of breast on 06 Nov 2016 which revealed infiltrating poorly differentiated ductal carcinoma, grade 3, estrogen receptor 0, progesterone receptor weakly positive 1% to 4%, HER2 was negative 0%, and Ki-67 ranged 85% to 95%. Patient underwent Core needle biopsy of axilla using ultrasound guidance on 06 Nov 2016 which showed right axillary lymph node was negative for malignancy. Patient underwent Transthoracic three dimensional echocardiogram of heart on 30 Dec 2016 which showed normal systolic function, with ejection fraction 60-65% and trace mitral regurgitation. Patient underwent Adjuvant Radiation Therapy from 04 Jan 2017 to 08 May 2017. Patient took Cyclophosphamide from 04 Jan 2017 to 08 May 2017. Patient took PACLitaxel from 04 Jan 2017 to 08 May 2017. Patient started Lisinopril 20mg tablet on 30 Jan 2017. Patient underwent Lumpectomy on 28 May 2017. Patient underwent Adjuvant Radiation Therapy from 03 Aug 2017 to 14 Sep 2017. Patient took Tamoxifen from 21 Sep 2017 to 12 Sep 2018. Patient underwent Digital tomosynthesis of bilateral breasts on 30 Nov 2017



Search shortcuts

Templates
ShortcutsPatient
@patient
@age
@gender
@dateofbirth
@name
...

Delete note

1 incomplete

3 Placeholder

Sign note

4 THE NOTEPAD



Debra24 Hernandez98Aj

Date of birth
5 Apr 1967 (51)Admin. sex
FemaleLocation
Boston, MAROID
12345432312Language
EnglishCondition
invasive ductal carcinoma of breast

source: Dana

Structure data (as identified by the NLP engine or by hand) is identified and formatted graphically in this concept. We can also consider a simpler textual formatting using the standard underlining.

Dr.Jraker299 referred ms. Debra24 Hernandez98Aj due to pain in left breast. Hernandez98Aj's primary care provider is Dr. Bran24 Michel09A.

The notepad provides a parking lot for quick textual notes, voice captured data elements, and data captured with other future modes.

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Progress note

signed by: Dr. Bran24 Michel09A

"I was feeling pretty nauseous"

"was it interfering with eating?" "[positive]"

"...it was due to your Tamoxifen, we can.."

toxicity

adverse event: nausea

grade: 2

cause: treatment



tap

- Mom sick, depressed. Discussed medication.
- knows Valerie!
-

condition

name: depression

diagnosis: undiagnosed

action: discussed treatments

"...second to last thing they were talking about" "a few other important words"

"lower your Tamoxifen" "right, because of the side effects"



Provides an interface with voice data. As the voice service picks out potential elements, the clinician can quickly tag them for later use.

SOME SET OF VOICE, NLP, and DICTATION CONTROLS AT BOTTOM?

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EnglishCondition
invasive ductal carcinoma of breast ▾

Debra24 search...



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Progress note

created by Dr. Bran24 Michel09A

source: Dana Farber Cancer Institute

“I was feeling pretty nauseous”
“was it interfering with eating?” “[positive]”
“...it was due to your Tamoxifen, we can..”

toxicity

adverse event: nausea

inserted in ROS

Go To <toxicity>

Remove from note

inserted in Assessment

Go To <toxicity>

Remove from note

Delete from notepad

- Mom sick, depressed. Discussed medication.

- knows Valerie!

“lower your Tamoxifen” “right, because of the side effects”

-



“...second to last thing they were talking about” “a few other important words”

Summary

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source: Dana Farber Cancer Institute

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“...it was due to your Tamoxifen, we can..”

toxicity

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grade: 2

cause: treatment

- Mom sick, depressed. Discussed medication.

condition

name: depression

diagnosis: undiagnosed

action: discussed treatments

- knows Valerie!

“lower your **Tamoxifen**” “right, because of the side effects”

identified: medication | Tamoxifen

edit

Change dosage

Swap medication

Stop medication



Tamoxifen #Complete response #imaging done

Change dosage

New Dosage (current: 4 mg 6 cycles) 2 mg ▾ 6 cycles ▾ as needed

Reason (select multiple) not needed side effects ineffective burdensome finished difficult




Date of birth
5 Apr 1967 (51)

Admin. sex
Female

Location
Boston, MA

ROID
12345432312

Language
English

Condition
invasive ductal carcinoma of breast

Debra24 search...



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created by: Dr. Bran24 Michel09A

source: Dana Farber Cancer Institute

B / U

created date: 10 April 2018

Reason for Visit

Follow-up for @condition



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condition name: depression
diagnosis: undiagnosed
action: discussed treatment

Assessment

The patient is experiencing #toxicity of Grade 2 Nausea related to treatment, likely the Tamoxifen.

tamoxifen
change dosage
drag: 2 mg 6 cycles
reason: side effects

Plan

ROS

A complete 15 point ROS was performed and was unremarkable except report of Grade 2 Nausea, interfering with eating.

Exam

Procedures

data elements from the notepad can be drag-and-dropped into the note, or are automatically inserted into placeholders where appropriate.

Delete note

1 incomplete

3 Placeholder

Sign note