MITRE / FLUX NOTES CONCEPTS vI5.I

EDWIN CHOI, DANIEL REEVES, JUHAN SONIN, 28.NOV.2018



Hover alternatives

A) touch and hold

- not discoverable
- slow
- contributes additional interaction
- + somewhat popular and standard
- + contributes no screen clutter
- + current design is maintained

B) Additional interactive element

- e.g. "show details" or "show description"
- additional screen element
- + requires no discovery
- requires design modifications
- + very simple and clear

C) Hover functionality is replicated on primary interaction

- e.g. Tap reveals a description on selection
- additional screen element after interaction
- + contributes no additional clutter or elements on primary view
- + simple and discoverable
- requires modest design modifications
- does not work if primary interaction is hard to reverse

ate of birth Admin, sex: Lo

1) Female Boston M/

Ductal carcinoma of the breast

Q Debra24 search...

• In place of hover interactions, interactive text toggles the display of hidden information.

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

Procedures

Vitals

Labs

Disease

status

Medication

Pathology

Treatment

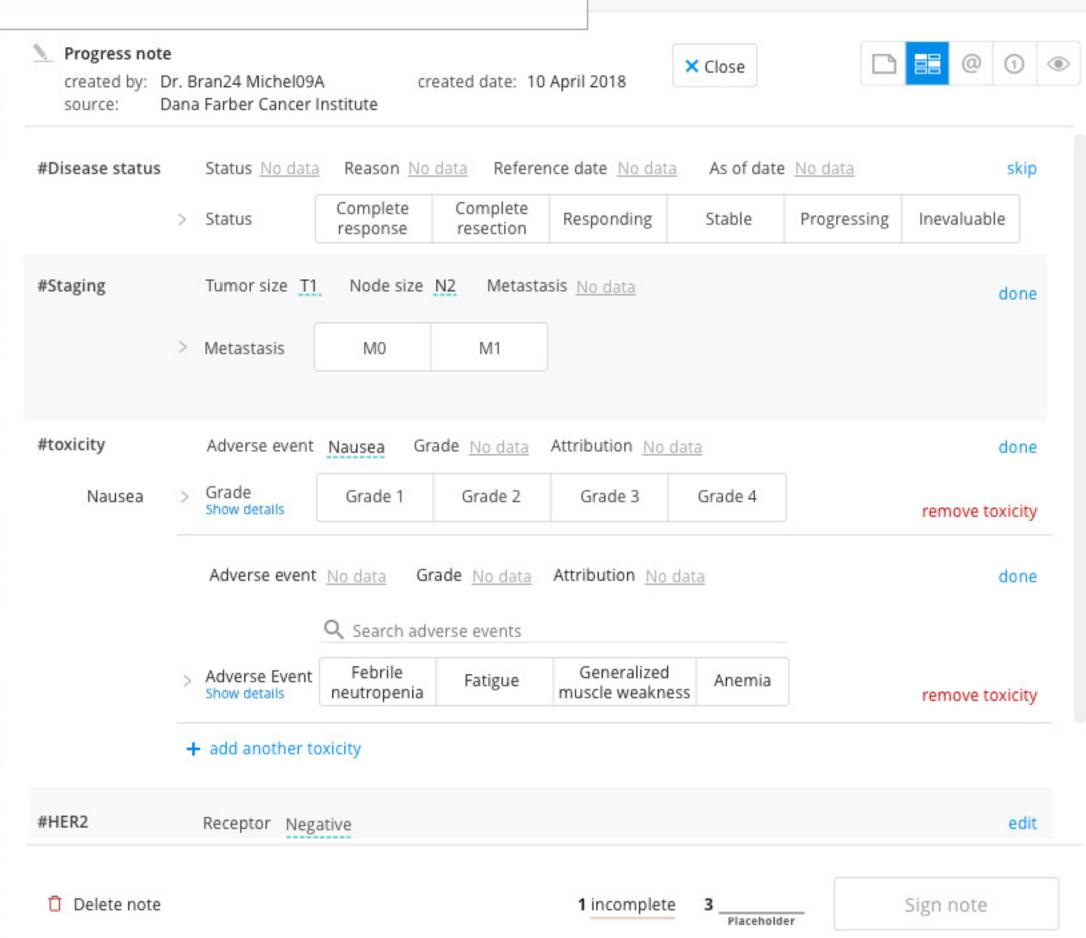
options

Ms. Debra24 Hernandez98Aj is a 51year-old menopausal non hispanic or latino woman with invasive ductal carcinoma of the breast, diagnosed on 13 January 2012. Her most recent status, recorded on 15 May 2017, is of worsening, disease progression based on pathology, imaging, and symptoms.

She underwent a lumpectomy. She underwent a sentinel lymph node biopsy on 20 September 2012 which revealed infiltrating poorly differentiated ductal carcinoma, stage IV, estrogen receptor 0, etc.

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





Easing Clinician Burder - more concepts

Joining narrative with POC

Current shortcomings

- 1. To add content not supported by shortcut, the clinician must go to the note itself.
- 2. Switching back and forth is cumbersome.
- Forced progression of POC elements may be awkward.
- 4. Entering forms one
- 5. POC elements have no context.

Concept A - simplify operation of POC

- 1. collapse all elements easier to see full context, what is available, everything will always fit
- single tap reveals all fields (visual indicator TBD) easier to fill out quickly as user becomes familiar with element as a whole.
- 3. collapses when complete, "x" is tapped, or another element is opened.

Concept B - text into POC

- 1. Make textual context and formatting available within POC. This requires concept A to make space.
- Editable text from POC.
- 3. Go to note available from POC.

Concept C - integrate POC into note

- 1. Make note more sectioned, modular, navigable.
- 2. Access POC elements directly from narrative via popups.
- The proposal (Concepts v14.15) for editable formatted text is implemented.
- 4. Use of #hashtag input and graphical selection is fluid and interchangable.





Q Debra24 search...

× Close



Include textual context within POC

Summary

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

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Progress note

created by: Dr. Bran24 Michel09A

Dana Farber Cancer Institute

Assessment

#Disease status Status Complete Resection Reason No data Reference date No data As of date No data

created date: 10 April 2018

#disease status is #Complete Resection.

#Staging Tumor size T1 Node size N2 Metastasis No data

#Staging #T1 #N2.

#toxicity Adverse event Nausea Grade Grade 2 Attribution No data remove toxicity

#toxicity of #Nausea #Grade 2.

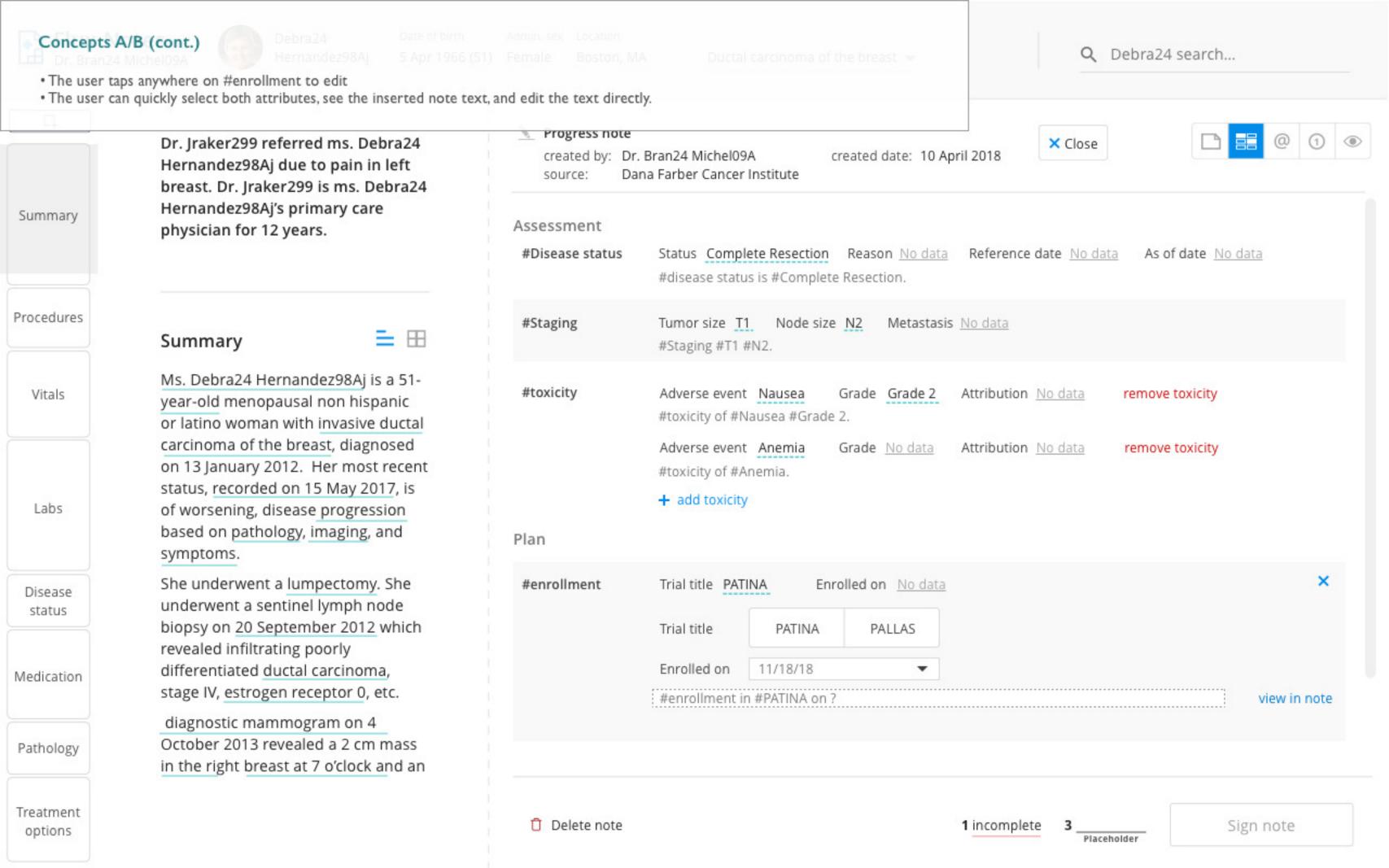
Adverse event Anemia Grade No data Attribution No data remove toxicity

#toxicity of #Anemia.

+ add toxicity

Plan

#enrollment Trial title No data Enrolled on No data



source:

- · Sections are defined by a new button in the edit toolbar.
- When the section content exceeds a single line, the section becomes collapsible.

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Dana Farber Cancer Institute

created date: 10 April 2018

× Close



Q Search shortcuts

Templates Shortcuts

Patient

@patient

@age

@gender

@dateofbirth

@name

Reason for Visit

B / U ≔ ∺ ₩

Debra has requested a visit after complaints of pain that prevent her from ...

Oncology History

Debra is a 51 year old Female diagnosed with blablabla blablba bla bla bla ...

Review of Systems

A 15 point ROS has been performed and found this thing wrong, and this other...

Allergies

no allergies

Medications

imatinib 100 mg capsule QD started 10 Aug 2017...

Assessment

I evaluate <disease status>.

Plan

We discussed clinical trials: <enrollment>.

Delete note

1 incomplete

Sign note

Treatment options

 $= \oplus$

× Close

. The user taps on a placeholder, revealing a POC interface for that single element.

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I evaluate <disease stat

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We discussed clinical tr

type @shortcuts <Disease Status> Complete Complete Status Responding response resection Progressing Inevaluable Rationale Pathology Markers Imaging (select multiple)

select a date

₩

As of Date Nov. 28, 2018

Reference Date

Delete note

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Labs

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skip

Physical

exam





Shortcuts

Patient @patient

@age

@gender

@dateofbirth @name

Stable

Symptoms

Q Debra24 search...

Q Search shortcuts

Templates

Shortcuts

Patient

@age

@patient

@gender

@name

@dateofbirth

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· As the user selects attributes by tapping on buttons, the corresponding shortcut is included in the top line.

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underwent a sentinel lymph node revealed infiltrating poorly differentiated ductal carcinoma, stage IV, estrogen receptor 0, etc.

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Summary



Ms. Debra24 Hernandez98Aj is a 51-

She underwent a lumpectomy. She biopsy on 20 September 2012 which

or latino woman with invasive ductal on 13 January 2012. Her most recent symptoms.

created by: Dr. Bran24 Michel09A created date: 10 April 2018 Dana Farber Cancer Institute source:

B / U ≔ ∺ ₩

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Review of Systems

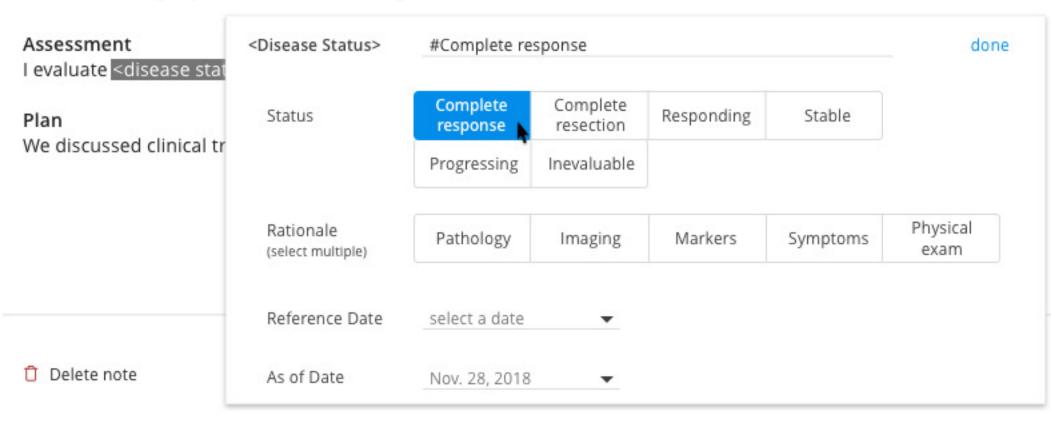
A 15 point ROS has been performed and found this thing wrong, and this other...

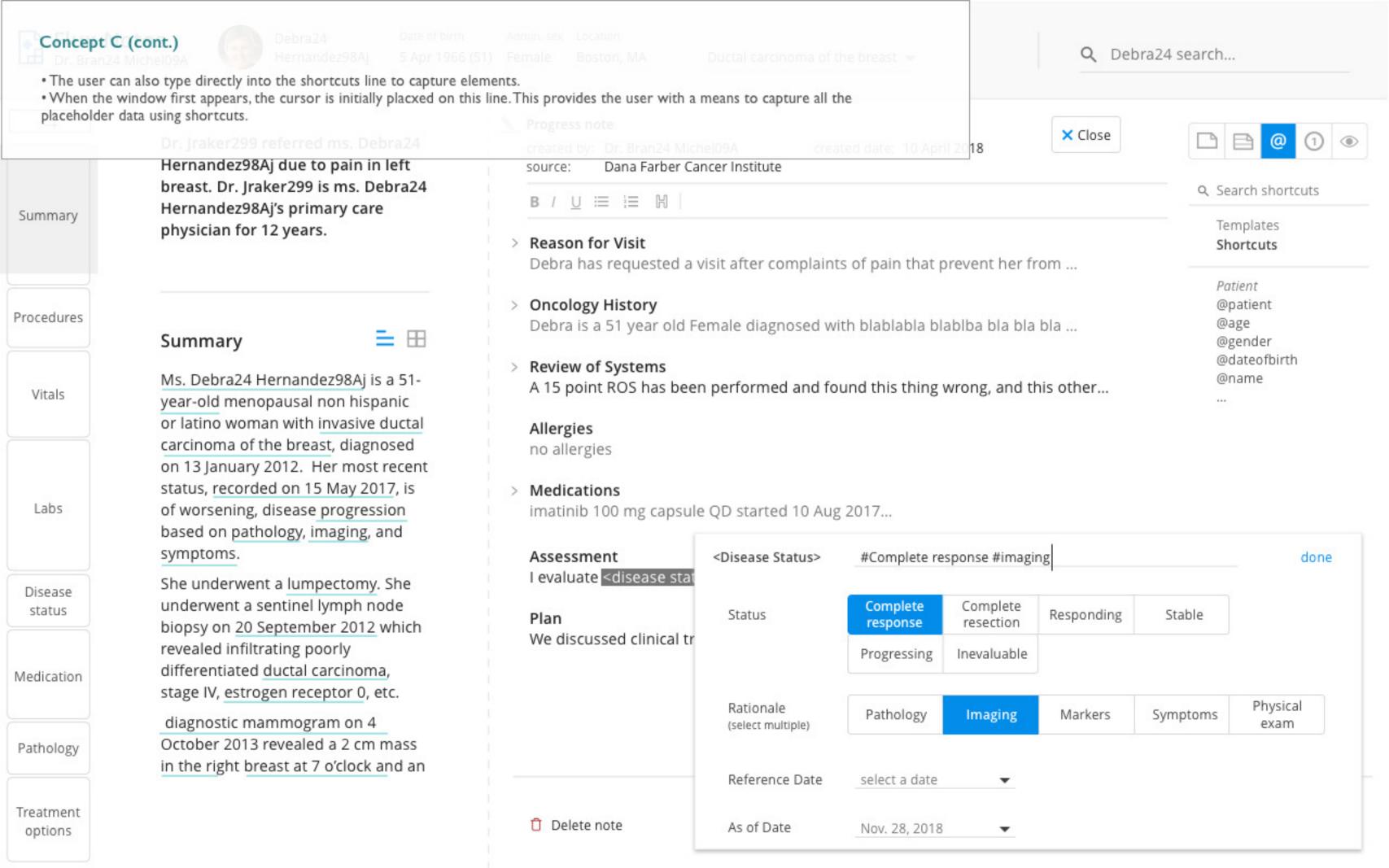
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Medications

imatinib 100 mg capsule QD started 10 Aug 2017...





Q Debra24 search...

× Close

· When the user is finished, they tap "done" or away to dismiss the window.

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TTOGTC33 HOLD

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Review of Systems

A 15 point ROS has been performed and found this thing wrong, and this other...

Allergies

no allergies

Medications

imatinib 100 mg capsule QD started 10 Aug 2017...

Assessment

I evaluate #disease status is #Complete response as indicated by #imaging #as of #28 Nov 2018.

Plan

We discussed clinical trials: <enrollment>.

Delete note

1 incomplete

Placeholder

Sign note





Templates Shortcuts

Patient

@patient

@age

@gender

@dateofbirth

@name

Templates and Snippets

Difference

- 1. Templates intended to initialize a note. Support selections and previews from right hand pane.
- 1. Snippets intended to be components within note. Like custom shortcuts.
 - Context: Allow undetermined contexts that are expected previously in the note. If the context is missing, the user is informed and expected to fix the problem.

Snippets as components

- Inspired by Components and Symbols in design software such as Figma or Sketch
- Snippets are modular. Snippets inside snippets and inside templates.
- 3. Graphical indication of the snippets and manipulation (boxes that are draggable).
- 4. User can highlight note content to create a a new snippet. Source can be saved or in progress note.
- 5. Snippets persist
 - After insertion, the snippet can be swapped out, retaining data.
 - Composition of snippets can be saved as a new snippet.
 - User can navigate to master snippet.
 - User can detach a snippet from master snippet.
- 6. Text and formatting in a snippet can be swapped out, or "overridden".

Organization

- 1. Tags
 - custom, e.g. "vital", "status", "side effect"
 - dynamic, e.g. "this patient", "this disease"
- 2. Folders: contain tags and snippets

Post-application

- Data initially caught on the fly within note, by nurse in a vitals entry, or by PRO, then reorganized into template.
- 2. Librates workflow

Filters and Logic

- 1. Applied to whole snippet, or any single shortcut.
 - Each shortcut needs to have a set of properties: cardinality, filter set, keys with value types.
- 2. Filters:
 - Ex: @currentMedications = @allMedications with filter: active==True.
- 3. Branching logic
 - Ex: @lastVitals. If date < today, then replace with placeholder. If empty, then replace with "no Vitals today..."
- Truly opens door to powerful templates and snippets. Removes pickiness of built-in specialized shortcuts.

Snippets

Definition

- 1. String of plain text, formatting, @ and # shortcuts, other snippets.
- 2. filters applied to each @shortcut
- 3. Set of meta tags:
 - topics. These help in searching and organizing snippets.
 - contexts. The snippet is only allowed within this type of context.
 - environments. The snippet is only allowed within this particular context or entity.

Preliminaries

1. For snippet filters, each shortcut must have an associated set of defined filters.

@name is a @age year old @gender.

@all medications where active == TRUE

e.g. vitals, ROS, demographics

e.g. @medication.

e.g. ibuprofin, John S. Patient.

Snippets

Text Views: ways to express a snippet				
1.	definition: plain text.	@name is a @age year old @gender taking .ActiveMedications.		
2.	name: dot notation.	.PatientAndMeds		
3.	evaluated: each part expressed for context of note.	John McQueen is a 52 year old Male taking Ibuprofin 400 mg QD.		
4.	expanded: plain text with embedded snippets defined.	@name is a @age year old @gender taking @allMedications::where:active=True		

Graphical Views: ways to express a snippet

1. expanded: plain text with embedded snippets defined.

.PatientAndMeds .ActiveMedications
@name is a @age year old @gender taking @allMedications::filter:active=True .

Snippets

Use Environments / Modes

Use	Primary view	Secondary views	Actions
Composing notes, typing	name, then evaluated	 definition (on tap, and as mode?) expanded (on tap, and as mode?) name (on tap) 	detach from snippet save text as new snippet
in RH tooltray in list	name	• definition (peak on hover or hold)	inserteditduplicate or new?organize
viewing old note	evaluated	• names (as mode) • highlighting	• save text as new snippet
editing snippet	definition	• expanded • evaluated	 edit meta data graphical filter selection organize detach embedded snippet edit embedded snippet





Date of birth Admin. se 5 Apr 1966 (51) Female

Admin. sex Location

Boston, MA

Ductal carcinoma of the breast

Q Debra24 search...



Summary

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.

Procedures

Vitals

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Disease status

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Treatment options

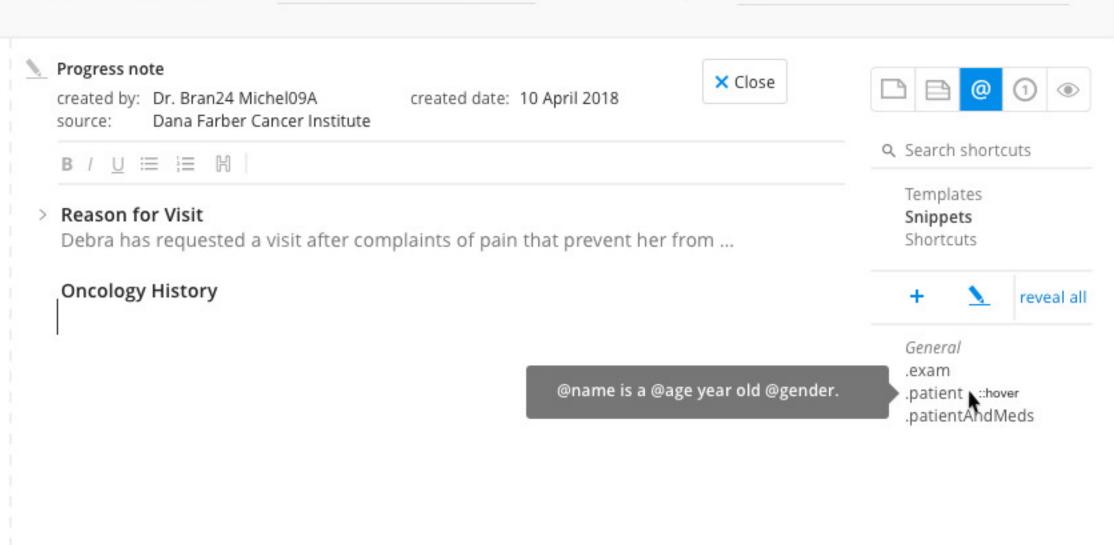
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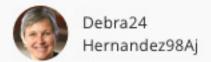
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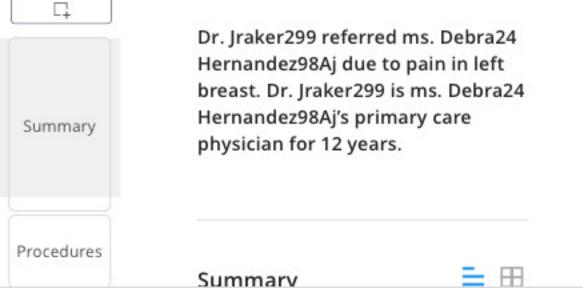


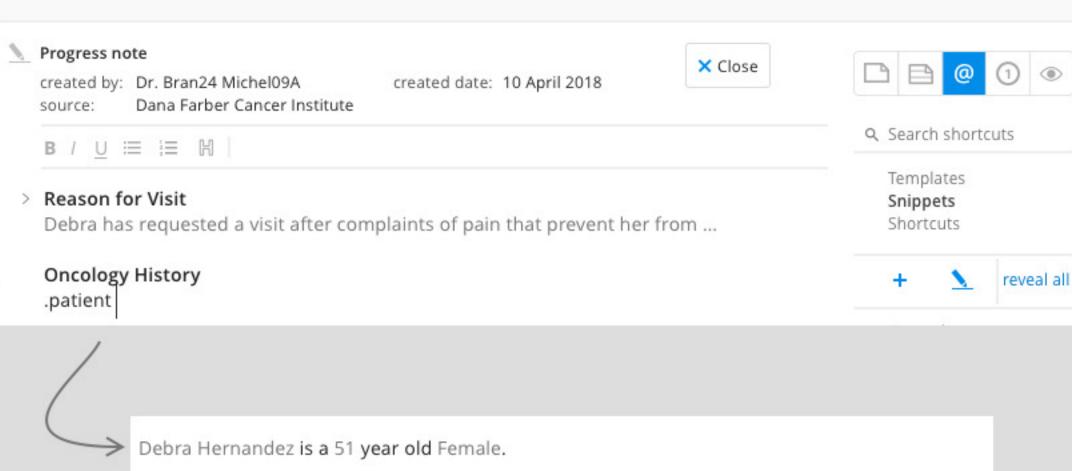
Admin. sex Location

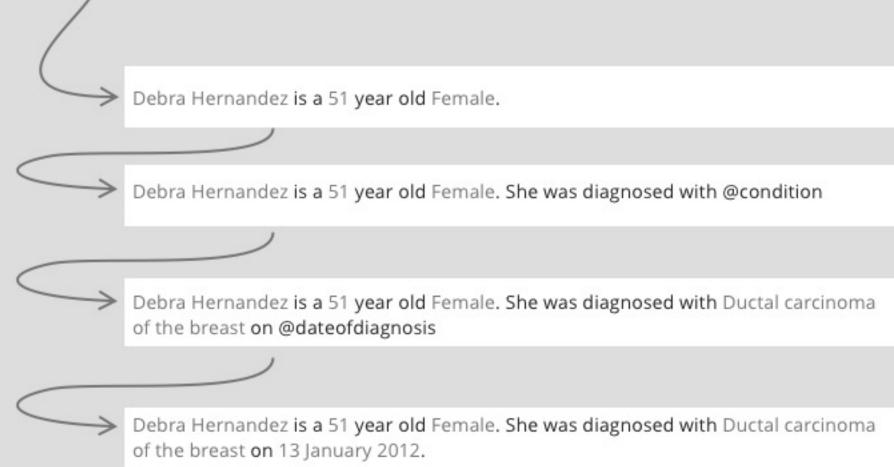
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Ductal carcinoma of the breast -

Q Debra24 search...











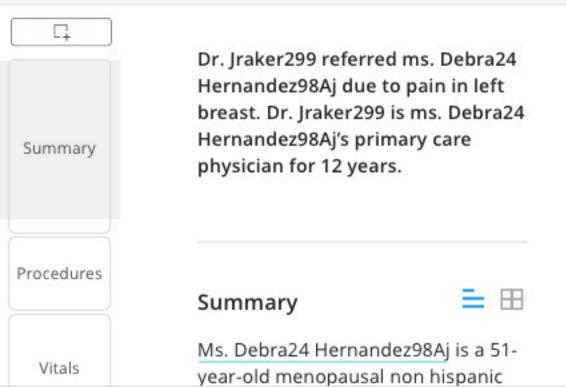
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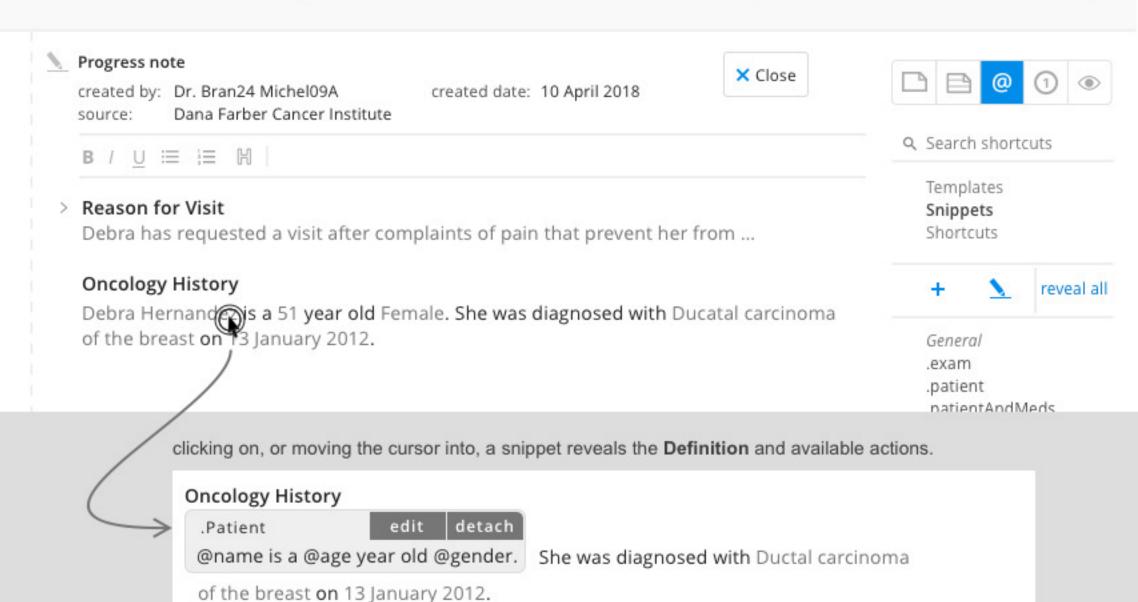
Admin. sex Location

Boston, MA

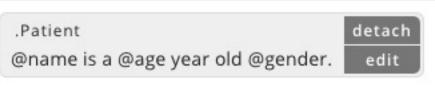
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Alternative layout. More flexible for embedded snippets.





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Q Debra24 search...

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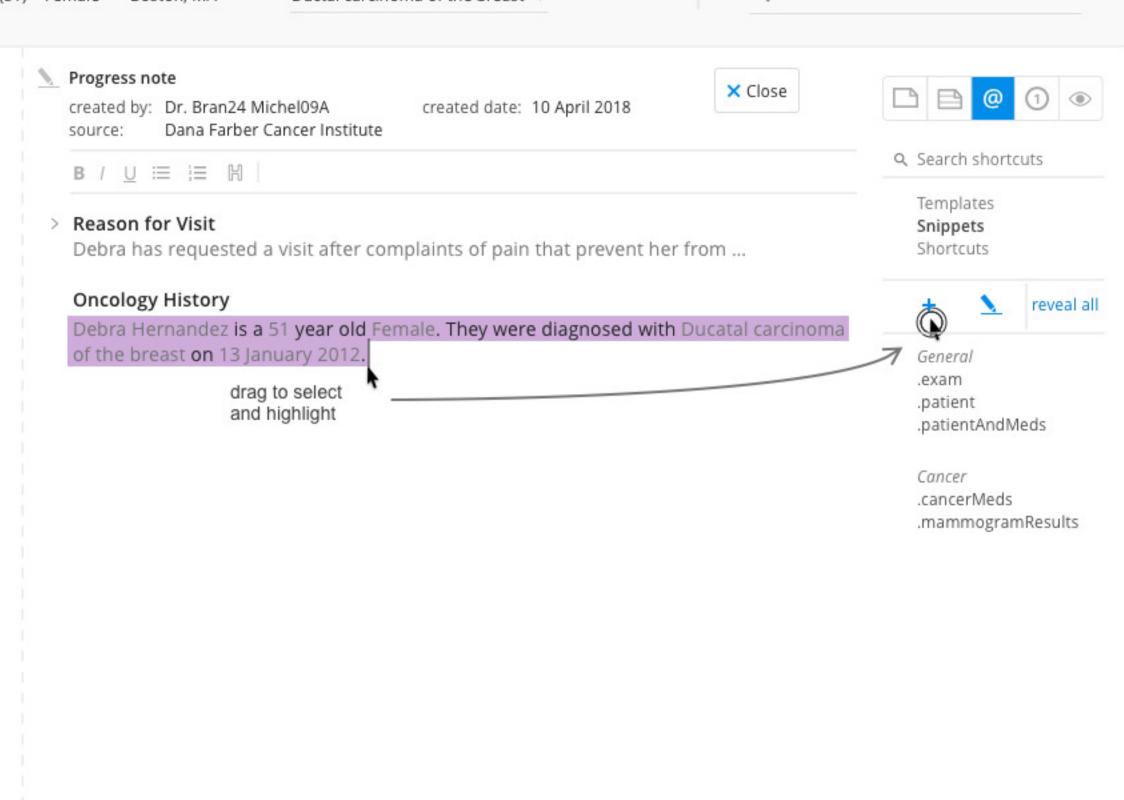
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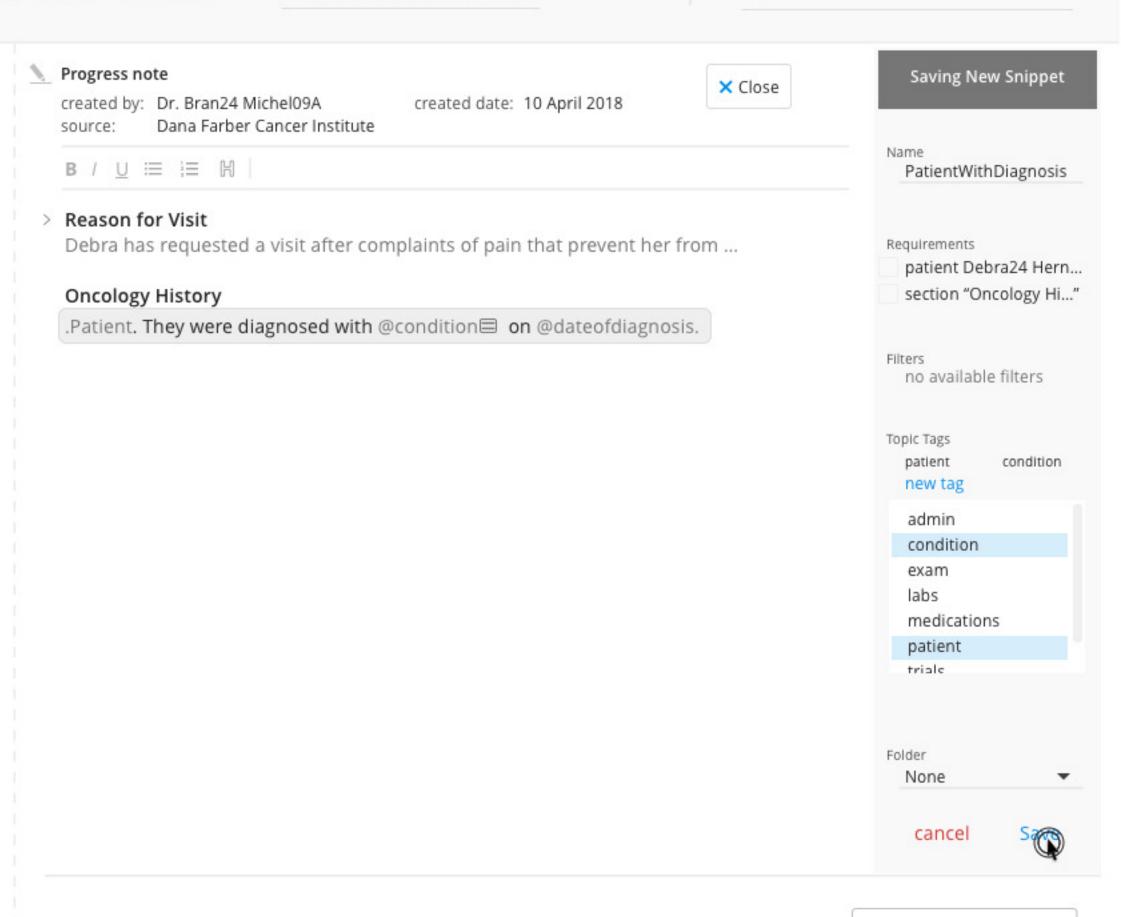
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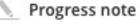
Summary



symptoms.

biopsy on 20 September 2012 which

in the right breast at 7 o'clock and an



created by: Dr. Bran24 Michel09A created date: 10 April 2018

Dana Farber Cancer Institute source:

B / U ≔ ≔ ∺

Reason for Visit

Debra has requested a visit after complaints of pain that prevent her from ...

Oncology History

Debra Hernandez is a 51 year old Female. They were diagnosed with Ducatal carcinoma of the breast on 13 January 2012.

× Close



Q Search shortcuts

Templates Snippets Shortcuts





reveal all

General

.exam

.patient

.patientWithDiagnosis

.patientAndMeds

Cancer

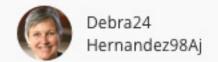
.cancerMeds

.mammogramResults



Delete note





Admin. sex Location

Boston, MA

Ductal carcinoma of the breast -

Q Debra24 search...

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reveal all

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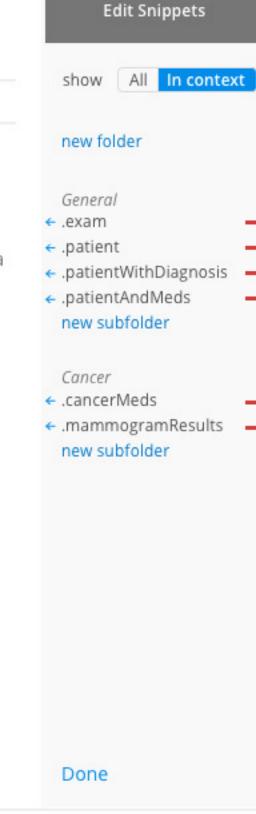


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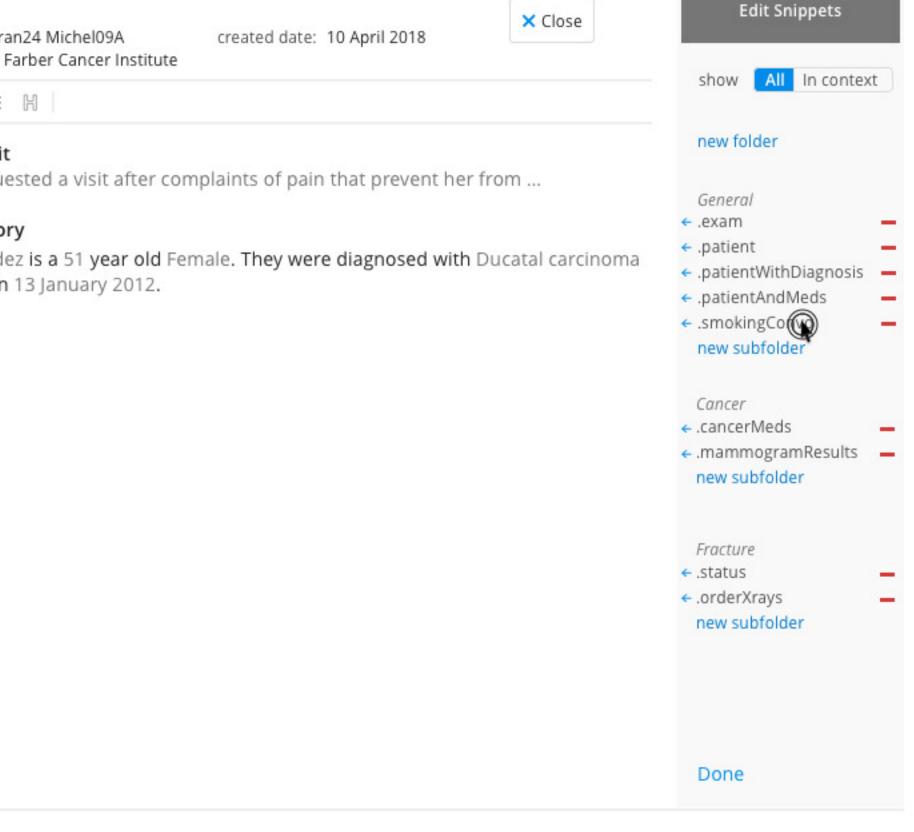
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Q Debra24 search...

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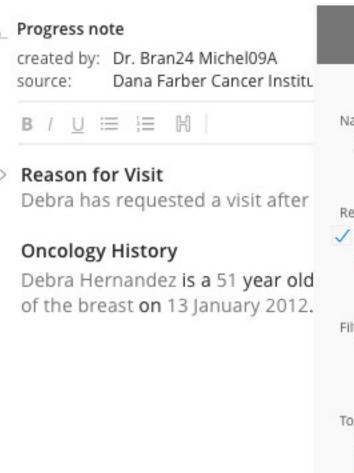
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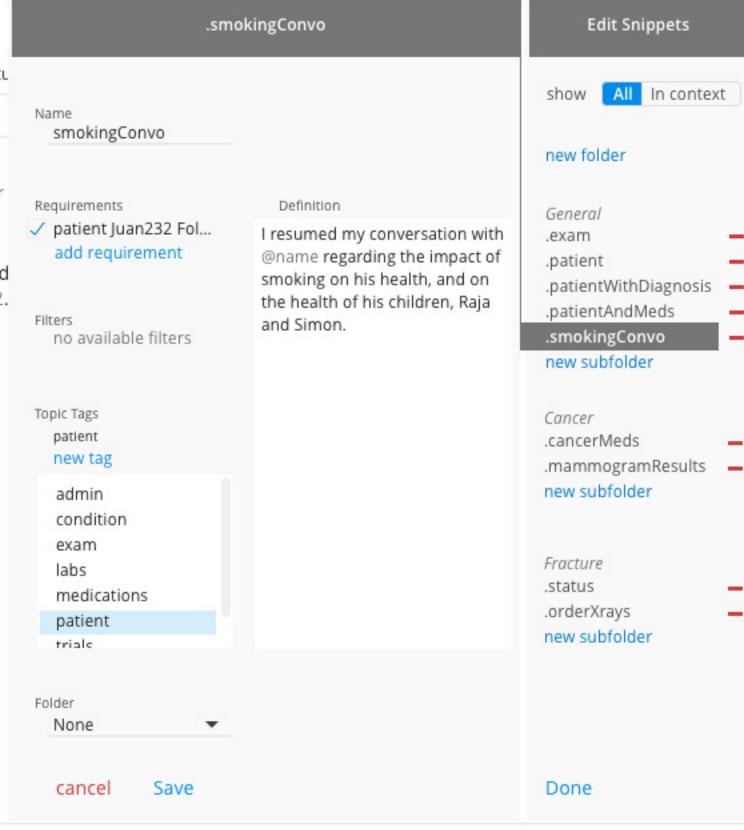


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She underwent a lumpectomy. She underwent a sentinel lymph node biopsy on 20 September 2012 which revealed infiltrating poorly differentiated ductal carcinoma, stage IV, estrogen receptor 0, etc.

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









Debra24 Hernandez98Aj

Date of birth 5 Apr 1966 (51) Female

Admin. sex Location

Boston, MA

Ductal carcinoma of the breast -

Q Debra24 search...

Summary

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.

Procedures

Vitals

Labs

Disease status

Medication

Pathology

Treatment options

Summary



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Oncology History

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Patient. They were diagnosed with @condition on @dateofdiagnosis.











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