MITRE / FLUX NOTES TREATMENT OPTIONS v6

EDWIN CHOI, DANIEL REEVES, JUHAN SONIN, 31.DEC.2018



Concepts to approach in v6

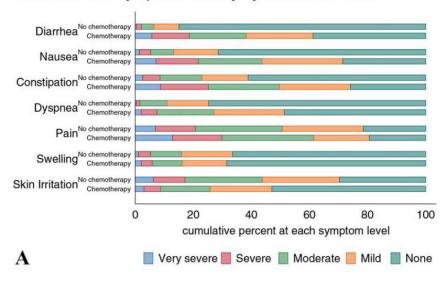
- Collaborative/patient centric view
- New ways to view and approach side effects
- Printing capabilities

One inspiration for viewing and understanding sidse effects:

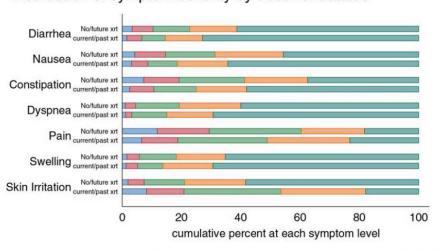
Treatment-Associated Toxicities Reported by Patients With Early-Stage Invasive Breast Cancer

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Distribution of symptom severity by treatment status



Distribution of symptom severity by treatment status





Date of birth 5 Apr 1966 (51)

Admin. sex Female Location Boston, MA 12345432312 Language Spanish

ROID

Condition

Ductal carcinoma of the breast ▼





Treatment Options Ductal carcinoma of the breast

Outcomes and criteria for 156,765 patients with Ductal carcinoma of the breast were collected by CancerLinQ ...more

> **Similar patients** 156 patients excluded criteria: race, received radiation therapy, received chemotherapy

> Outcomes overall survival rate, ECOG impact, hospitalization due to side effects

Previous Design

Slightly different header layout: remove search and include mode/print

	2		rvival rates		F	ECOG impact	•	ation due to side effects
include and a		1 yr	2 yr		5 yr	ППрасс	all	leading causes
include only: add/remove surgery	(11)	67%	54%	-	43%	0.2	19%	pain (9%) neuropathy (4%)
combine with: select treatments								
hormonal therapy & chemotherapy	(64)	87%	20% 74%	20%	58% 🔺 15	0.5 ▲ 0.3	15% ▼ 4%	pain (9%) dyspnoea (2%)
hormonal therapy	(76)	77% 🔺 1	10% 59%	5 %	49% • 69	% 0.5 ▲ 0.3	23% - 4%	dyspnoea (11%) blood clots (4%)
chemotherapy	(12)	68% • 1	1% 53%	▼1 %	41% ~ 29	% 0.9 ▲0.7	22% - 3%	pain (11%) dyspnoea (7%)

Treatment Options

Summary

survived with surgery alone
additional survivors due to treatment
cancer related deaths
deaths due to other causes



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Compare these treatments select treatments

surgery alone

- + homonal therapy
- + chemotherapy
- + hormonal therapy & chemotherapy

description of surgery

more description another description yet another description

Collaborative view

- Print is available
- Simpler visualizations
- More visualization options
- Remove collapsing menus, expose descriptions and make selections via popup menus.
- Considering removing patient filter here...?
- Include option to show numbers with/instead of of circles...?

Using these outcomes select outcomes

overall survival rate reported severe side effects

description of overall survival rate description of this other metric











5 yr 2 yr

Of every 100 patients...

overall survival:

number reporting severe effects:

surgery (11 patients)

......

67 survive after 1 yr

dyspnaea 0000000 peripheral motor neuro. other side effect

anemia 0000000

••••••••••••••• •••••• blood clots pain

combined with:

hormonal therapy & chemotherapy (64) 12 more survive

dyspnaea anemia



blood clots pain

hormonal therapy (76)

6 more survive

dyspnaea

pain

chemotherapy (12)







blood clots peripheral motor neuro.



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Ductal carcinoma of the breast







Compare these treatments select treatments surgery alone combined Compare this these with + homonal therapy select multiple types + chemotherapy hormonal therapy √ surgery + hormonal therapy & che hormonal therapy chemotherapy chemotherapy radiation radiation or compare within one type Using these outcomes sele chemotherapy regimens external beam hormonal therapy regimens overall survival rate internal radiation therapies reported severe side effect Common treatments to compare: surgery combined with radiation or chemotherapy \blacksquare surgery & hormonal therapy combined with radiation or chemotherapy table text icons chart surgery combined with chemotherapy regimens Of every 100 patients... overall survival: number reporting severe effects: ••••••••••••••• ••••• anemia blood clots pain **surgery** (11 patients) 0000000 0000000 67 survive after 1 yr peripheral motor neuro. other side effect combined with: hormonal therapy & chemotherapy (64) 12 more survive dyspnaea blood clots pain anemia hormonal therapy (76) 6 more survive dyspnaea pain chemotherapy (12) 8 more survive blood clots peripheral motor neuro. anemia



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another description

yet another description

Using these outcomes select outcomes

overall survival rate

hospitalization due to side effects

description of overall survival rate

description of this other metric









5 yr

2 yr

With surgery alone, 68% of patients will survive 1 year, with 30% dying due to cancer. 10% are hospitalized due to side effects, most commonly due to pain.

With **chemotherapy** in addition to surgery, **5% additional** patients will survive 1 year. 2% more are hospitalized due to side effects, most commonly due to neuropathy.

With chemotherapy & radiation in addition to surgery, 12% additional patients will survive 1 year. 4% more are hospitalized due to side effects, most commonly due to blood clots.

Collaborative view

• additional views available in collaborative mode.



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Compare these treatments select treatments

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description of surgery

+ homonal therapy

more description

+ chemotherapy

another description

+ hormonal therapy & chemotherapy

yet another description

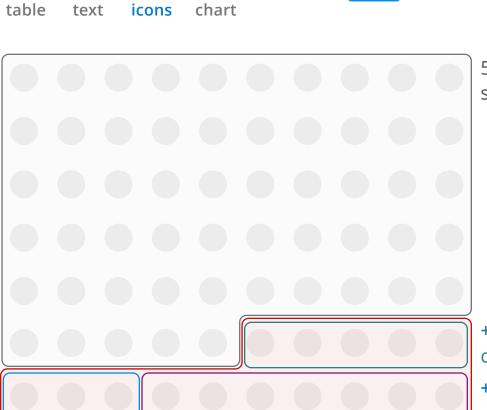
Using these outcomes select outcomes

overall survival rate

description of overall survival rate

hospitalization due to side effects

description of this other metric



2 yr 5 yr

55/100 survive with surgery only

+5 survive with chemotherapy

+3 survive with radiation

+7 survive with radiation and chemotherapy

40/100 die from cancer with surgery only

5/100 die from causes other than cancer



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Condition Ductal carcinoma of the breast







Compare these treatments select treatments

surgery alone

description of surgery

+ homonal therapy

more description another description

+ chemotherapy

- yet another description
- + hormonal therapy & chemotherapy

Using these outcomes select outcomes

overall survival rate hospitalization due to side effects description of overall survival rate description of this other metric







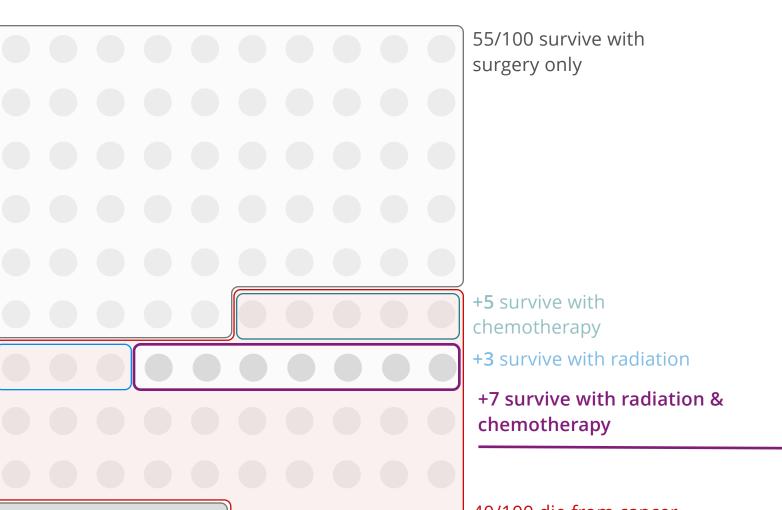






2 yr





16 of 100 patients are hospitalized due to side effects of radiation & chemotherapy



pain

blood clots

other causes

40/100 die from cancer with surgery only

5/100 die from causes other than cancer



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Compare these treatments select treatments

surgery alone

+ homonal therapy

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more description

another description

yet another description

Using these outcomes select outcomes

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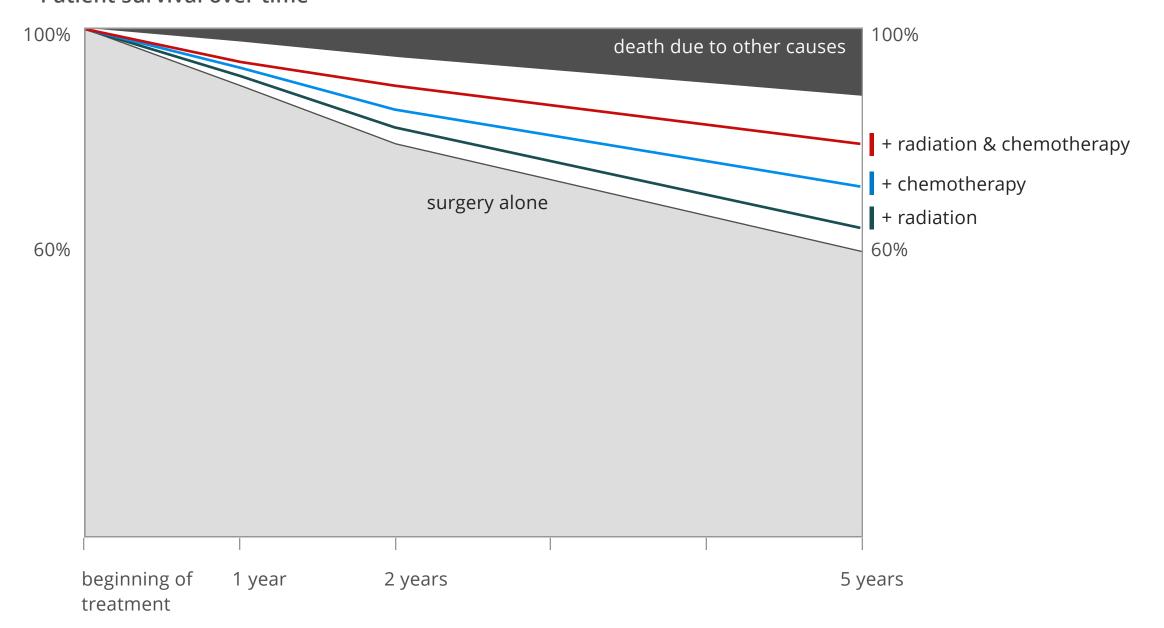




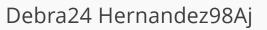




Patient survival over time







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Ductal carcinoma of the breast







Compare these treatments select treatments

surgery alone

+ homonal therapy

+ chemotherapy

+ hormonal therapy & chemotherapy

description of surgery

more description

another description

yet another description

using these outcomes select outcomes

overall survival rate severe symptoms

description of overall survival rate description of this other metric

Other ideas

- Vertical table. More natural to list all reported side effects, as well as other information and notes. But less compact.
- This vertical layout could be an option, or could be default for certain types or quantities of data.
- Idea of % vs. #/100 vs. icons. Is there an option? Is one the best? Which one should we support first?



vs. **Surgery** Alone (show in table)

	+Radiation	+Chemotherapy	+Radiation & Chemotherapy	
Overall Survival Rate 1 yr 2 yr 5 yr	+11	••••••••	+21%	
Reporting severe side effects in similar studies (ref.)	+19	•••••••	+25%	
Diarrhea	+6	•••••	+9%	
Nausea	+4	••••••	+14%	
Constipation	+2		+2%	
Dyspnea	+12		+12%	
Pain	+5	••••	+9%	
Swelling	+2	•	+4%	
Skin Irritation	+10		+10%	
Other possible serious side effects		blood clots (details)	blood clots (details)	



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description of surgery

more description another description

yet another description

Other ideas

- Using outside data that is not filtered by cohort. This can supplement ideas that may be weak on data and provide useful tools.
- Semi-quantitative data that is drawn from clinician experience, or processed from quantitative data.

using these outcomes select outcomes

overall survival rate general side effects

description of overall survival rate description of this other metric



vs. **Surgery** Alone (show in table)

	+Radiation	+Chemotherapy	+Radiation & Chemotherapy
Overall Survival Rate 1 yr 2 yr 5 yr	+11% (71%)	+16% (76%)	+21% (81%)

General experience of side effects (not filtered)

Diarrhea	•	•	••	
Nausea		***	***	
Constipation	••		••	
Dyspnea	•		▼	
Pain	•	••	••	
Swelling	•		▼	
Skin Irritation	•••		***	

Other possible serious side effects

blood clots (details) blood clots (details)





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Location Boston, MA Language Spanish Condition Ductal carcinoma of the breast

Summary

You have Invasive ductal carcinoma of breast, stage IA diagnosed on 16 Oct 2016, at the age of 50 (between 45 and 65). As of 18 Oct 2018, disease is Progressing, based on imaging. Key toxicities include Grade 3 peripheral motor neuropathy. You are ER Negative, PR Positive, and HER2 Positive. Tumour size is 42 mm and grade is High. The patient underwent a lumpectomy 29 April 2017.

Using the blue underlined data (and omitting the gray), we create a cohort of 1,245 patients like you.

Below, we compare outcomes across the different treatments they received.

Compare these treatments

surgery alone

- + homonal therapy
- + chemotherapy
- + hormonal therapy & chemotherapy

description of surgery

more description another description yet another description

Using these outcomes

overall survival rate

hospitalization due to side effects

description of overall survival rate description of this other metric

Additional Resources:

resource 1

resource 2

resource 3

resource 4

print these visualizations:











2 yr 5 yr

Of every 100 patients...

overall survival:

67 survive after 1 yr

----dyspnaea anemia ••••••

..... blood clots 0000000 peripheral motor neuro. other side effect

combined with:

surgery (11 patients)

hormonal therapy & chemotherapy (64)

12 more survive

dyspnaea

anemia

number reporting severe effects:

blood clots pain

hormonal therapy (76)

dyspnaea

000 pain

chemotherapy (12)

pain

anemia

blood clots peripheral motor

neuro.

With surgery alone, 68% of patients will survive 1 year, with 30% dying due to cancer. 10% are hospitalized due to side effects, most commonly due to pain.

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