Modeling to Learn

Test. Don't guess.

Session 4: Combining Measurement Based Care and Stepped Care for Suicide Prevention

@LZPhD

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Created by VA Team PSD

Team
Participatory System Dynamics

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HSR&D cyberseminars

This is session 4 of a four part series.

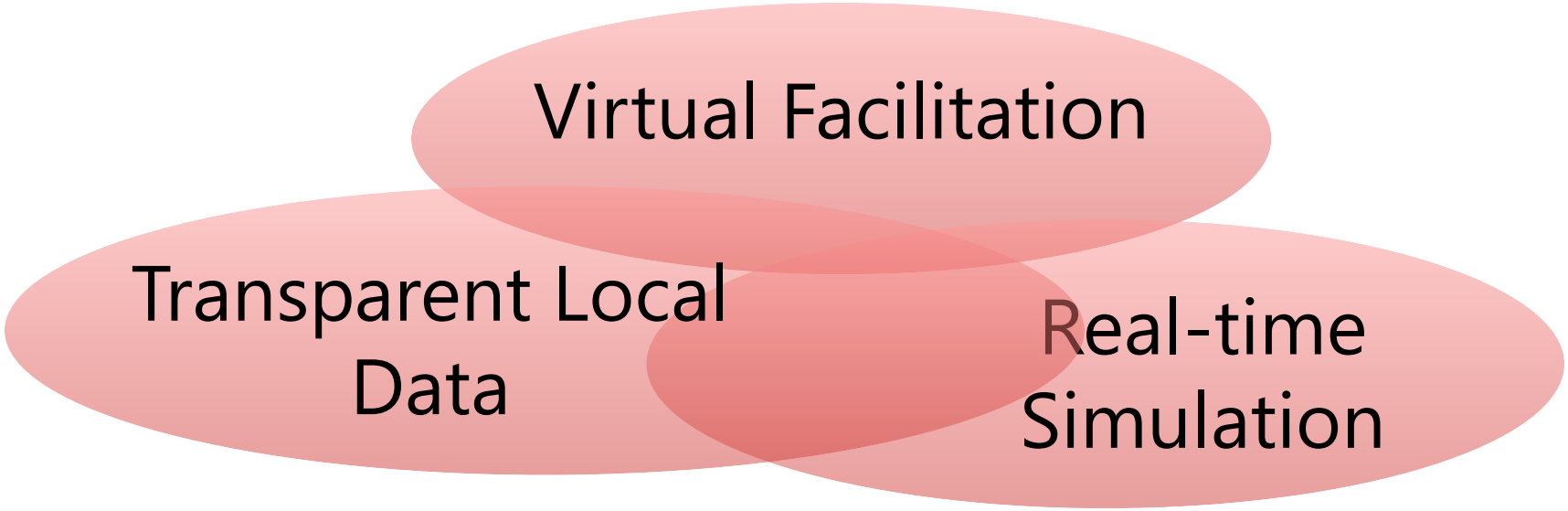
Date	Title	Focus
May 23, 2019 12noon Pacific/3PM Eastern	**Putting it Together: Combining Measurement Based Stepped Care for Suicide Prevention**	mtl session 10 systems thinking

Learning Objectives: *Modeling to Learn* how to use systems thinking.

1. Describe the decisions the team experimented with and how they intertwine to influence patients' symptoms and risk.
2. Test your understanding of the "higher care quality improves recovery" system story by describing what's happening when the simulation produces a runaway increase or decrease.
3. Apply systems thinking to anticipate the long-term trend in this team's ability to reduce patients' symptoms and suicide risk.

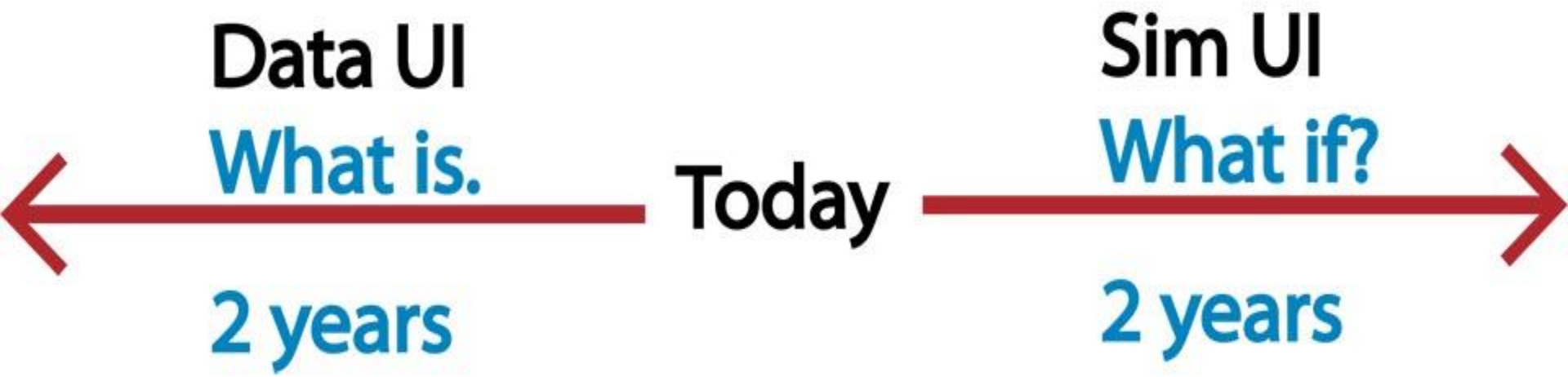
Modeling to Learn

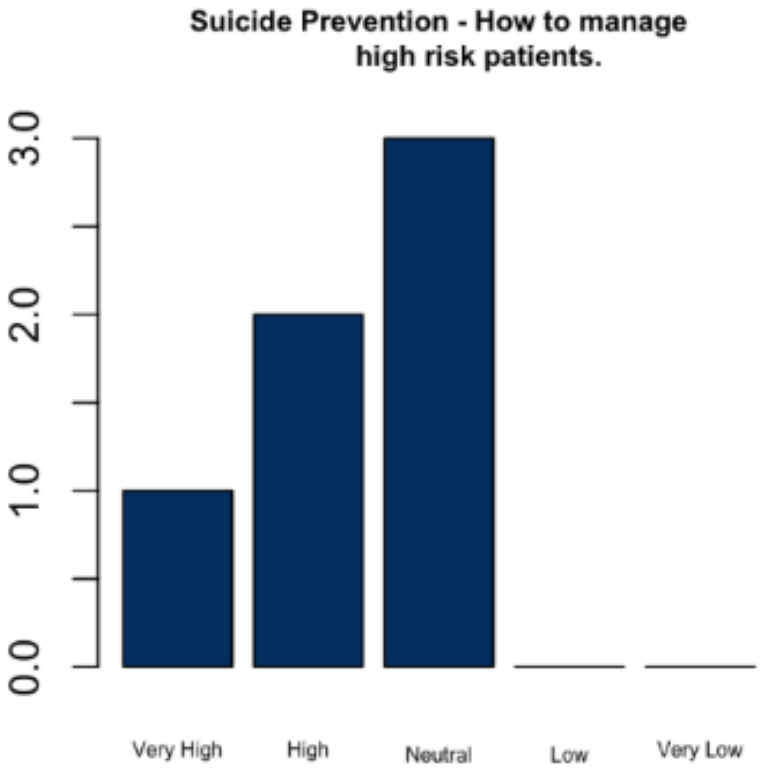
Test. Don't guess.



1. Equitable access to resources.
2. Mutual learning.
3. Shared decision-making.

MTL resources help teams look back two years and look ahead two years.




Suicide Prevention - How to manage high risk patients.
3.0
2.0
1.0
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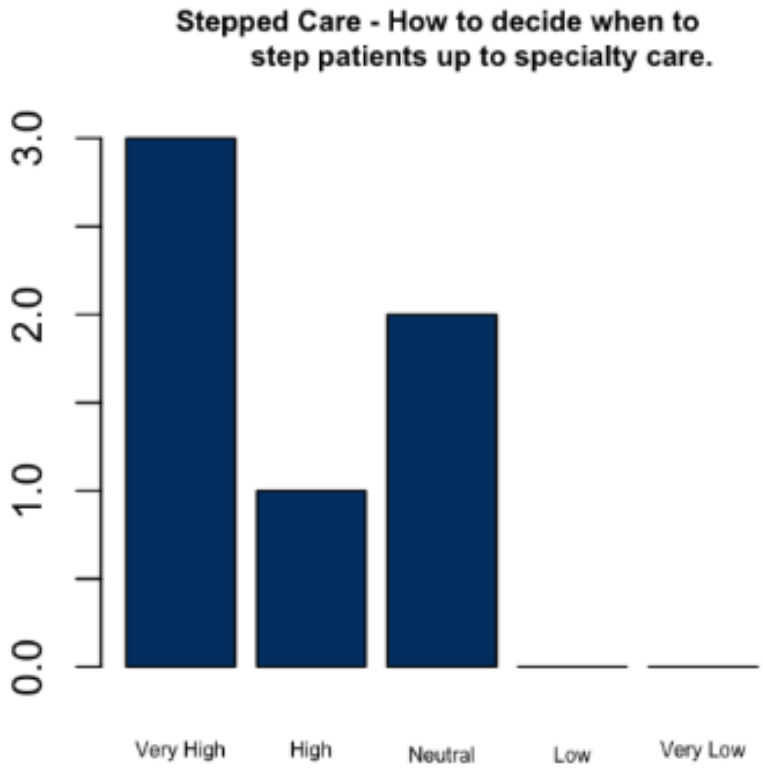
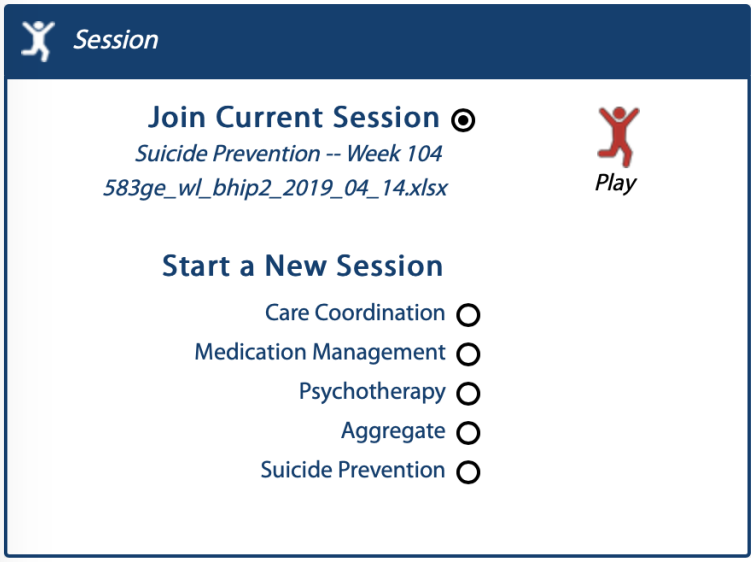
Very High
High
Neutral
Low
Very Low

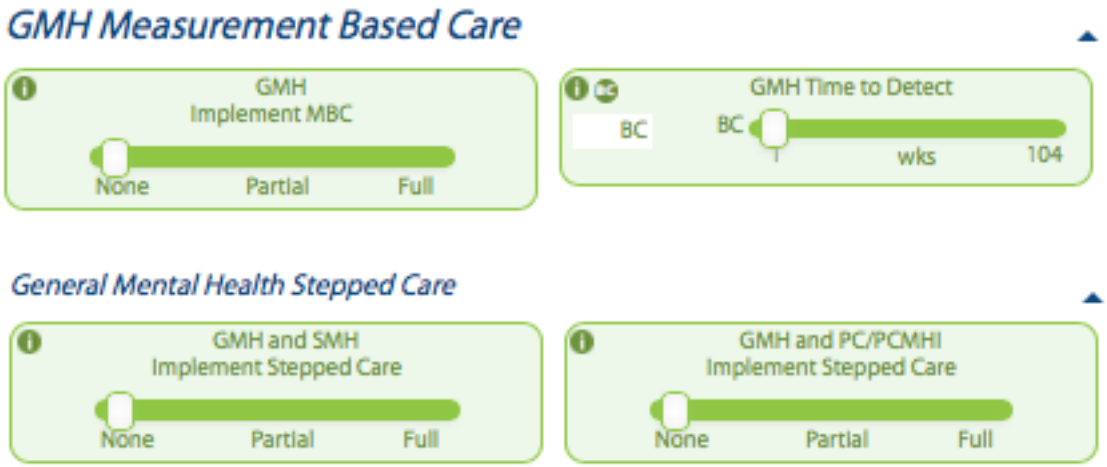

Stepped Care - How to decide when to step patients up to specialty care.
3.0
2.0
1.0
0.0
Very High
High
Neutral
Low
Very Low

mtl.how/menu


Session
Join Current Session
Suicide Prevention -- Week 104
583ge_wl_bhip2_2019_04_14.xlsx
Play
Start a New Session
Care Coordination
Medication Management
Psychotherapy
Aggregate
Suicide Prevention

Conduct a combined experiment to reduce patient symptoms and wait times.

Will implementing both measurement-based care and stepped care address risks associated with either alone?



Findings from last session:

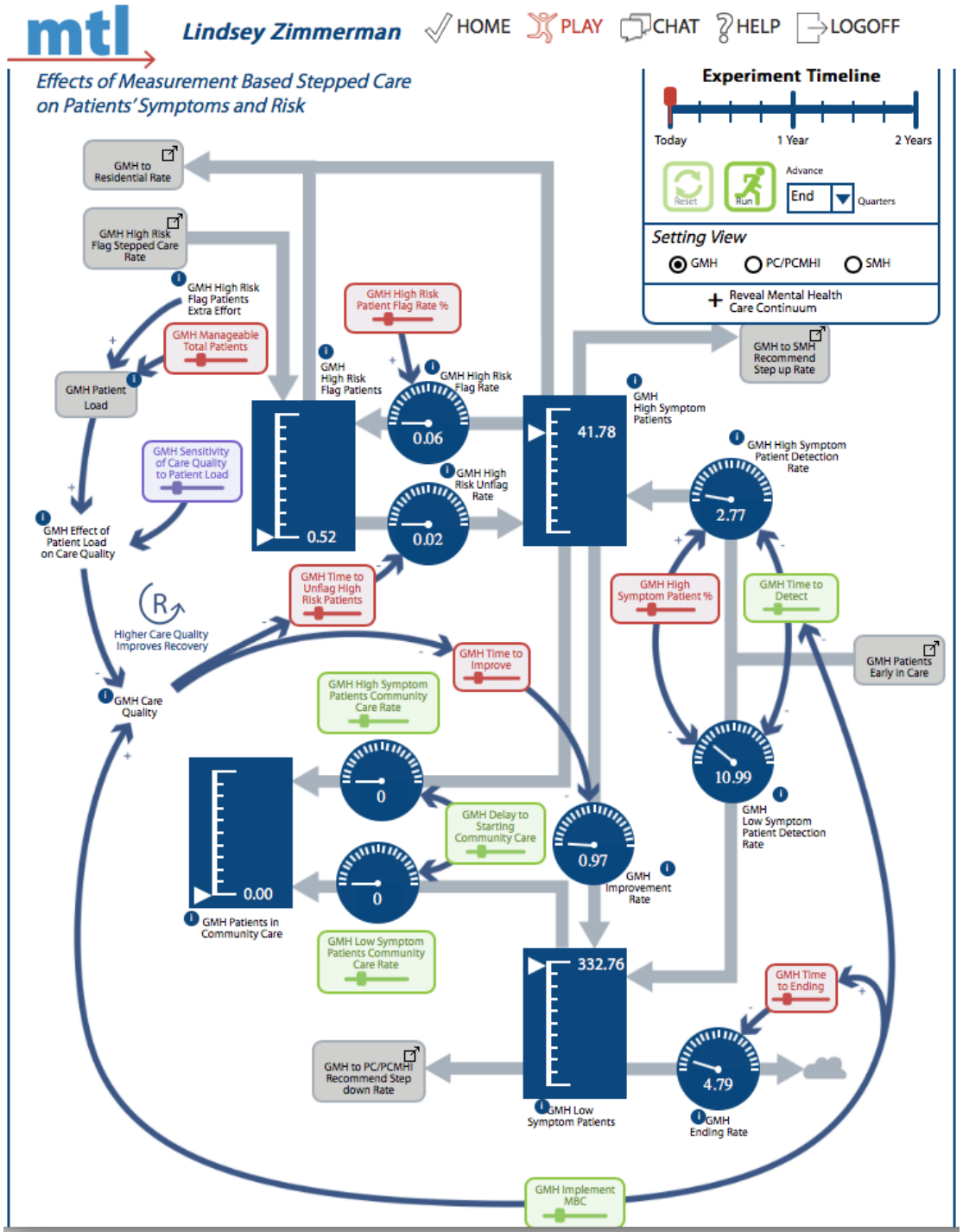
- Measurement Based Care (MBC) improved patients' symptoms and risk, but reduced new care episode starts.
- Stepped care (SC) started more GMH care episodes, but didn't improve patients' symptoms and risk.

MTL focuses on improving systems thinking among frontline teams making care decisions.

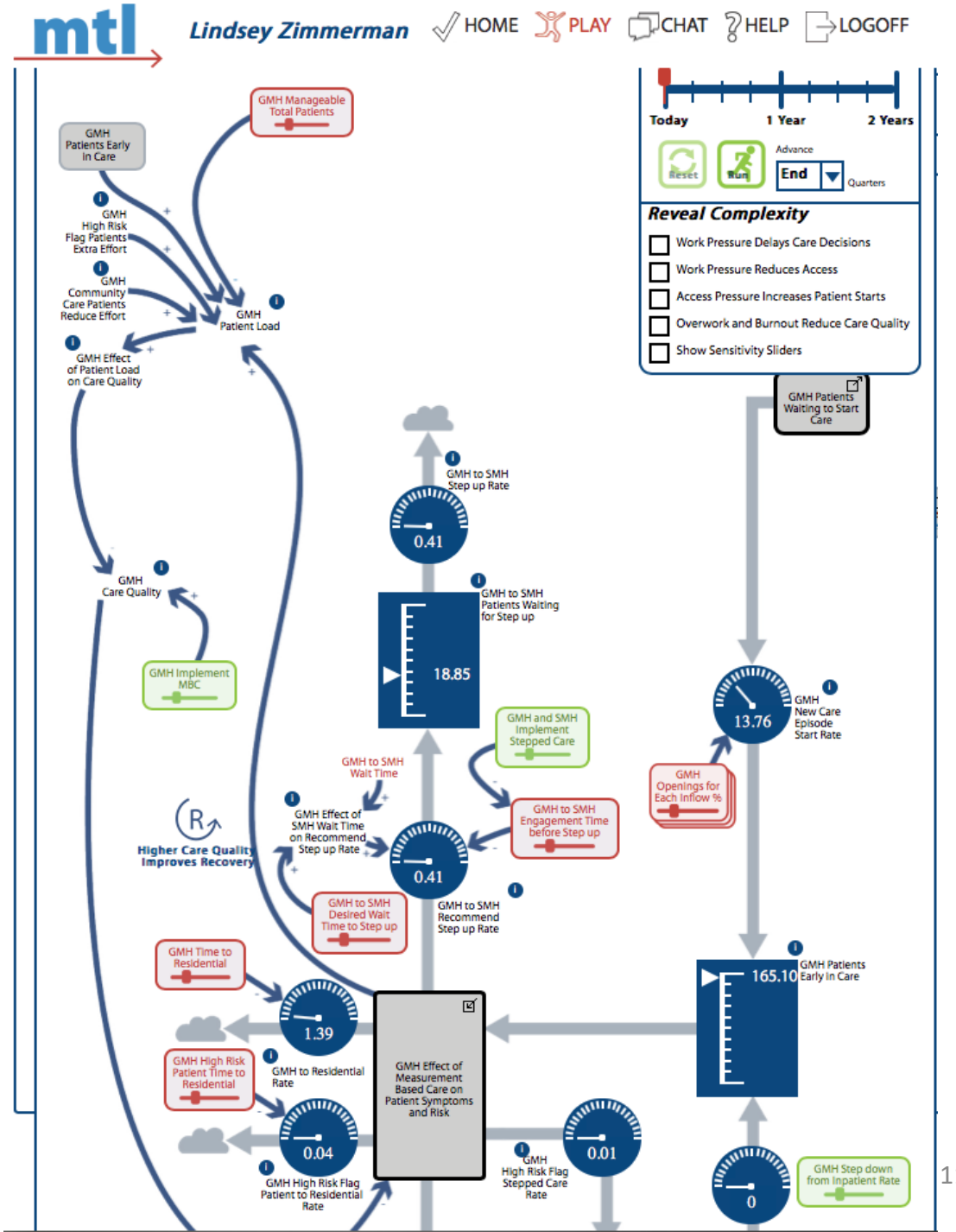
Systems Thinking	Definition
Complex	**Forest not trees.** Relationships among two or more variables (wait times, improvement rate), or two or more settings (primary care, general mental health).
Feedback	**Loop not line.** Not simple cause and effect. The end of the story often influences the beginning, and is strengthened (reinforcing) or reduced (balancing) around the loop.
System Behavior	
Time	**Short *and* long term**. Better understanding of change over time (e.g., worse before better, better before worse).

Higher Care Quality Improves Recovery: *why*

MBC reduced GMH patients' symptoms and suicide risk. (zoom in)



Higher
Care Quality
Improves Recovery:
why
SC to address
wait times is
also needed.
(zoom out)



Poll 1:

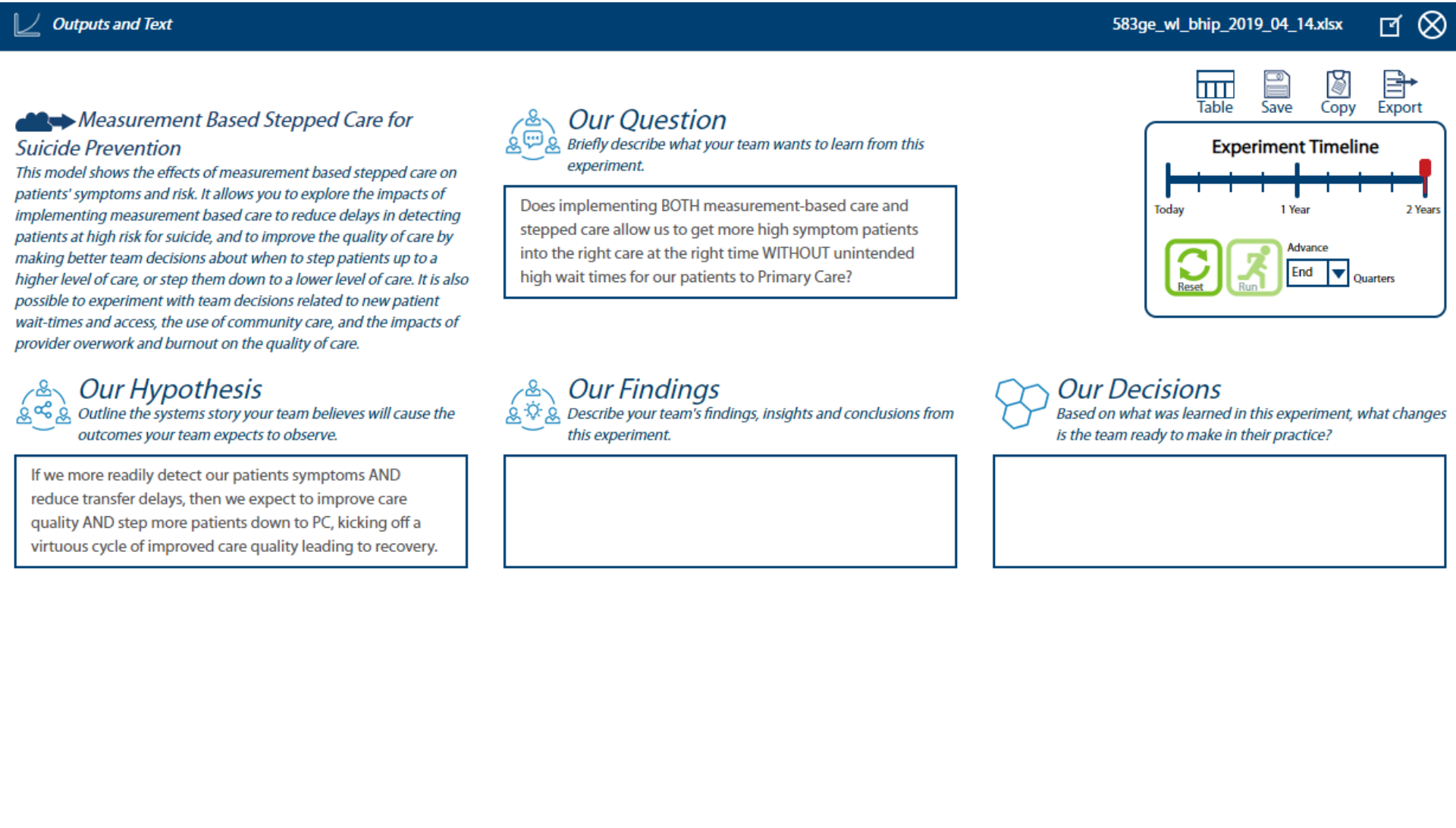
If we combine Measurement Based Care and Stepped Care, then will it most improve…

Select one.

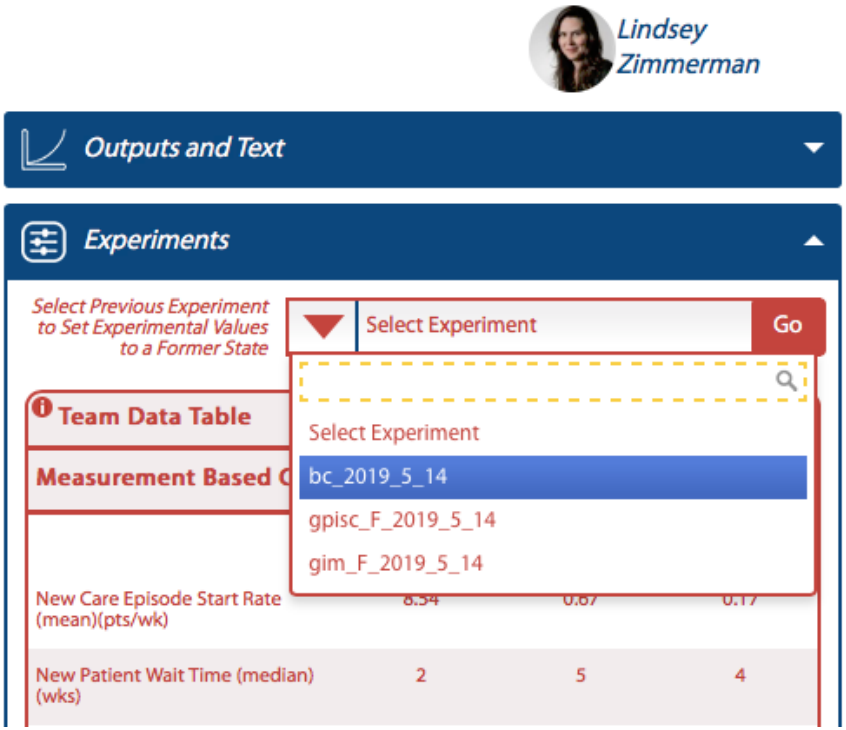
A. Patients waiting to start care
B. Detecting changes in patients' symptoms
C. Wait times to transfer patients' care across settings
D. Managing our patient load
E. Care for patients at high risk for suicide

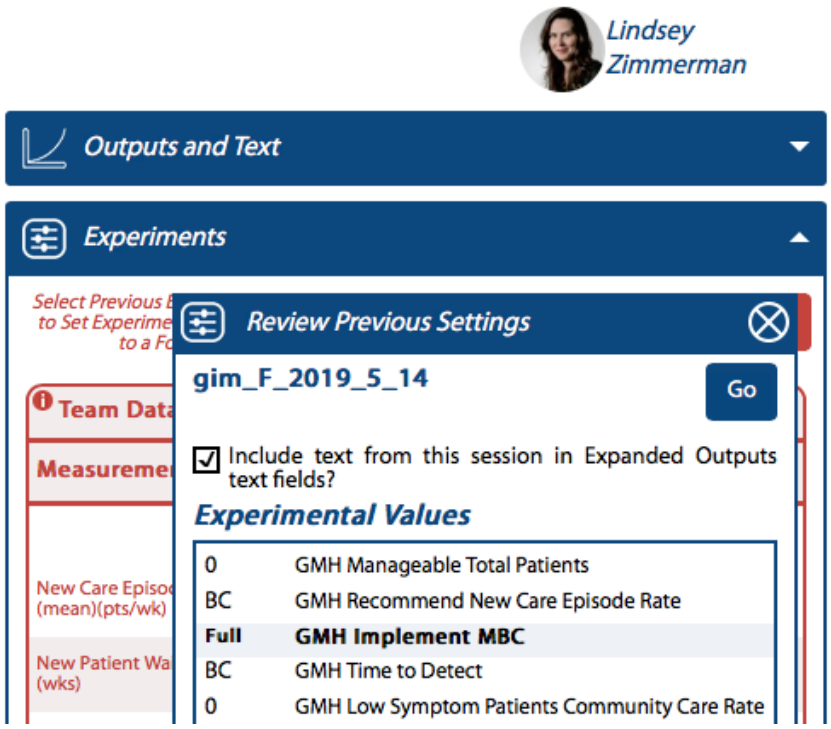
Dynamic Hypothesis: Combining MBC and SC will…

- **MBC** reduce patients' symptoms and risk
- **SC** reduce wait times in GMH, and from GMH to SMH
- **COMBINED** will mitigate the *risks* of either alone.



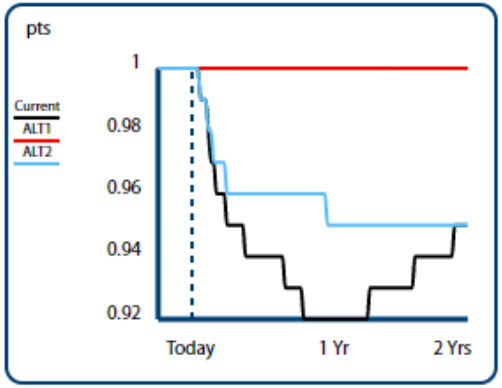
Pull up prior work to save time.



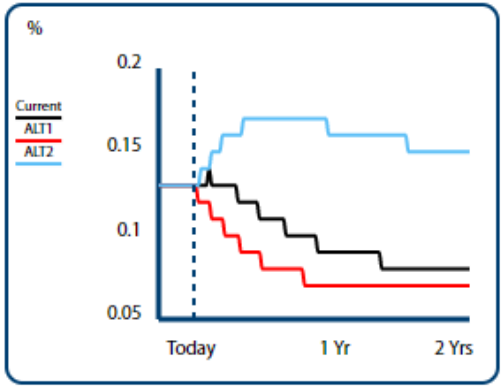


What if we combine Measurement Based Care and Stepped Care?

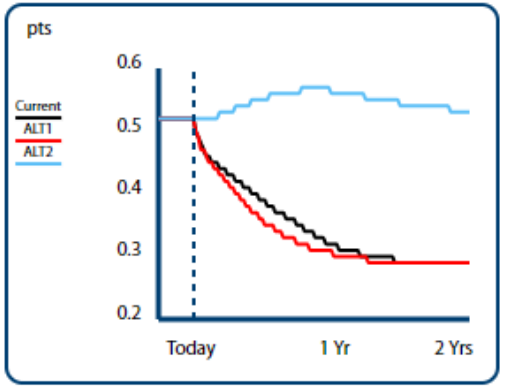
vs implementing each one individually



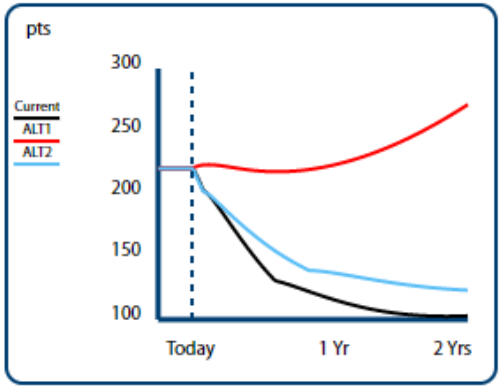
GMH Patient Load



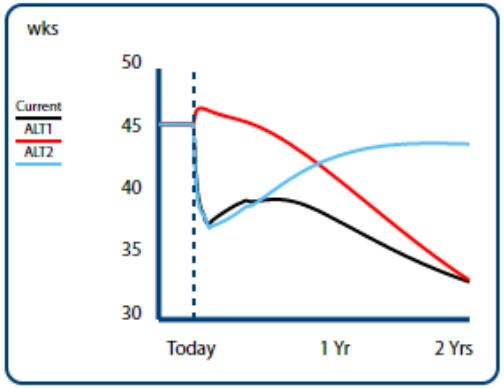
GMH Ratio of High to Low Sympto…



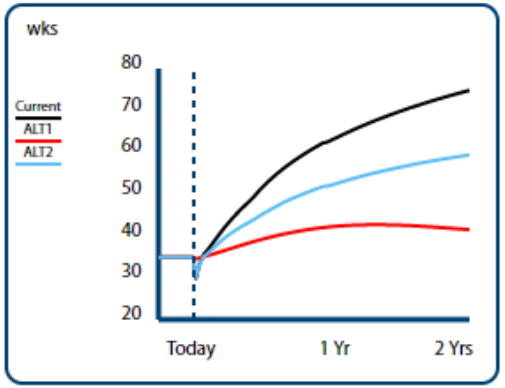
GMH High Risk Flag Patients



GMH Patients Waiting to Start



GMH to SMH Wait Time for Step up



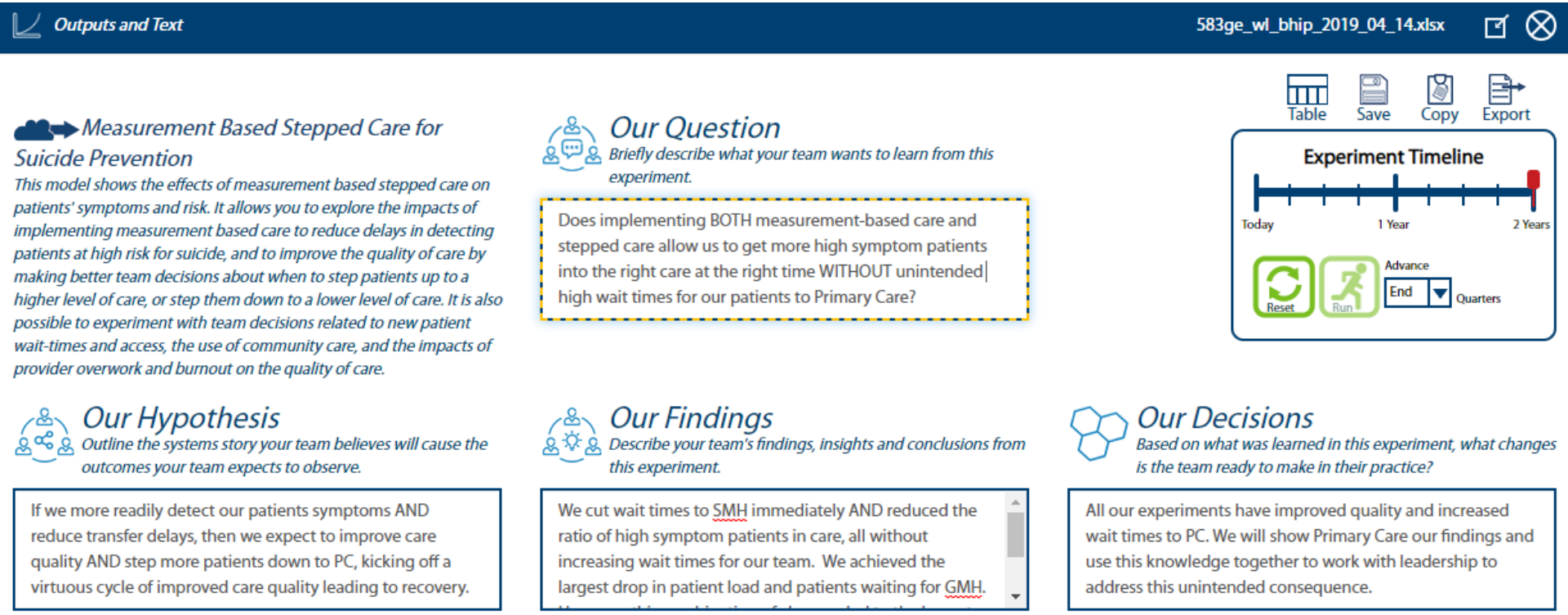
GMH to PC/PCMHI Wait Time to St…

Decisions:

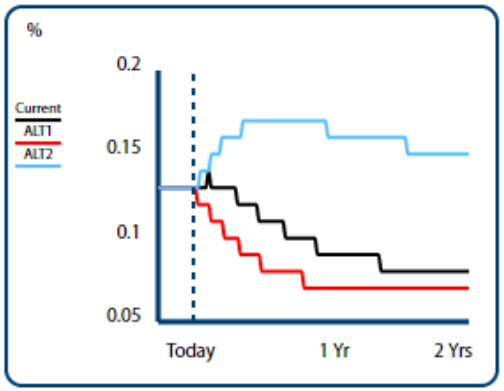
We should implement MBC *and* SC with Primary Care.

Because higher quality improves recovery, when we…

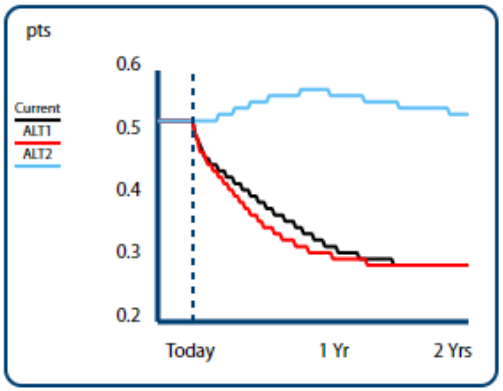
1. reduce patients' symptoms and risk, *and*
2. get patients to the right level of care at the right time.



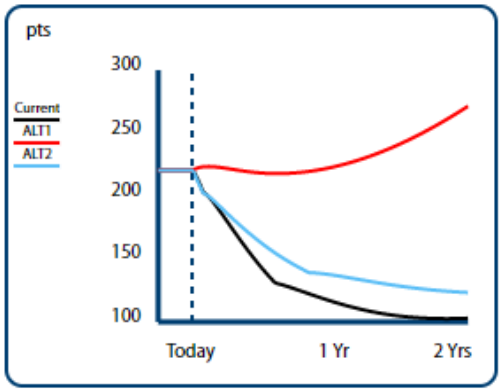
Only the combination of MBC and SC increases patients getting better and reduces GMH and SMH wait times.



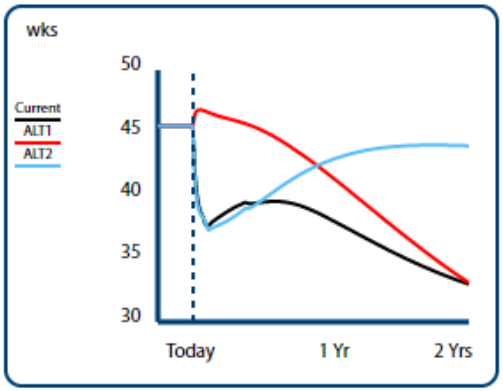
GMH Ratio of High to Low Sympto…



GMH High Risk Flag Patients

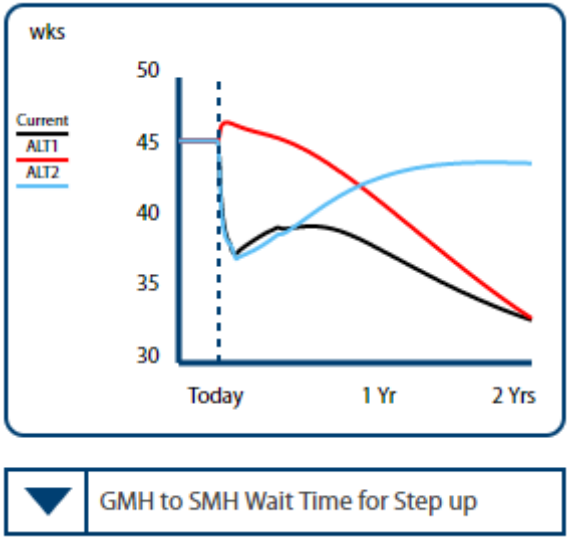


GMH Patients Waiting to Start



GMH to SMH Wait Time for Step up

Implementing MBC alone, or SC alone, is not effective for getting local patients to the right treatment at the right time.

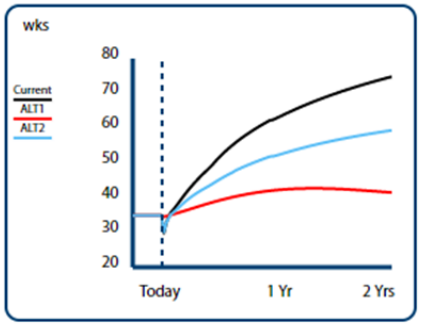


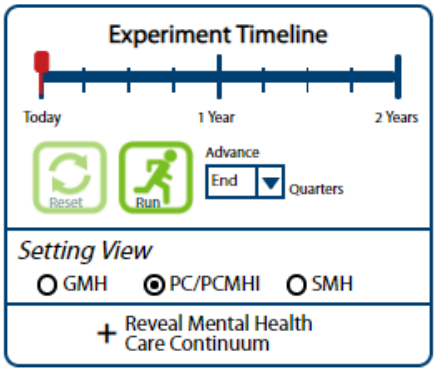
MBC Without improvement for more than 6 months, we may lose faith and abandon the change.

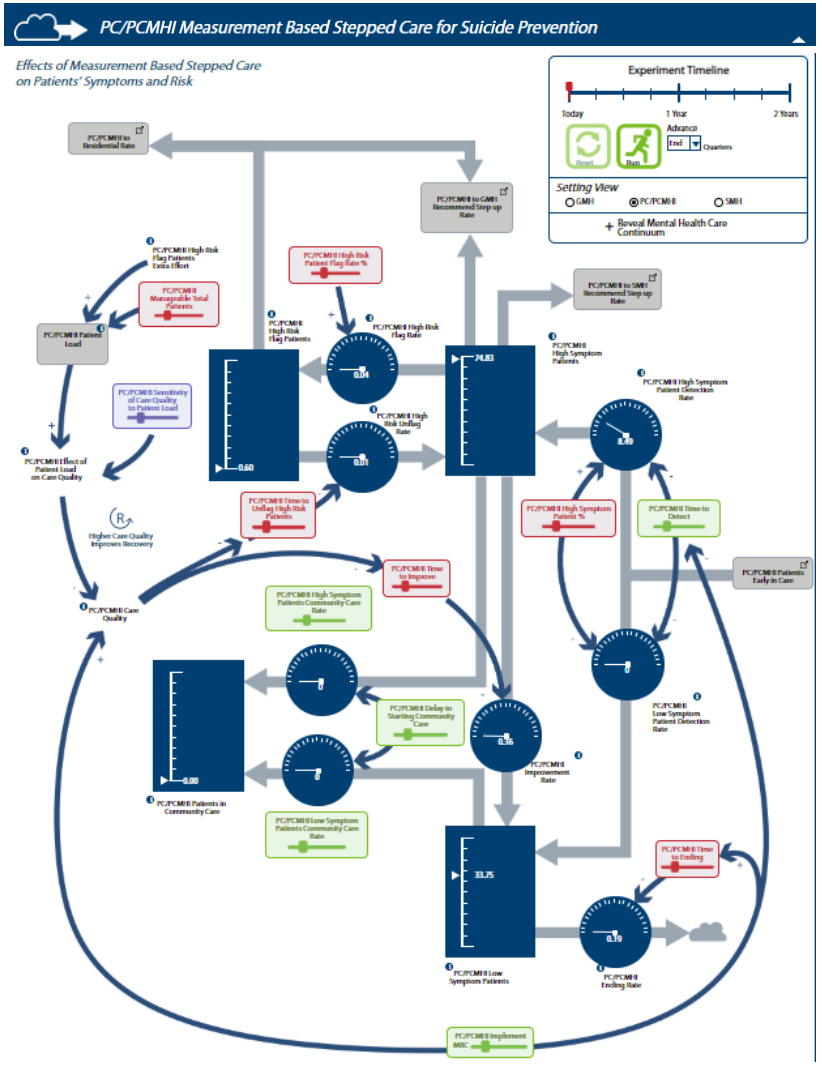
SC We see immediate improvement, but then we slowly go back to business-as-usual in two years.

COMBINED "Virtuous Cycle"- We see immediate improvement in wait times, that continue to get better over the next two years.

"Vicious Cycle"- wait-times keep growing for primary care, due to increased patient load, an unintended effect of improving general mental health care quality.





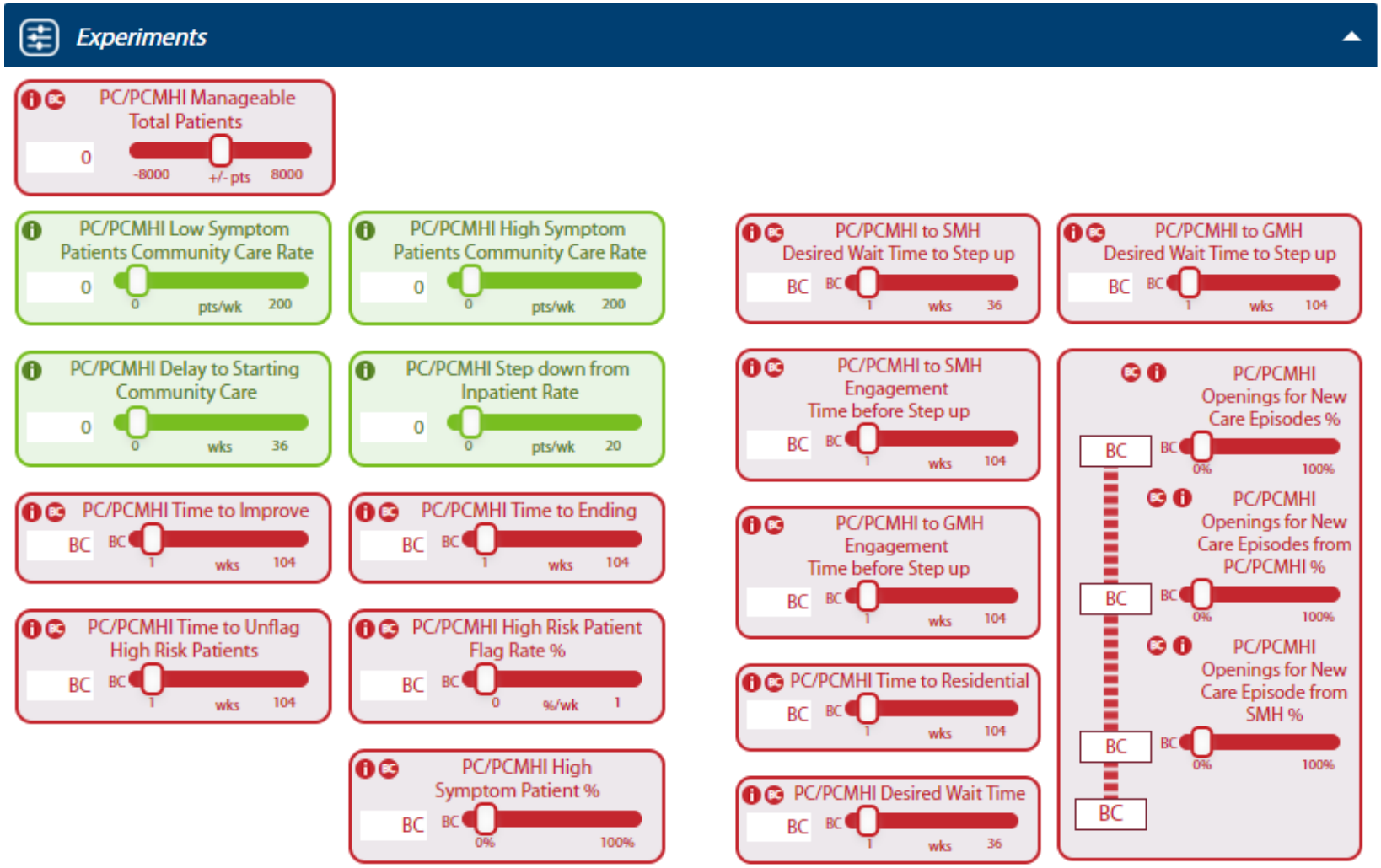


COMBINED

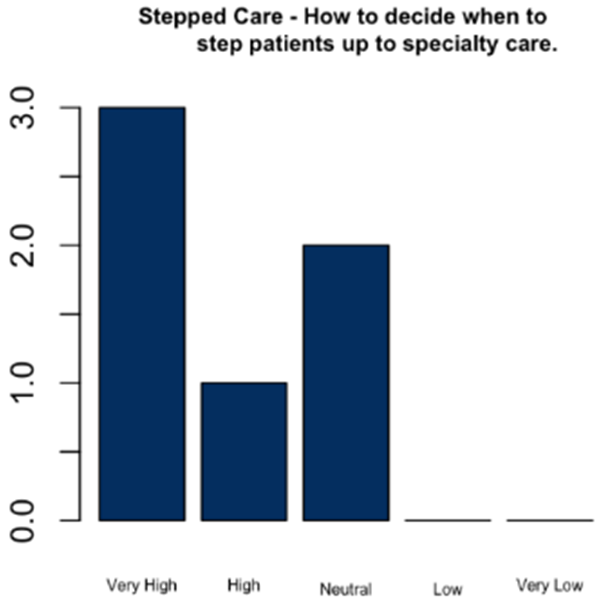
1. GMH to PC/PCMHI wait times increase as GMH patients get better and are stepped down to Primary Care.
2. Toggle to PC/PCMHI to see it has the same Higher Care Quality Improves Recovery feedback.
3. PC/PCMHI has made no new decision to implement MBC in their setting….

Use *Modeling to Learn* in partnership with Primary Care:

PC, like the other settings, has many options for working with the Higher Care Quality Improves Recovery systems story.



Counterintuitive fix for team's need to reduce long GMH -> SMH wait times: Improve GMH care quality via MBC and coordinate SC *with PC* (not SMH).



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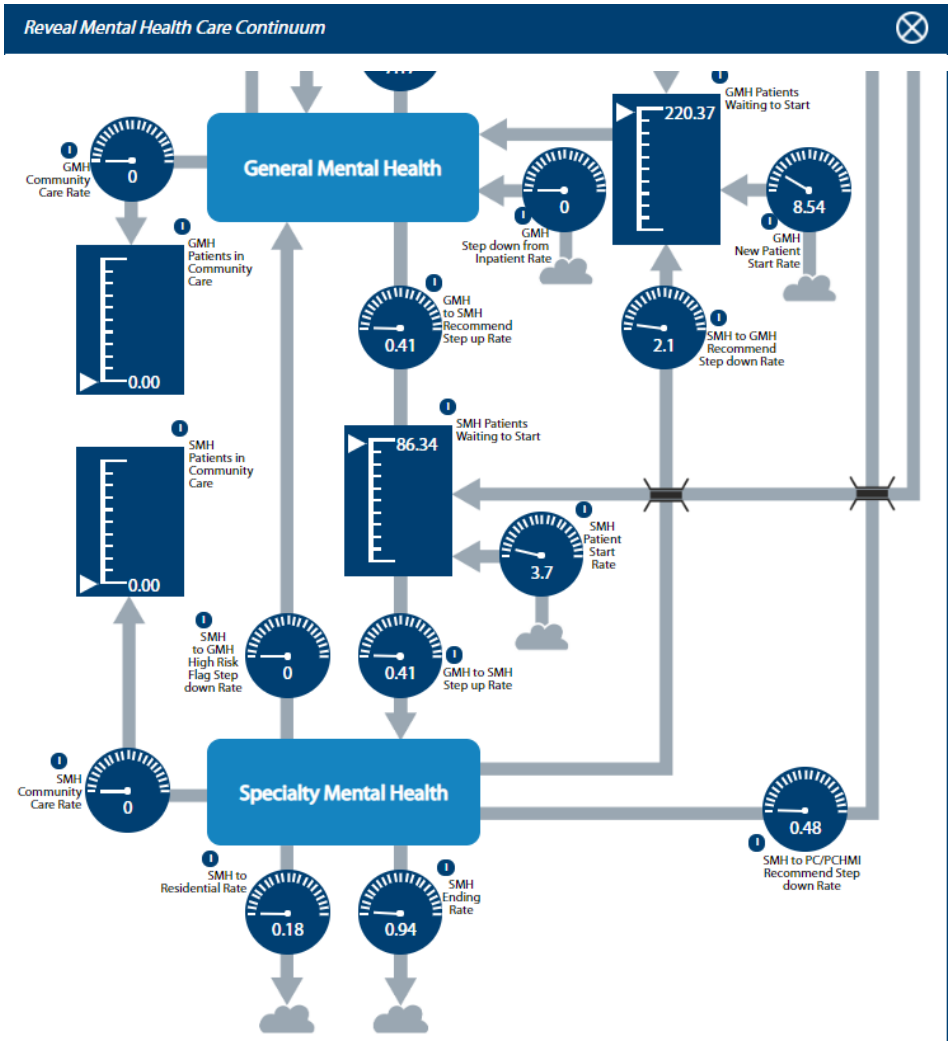
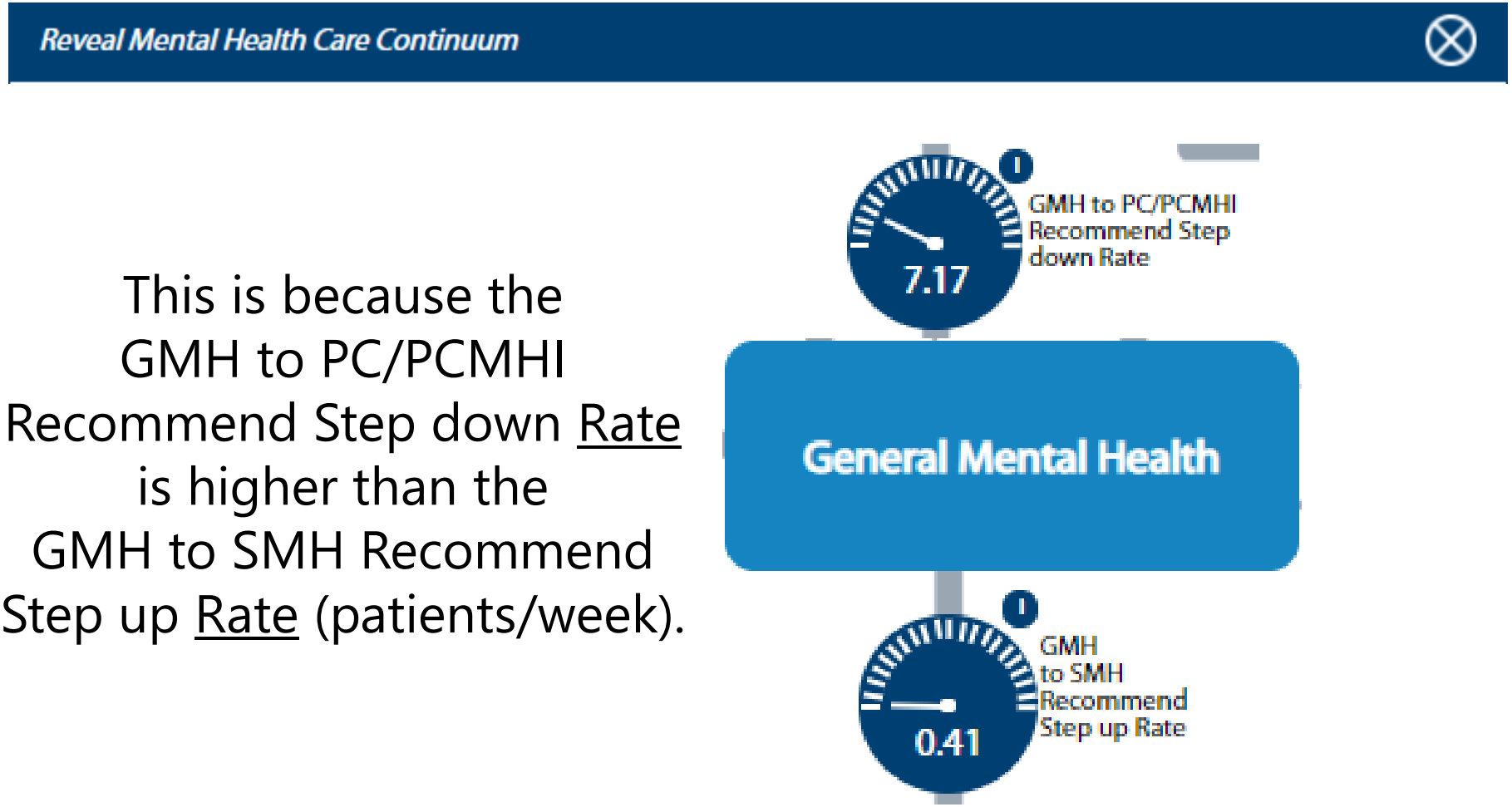


Coordinating stepped care *with PC* (not SMH) will have a stronger effect because there more patients.

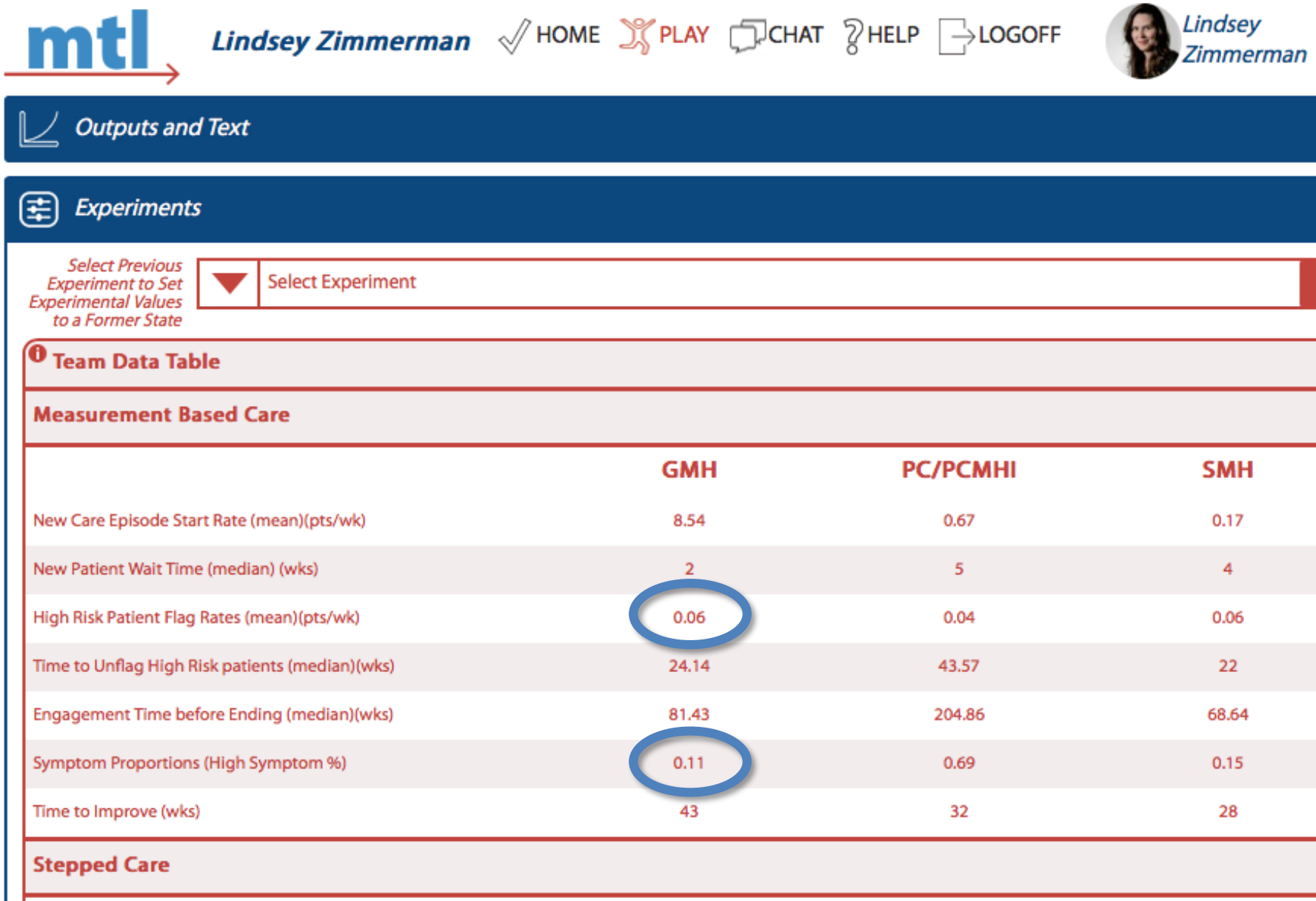


This is because the GMH to PC/PCMHI Recommend Step down Rate is higher than the GMH to SMH Recommend Step up Rate (patients/week).

MTL focuses on improving systems thinking among frontline teams making care decisions.

Systems Thinking	Definition
Complex	**Forest not trees.** Only the combination of MBC and SC increases patients getting better and reduces wait times.
Feedback	**Loop not line.** Increased wait-times for primary care, due to increased patient load is an unintended consequence of improving general mental health care quality.
System Behavior	**Movie not snapshot.** Counterintuitive fix long GMH->SMH wait times: Improve GMH care quality via measurement based care and coordinate stepped care *with PC* (not SMH).
Time	**Short *and* long term**. With delayed improvement we may lose faith. Immediate improvements may not be sustained.

Our GMH team's data for High Risk Flag Rates and Symptom Proportions:



A different team in our GMH setting, with more acute patients, stepping up/down to the same SMH and PC settings.

Select Previous Experiment to Set Experimental Values to a Former State

Select Experiment | Go

Team Data Table

Measurement Based Care

	GMH	PC/PCMHI	SMH
New Care Episode Start Rate (mean)(pts/wk)	8.54	0.67	0.17
New Patient Wait Time (median) (wks)	2	5	4
High Risk Patient Flag Rates (mean)(pts/wk)	0.23	0.04	0.06
Time to Unflag High Risk patients (median)(wks)	24.14	43.57	22
Engagement Time before Ending (median)(wks)	162.86	204.86	68.64
Symptom Proportions (High Symptom %)	0.45	0.69	0.15
Time to Improve (wks)	43	32	28

Poll 2

If a **New Team** from the same GMH setting with more acute patients ran this same combined MBC and SC experiment, then they would find that it would most improve…

Select one.

A. Patients' symptoms and suicide risk will get better *faster* than in our original team.

B. Patients' symptoms and suicide risk will get better *slower* than in our original team.

C. Patients' symptoms and suicide risk will get worse *faster* than in our original team.

D. Patients' symptoms and suicide risk will get worse *slower* than in our original team.

E. Patients' symptoms and suicide risk will change *in the same way* across the two GMH teams over the next two years.

Our Hypothesis

Outline the systems story your team believes will cause the outcomes your team expects to observe.

If the **New Team** with

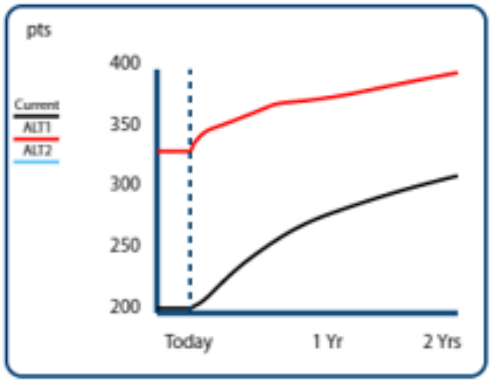
- more high symptom patients, and
- more high risk flag patients,

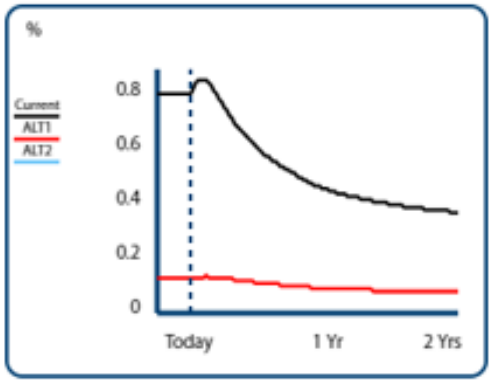
implements both MBC and SC combined…

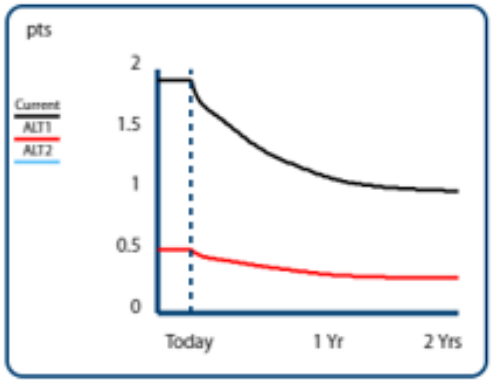
then, it will lead to even greater benefits than **Our Original Team** because…

the Higher Care Quality Improves Recovery story will apply to more patients in the **New Team.**

Comparing combined experiments across two different GMH teams in the same setting shows big differences in patients' symptoms and risk.







In our **New Team,** *from the same setting*, the GMH Ratio of High to Low Symptoms drops *faster* and
the number High Risk Flag Patients is reduced more due implementing MBC and SC than in our **Original Team.**

Team
Participatory System Dynamics

Five ways to help improve *MTL* usefulness.

Email: **mtl.info@va.gov**

Subject line: **Learning**

1. *MTL* Live Team/Clinic
2. Pilot Review EES materials (e.g., Video, Guides)

Design

3. Data User Interface (mtl.how/data)
4. Simulation User Interface (mtl.how/demo)

Research

5. Advisory Board and other opportunities

Team
Participatory System Dynamics

Thank you, Team PSD!

mtl.how/team

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MTL Resources and Help

mtl.how

Session guides, links, and cheatsheets.

mtl.how/demo

Self-registration for simulation demo. *Course code: cybersem*

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Modeling to Learn

Test. Don't guess.

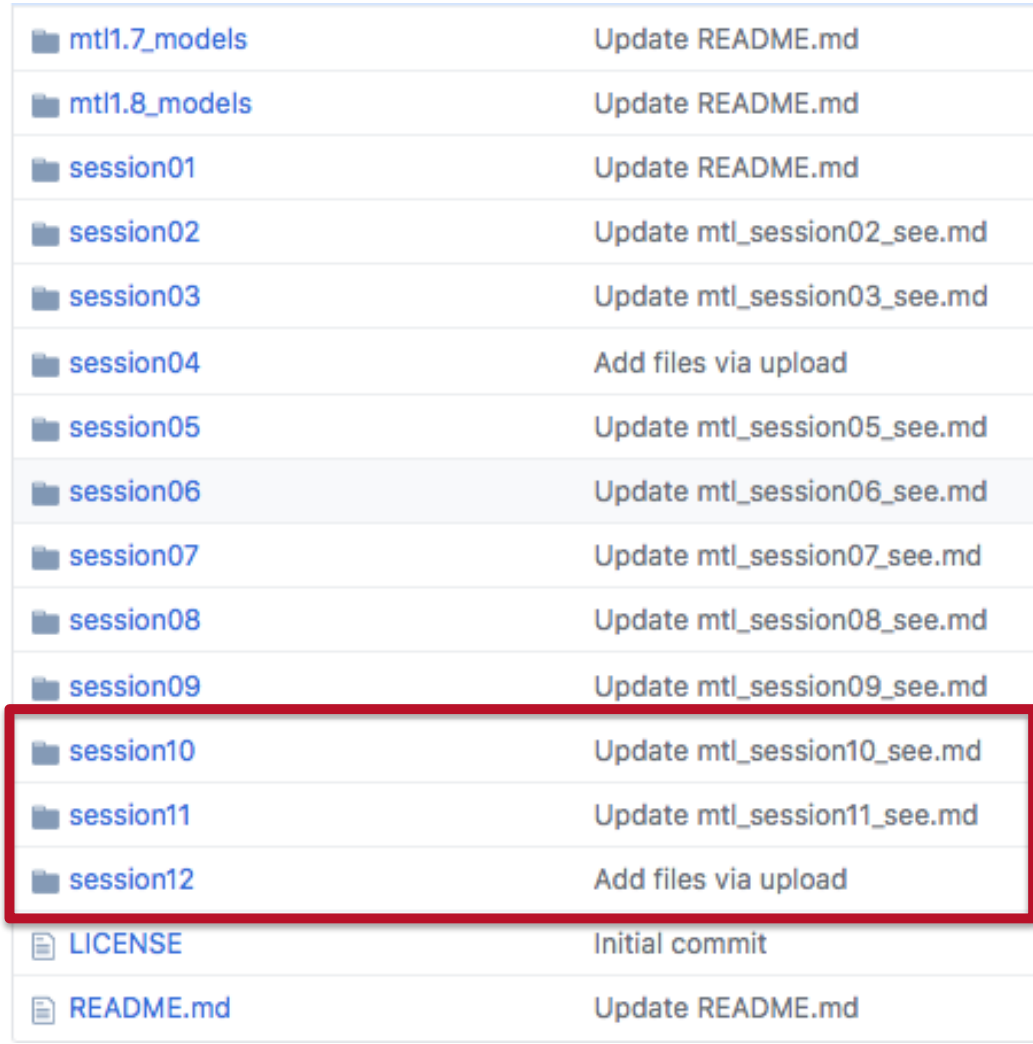
mtl.how/quick_overview

VA Team PSD

You can review *Modeling to Learn* session guides at mtl.how

mtl.how

Session guides, links, and cheatsheets.



mtl1.7_models	Update README.md
mtl1.8_models	Update README.md
session01	Update README.md
session02	Update mtl_session02_see.md
session03	Update mtl_session03_see.md
session04	Add files via upload
session05	Update mtl_session05_see.md
session06	Update mtl_session06_see.md
session07	Update mtl_session07_see.md
session08	Update mtl_session08_see.md
session09	Update mtl_session09_see.md
session10	Update mtl_session10_see.md
session11	Update mtl_session11_see.md
session12	Add files via upload
LICENSE	Initial commit
README.md	Update README.md

Download 1-page *Modeling to Learn* Cheatsheets at mtl.how

mtl mtl.how/data Data UI Cheatsheet (Updated 2019_05_09)

Learning Objectives

Modeling to Learn
Test. Don't guess.

MTL objectives include activities and competencies that…
1. Are meaning for you and align your learning goals with your team.
2. Develop systems thinking skills to help you see how several things fit together, and understand causes hard to see without data and modeling resources.
3. Make VA data, initiatives, and standards transparent to you.
4. Empower you to realize ongoing improvements in team quality of care & work life.

Timesavers

1. Explore trends on SplashPage
2. Use most recent data_ui file
3. Save a team_data_sim_ui file w/ preferred filters

Splashpage

Login: Open mtl.how/data from Internet Explorer.
Select VISN & Facility

1. Click on facility # at top left for larger view of splashpage
2. Use arrows & funnels to filter by location, grids, etc.
3. Click on View dropdown to switch between different charts and tables

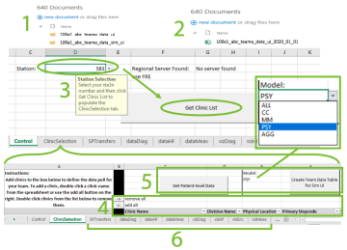
Note: Splashpages typically show 2 years of prior data, but if your facility is too large, it will only show 1 year.

Data UI

1) Find data_ui folder

2) Open most recent data_ui file using Excel Workbook not web app.

3) Click on "Control" sheet. Choose 3 digit station # from dropdown. Click "Get Clinic List"



4) Choose grids by clinic names, location, etc. Click on arrow in Column B to add grids to Column A. Make Column B wider to the right for hidden grids
Note: "ZZ" Clinic Names = Deactivated clinics

5) Choose a) "Get Patient-level Data"" (shows data derived from charting) or b) Choose module & "Create Team Data table for Sim UI" (shows parameters for each module from team data)"

6) Explore different tabs in the file saved.
Note: Restricted Patients = Patient identifiers asterisked out w/ last initial & last 4 of SSN in Column H.

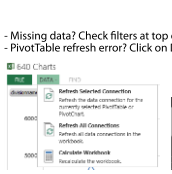
To Save: Click on Browse & Save. This will automatically save back to the SharePointSave file to 1) data_ui or 2) team_data_sim_ui folder by clicking on BrowseAdd team name (facility # & date will auto-populate).
Note: This is PHI. Save back to SharePoint or PHI-safe places. Encrypt for emails.

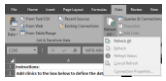
Acronyms

AGG: Aggregate
CC: Care Coordination
Count: Aggregate Data for Viz
Diag: Diagnostic data
Data: Sortable report of data
Enc: Encounter types of visits
HF: Health Factors data of visits
Meas: Measures or flag names
MM: Medication Management
MTL: Modeling to Learn
PSD: Participatory System Dynamics
PSY: Psychotherapy
SP: Suicide Prevention
UI: User Interface
Viz: Visualization of trends

Troubleshooting

- Missing data? Check filters at top of columns or legends
- PivotTable refresh error? Click on Data tab & Refresh





Modeling to Learn (MTL) is an ongoing quality improvement project by VA Team Participatory System Dynamics. Info: mtl.info @va.gov Updated 2019_05_09

mtl mtl.how/sim Sim UI Cheatsheet (Updated 2019_05_09)

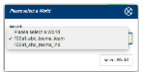
Learning Objectives

Modeling to Learn
Test. Don't guess.

MTL objectives include activities and competencies that…
1. Are meaning for you and align your learning goals with your team.
2. Develop systems thinking skills to help you see how several things fit together, and understand causes hard to see without data and modeling resources.
3. Make VA data, initiatives, and standards transparent to you.
4. Empower you to realize ongoing improvements in team quality of care and team quality of work life.

Login

1. Open mtl.how/sim in Chrome. Use lowercase for username (VA email) & password



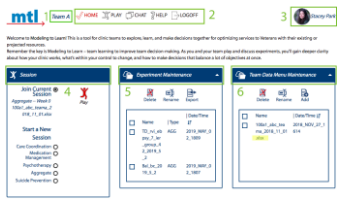
2. Choose team world for experimenting as a team -or- individual (ind) world for learning on your own

Navbar

1. Team Name (team world) or Your Name (ind world)

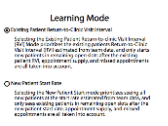
2. Navigation Menu - Home: You are here!
- Play: Run experiments
- Chat: Chat w/ team or facilitator
- Help: MTL sim resources
- Logoff: Always logoff via button

3. Your Name & Photo
- To add your image: Create gravatar.com account w/ VA email & upload photo



4. Session
- Join Current Session: Click on circle & Play
- Start New Session: Choose new module, select Team Data, & Play

Note: For CC & MM modules: choose Learning Mode



5. Experiment Maintenance**
- Delete incorrect runs
- Rename runs as necessary
- Export ≤10 runs in Excel file

6. Team Data Menu Maintenance**
- Delete old files
- Rename incorrect files
- Add files: Copy + paste team_data_sim_ui file name from mtl.how/data

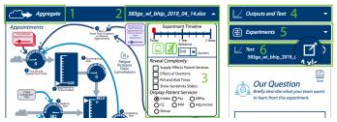
** Panels 5 & 6 are only visible for individual worlds or team leads in team worlds, and are NOT available in mtl.how/demo mode

Panels

1. Module name

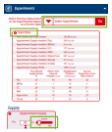
2. Team data uploaded for current sim

3. Experiment Timeline
Run experiment for 0-2yrs & show feedback stories.



4. Outputs & Text
View ≤6 variable trends overtime. Click on expand icon for full functions.

5. Experiments
- Select any previous run to set experimental sliders & Q/H/F/D text to that run.
- Team data table shows starting values for variables from your data.
- Move sliders from initial values to test a hypothesis.



6. Text
Enter Question, Hypothesis, Findings, & Decisions text. Click on expand icon in blue bar for full functions.

Troubleshooting

- Questions on variables? Click on "i" icon for variable info or "BC" for basecase values.

- Data not loading? Make sure .xlsx extension is included. - Rendering issues? Log-off completely and log back in.
- What do the colors means? Red means read in from team data. Green is for experiments that are important that we do not have enough data for. Purple is for experiments on sensitivity.
- Questions? Visit Help page on the Sim UI at mtl.how/sim or visit mtl.how.

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Updated 2019/05/09

Modeling to Learn

You can review data at *within VA* at mtl.how/data.

You can self-register and use the demonstration simulation to explore the suicide prevention module.

mtl.how/demo

- Self-register
  Course Code: cybersem
- Once registered go to:
  mtl.how/demo_login

Run Your Test

Click the icon to run your own simulation.

Please provide some information
so we can send you a login

Please note that your name, email and password will only be used to create your login credentials. You will have access to the simulation for 5 days, unless you were given a Course Code. Unless you choose to continue to receive updates about the Modeling to Learn program, the system will erase your information after 5 days.

*First Name?

*Last Name?

*Your email?

*Create a Password?

*Confirm your password?

*Your Institution? Please select

If other please specify >

*Your Role? Please select

If other please specify >

*Your Discipline? Please select

If other please specify >

*How did you find us? Please select

If other please specify >

Enter your course code >

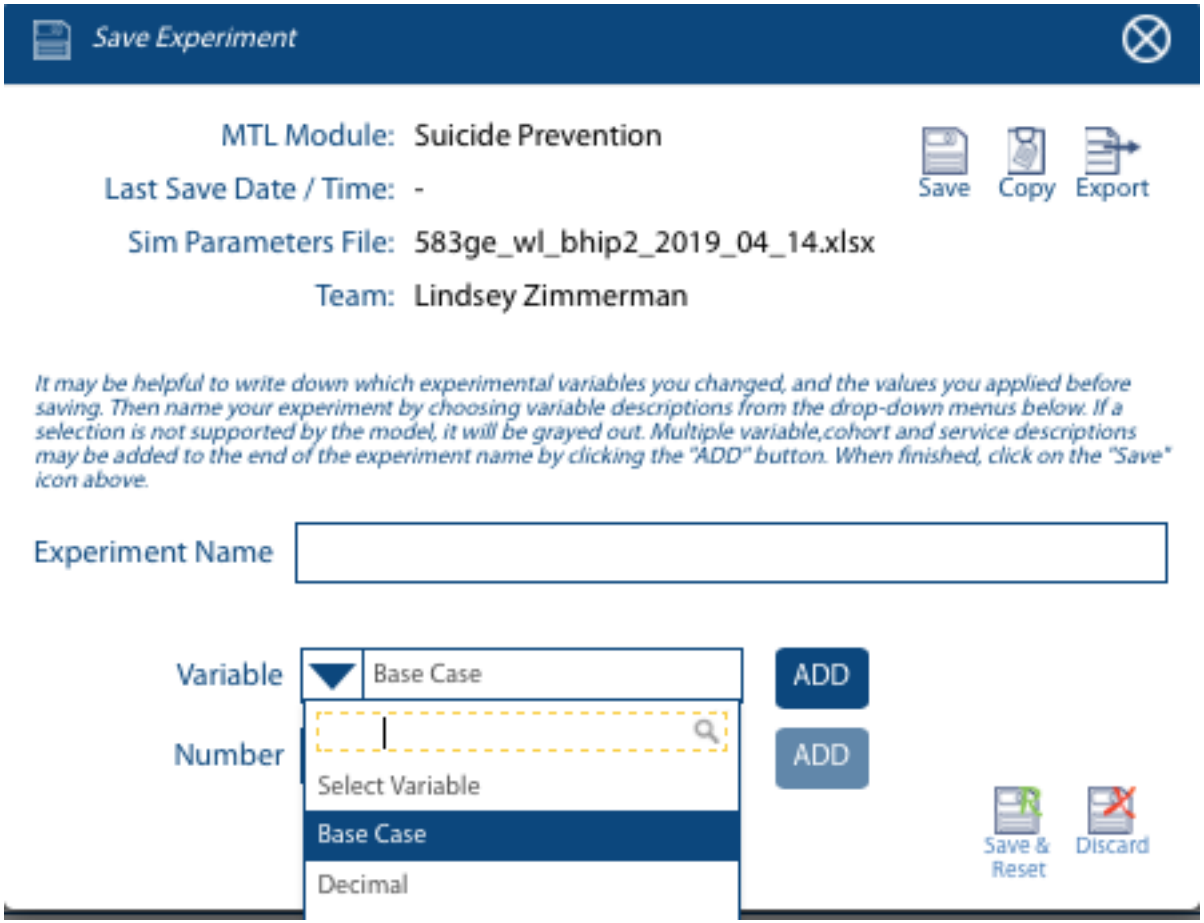
You do not need a course code. However, some users may have course codes for specific trainings.

Yes ☐ No ☐ Would you like email updates about *Modeling to Learn* quick tips and new releases?

mtl
mtl.how/demo

mtl.how/demo

*Once registered go to: mtl.how/demo_login



Help is available in top navigation bar.

mtl Lindsey Zimmerman HOME PLAY CHAT HELP LOGOFF Lindsey Zimmerman

PLAY

Model Diagram	Experiment Timeline	Outputs	Experiment
The blue header at the top shows the module and data file chosen. The rates (circles) and stocks (rectangles) update dynamically with changes in the experiment variables.  Throughout the model diagram, there are "I" icons to explain how the variable is calculated. 	Use reveal complexities to look at balancing and reinforcing feedback systems stories.  In the systems stories, there are two kinds of arrows. Plus signs mean trends move in the same direction. Minus signs mean trends move in the opposite direction.  	View trends over time for ≤6 variables **Text or Q/H/F/D** Enter Question, Hypothesis, Findings, and Decisions text for each experiment.  **Expanded Outputs** View Q/H/F/D Text and Results Dashboard at once  **Results Dashboard** View trends over time for ≤6 variables. Compare ≤2 experiments against current run.	**Select Experiment** Select previous experiments to cue up experiment values and q/h/f/d text from previous experiments. **Team Data Table** Shows initial starting values of experimental variables based on team data. **Experiment** Adjust experiment sliders to test different values in the sim by dragging the slider. 

Session 4 Bibliography

- **Barlas, Y.** (1996). Formal aspects of model validity and validation in system dynamics. *System Dynamics Review*, *12*(3), 183–210.
- **Hovmand, P. S.** (2014). *Community Based System Dynamics*. Retrieved from http://link.springer.com/10.1007/978-1-4614-8763-0
- **Sterman, J. D.** (2006). Learning from evidence in a complex world. *American Journal of Public Health*, *96*(3), 505–514.
- **Zimmerman, L., Lounsbury, D. W., Rosen, C. S., Kimerling, R., Trafton, J. A., & Lindley, S. E.** (2016). Participatory System Dynamics Modeling: Increasing Stakeholder Engagement and Precision to Improve Implementation Planning in Systems. *Administration and Policy in Mental Health and Mental Health Services Research*, *43*(6), 834–849. https://doi.org/10.1007/s10488-016-0754-1

mtl.how/refs

Additional Suicide Prevention Resources

https://www.mentalhealth.va.gov/suicide_prevention/resources.asp

Twenty helpful resources are available at the link for:

- Veterans and their Loved Ones
- Community Providers and Community Members
- VA Providers and Teams