***MTL* Sessions 9 and 10: Mutual Learning: Mutual Learning: Systems Thinking - Complex, Feedback, Behavior, Time**

Ask David to create scripts for this exercise. Resources needed: Draft 3 short team dialogues about AGG that each use all four dimensions of systems thinking. The readers of the dialogue wil be team PSD members. These sections of dialogue can come from the team meeting notes in the qualitative workgroup folder. Use the systems thinking codebook for reference.   The purpose is to  ask the MTL Facilitate Pilot learners to identify the dimensions of systems thinking present in the dialogue.  There should be at least one that has all four dimensions.

**Hypotheses and Finding Pairs**

[Scheduling grids: Allocating appointments across services] [Level 1]

H1: In the AGG model, increasing the number of appointments for any given service can change the 'service mix' for our team's patients. For example, we hypothesize that if we decrease the proportion of appointment slots for MM, we can increase the proportion of appointment slots for PSY.

[Scheduling grids: Allocating appointments across services] [Level 4]

F1: We found that by decreasing the proportion of appointments for MM, we were able to increase appointment slots for PSY, which decreased our backlog of PSY appts. We also found that it shortened the return visit interval for PSY, which increased our PSY graduation rate. However, we also found that the number of MM patients waiting to start increased from 0 to 4 people after two months.

[Overtime, quality, and burnout] [Level 3]

H2: We see that we have a large backlog of patients in PSY, which we believe is related to the loss of two psychologists on our team (turnover) within the last 12 months. We hypothesize that if our remaining two psychologists work a few more hours (say, 4 hours more per week, each), we will eliminate our backlog of PSY appts.

[Overtime, quality, and burnout] [Level 4]

F2: Working overtime decreased our backlog of PSY appts, but the effect was surprisingly slow, very gradual. We also observed that we caused more PSY patients to finish before getting the recommended number of PSY appts. We also saw how working more overtime would put our team at even greater risk for team member turnover. Decisions about how to improve service delivery in the AGG model for any given service requires careful appreciation of patient engagement goals for CC, MM and PSY patients, which can improve or exacerbate Work Pressure for the team, which can affect patient engagement patterns and team turnover. We see that there are many possible ways to manage appt backlogs, but that working overtime is not practicable in the long run.

[Meeting current demand without adding staff or compromising quality] [Level 3]

H3: We want to eliminate or minimize wait times for patients starting care in our team. We hypothesize that by extending the return visit interval for all of our MM patients, from, say, 26 weeks to 36 weeks, we can impact wait times for new patients.

[Meeting current demand without adding staff or compromising quality] [Level 2]

F3: Extending the return visit interval for all of our MM patients from 26 to 36 weeks allowed us to start all patients referred to our team within the standard two-week period.

[Improvements by service vs. improvements across the team overall] [Level 4]

H4: There are too many patients in PSY that either dropout before they should or that are staying in PSY for much longer than they should. We hypothesize that we can correct this problem of PSY patient engagement by ‘gently’ graduating all PSY patients served by our team who have received more than 15 PSY appts, which we expect will open up more PSY appt slots so that new PSY patients can be seen regularly (i.e., once a week) and graduate on time. This should help with early dropout as well as on time completion rates.

[Improvements by service vs. improvements across the team overall] [Level 3]

F4: We found that increasing the graduation rate for PSY patients who have had more than 15 PSY appts freed slots for other PSY patients and started to shorten the actual PSY return visit interval, which reduced wait times for PSY appts and also reduced our missed appt rate.

[Referrals] [Level 4]

H5: We would like to increase the number of patients we serve in our team, as we have just added two new staff members (a new social worker and a new psychologist). We hypothesize that we can take on a 50% increase in patient referrals for a 12 month period without working overtime and without increasing our missed appt rate (across all services: CC, MM, PSY and ADJ).

[Referrals] [Level 4]

F5: We found that a 50% increase in patient referrals was manageable if our staffing stayed constant. We found that we could support an effective return visit interval for PSY if we extended the return visit intervals for CC and MM. In general, we found that changing referral rates for any given service in the AGG model can impact the actual return visit intervals for multiple services, which in turn impacts appt wait times for existing patients and starting rates for new patients. This experiment underscored that we really do not have a lot of control over referral rates, but we have many ways to manage our existing service mix for patients.

**Levels of Systems Thinking (def):**

LEVEL 1 – Bi-variate relationships only. Open loop thinking.

LEVEL 2 – Multivariate interdependencies. Closed loop thinking.

LEVEL 3 – Multivariate interdependencies. Closed loop thinking with reference to change over time.

LEVEL 4 – Multivariate interdependencies. Closed loop thinking with reference to change over time. Generality of dynamics stated.

**AGG model feedback loops:**

1. Start delays affect treatment decisions (B)
2. RVI delays affect treatment decisions (B)
3. Wait times affect intake evaluations (B)
4. Fatigue increases patient dropout (B)
5. Overtime relieves work pressure (B)
6. Burnout increases team turnover (B)
7. Appt backlog extends return visit interval (B)

**Complexity, Feedback, Behavior, Time: C F B T**

**Complex.** The state or quality of being intricate, complicated, interactive with one or more than one time-dependent interdependent relationships among elements of a system.

**Feedback.** Circular processes. Mutual causality. A self-reinforcing relationship. Interdependency.

**Behavior.** [dynamic behavior] The pattern of change in a system over time. Can be discrete, or continuous, linear or non-linear. Can be positive (reinforcing; characterized by continuous growth or decline) or negative (balancing; characterized by oscillations, equilibrium, or goal-seeking).

**Time.** A period or horizon representing the past, present and/or future. A unit for measuring change in time (minutes, hours, days, months, quarters, years).

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