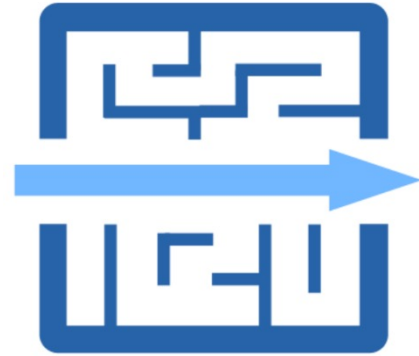


Make it Simple



but Significant

The role of a hospital pharmacist in addressing health literacy

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National Institutes of Health (NIA, NINDS, NINR, NIDDK, NHLBI)	Eli Lilly
Gordon & Betty Moore Foundation	Lundbeck
RRF Foundation on Aging	Merck, Sharpe & Dohme
Amgen	Pfizer

Consultation

Luto (UK)	Pfizer
GlaxoSmithKline	Sanofi
Merck, Sharpe & Dohme	

Questions – True or False?

1. An individual's cognitive abilities are a major determinant of health literacy skills.

T

F

2. Effective health literacy interventions seek to improve patients' cognitive function.

T

F

3. Most patient barriers to treatment adherence can be 'phenotyped' as either cognitive, psychological, medical, regimen-related, social or economic.

T

F

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- Division of General Internal Medicine & Geriatrics

▪ **Department of Surgery**

▪ **Department of Medical Social Sciences**

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CAHRA
Center for Applied Health Research on Aging

Overview

1. Making it Simple: A **Health Literacy** Research Agenda
2. ...But Significant: A **Healthcare Activation** Research Agenda
3. Next Steps: Advancing Public Health & Patient-Centered Healthcare

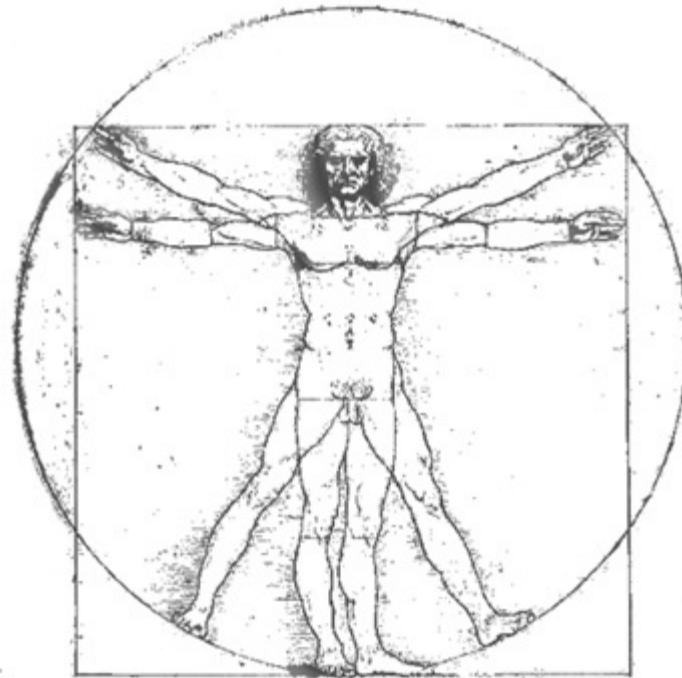
Confluence of 2 Age-related Problems

Body

80% of adults over 65 live with ≥ 2 chronic conditions (vs. 18%; 18-44 years)



Healthcare Demands



Mind


'Fluid' cognitive abilities necessary for self-care are known to decline with increased age.



Self-care Skills

Assumptions

1. A person's cognitive skills are a major determinant of health literacy skills
2. The requisite health literacy skills needed to successfully manage health is determined by the design, accessibility of a healthcare system
3. Reducing the 'cognitive burden' of healthcare means...
 - ✓ better communication
 - ✓ simplified patient roles
 - ✓ proactive, learning healthcare systems



*Confusing
People
Less*

Making it Simple.


Health Literacy Interventions


A Case Example





Universal Medication Schedule (UMS)

Take	1 pill in the morning (bedtime)
Take	1 pill in the morning 1 pill in the evening
Take	1 pill in the morning 1 pill at noon 1 pill in the evening
Take	1 pill in the morning 1 pill at noon 1 pill in the evening 1 pill at bedtime

 Morning: 6-8 am


 Noon: 11-1 pm


 Evening: 4-6 pm


 Bedtime: 9-11 pm


Universal Medication Schedule (UMS)

Take	1 pill in the morning (bedtime)
Take	1 pill in the morning 1 pill in the evening
Take	1 pill in the morning 1 pill at noon 1 pill in the evening
Take	1 pill in the morning 1 pill at noon 1 pill in the evening 1 pill at bedtime

 Morning: 6-8 am

 Noon: 11-1 pm

 Evening: 4-6 pm

 Bedtime: 9-11 pm

- Provides more explicit guidance as to when to take prescribed medicine
- Reduces variable prescribing, dispensing practices that lead to regimen complexity
- Aligns with a 'pill box' schema
- Evidence-based: multiple studies have found the UMS
 - reduces dosing errors
 - improves regimen efficiency
 - improves adherence (14% increase)
- Yet only 1 in 8 prescriptions written using UMS
- NCPDP, USP, NAM identify it as a best practice

MEDICATION SHEET FOR KIDNEY TRANSPLANT PATIENTS

Day	Date	Myfortic (Mycophenolate Sodium) 180mg tablets	*Prograf (Tacrolimus) 1mg capsules	Pep (Famc 20mg)
Monday	8/6/12			
Tuesday	8-7-12			
Wednesday	8-8-12			
Thursday	8-9-12			
Friday	8-10-12			
Saturday	8-11-12			
Sunday	8-12-12			
Monday	8-13-12			
Tuesday	8-14-12			

MetFORMIN HCl 500 MG T
Take 1 pill

Sig: (140 char max)

Dispense: Di

Start Date:

Class:

Comments (F6): (210 char max)



SOME IMPORTANT THINGS TO KNOW ABOUT YOUR MEDICINE	
Brand Name	Tradjenta
Also Known As	linagliptin
Purpose	This medicine helps control blood sugar in adults with type 2 diabetes.
Benefit	This medicine treats high blood sugar. It can help prevent damage to your eyes, kidneys, nerves, and heart.
How to Take	<ul style="list-style-type: none"> Take by mouth as directed by your doctor. Try to take your medicine at the same time each day. Take with or without food.
Warnings	<p>While you are taking this medicine:</p> <ul style="list-style-type: none"> Call your doctor if you have low or high blood sugar. Limit how much alcohol you drink. Do not take aspirin or St. John's Wort.
Ask Before Use	<p>Ask your doctor if it is safe for you to take this medicine if you:</p> <ul style="list-style-type: none"> are pregnant, trying to become pregnant, or breastfeeding. have allergies to any medicines or foods. take other medicines, vitamins, herbal products or supplements.
Common Side Effects	<ul style="list-style-type: none"> Sore throat Runny nose Cough Diarrhea Headache Stomach pain <p>These are common side effects for this medicine. Tell your doctor about any side effect that does not go away or gets worse.</p>
Serious Side Effects	<p>This medicine could cause low blood sugar (hypoglycemia). Some signs of low blood sugar are:</p> <ul style="list-style-type: none"> Nausea and vomiting Dry mouth Tingling lips Tremor Blurry vision Feeling more hungry than usual Feeling very dizzy Feeling anxious or unable to sit still Very bad headache Confusion Sweating more than usual Feeling unusually drowsy or weak Unusually fast or uneven heartbeat Fainting or losing consciousness <p>Check your blood sugar if you have any of these symptoms. If your blood sugar is below 70, drink a glass of juice or eat hard candies or glucose tablets. Check your blood sugar again in 15 minutes and repeat if necessary.</p> <p>You could be allergic to this medicine. Some signs of an allergy are:</p> <ul style="list-style-type: none"> Swelling of face, lips, tongue or throat Hard time breathing or swallowing Very bad rash or itching <p>These side effects might be signs of a serious problem. If you have any, call your doctor right away.</p>
For More Information	It is important to read all the information about your medicine you get from your pharmacy. If you have questions, ask your doctor or pharmacist. You can find more information at www.nlm.nih.gov/medlineplus



Simple and **Significant**

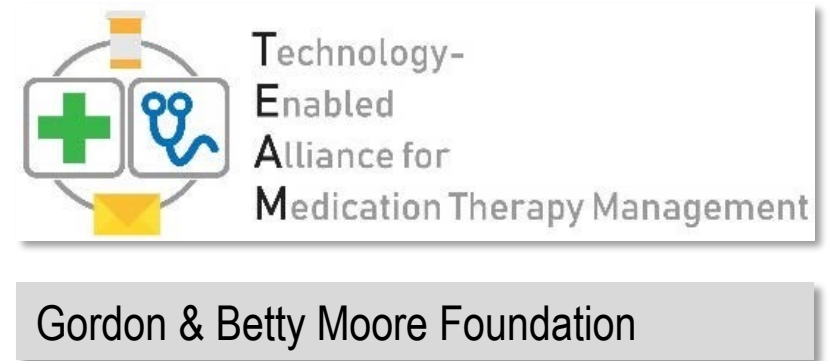
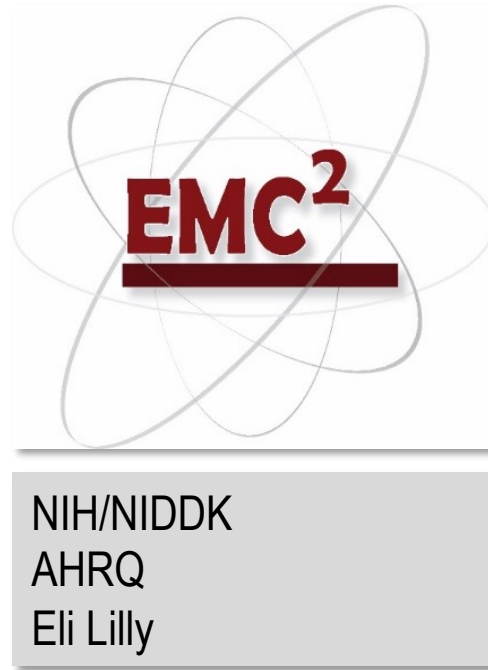
staying engaged with patients



beyond the point of care

Activated Healthcare System, Activated Patient/Family

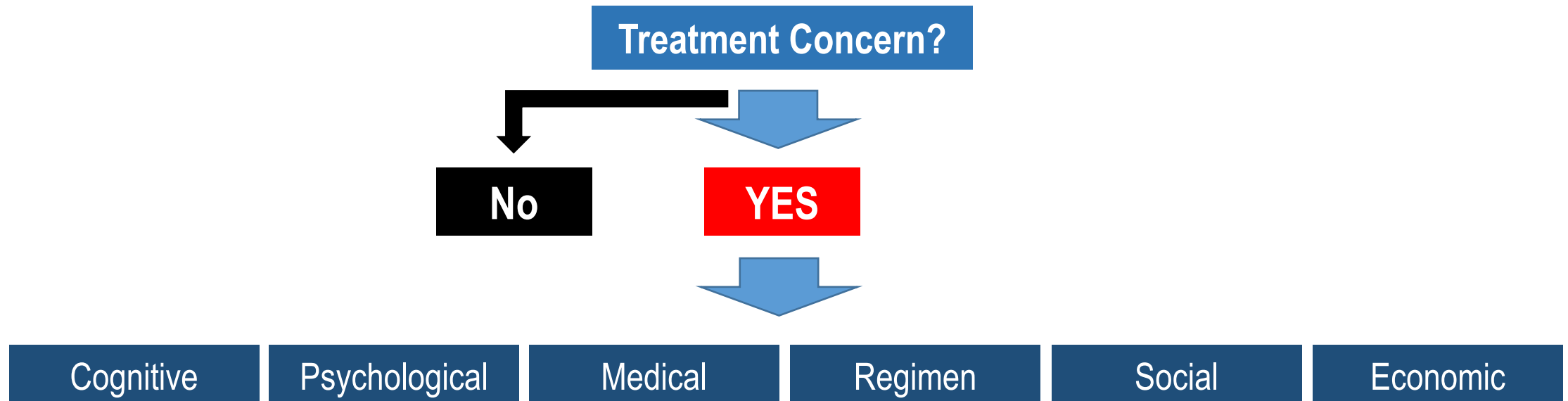
Some Current Projects



TAKE IT

Treatment Adherence among Kidney Recipients by Engaging Information Technologies

- Routinely monitor regimen use, adherence & persistence via EHR portal
- Provide 'adherence alerts' to transplant center with specific patient concerns
- Mobilize appropriate resources to map specific problems to tailored solutions



TAKE IT

1

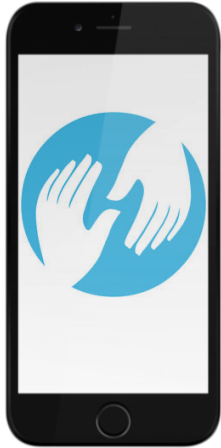
Mobile Med App
(Transplant Hero)



TAKE IT

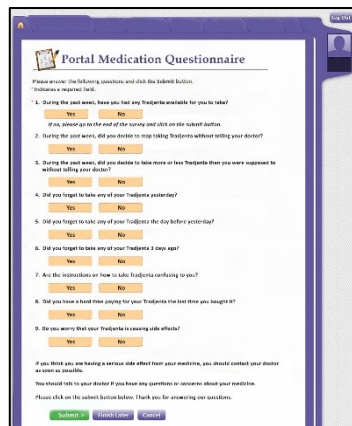
1

Mobile Med App
(Transplant Hero)



2

Monthly Assessment
(Patient Portal)



Portal Medication Questionnaire

Please answer the following questions and click the Submit button.
(Instructions are required text.)

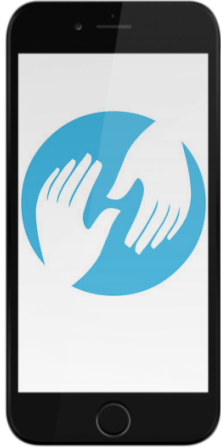
1. During the past week, have you had any Transplants available for you to take?
 Yes No
2. During the past week, did you decide to stop taking Transplants without telling your doctor?
 Yes No
3. During the past week, did you decide to take more or less Transplants than you were supposed to without telling your doctor?
 Yes No
4. Did you forget to take any of your Transplants yesterday?
 Yes No
5. Did you forget to take any of your Transplants the day before yesterday?
 Yes No
6. Did you forget to take any of your Transplants 2 days ago?
 Yes No
7. Are the instructions on how to take Transplants confusing to you?
 Yes No
8. Did you have a hard time paying for your Transplants the last time you bought it?
 Yes No
9. Do you worry that your Transplants is causing side effects?
 Yes No

If you think you are having a serious side effect from your medication, you should contact your doctor as soon as possible.
You should talk to your doctor if you have any questions or concerns about your medication.
Please click on the Submit button below. Thank you for answering our questions.

TAKE IT

1

Mobile Med App
(Transplant Hero)



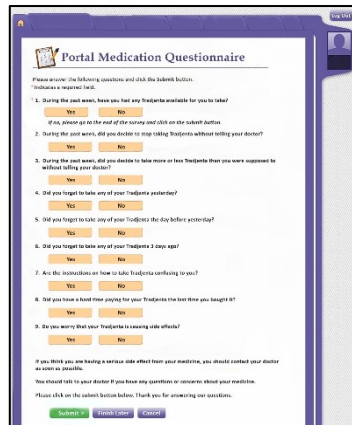
3

Transplant Nurse
Coordinator Triage



2

Monthly Assessment
(Patient Portal)



Portal Medication Questionnaire

Please answer the following questions and click the Submit button.
*Instructions are required text.

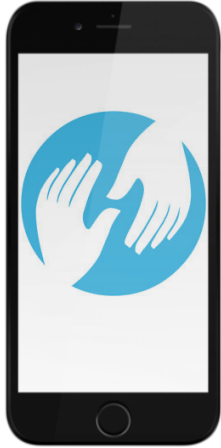
1. During the past week, have you had any Transplants available for you to take?
 Yes No
2. If Yes, answer up to the end of the survey and click on the Submit button.
3. During the past week, did you decide to stop taking Transplants without telling your doctor?
 Yes No
4. During the past week, did you decide to take more or less Transplants than you were supposed to without telling your doctor?
 Yes No
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TAKE IT

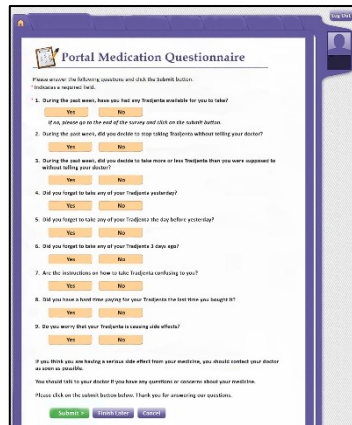
1

Mobile Med App
(Transplant Hero)



2

Monthly Assessment
(Patient Portal)



Portal Medication Questionnaire

Please answer the following questions and click the submit button.
*Indicates a required field.

- During the past week, have you had any Transplants available for you to take?
 Yes No
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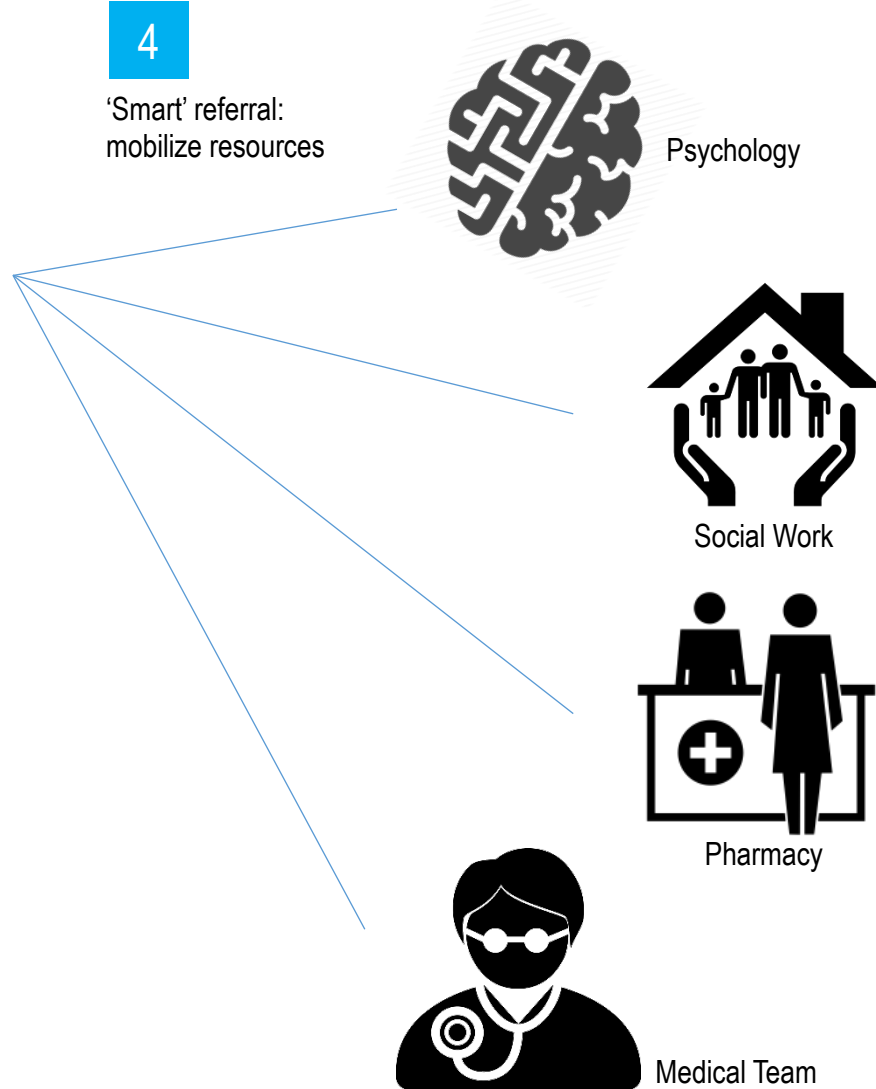
3

Transplant Nurse
Coordinator Triage



4

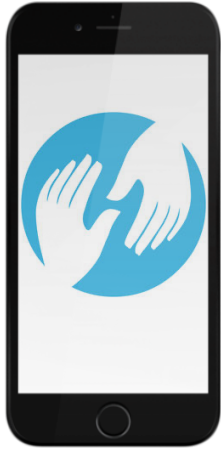
'Smart' referral:
mobilize resources



TAKE IT

1

Mobile Med App
(Transplant Hero)



2

Monthly Assessment
(Patient Portal)

Portal Medication Questionnaire

Please answer the following questions and click the submit button.
*Indicates a required field.

- During the past week, have you had any Tacrolimus available for you to take?
 Yes No
- During the past week, did you decide to stop taking Tacrolimus without telling your doctor?
 Yes No
- During the past week, did you decide to take more or less Tacrolimus than you were supposed to without telling your doctor?
 Yes No
- Did you forget to take any of your Tacrolimus yesterday?
 Yes No
- Did you forget to take any of your Tacrolimus the day before yesterday?
 Yes No
- Did you forget to take any of your Tacrolimus 2 days ago?
 Yes No
- Are the instructions on how to take Tacrolimus confusing to you?
 Yes No
- Did you have a hard time paying for your Tacrolimus the last time you bought it?
 Yes No
- Do you worry that your Tacrolimus is causing side effects?
 Yes No

If you think you are having a serious side effect from your medication, you should contact your doctor as soon as possible.
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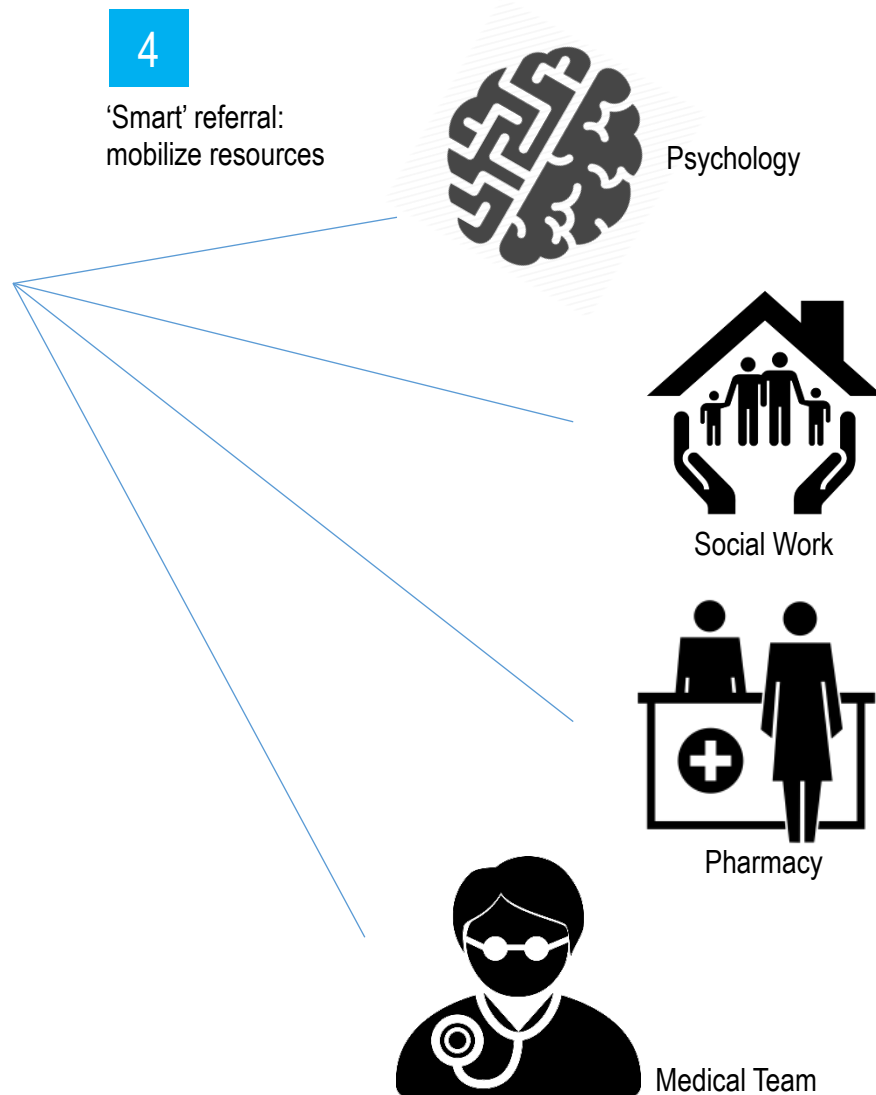
3

Transplant Nurse
Coordinator Triage



4

'Smart' referral:
mobilize resources



5

CoV Quarterly Report
(tacrolimus)

TAKE IT: Preliminary Fidelity Data

449 participants
enrolled in TAKE IT

224 randomized to
intervention arm

- Median age = 53 years (range 21 - 76)
- 58.4% male
- 19.2% African American
- Median time since transplant = 202 days (range 23 - 1,091)

Online Adherence Assessment Completion

449 participants
enrolled in TAKE IT

224 randomized to
intervention arm

162 completed initial
adherence assessment

72.3% of recipients completed the initial online adherence assessment

Comparing participants who DID NOT complete vs. DID complete initial assessment:

- No significant differences in age, gender, race, or time since transplant
- But had **lower health activation** ($p = 0.056$), **health literacy** ($p = 0.090$), **education** ($p = 0.018$), and **household income** ($p = 0.006$)

Online Adherence Assessment Completion

449 participants
enrolled in TAKE IT

224 randomized to
intervention arm

162 completed initial
adherence
assessment

56 at risk for
inadequate
adherence

Among those who completed the initial assessment, **34.6% were at risk for inadequate adherence.**

Common barriers to adherence:

- Regimen (44.6%)
- Cognitive (26.8%)
- Medical (19.6%)
- Psychological (16.1%)

Online Adherence Assessment Completion

449 participants
enrolled in TAKE IT

224 randomized to
intervention arm

202 exposed to TAKE
IT for 3+ months

Online Adherence Assessment Completion

449 participants enrolled in TAKE IT

224 randomized to intervention arm

202 exposed to TAKE IT for 3+ months

81% completed **at least 1 assessment.**

Monthly assessment completion rates:

- 57% completed all 3 assessments
- 16% completed 2 assessments
- 8% completed 1 assessment
- 19% completed none

Evaluate **repeat completion** of monthly assessments

	Total	
Participant Characteristics	n=164	%
Any Adherence Concern		
No	82	50.0%
Yes	82	50.0%
Average # of Concerns	1.13	
Flagged for 2+ concerns	26	31.7%
Total Adherence Concerns		
	n=93	%
Adherence Concern Type		
Cognitive	42	45.2%
Regimen	26	28.0%
Medical	25	26.9%
Psych	16	17.2%
Economic	5	5.4%
Social	4	4.3%

50% of intervention participants were at risk for inadequate adherence at some point over the three-month assessment period.

- **Average of 1.13** adherence concerns (range 1 - 5)
- 26 (**31.7%**) of participants **flagged for 2+ adherence concerns**

Most commonly reported barriers:

- Cognitive (45.2%)
- Regimen (28.0%)
- Medical (26.9%)



Technology-Enabled Alliance for Medication Therapy Management

- Meaningful sharing of EHR with pharmacies to:



Reconcile medication regimens
Perform medication reviews

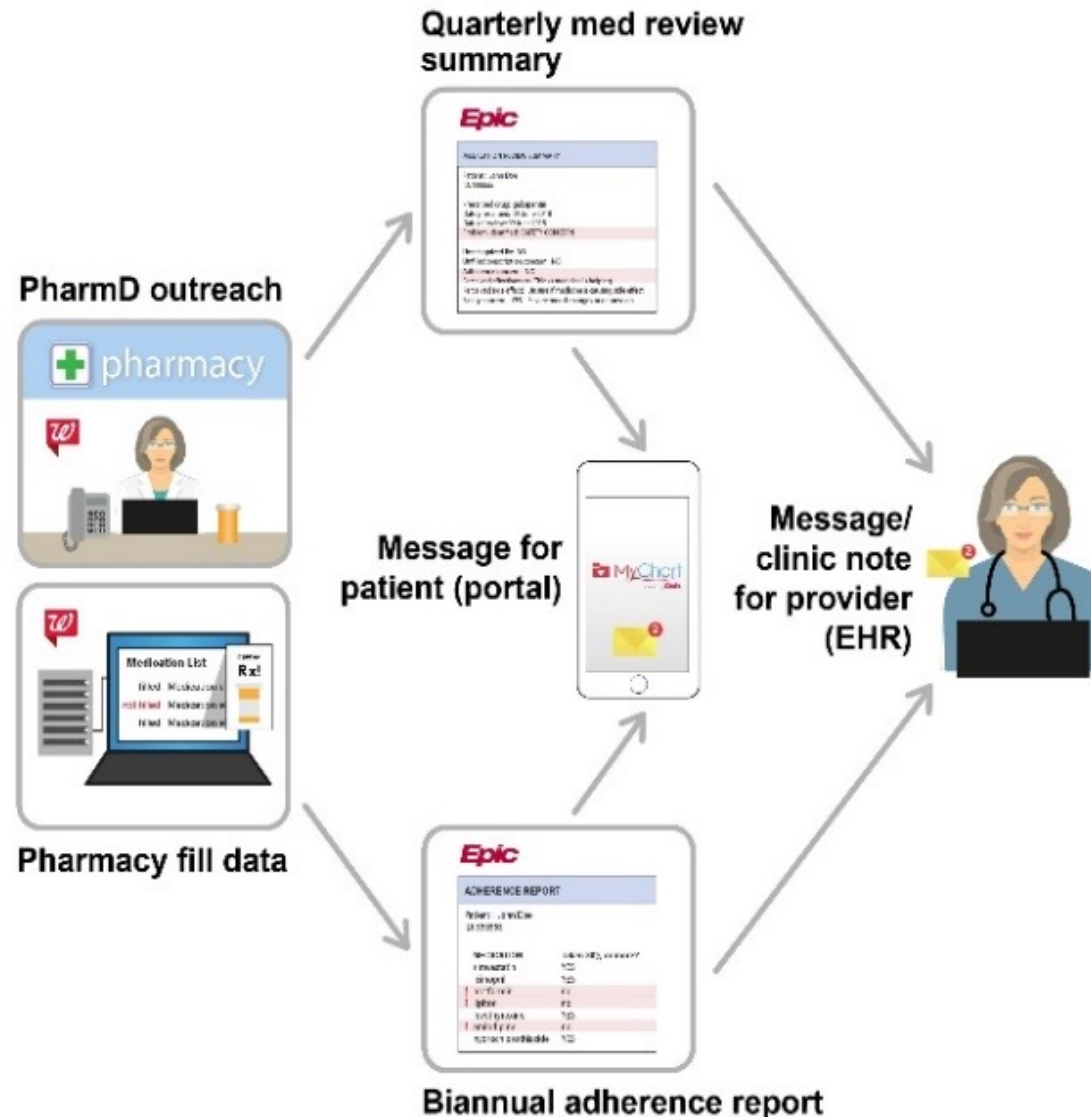


Provide adherence alerts, updates



Offer clinical decision support

TEAM Communication & Information Flow



Take Home Messages

- Direct more attention to the 'user interface' of healthcare
 - *Strong evidence base of health literacy best practices*
- Create opportunities to keep patients engaged
 - *leverage technologies, offer multiple modalities*
- Identify/classify individuals at risk
 - *screen for low health literacy, low 'activation'?*
 - *allocate more resources to those most in need*

Thank You!



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Associate Division Chief

General Internal Medicine & Geriatrics

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