Moving upstream to achieve the Quadruple Aim

Rishi Manchanda MD MPH

@RishiManchanda
Objectives

• Describe the importance of upstream social determinants to the Quadruple Aim
• Describe at least two non-medical determinants of patient health
• Describe how QI and practice redesign can help operationalize changes needed to move healthcare upstream
• Improve readiness to move upstream
Quadruple aim

Outcomes
• Effective interventions
• Less preventable illness
• Decreased disparities

Patient Experience
• Satisfaction
• Quality
• Trust

Provider Experience
• Professionalism
• Joy at Work
• Recruitment & Retention

Costs
• Lower per-capita costs
• Appropriate spending & utilization

Equity
• Societal opportunity
• Decision making
• Structural Fairness

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A Medical-Legal Partnership for ‘High Utilizer’ Homeless Veterans

The care team includes a doctor, attorney, social worker, clerk, and nurse.
Lopsided

US has a lopsided health: social services ratio

Health Systems Improvement
- Performance Management/Quality Improvement
- Practice Transformation
- Payment Reform

Upstream Medicine

Population Medicine
- Preventive Medicine
- Social Medicine
- Community-Oriented Primary Care

Social Determinants of Health
- Public Health
- Community Development
- Social Services

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More community ‘social capital’ associated with lower mortality

Differences in county mortality rates associated with comprehensive population health system capital, 2014.


©2016 by Project HOPE - The People-to-People Health Foundation, Inc.
## Housing as a health intervention

<table>
<thead>
<tr>
<th>Upstream Intervention</th>
<th>Target Population</th>
<th>Healthcare Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Housing First</strong></td>
<td>People experiencing chronic homelessness—Seattle and Boston</td>
<td>$29,388 per person per year in net savings, and $8,949 per person per year in net savings, respectively (Larimer, 2009; MHSA, 2014)</td>
</tr>
<tr>
<td><strong>Special Homeless Initiative</strong></td>
<td>Adults with serious mental illness—Boston</td>
<td>93% reduction in hospital costs, resulting in $18 million reduction in health care costs annually (Levine, 2007)</td>
</tr>
<tr>
<td><strong>10th Decile Project</strong></td>
<td>High-need homeless—Los Angeles</td>
<td>72% reduction in total health care costs; positive ROI - Every $1 invested in housing and support estimated to reduce public &amp; hospital costs by $2 the following year and $6 in subsequent years (Burns, 2013)</td>
</tr>
<tr>
<td><strong>My First Place</strong></td>
<td>Foster care recipients—California</td>
<td>Better health outcomes; $44,000 per person per year in net savings (First Place for Youth, 2012)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Upstream Intervention</th>
<th>Target Population</th>
<th>Healthcare Outcomes</th>
</tr>
</thead>
</table>
| **Women, Infants, and Children (WIC)** | Low-income women and children—selected cities and states (U.S.) | Better health outcomes; $176 million per year in net savings in U.S.  
Foster, Jiang, & Gibson-Davis, 2010; Khanani et al., 2010; Hoynes, Page, & Stevens, 2009 |
| **Home-delivered meals**      | Older adults—nationwide                                 | A 1% increase in meals delivered to the homes of older adults was estimated to be associated with reduction of $109 million in Medicaid costs;  
A $25 annual increase in home-delivered meals per older adult was estimated to be associated with a 1% decline in nursing home admissions  
Thomas & Mor, 2013a; Thomas & Mor, 2013b; Thomas & Dosa, 2015 |
The impact of linking social & healthcare services (moving upstream)

<table>
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<tr>
<th>Upstream Intervention</th>
<th>Target Population</th>
<th>Outcomes</th>
</tr>
</thead>
</table>
| “Effects of Social Needs Screening and In-Person Service Navigation on Child Health: A Randomized Clinical Trial” Pediatrics, 2016. | 1809 children, enrolled in primary care and urgent care settings | At 4 months after enrollment, the number of social needs reported by the intervention arm (navigation) decreased more than that reported by the control arm, with a mean (SE) change of −0.39 (0.13) vs 0.22 (0.13) ($P < .001$).

Caregivers in the intervention arm reported significantly greater improvement in their child’s health, with a mean (SE) change of −0.36 (0.05) vs −0.12 (0.05) ($P < .001$). |

Healthcare payers are considering upstream factors

• Affordable Care Act ➔ More coverage for millions of people with health–related social needs

• Value-Based Payment reform and Alternative Payment Models (bundled payments, ACOs, MACRA)

• Payers are considering upstream factors
  • CMMI Accountable Health Communities
  • Health Plans / Managed Care Organizations
  • Self-insured Employers
Building Medicaid Managed Care Systems that Address Social Determinants of Health:
A Case Study Synthesis
February 2016
Findings

Medicaid managed care leaders describe investments in social determinants of health in terms that reflect components of the Triple Aim.
Findings

Improved health care quality:

“We can’t do the work we’ve been charged with and do it well unless we figure [social determinants of health] out.”
Findings

Improved patient care experience:

“We [address social determinants because we] want to have high levels of consumer engagement [and] high levels of consumer satisfaction, which is the most important benchmark for me.”
Decreased costs:

“We don’t go into this as if we were making grants. We go into this more as if we were making business investments.”
Our healthcare workforce is asking for help

“'I'm a primary care pediatrician in [a rural county]. Highest teen preg rate, meth addiction, high school drop out rate... Many more issues.

Understand upstream approach for years. Try my best but falls by the wayside as I don't have resources - No help, city/ county overwhelmed.

Patients lost to follow up- I'm seeing over 30 a day. How to manage? Would like to discuss.”
Survey of over 500 primary care clinicians

"My clinic has the resources, such as dedicated staff, community programs, resources or tools to address patients’ social needs"

After multivariate analysis, lower perceived capacity of clinics to address social needs was the strongest predictor of clinician burnout.

Social factors account for 60% of premature death & impact the Quadruple Aim

But only 1 in 5 MDs have confidence to address them

Robert Wood Johnson Foundation
“Health Care’s Blind Side” December 2011

No social determinants integration = No Quadruple aim

Poorer Outcomes
- Less effective interventions
- Preventable illness
- Health disparities

Poor Patient Experience
- Frustration & Helplessness
- Costs of Care
- Distrust

Higher Costs
- Wasteful spending
- Opportunity costs
- Avoidable utilization

Poor Provider Experience
- Eroding Professionalism
- Poor recruitment & retention
- Burnout

Less equity
- Decreased opportunity
- Structural violence
- Inequity
“I get it.

So how do we this?"

- Healthcare leaders & professionals
Objectives

• Describe the importance of upstream social determinants to the Quadruple Aim
• Describe at least two non-medical determinants of patient health
• Describe how QI and practice redesign can help operationalize changes needed to move healthcare upstream
• Improve your readiness to move upstream
Let’s start with a Case Study

• Mr. M is a 51 year old father of two, diagnosed with Type II diabetes at age 38. Last HbA1c = 8.2. BMI: 29

• Medications:
  - Metformin 1000mg po bid
  - Glipizide 10mg po bid
  - No known problems with medication adherence.

• At the end of last month, he was extremely dizzy, nearly fainted and was hospitalized. Diagnosis: Hypoglycemia
What could have led to Mr. M’s hospitalization?
What Could Have Led to Mr. M’s Hospitalization?

Food Insecurity

Poor Dietary or Exercise Habits

Medications
Creative Commons "Some People Contemplate Their Navel" by Gregg Taveres is licensed under CC BY 2.0.
Food Insecurity

- **Food insecurity** reflects the inability to access food because of inadequate finances or other resources

- **Hunger** is a related individual – level physical sensation

- **One in seven Americans cannot reliably afford food**

Food insecurity: A driver of preventable disease & high cost healthcare utilization


Lower-income diabetic adults have a 27% higher rate of hospital admissions due to end-of-the month food insecurity, compared with higher-income diabetics. Seligman HK, et al. Health Affairs. 2014;33(1):116–23.;

More than half of patients with high hospitalization rates (at least 3 inpatient visits in a 12-month period) were food insecure or marginally food secure. 75% were unable to shop for food on their own and 58% were unable to prepare their own food. (Philadelphia)
To achieve the Quadruple Aim, where do we start?
Let’s

1) Get Ready,

2) Get Set, &

3) Go Upstream

for Mr. M and other at-risk diabetic patients
1) Get Ready
Assess the maturity of your clinic processes & environment to address social determinants of health

2) Get Set
Engage colleagues, key stakeholders, and community partners to plan

3) Go Upstream
Launch targeted campaigns using ‘Upstream Quality Improvement’

Build system capability to support tools/best practices to address patients’ social needs & connect to resources

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# Upstream Readiness Assessment For Health Care Systems

<table>
<thead>
<tr>
<th>Question</th>
<th>Limited or unclear</th>
<th>Moderate</th>
<th>Robust</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is the <strong>environment favorable</strong> for your organization to address social determinants of health?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What’s the <strong>perceived value</strong> of a change to assess and address social determinants of health?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Do you have <strong>executive sponsorship</strong> to advance social determinants interventions?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How established are <strong>team roles and ownership</strong> for your social determinants intervention(s)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. How well defined is (are) the <strong>scope</strong> of your social determinants intervention(s)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. How <strong>well managed</strong> is (are) your social determinants intervention(s)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. How <strong>well integrated</strong> are social determinants of health with care delivery?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. How well developed are your <strong>Continuous Quality Improvement</strong> (CQI) processes?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. How mature are your <strong>information systems and human resources</strong> systems?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. What is your <strong>financial readiness</strong> for social determinants of health interventions?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Get Set:

1. Review the readiness assessment results.
Where are we ready? What can be done?
Get Set:

2. Who are your healthcare-based upstreamists?
A workforce model for US healthcare

By 2020,

25,000

260,000

450,000

Healthcare system responsibility for population medicine

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Get Set:

3. Whose are your upstream partners?

Can we describe non-medical “specialists” in the community by name, capacity, services?

For example:
For Mr. M and people like her suffering poor healthcare outcomes due to food insecurity, can you partner with a local food bank? Which one?
Get Set:

4. Review upstream data collection

**Conceptual Model for SDH in Primary Care**

Housing and Health

• Overlaying health and housing data spurs pattern recognition
• Cincinnati Child Health Law Partnership (Child HeLP)

Healthcare data alone
Housing data alone
Merged data

44 children (25% asthma)
33 children (24% asthma)
45 children (36% asthma)

Avondale Neighborhood
General Pediatrics Patients
Asthma patients
- No
- Yes

Housing code violation density
- Low
- Low-medium
- Medium
- Medium-high
- High

Courtesy: Cincinnati Children’s Hospital
CCHMC Inpatient Days-Excludes Mental Health
YTD Inpatient Days per 1000 Population
General Pediatric Patients Age 0 up to 18 Residing in Avondale
Excludes Patients with LOS > 14 Days

Modified run-chart to track progress

Active population: ~1,550

Bed Days per 1,000 Patients

FY 17 Month and Population

Green Threshold  Yellow Threshold  YTD Bed Days per 1000  Target Based on Sustaining 10% Reduction from FY 15

Courtesy: Cincinnati Children’s Hospital
Get Set: 5. Optimize segmentation and risk stratification using upstream data

The overall risk is rarely useful. The risk must be phenotyped into specific actionable categories, to allow for intervention mapping and execution.

In this example, individuals in the lower right quadrant have high overall risk but it is driven by social factors, not clinical factors. Suggesting different interventional pathways.

Explanatory Modeling: Avoidable Hospitalizations

Courtesy: Ruben Amarasingham, PCCI
Go Upstream
using Upstream Quality Improvement (Upstream QI)
Upstream QI example
“FoodRx: A campaign to reduce hospital admissions among our patients”

- Improve Screening of Food Insecurity among diabetics by 30% within 6 months
- Improve Provider Confidence to address Food Insecurity by 30% within 6 months
- Reduce Hospital admissions among food-insecure patients by 30% within 18 months

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## Screening for Food Insecurity

1. Within the past 12 months, we worried whether our food would run out before we got money to buy more. (Yes or No)

2. Within the past 12 months, the food we bought just didn't last, and we didn't have money to get more. (Yes or No)
<table>
<thead>
<tr>
<th>Food insecurity</th>
<th>Upstream QI committee</th>
<th>Project Team oversees &amp; tracks PDSAs</th>
<th>“Upstream Project Canvas”</th>
<th># QI team participation # PDSAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen</td>
<td>Medical Assistant</td>
<td>Ask during vitals of diabetics</td>
<td>2-item food insecurity screener</td>
<td>% screened</td>
</tr>
<tr>
<td>Triage</td>
<td>Medical Assistant</td>
<td>Flag in EMR</td>
<td>Triage Protocol</td>
<td>% positive % flagged</td>
</tr>
<tr>
<td>Exam</td>
<td>PCP</td>
<td>Adjust / create treatment plan</td>
<td>EMR care plan</td>
<td>% plans updated</td>
</tr>
<tr>
<td>Chart/Code</td>
<td>Medical Assistant</td>
<td>Scribe, standing order to refer to SW</td>
<td>EMR</td>
<td>% internal referrals</td>
</tr>
<tr>
<td>Refer</td>
<td>Certified Case Manager</td>
<td>Assess / Food bank referral</td>
<td>Resource database (e.g. Healthify)</td>
<td>% referred</td>
</tr>
<tr>
<td>Follow-up</td>
<td>Certified Case Manager</td>
<td>Q1month or more check-in based on risk</td>
<td>EMR CRM (e.g. Healthify)</td>
<td>% decrease in food insecurity &amp; utilization</td>
</tr>
</tbody>
</table>
Upstream Risks Screening Tool

“Everyone deserves the opportunity to have a safe, healthy place to live, work, eat, sleep, learn and play. Problems or stress in these areas can affect health. We ask our patients about these issues because we may be able to help.”

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>For Staff only: Review</th>
<th>Referral Plan Complete?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What's your name?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>First Last</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What's your date of birth?</td>
<td>Day Month Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1a. What is the highest level of school you have completed? Check one.</td>
<td>Elementary School</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High School</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>College</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graduate / Professional School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b. What is the highest degree you earned? Check one.</td>
<td>High school diploma</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GED</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vocational certificate (post high school or GED)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Associate’s degree (junior college)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Bachelor's degree</td>
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<tr>
<td></td>
<td>Master's degree</td>
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<td></td>
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<tr>
<td></td>
<td>Doctorate</td>
<td></td>
<td></td>
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<tr>
<td>1c. Are you concerned about your child’s learning, performance, or behavior in school?</td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Choose one of the following. Which best describes your current occupation?</td>
<td>Homemaker, not working outside the home</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employed (or self-employed) full time</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employed (or self-employed) part time</td>
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<tr>
<td></td>
<td>Employed, but on leave for health reasons</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Employed but temporarily away from my job (other than health reasons)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


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*Several domains have been adapted from Institute of Medicine. 2014. Capturing social and behavioral domains and measures in electronic health records: Phase 2. Washington, DC: The National Academies Press.*
<table>
<thead>
<tr>
<th>UPSTREAM TOOLS</th>
<th>Screen</th>
<th>Find Resource</th>
<th>Referral Manage</th>
<th>EMR Integrate</th>
<th>Risk Model</th>
<th>Community/ Patient Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Healthify</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>#</td>
<td>#</td>
<td></td>
</tr>
<tr>
<td>• Health Leads</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>#</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Help Steps</td>
<td>+</td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Purple Binder</td>
<td>+/-</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Aunt Bertha/ OneDegree</td>
<td>+/-</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Community Detailing- HB</td>
<td></td>
<td>+</td>
<td></td>
<td></td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>• CommunityRX</td>
<td>+/-</td>
<td>+</td>
<td>+/-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Forecast Health</td>
<td></td>
<td>+</td>
<td></td>
<td>+/-</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>• PCCI</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+/-</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>Enterprise – Built</td>
<td></td>
<td>+</td>
<td></td>
<td>+</td>
<td></td>
<td>+/-</td>
</tr>
<tr>
<td>County 211 / Other</td>
<td></td>
<td></td>
<td></td>
<td>+</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Find help now.

Add a new resource

Evergreen Treatment Services - Substance Abuse Services

Updated 8 months ago

1700 Airport Way S
Seattle, WA 98134
(206) 223-3644

Substance Abuse Treatment
Medical Care
Pregnancy Help
Family Counseling
General Counseling
Shelter or Temporary Housing

Offers outpatient drug treatment with assessment and treatment planning, individual and group counseling and Drug Diversion Court...Read More
First Presbyterian Church of Brooklyn
124 Henry Street
Brooklyn, NY 11201
Directions to this Site
Updated 12 months ago.
(212) 333-4421
local@example.com
http://www.local_site.com

Hours
No business hours listed.

Refer to First Presbyterian Church of Brooklyn
Select a Resource Program
Food Pantry

Select a Patient
Jayce Bartell
Submit Referral

Overview
Description
Resource Programs
# Upstream QI matrix

## Example: Diabetes & Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>Patient/Team Level</th>
<th>Health Care Organization Population-Level</th>
<th>General Population-Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Prevention</strong></td>
<td>Financial literacy, support, &amp; nutrition programs for low-income families with strong family history of DM</td>
<td>Provide on-site Farmers’ Market, gym, walking trails, or financial counseling for families at risk for DM</td>
<td>Advocate for local increase in minimum wage and supports for low-income families, particularly those at risk of DM</td>
</tr>
<tr>
<td><strong>Secondary Prevention</strong></td>
<td>Poverty screening &amp; financial assistance for DM patients at-risk of end-of-month hypoglycemia</td>
<td>Subsidize vouchers to local Farmer’s Market or hire a financial counselor for low-income DM patients</td>
<td>Change timing and content WIC &amp; school food programs to avoid food insecurity among DM</td>
</tr>
<tr>
<td><strong>Tertiary Prevention</strong></td>
<td>Reduce hospital use among high-utilizer severe diabetics using food and income support</td>
<td>Coordinate with local banks, collectors, lenders, to reduce debt burden for utilizer diabetics</td>
<td>Support legislation/regulations to provide financial and “hotspotter” services to severe diabetics</td>
</tr>
</tbody>
</table>

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Upstream Medicine Example: Tertiary Prevention, Patient-level

“Food Pharmacy”
- On campus of ProMedica Toledo Hospital in Ohio
- Accepts patients with a physician referral, offering them 2-3 days’ worth of food per visit. Monthly followup x 6 months.
- Nutrition counseling, Healthy recipes, connection to community resources

“The food pharmacy will be able to provide [diabetics] access to the necessary food to help stabilize their medical condition and keep them healthier”

A Hospital based ‘Food Pharmacy’

Source: http://alliancetoendhunger.org/promedicas-food-pharmacy/ Accessed 4/01/16
1) Get Ready
Assess the maturity of your clinic processes & environment to address social determinants of health

2) Get Set
Engage colleagues, key stakeholders, and community partners to plan

3) Go Upstream
Launch targeted campaigns using ‘Upstream Quality Improvement’

Build system capability to support programs, tools, & best practices to address patients’ social needs & connect to resources
Move Upstream to the Quadruple aim

Outcomes
- Effective interventions
- Less preventable illness
- Decreased disparities

Patient Experience
- Satisfaction
- Quality
- Trust

Provider Experience
- Professionalism
- Joy at Work
- Recruitment & Retention

Costs
- Lower per-capita costs
- Appropriate spending & utilization

Equity
- Societal opportunity
- Decision making
- Structural Fairness
Improving patient engagement by moving upstream

• When applying ‘Upstream’ QI → GOOB
  • Get Out Of the Building to quickly validate or invalidate assumptions about health-related social needs

• Upstream’ QI teams should include case managers, relevant social service providers and community representatives

• Use “Community Health Detailing” model to include and leverage constituents’ community expertise to increase provider knowledge, capacity and efficacy