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 how QI and practice redesign can help operationalize changes needed to move healthcare upstream
• Describe best practices for:
  • Patient engagement approaches that can improve how upstream information can be used
  • Provider and staff training
  • Sharing upstream data to bolster local partnerships required to achieve whole person care
• 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
• Coalesce around a common civic purpose – transform traditional service providers and institutions into catalysts of civil society.

• Increase performance management capabilities & human capital development in the social sector as an “upstream” force multiplier in education, housing, food security, transportation, and other areas of action

• As healthcare and social service spending is rebalanced, we should not underestimate the degree of waste, missed opportunity, and suffering that results when these sectors remain siloed
A Medical-Legal Partnership for ‘High Utilizer’ Homeless Veterans

The care team includes a doctor, attorney, social worker, clerk, and nurse.
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
Cross-sector work creates more robust community social capital

Density of relationships among organizations contributing to population health activities.


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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.


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A Library as a Hub for Health

Free Library of Philadelphia:
Of the 5.8 million in-person Free Library visits in 2015, 500,000 included attendance at specialized programs that addressed multiple health determinants, such as housing and literacy.
If a library can be a health hub, how about a school, barbershop, or a home?

# Housing as a health intervention

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

## Food and nutrition as health interventions

<table>
<thead>
<tr>
<th>Upstream Intervention</th>
<th>Target Population</th>
<th>Healthcare Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women, Infants, and Children (WIC)</td>
<td>Low-income women and children—selected cities and states (U.S.)</td>
<td>Better health outcomes; $176 million per year in net savings in U.S. Foster, Jiang, &amp; Gibson-Davis, 2010; Khanani et al., 2010; Hoynes, Page, &amp; Stevens, 2009</td>
</tr>
<tr>
<td>Home-delivered meals</td>
<td>Older adults—nationwide</td>
<td>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 &amp; Mor, 2013a; Thomas &amp; Mor, 2013b; Thomas &amp; Dosa, 2015</td>
</tr>
</tbody>
</table>

The impact of linking social & healthcare services (moving upstream)

<table>
<thead>
<tr>
<th>Upstream Intervention</th>
<th>Target Population</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Effects of Social Needs Screening and In-Person Service Navigation on Child Health: A Randomized Clinical Trial” Pediatrics, 2016.</td>
<td>1809 children, enrolled in primary care and urgent care settings</td>
<td>At 4 months after enrollment, the number of social needs reported by the intervention arm decreased more than that reported by the control arm, with a mean (SE) change of $-0.39 (0.13)$ vs $0.22 (0.13)$ ($P &lt; .001$). 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 $-0.12 (0.05)$ ($P &lt; .001$).</td>
</tr>
</tbody>
</table>

Healthcare payers are considering upstream factors

• Affordable Care Act ➔ More coverage for millions of people with more social needs

• Value-Based Payment reform and Alternative Payment Models (bundled payments, ACOs, MACRA) ➔ Healthcare providers financially accountable for health and costs of care

• Payers are considering upstream factors
  • CMMI Accountable Health Communities
  • California Accountable Communities for Health Initiative (CACHI)
  • 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 MCO 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.”
Findings

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.”
Identifying upstream risks at the workplace

- Across the US, half of large employers either offer employees the opportunity or require them to complete biometric screening. [Health Aff (Millwood), 2015 Oct;34(10):1779-88. doi: 10.1377/hlthaff.2015.0885.]

Biometrics nationally

- California Central Valley employees screened: 87%
- Diabetes 11%.

Biological risks

- We added 4 SDOH questions to the biometrics:
  - Financial, Food and Housing Insecurity
- 10% of employees identified with biological, psychological AND social health risks

Social risk identified

Acting on upstream issues as a self-insured employer

- Targeted care management through primary care onsite clinics with integrated psychosocial services
- Community benefits & corporate philanthropy
- Evaluation, risk models, and value contracting
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.”
Lopsided

US has a lopsided health: social services ratio

Burnout & clinic capacity to address social determinants of health

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.

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?”
Objectives

• Describe the importance of upstream social determinants to the Quadruple Aim

• Describe how QI and practice redesign can help operationalize changes needed to move healthcare upstream

• Describe best practices for:
  • Patient engagement approaches that can improve how upstream information can be used
  • Provider and staff training
  • Sharing upstream data to bolster local partnerships required to achieve whole person care

• 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
Food Insecurity & Diabetes

• Food insecurity reflects the inability to access food because of inadequate finances or other resources
  • Hunger is related as an individual – level physical sensation
  • One in seven Americans cannot reliably afford food

• The risk of diabetes is about 3X higher in very food-insecure households compared to food-secure households, after accounting for differences in socioeconomic status and obesity.

Food insecurity is a driver of preventable, 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. (Health Affairs)

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?
Get Ready, Get Set, Go Upstream

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

How many of the following domains have been well defined for your social determinants intervention(s)

- Target population
- Geography
- Level of prevention
- Level of intervention
- Type and/or number of social determinants addressed
- Outcome measure
- Timeline
### Step 8: Continuous Quality Improvement (CQI) and care management processes

<table>
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</table>

The organization has a QI officer, has an updated CQI plan that includes established processes a) for identifying QI priorities, b) for continuous evaluation to see if programs are working as intended and are effective; and c) for identifying and addressing root causes in the social determinants of health (“Upstream QI”).

Robust systems and processes are in place to support ongoing management of patients with high-volume, high-cost chronic diseases.

Ability to effectively educate and monitor patients regarding adherence to medical regimens after discharge from the hospital

What percentage of leaders and staff:

- Are trained in basic methods for evaluating and improving quality, such as Plan-Do-Study-Act.
- Are engaged in established, consistent efforts to integrate lessons from QI activities into daily practice and operations.
- Have the authority to change or influence practices to improve services within their areas of responsibility.

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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
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

Step 1: Collect & Organize SDH Data
- **Community Vital Signs Data**: Imported from public data sources about community-level information (e.g., US Census) matched to patient address
- **Patient-Reported Data**: Collected by asking patients direct questions about their individual circumstances (e.g., employment, education, housing)

Step 2: Present & Integrate SDH Data into Primary Care Workflows
- **Panel Management**: Population of Patients
- **Point-of-Care**: Individual Patient Care

Step 3: SDH Data Triggers Automated Support & Action
- Referrals to social services, medical specialists
- Clinical Decision Support
- Patient Engagement
- Clinical & Social Services Coordination

Conceptual Model for SDH in Primary Care

Get Set: 5. Optimize segmentation and risk stratification using upstream data

Explanatory Modeling: Avoidable Hospitalizations

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

Manchanda, Rishi and Gottlieb, Laura (2015). Upstream Risks Screening Tool and Guide V2.0. Health Begins; Los Angeles, CA. This work is licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. *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>
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<td>• Healthify</td>
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<td>• Health Leads</td>
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<td>• Help Steps</td>
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<td>• Purple Binder</td>
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<td>• Aunt Bertha/OneDegree</td>
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<td>• Community Detailing-HB</td>
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<td>• CommunityRX</td>
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<td>• Forecast Health</td>
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<td>• PCCl</td>
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<td>Enterprise – Built</td>
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<td>County 211 / Other</td>
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</table>
# Upstream QI Workflow for Mr. M

<table>
<thead>
<tr>
<th>Role/Process</th>
<th>Tools/Data Source</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food insecurity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen</td>
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<tr>
<td>Triage</td>
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<tr>
<td>Exam</td>
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<tr>
<td>Chart/Code</td>
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<tr>
<td>Refer</td>
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<tr>
<td>Follow-up</td>
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<table>
<thead>
<tr>
<th>Care Team Member</th>
<th>Role/Process</th>
<th>Tools/Data Source</th>
<th>Metric</th>
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</thead>
<tbody>
<tr>
<td><strong>Upstream QI Workflow for Mr. M</strong></td>
<td>Care Team Member</td>
<td>Role/Process</td>
<td>Tools/Data Source</td>
</tr>
<tr>
<td><strong>Food insecurity</strong></td>
<td>Upstream QI committee</td>
<td>Project Team oversees &amp; tracks PDSAs</td>
<td>“Upstream Project Canvas”</td>
</tr>
<tr>
<td>Screen</td>
<td>Medical Assistant</td>
<td>Ask during vitals of diabetics</td>
<td>2-item food insecurity screener</td>
</tr>
<tr>
<td>Triage</td>
<td>Medical Assistant</td>
<td>Flag in EMR</td>
<td>Triage Protocol</td>
</tr>
<tr>
<td>Exam</td>
<td>PCP</td>
<td>Adjust / create treatment plan</td>
<td>EMR care plan</td>
</tr>
<tr>
<td>Chart/Code</td>
<td>Medical Assistant</td>
<td>Scribe, standing order to refer to SW</td>
<td>EMR</td>
</tr>
<tr>
<td>Refer</td>
<td>Social Worker or RN</td>
<td>Assess / Food bank referral</td>
<td>Resource database (e.g. Healthify)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>Social Worker or RN</td>
<td>Q1month or more check-in based on risk</td>
<td>EMR CRM (e.g. Healthify)</td>
</tr>
</tbody>
</table>
# 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>
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
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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• Coalesce around a common civic purpose – transform traditional service providers and institutions into catalysts of civil society.

• Increase performance management capabilities & human capital development in the social sector as an “upstream” force multiplier in education, housing, food security, transportation, and other areas of action

• As healthcare and social service spending is rebalanced, we should not underestimate the degree of waste, missed opportunity, and suffering that results when these sectors remain siloed
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

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