Session 097 PD - Population Management for Managed Medicaid

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Session 97:
Population Management for Managed Medicaid

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Limitations

The views expressed in this presentation are those of the presenter, and not those of Milliman or the Society of Actuaries. Nothing in this presentation is intended to represent a professional opinion or be an interpretation of actuarial standards of practice.

What we will discuss:

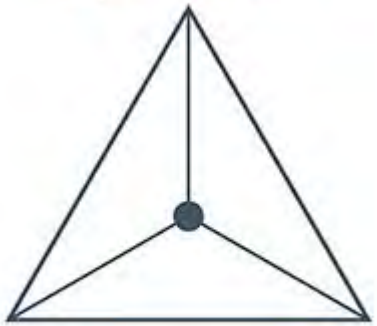
- Population Health for managed Medicaid population
- Social Determinants of Health
- Case Studies

What is population health management?

- Striving to meet “Triple Aim” goals
- Utilization of predictive analytics to identify patients for interventions

Institute for Healthcare Improvement: “Triple aim”

Population Health



Experience of Care

Per Capita Cost

\+

Experience of Provider

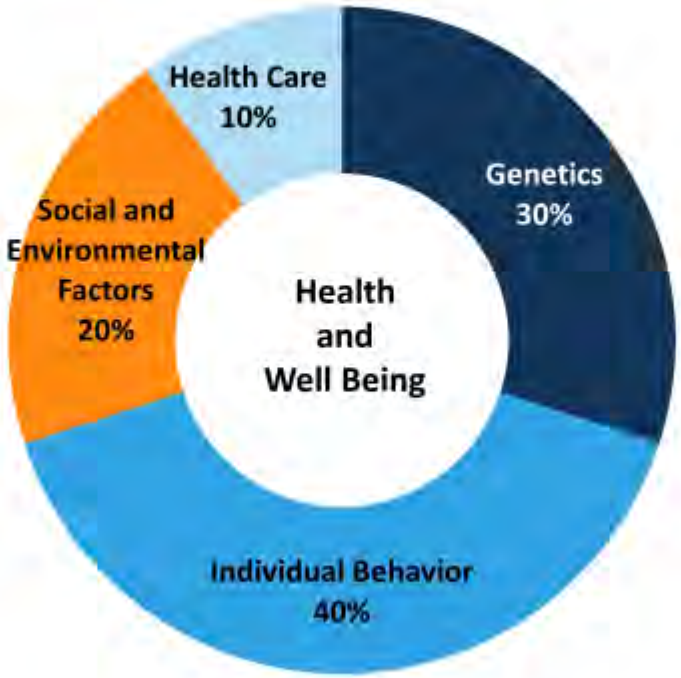
Medicaid and Population Management

- What is important to try to model?
- How is this population different than a commercial or Medicare population?
- How does Medicaid vary by state, and within each state?
- Unique characteristics of this population
  - Depends on eligibility requirements in each state
  - Low income, population often in transition
  - Often limited access to care or other “staples”
  - Segmentation based on eligibility category
    - Expansion population
    - Aged, blind, and disabled
    - Specific conditions that result in Medicaid eligibility

Moving beyond claims data: Other determinants of health

Figure 1

Impact of Different Factors on Risk of Premature Death



SOURCE: Schroeder, SA. (2007). We Can Do Better — Improving the Health of the American People. *NEJM*. 357:1221-8.

Source: http://www.kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/

Social Cohort Segmentation

Pros

- Expands potential reach
- Improves patient experience

Cons

- Smaller case-by-case savings
- Requires non-traditional data analysis

Social determinants of health

Figure 2

Social Determinants of Health

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education			
Support	Walkability				

Health Outcomes
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

Source: http://www.kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/

Considerations in modeling social determinants

- How can you map data to each social determinant?
  - What characteristics are being tracked internally?
  - What variables can be used to flag social determinants?
- How usable is the data?
  - Does the claims data have necessary PHI to integrate non-health or “consumer” data?
  - If a particular variable has predictive value, will it be readily available to model other populations?
  - Can we model at the person level, or does the data require less granularity (ZIP code or larger)?
- What programs can be implemented to help “solve” health gaps related to social determinants?
  - Common applications: Improve transportation to improve access to care, or flag members less likely to receive follow-up care

Segmentation Approaches: Cohort segmentation methods

Cost cohort segmentation	Condition cohort segmentation
– Heterogeneous cohort, difficult to implement processes – High “bang for the buck” – Example: case management	– Stratify by severity and complications – Predicting advances in disease state – Examples: Risk adjustment, behavioral health
Utilization cohort segmentation	**Social cohort segmentation**
– Identify inefficient use of care or abuse – Examples: likelihood of ER or IP stay, back surgeries, inappropriate opioid base	– High improvement in outcomes – Often high ROI with capitation – Examples: telemedicine, transportation, in-home assessments, food pantries

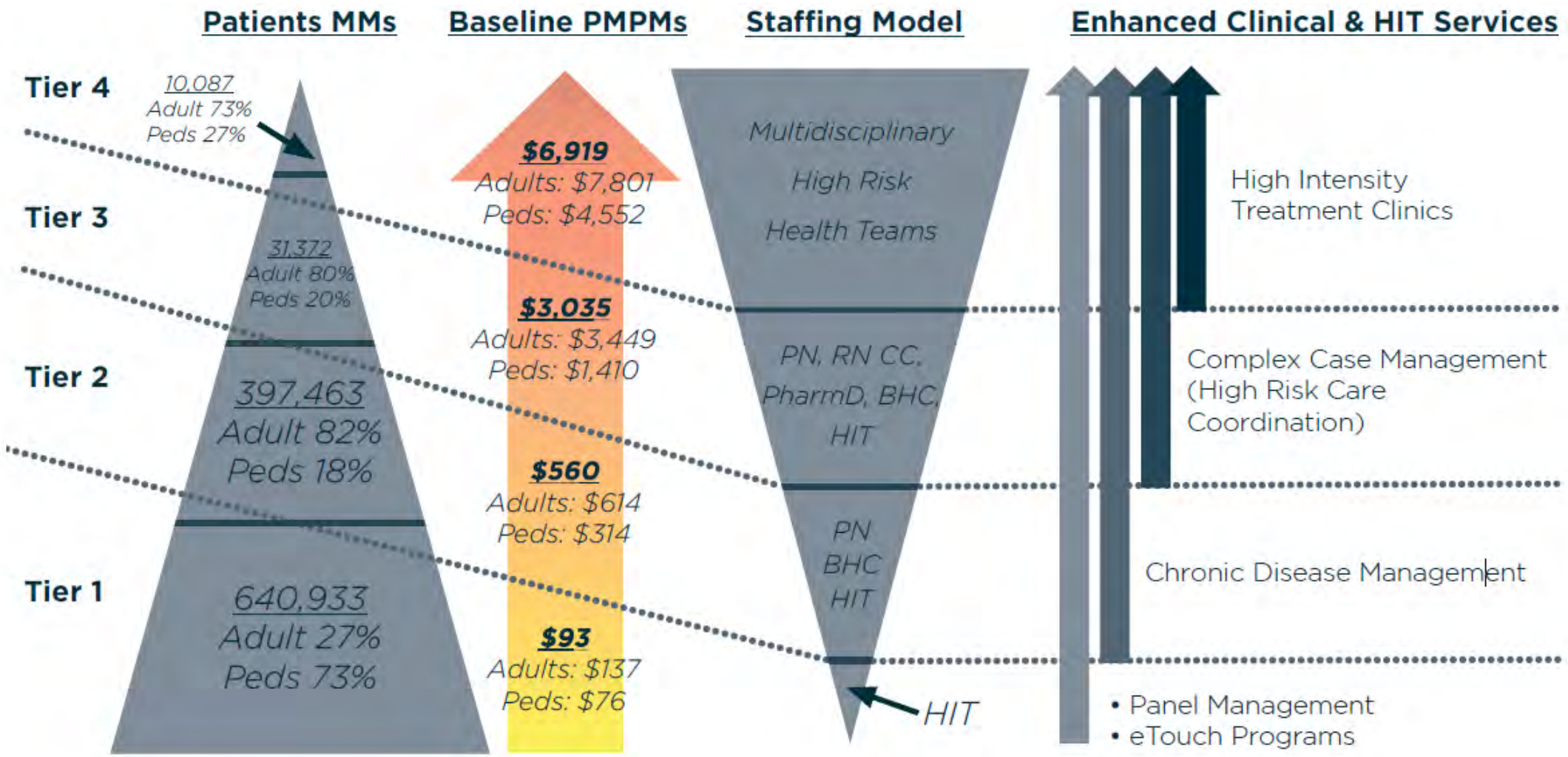
Case Study: Denver Health Hospital Authority – CMMI Grant

- Denver Health's 21st Century Care Program: Population health-informed primary care
  - $19.8 million Innovation Award from the Center for Medicare and Medicaid Innovation (CMMI)
  - Goals were to improve access and achieve the Triple Aim: better care, smarter spending, healthier people
  - Covered all the populations (Medicaid, Medicare, commercial)
  - $15.8 million in cost avoidances achieved for adult Medicare and Medicaid beneficiaries alone in 2013 and 2014

Enhanced clinical services	Enhanced health information technology	Administration and evaluation
• Clinical pharmacists • Behavioral health consultants • RN care coordinators • Patient navigators • Social workers • Specialized high intensity teams	• Population segmentation • Patient risk stratification • 3M™ Clinical Risk Groups (CRGs) • eTouch Services	• Rapid cycle evaluation • Quality improvement

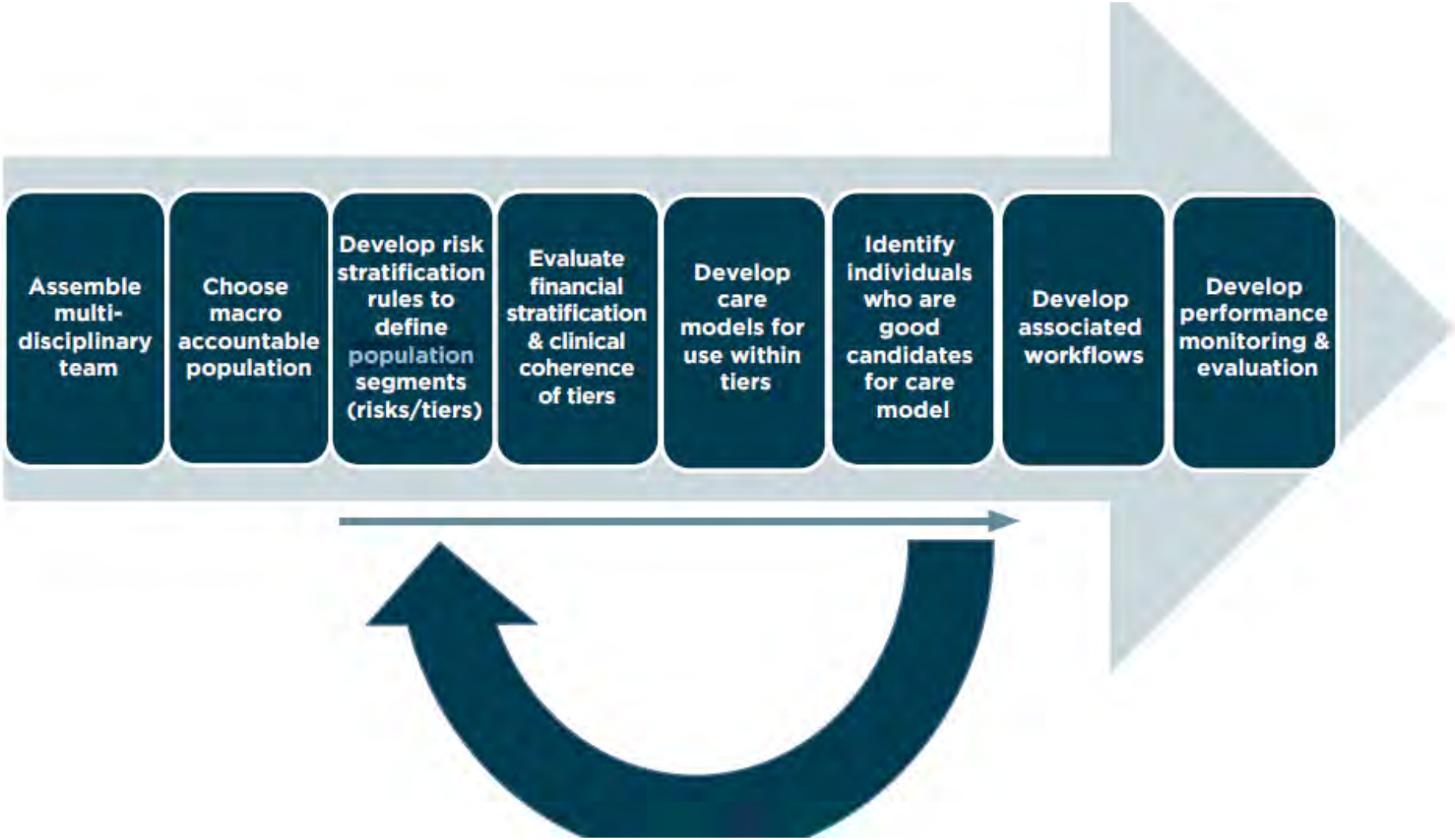
Source: https://www.camdenhealth.org/wp-content/uploads/2015/11/Characteristics-of-High-Utilizers-Webinar-Slides.pdf

Example: Enhanced care management “tiered” delivery



Source: Johnson, T. L., Brewer, D., Estacio, R., Vlasimsky, T., Durfee, M. J., Thompson, K. R., . . . Batal, H. (2015). Augmenting Predictive Modeling Tools with Clinical Insights for Care Coordination Program Design and Implementation. *EGEMs (Generating Evidence & Methods to Improve Patient Outcomes), 3*(1).

Example: Program development as an iterative process



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Example: Iterative tiering process

Improving models over time

Algorithm 1.0

- Instable assignments, complicated interventions
- Lab values good within tiers, but not defining tiers

Algorithm 2.0

- Transparency important for acceptance
- Can meet clinical and financial goals
- Interventions require stability

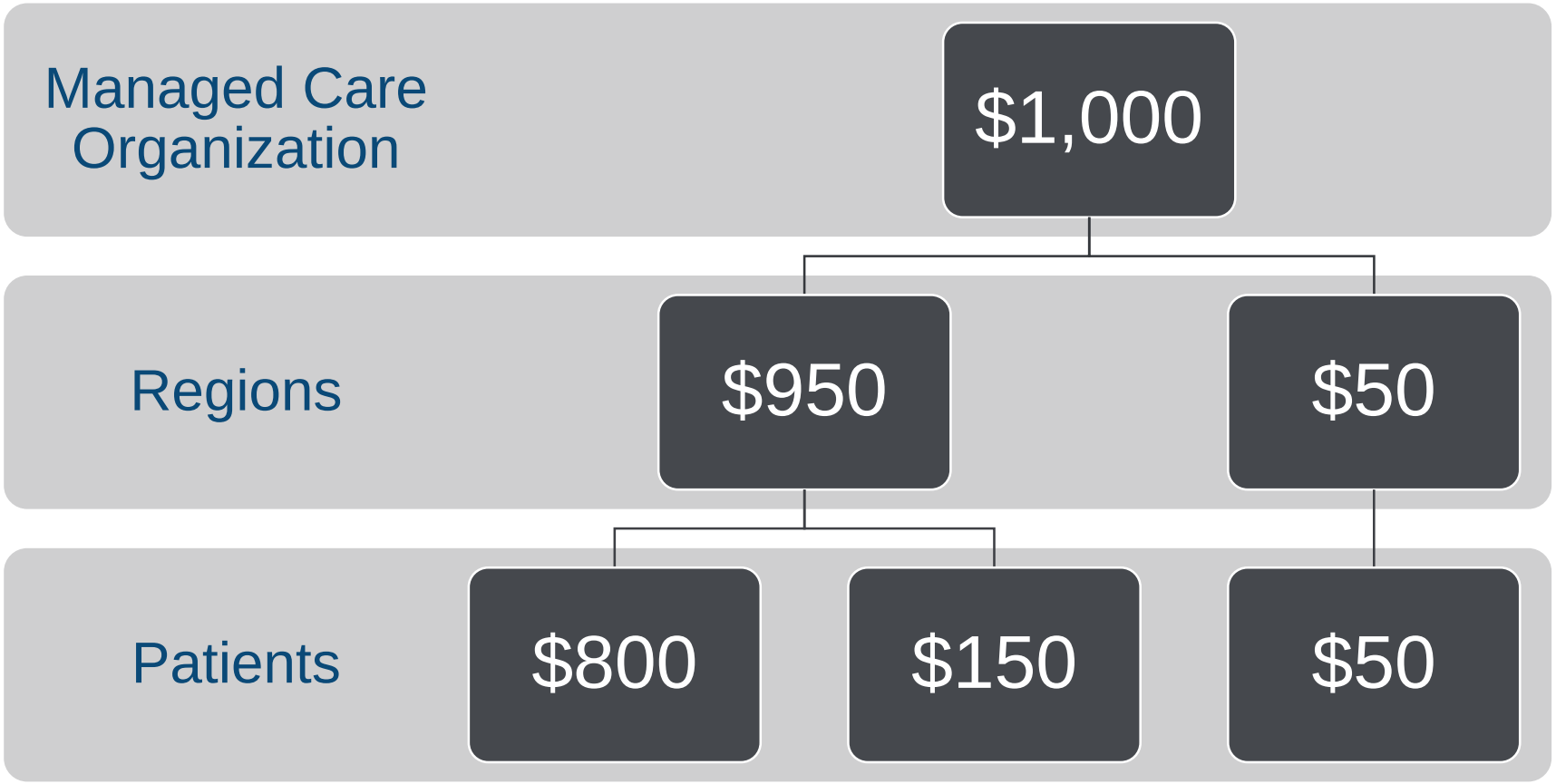
Algorithm 3.0

- Clinical feedback improves acceptance
- Social determinants of health are important

Clinical acceptance (“buy-in”) weighed against financial differentiation

Source: Johnson, T. L., Brewer, D., Estacio, R., Vlasimsky, T., Durfee, M. J., Thompson, K. R., . . . Batal, H. (2015). Augmenting Predictive Modeling Tools with Clinical Insights for Care Coordination Program Design and Implementation. *EGEMs (Generating Evidence & Methods to Improve Patient Outcomes), 3*(1).

Example: Custom Predictive Modelling for Distributing Limited Care Management Resources

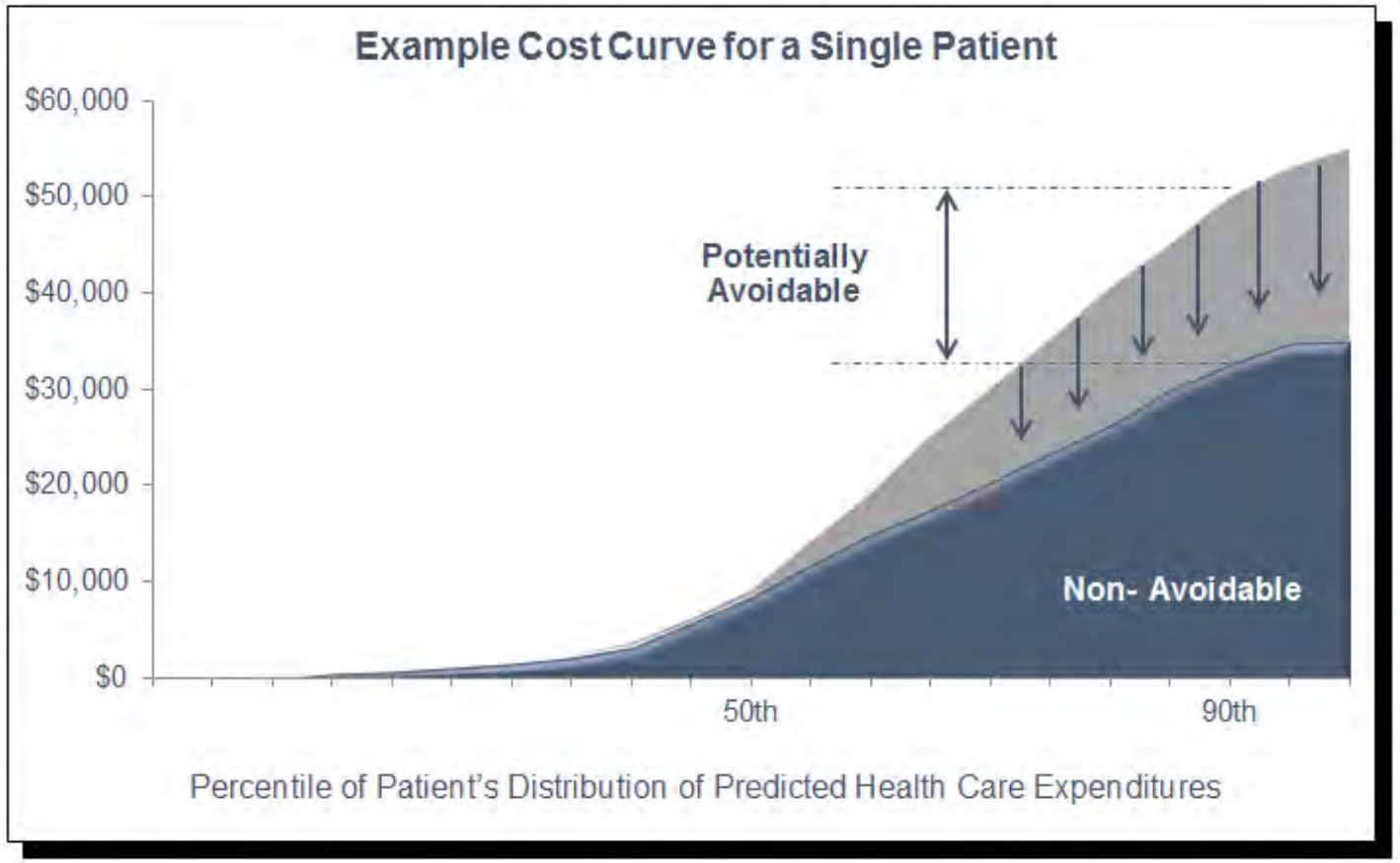


Goal and Challenges

- Goal:
  - Identify members who would benefit the most from care management intervention

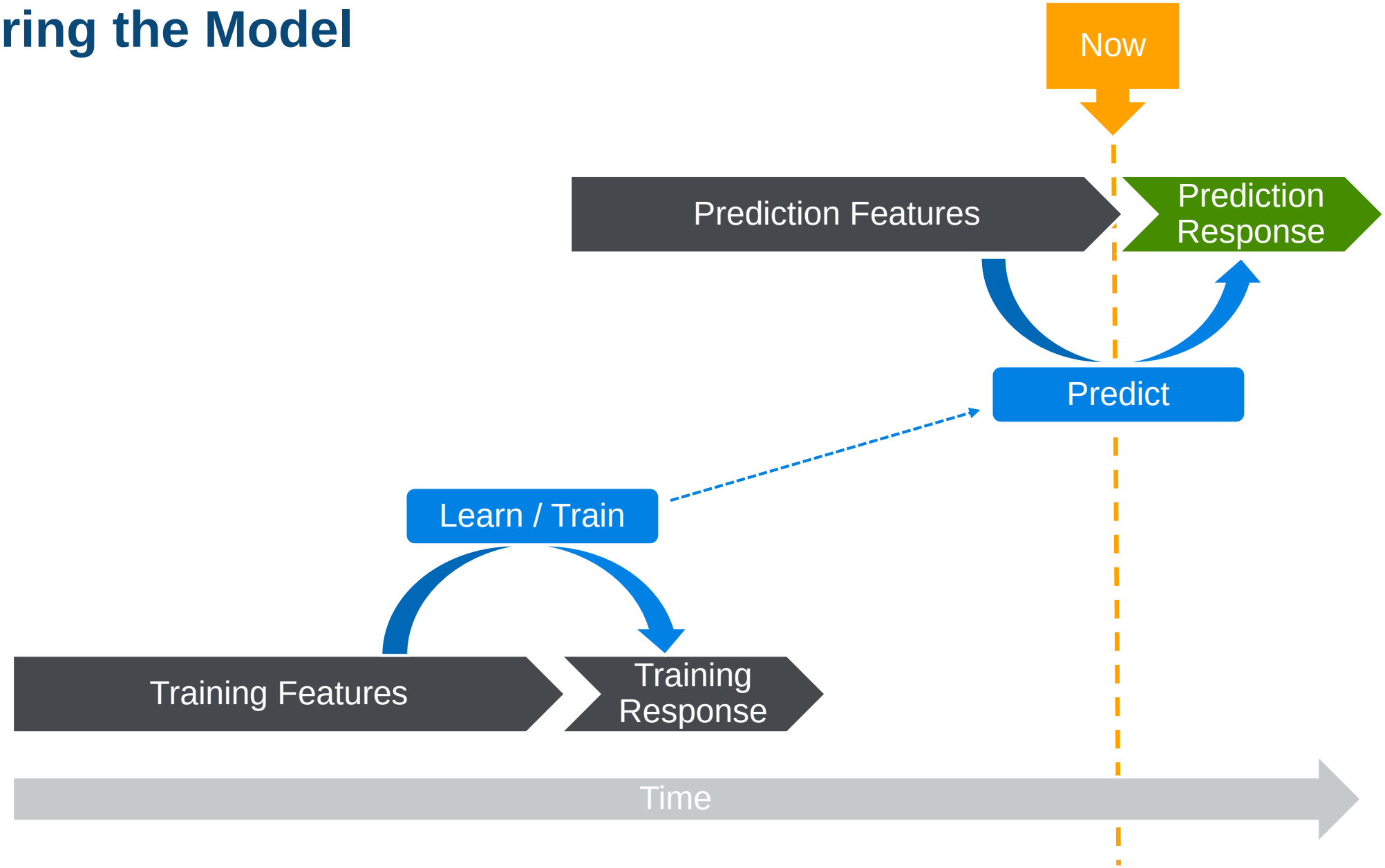
- Challenges:
  - Filtering out high cost but unavoidable issues (i.e. cancer) while not ignoring patients with those conditions
  - Identifying patients who are not yet expensive, but have the potential to be
  - Accounting for organization specific strengths/weaknesses, including

Approach



- Used AHRQ research and clinical input to identify costs as "Potentially Avoidable"
- Focused on predicting the potentially avoidable costs in the right tail of the distribution (90th percentile)

Tailoring the Model



Output

Adverse Scenario Total Costs		Adverse Scenario Potentially Avoidable Costs	
Dollars	Rank	Dollars	Rank
$ 88,800	100	$ 50,600	100
$ 86,100	100	$ 50,300	100
$ 104,800	100	$ 47,900	100
$ 86,100	100	$ 47,500	100
$ 81,700	100	$ 43,500	100
$ 105,600	100	$ 43,100	100
$ 91,400	100	$ 43,100	100
$ 86,100	100	$ 43,000	100
$ 92,100	100	$ 42,000	100
$ 102,300	100	$ 41,200	100
$ 94,700	100	$ 40,900	100
$ 87,000	100	$ 40,700	100
$ 93,100	100	$ 40,100	100
$ 90,700	100	$ 39,200	100
$ 82,900	100	$ 38,900	100
$ 75,100	100	$ 37,900	100
$ 64,200	100	$ 37,800	100
$ 106,300	100	$ 37,500	100

- Rank-ordered list of high risk patients
- Total cost rank and potentially avoidable ranks differ – as expected

Example: Developing Cohorts to Support CPC+ Program

- Goal:
  - Come up with cohorts of high-risk patients with similar clinical and demographic profiles

- Challenges:
  - Developing cohorts without long manual process of hand selecting
  - Leveraging potentially avoidable costs for patient stratification in the cohort building
  - Ensuring the cohorts are similar enough to offer coherent management opportunities

Cluster Analysis – the *K*-means Algorithm

1. Select *K* points as initial **centroids**.

REPEAT:

2. Form *K* clusters by assigning each point to its closest **centroid**.
3. Re-calculate the **centroid** of each cluster.

UNTIL:

4. The **centroids** do not change.

Results

- Some meaningful clusters emerged, others were noise
- Roughly 80% of patients were in three clusters
- Cluster 1: Seizures, asthma, other metabolic disorders, cerebral palsy (average age 18)
- Cluster 2: Seizures, artificial openings for feeding, cardio respiratory issues, spina bifida, down syndrome, autism (average age 8)
- Cluster 3: Diabetes, seizures, congestive heart failure, asthma, major depressive and bipolar disorders, specified heart arrhythmias (average age 55)

Questions?

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