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# VALUE EQUITY IN CLINICAL CARE DELIVERY: UNLOCKING THE POWER OF DATA

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# LEARNING OBJECTIVES

1. Discuss value in clinical care delivery
2. Consider the implications of value equity
3. Recognize the power of data to drive value
4. Distinguish between qualitative/quantitative and structured/unstructured data
5. Discuss macro and micro data strategies as an iterative loop
6. Understand history of how the Triple Aim became the Quadruple Aim
7. Contemplate the balance between increasing clinical care value and mitigating clinician burnout

# HOW DO YOU DEFINE VALUE?



- **Clinical outcomes relative to costs** from a health economics perspective by either improving quality or reducing costs – or both?
- **Patient-Centered care** which is viewed through the lens of patient satisfaction and outcomes relative to patients themselves?
- **Long-term health improvement** focused on keeping populations healthy over time which reduces the need for healthcare resource utilization?

# VALUE DEFINED



- The New England Journal of Medicine defines value in the context of healthcare delivery as health **outcomes achieved** per **dollar spent**.<sup>1</sup>
- Definitions vary, but typically elements such as quality, outcomes, and patient experience are in the numerator with cost being in the denominator

# IS ALL HEALTHCARE EQUAL IN VALUE?



- What about the home health agency that implements a comprehensive program for patients with chronic diseases which includes in-person nursing and therapy, telehealth monitoring, and physician coordination?
- What about the home health agency that provides a standard visit frequency and duration across all patients?
- Is there a clear winner? Or perhaps it's not so simple?

# HIGH QUALITY = HIGH VALUE? NOT ALWAYS!



- Comprehensive and integrated cross-continuum healthcare delivery
- ED → Hospital → Skilled Nursing → Home Health → OP Therapy
- What if EVERY patient received these services and EACH of these settings was highly coordinated and highly effective?
- Likely High Quality...but...definitely High Cost!
- So how do we achieve High Value?

# VALUE EQUITY

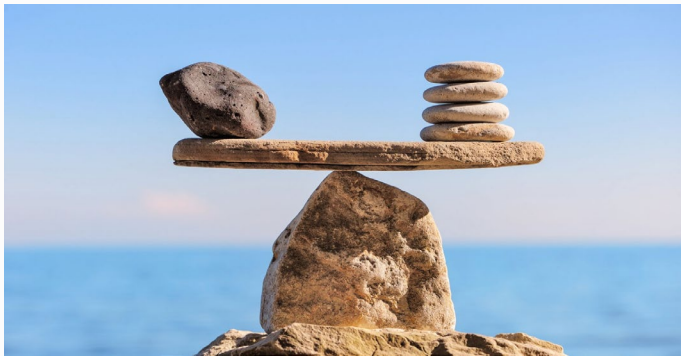
Throughout a patient's healthcare journey, is every encounter, treatment, test, or procedure equal in its value?



- In home-based care are all visits equal in the value they provide?
- Or are some more beneficial than others?
- Can a virtual/remote visit contain equal or higher value than in-person?



# HOW DO WE ACHIEVE BALANCE?



- What is measurable can be manageable
- Be mindful of “garbage in, garbage out”
- Correlation  $\neq$  Causation
- “When you can’t see the forest for the trees - go for a walk **IN** the forest.” - *Gail Lynne Goodwin*

# WHY FOCUS ON DATA?



- If you cannot measure, how can you manage?
- How can you optimize your finite resources?
- How can you be confident in your decisions?
- How can you improve your quality?

# THE POWER OF DATA TO DRIVE VALUE



- **All data tells a story...**
- Patterns and trends emerge
- Opportunities can be identified
- Processes can be streamlined
- High impact can be realized

# QUALITATIVE VS. QUANTITATIVE DATA



## Quantitative:

- Numerical data that can be measured and analyzed statistically
- Examples include lab results, vital signs, claims data
- Statistical methods include regression, t-tests, chi-square
- Enables identification of trends, patterns, and predictive modeling



## Qualitative:

- Qualitative data that captures experiences and perceptions
- Examples include patient narratives, focus groups, transcripts
- Analyzed through thematic analysis, manual abstraction, ML/AI NLP
- Provides insights into patient experience and clinician assessment<sup>2</sup>

# STRUCTURED VS. UNSTRUCTURED DATA



- Organized in predefined format such as relational databases
- Examples include patient demographics, diagnoses, medications, vitals
- Analyzed with spreadsheets and BI tools
- Drives clinical decision support and population health management



- Unorganized data that does not conform to predefined format
- Clinical narratives, diagnostic images, patient feedback, genomic data
- Analyzed with machine learning and AI (NLP, OCR, LLM's, etc.)
- Drives patient sentiment analysis and risk predictives<sup>3</sup>



# MACRO VS. MICRO DATA STRATEGIES



## Macro:

- Broad, population-level analysis for strategic insights
- Population health, aggregated patient outcomes, enterprise level
- Analyzed with BI dashboards, geospatial mapping, industry trends analysis
- Informs strategic planning, policies, and resource allocation



## Micro:

- Detailed, agency, team, or even patient-specific analysis
- Individual patient health records, biometric data, plans of care
- Analyzed with BI drilldowns, ad-hoc spreadsheets, chart abstraction
- Enhances individual patient care and improves decision-making



# INTEGRATING MACRO AND MICRO DATA STRATEGIES

- Both are essential to maximize value and achieve value equity
- Dynamic interaction:
  - **Macro informs Micro:** Insights from macro data can help identify high-risk populations or emerging health trends, guiding more focused micro-level analysis and interventions
  - **Micro informs Macro:** aggregated micro data can refine and validate macro-level strategies, ensuring they are grounded in real-world patient experiences in outcomes<sup>4</sup>
- Iterative loop where macro-level strategies are continuously refined based on feedback from micro-level data to optimize healthcare delivery



# TOOLS FOR DATA ANALYSIS AND VISUALIZATION

	<b>Spreadsheets</b>	<b>BI Tools</b>	<b>SQL</b>	<b>Python / R</b>	<b>Generative AI</b>
<b>Examples</b>	Excel or Google Sheets	Tableau, Power BI, Qlik, Google Looker	MSSQL, MySQL, PostregSQL	Jupyter, Spyder, PyDev, RStudio	ChatGPT, Gemini, Co-Pilot
<b>Benefits</b>	<ul style="list-style-type: none"> <li>Easy to use</li> <li>Widely accessible</li> <li>Quick to learn</li> <li>Familiar to most</li> </ul>	<ul style="list-style-type: none"> <li>-Advanced visuals</li> <li>-User friendly</li> <li>-Dashboards</li> <li>-Data source integration</li> <li>-Automation</li> </ul>	<ul style="list-style-type: none"> <li>-Powerful for handling large data</li> <li>-Query customization</li> <li>-Standard language</li> </ul>	<ul style="list-style-type: none"> <li>-Highly flexible</li> <li>-Powerful analytics libraries</li> <li>-Open-source</li> <li>-Community support</li> </ul>	<ul style="list-style-type: none"> <li>-Human-like responses</li> <li>-Broad use-cases</li> <li>-Great at natural language processing</li> </ul>
<b>Limitations</b>	<ul style="list-style-type: none"> <li>-Data size limits</li> <li>-Prone to formula errors</li> <li>-Limited advanced analytics</li> </ul>	<ul style="list-style-type: none"> <li>-Expensive</li> <li>-Learning curve</li> <li>-Limitations on customizability</li> </ul>	<ul style="list-style-type: none"> <li>-Requires SQL coding knowledge</li> <li>-Less user-friendly</li> <li>-Not ideal for advanced analytics</li> </ul>	<ul style="list-style-type: none"> <li>-Steep learning curve</li> <li>-Requires programming skills</li> </ul>	<ul style="list-style-type: none"> <li>-Prone to hallucination</li> <li>-Inconsistent performance based on prompts</li> </ul>





# NECESSITY OF A UNIFIED DATA STRATEGY

## **Comprehensive Data Management:**

Utilizing tools like SQL and Python/R ensures robust data storage, management, and advanced analytics capabilities, essential for handling large volumes of patient and operational data.

## **Enhanced Decision-Making:**

BI tools and generative AI provide actionable insights through advanced visualizations and automated reporting, enabling data-driven decision-making and improved patient outcomes.<sup>5</sup>

## **Operational Efficiency:**

Spreadsheets for ad-hoc analysis, combined with BI tools for dynamic reporting, streamline operations, reduce manual errors, and enhance workflow efficiency.

## **Scalability and Flexibility:**

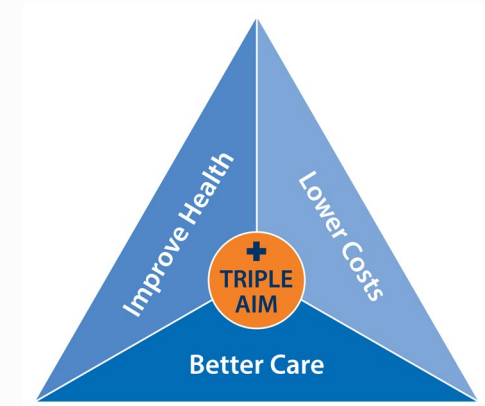
A combination of these tools allows for scalable solutions that can adapt to the evolving needs of healthcare organizations, from simple data logging to complex predictive modeling and machine learning.



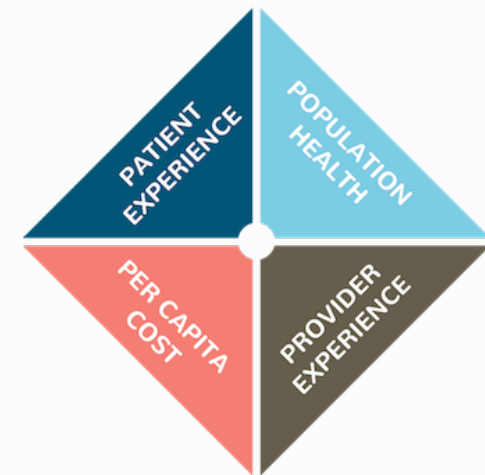
# FROM TRIPLE...TO QUADRUPLE AIM

In 2008 the Institute for Healthcare Improvement introduced the **Triple Aim**<sup>6</sup> to simultaneously improve:

- Patient Experience
- Quality Outcomes
- Cost of Care



In 2014, the **Quadruple Aim**<sup>7</sup> was introduced by Dr. Thomas Bodenheimer and Dr. Christine Sinsky to recognize the importance of healthcare team well-being

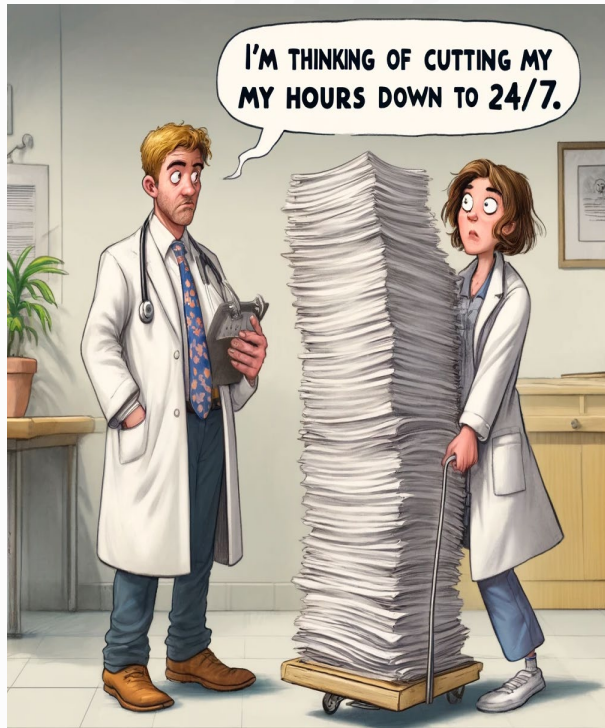


# CAUTION IN THE PURSUIT OF VALUE

With the Triple Aim, healthcare organizations began to focus on simultaneously improving patient experience, quality, and costs

Created a tipping point for clinicians

Constant pressure to improve these metrics led to increased burnout via unsustainable workloads and emotional exhaustion.<sup>8</sup>



# BALANCING VALUE WITH CLINICIAN WELL-BEING

- Engaged employees improve patient engagement, and vice versa
- Investment in continuous support and training for staff enables higher quality patient care and clinicians less prone to burnout
- Technology and vendor synergies can optimize workflow and improve work-life balance for clinicians through reducing administrative burden<sup>9</sup>
- Clinical value equity and clinician workload equity are intimately linked
- A unified data strategy which incorporates both macro and micro data strategies leveraging the fully array of data solutions available is key
- No such thing as a silver bullet, but by unlocking the power of data, we gain the visibility to what is required to achieve greater value equity



# FINAL THOUGHTS

If all patient-clinician encounters are unequal in value, inherently, there has to be a portion which is on the lower end of this spectrum

Our clinician pool is shrinking and our patient pool is growing<sup>10</sup>

The shift to not only high-value, but value equity is critical

*"Data isn't units of information. Data is a story about human behavior – about real people's wants, needs, goals, and fears. Never let the numbers, platforms, charts, and methodologies cloud your vision. Our real job with data is to better understand these very human stories so we can better serve these people. Every goal your business has is directly tied to your success in understanding and serving people."*

**— Daniel Burstein**



# REFERENCES

1. Porter, Michael E. "What Is Value in Health Care?" *New England Journal of Medicine*, vol. 363, no. 26, 23 Dec. 2010, pp. 2477–2481, <https://doi.org/10.1056/nejmp1011024>.
2. Moffatt, S., White, M., Mackintosh, J. et al. Using quantitative and qualitative data in health services research – what happens when mixed method findings conflict? [ISRCTN61522618]. *BMC Health Serv Res* 6, 28 (2006). <https://doi.org/10.1186/1472-6963-6-28>
3. HealthTech. (2023, May). Structured vs. Unstructured Data in Healthcare. Retrieved from <https://healthtechmagazine.net/article/2023/05/structured-vs-unstructured-data-in-healthcare-perfcon>
4. Figueroa, C.A., Harrison, R., Chauhan, A. et al. Priorities and challenges for health leadership and workforce management globally: a rapid review. *BMC Health Serv Res* 19, 239 (2019). <https://doi.org/10.1186/s12913-019-4080-7>
5. Rohloff, R. (2011, May). Healthcare BI: a tool for meaningful analysis. *Healthcare Financial Management*, 65(5), 100+. <https://link.gale.com/apps/doc/A259154781/AONE?u=googlescholar&sid=bookmark-AONE&xid=724d4a5d>
6. Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs*, 27(3), 759-769.
7. Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Ann Fam Med*. 2014 Nov-Dec;12(6):573-6. doi: 10.1370/afm.1713. PMID: 25384822; PMCID: PMC4226781.
8. Arnetz, B. B., Goetz, C. M., Arnetz, J. E., Sudan, S., vanSchagen, J., Piersma, K., & Reyelts, F. (2020). Enhancing healthcare efficiency to achieve the Quadruple Aim: an exploratory study. *BMC Research Notes*, 13(1), 362. doi: 10.1186/s13104-020-05199-8
9. Rangachari, P., & Woods, J. L. (2020). Preserving Organizational Resilience, Patient Safety, and Staff Retention during COVID-19 Requires a Holistic Consideration of the Psychological Safety of Healthcare Workers. *International Journal of Environmental Research and Public Health*, 17(12), 4267. <https://doi.org/10.3390/ijerph17124267>
10. Fernandes, R., & Masaki, K. (2022). Increasing Geriatric Care Capability in Hawai'i's Healthcare Systems through the Pacific Islands Geriatrics Workforce Enhancement Program (GWEP) at the University of Hawai'i. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/35495069>



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