AI Can Advance Health Equity

ChristianaCare™

By **leveraging its analytics platform and AI**, ChristianaCare now has a **systematic approach to evaluate health equity** as a core part of its commitment to quality.

The organization has **driven key insight** using this approach, including **overcoming disparities in COVID-19 testing** and **increasing access to care** through innovative clinics that combine virtual primary care and COVID-19 testing in some of Wilmington's underserved communities.

PRODUCTS

- Health Catalyst® Data Operating System (DOS™)
- Healthcare.AI™

EXECUTIVE SUMMARY

Health technology and augmented intelligence (AI) can significantly improve or worsen health equity. Recently, there has been a growing concern that AI is increasing disparity.[1] ChristianaCare set a goal to reduce avoidable health disparities. The organization faced many challenges, including inconsistent collection, storage, and use of personal characteristics such as race, ethnicity, and language. Using its data platform, ChristianaCare now has a single "source of truth" for personal characteristics data. By treating health equity as a goal with the same commitment and focus as it would for other clinical, operational, or financial improvement efforts, the organization is purposefully using AI to achieve health equity.

HEALTH EQUITY IS CORE TO QUALITY AND AI CAN HELP

Because of COVID-19's disproportionate infection and morbidity rates for communities of color, payers and providers are reprioritizing equity as a top strategic priority.[2,3] Despite equity being a core dimension of quality for more than 20 years, care provision still often varies in quality because of personal characteristics such as race, ethnicity, primary spoken language, geographic location, sexual orientation, and socioeconomic status.

Improved data-informed decision-making resulting from AI-enhanced health technology provides the potential to improve health equity outcomes dramatically. Organizations seeking to use AI to improve care must critically assess data sources, uncover biases in the data, and test for algorithmic bias. If misused, algorithms can increase disparities and worsen health inequity. With the appropriate objectives, data, and techniques, AI can be used as a tool to understand and enhance health equity systemically.

IMPROVING RELIABILITY OF DATA IS NECESSARY TO INCREASE HEALTH EQUITY

ChristianaCare is committed to achieving health equity and established a goal to reduce health disparities. The organization faced several challenges, including the inconsistent collection of personal characteristic data at the point of registration, multiple source systems that categorized and stored characteristics differently, and classification schemes that changed over time. The unreliable data created confusion and limited the ability to evaluate outcomes for different groups, and made it difficult to assess the spread of outcomes within groups. ChristianaCare needed a solution that would allow it to use its data to understand and improve health equity.

LEVERAGING PREDICTIVE ANALYTICS IMPROVES HEALTH EQUITY

To improve its data consistency and utility, ChristianaCare standardized the collection of personal characteristic data across its hundreds of registration points and mapped historical data to the current standard. The organization used the Health Catalyst® Data Operating System (DOS™) platform and a robust suite of analytics applications as the organization's single "source of truth" for personal characteristic data.

The organization utilized 18 months of historical data from its data platform, master person data that conforms to the enterprise data standard, and AI to perform an equity analysis. ChristianaCare created the ability to evaluate nine different measures over seven conditions for six equity dimensions, including age, race, ethnicity, gender, language, and zip code. The organization performed single- and multivariable analyses to perform a full range of analyses on each outcome and equity dimension, visualizing the data in a dashboard and creating a unique statistic for measuring, comparing, and tracking health equity.

ABOUT CHRISTIANACARE

ChristianaCare, headquartered in Wilmington, Delaware, is one of the country's most dynamic healthcare organizations centered on improving health outcomes, making high-quality care more accessible, and lowering healthcare costs.

> Health equity and AI are interconnected. Technology and AI need to help reduce health disparities, not exacerbate them. Partnering with Health Catalyst has enabled us to develop a health equity analytic framework, supporting our efforts to reduce the impact of personal characteristics such as gender, race, ethnicity, geography, language, sexual orientation, payer, or socioeconomic status on health outcomes in our community.
>
> **Ed Ewen, MD, Director, Clinical Data and Analytics, Center for Strategic Information Management**

RESULTS

By leveraging its data platform and AI, ChristianaCare can now evaluate its health equity focus and provide valuable insight into its patients' care and outcomes. ChristianaCare has identified:

- Specific opportunities to improve health equity.
  - **Age:** readmissions for chronic obstructive pulmonary disease and heart failure (HF).
  - **Race and gender:** HF readmission.
  - **Race and geography:** COVID-19 testing in Black/African American patients in parts of Wilmington.
- Opportunities that should be investigated further.
  - **Ethnicity:** sepsis mortality.
- Areas of current health equity that can be monitored.
  - Hemoglobin A1c control among diabetic patients.
  - Blood pressure greater than 130/80 or 140/90 among patients being treated for hypertension.

ChristianaCare is working to overcome disparities in COVID-19 testing, increasing access to care through innovative clinics that combine virtual primary care and COVID-19 testing in some of Wilmington's underserved communities.

WHAT'S NEXT

ChristianaCare plans to perform analyses on various healthcare processes and outcomes, enabling the organization to further identify opportunities to improve health equity. By integrating the analyses into the work of its improvement team, it is refining the framework, expectations, and communication plans for health equity goals at the organizational, practice, and provider level.

> Our partnership with Health Catalyst's data science team enhanced our team members' ability to think through both the problem they're trying to solve and apply techniques they understood to solve it.
>
> **Ed Ewen, MD, Director, Clinical Data and Analytics, Center for Strategic Information Management**

REFERENCES

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2. APM Research Lab. (2021). *The color of coronavirus: COVID-19 deaths by race and ethnicity in the U.S.* Retrieved from https://www.apmresearchlab.org/covid/deaths-by-race
3. Centers for Disease Control and Prevention. (2020). *COVID-19 hospitalization and death by race/ethnicity.* Retrieved from https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html

ABOUT HEALTH CATALYST

Health Catalyst is a leading provider of data and analytics technology and services to healthcare organizations, committed to being the catalyst for massive, measurable, data-informed healthcare improvement. Our customers leverage our cloud-based data platform—powered by data from more than 100 million patient records, and encompassing trillions of facts—as well as our analytics software and professional services expertise to make data-informed decisions and realize measurable clinical, financial, and operational improvements. We envision a future in which all healthcare decisions are data informed.

Learn more at **www.healthcatalyst.com**, and follow us on **Twitter**, **LinkedIn**, and **Facebook**.