

# Large Bronx-Based Federally Qualified Health Center: Hybrid Approach Combining Autonomous AI with Specialists Exceeded Targets and Improved Provider Efficiency

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## The Medical Facility

### About Urban Health Plan, Inc. (UHP): A Bronx-based Federally Qualified Health Center (FQHC) Serving over 80,000 Patients in New York City's Most At-risk Communities

Urban Health Plan, Inc ( UHP), is one of the largest federally qualified health center systems in New York State with 12 primary care locations, offering 18 specialty services throughout the Bronx, Corona, Queens and Central Harlem. Founded in 1974 by a local physician, UHP works to advance the health and economic vitality of the communities they serve.<sup>1,2</sup> Classified as a Patient-Centered Medical Home (PCMH),<sup>3</sup> UHP uses a culturally appropriate and team-based approach to coordinate patient care across its health care system while improving health outcomes for vulnerable patients in New York City's most underserved neighborhoods.

UHP's main site is located in one of the poorest Congressional Districts in the country (median household income of \$28,042). Over 97% of people living in the area identify as a person of color.

More than half of the residents speak languages other than English at home, and many face cultural and linguistic barriers to health care.<sup>4</sup>

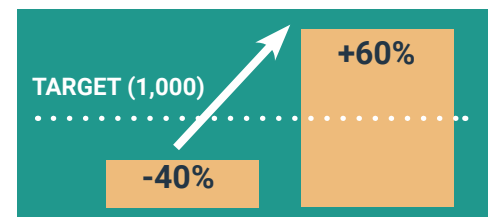
UHP serves neighborhoods that have historically faced cultural, linguistic, and economic barriers to high quality primary and specialty care (see Figure 1), resulting in a high prevalence of chronic conditions that exceed city, state, and national rates. Steadily increasing since 2017, 15% of Urban Health Plan's patient population had a diagnosis of diabetes in 2021 (see Figure 2), compared with 13% of the New York City population.<sup>5</sup>



## Impact Summary

Urban Health Plan (UHP) sees patients in one of the **most disadvantaged congressional districts in the country.**

Combining EEDs from eyecare providers and autonomous AI, UHP went from performing at 40% below target of 1000 annual EEDs every six months to **60% over target after just six months of implementation of an autonomous AI.**



**Nearly one in four patients** were found by the autonomous AI to have referable diabetic retinopathy.



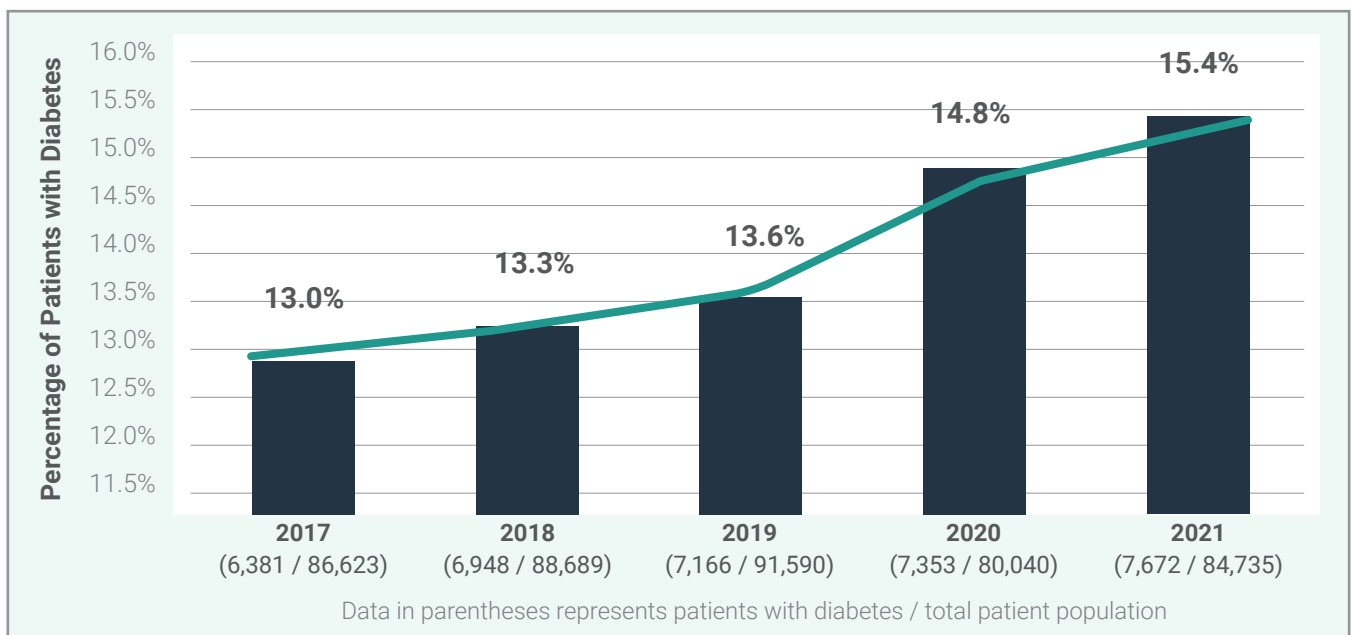
Deployment of autonomous AI increased efficiency of limited eyecare resources.

Figure 1: UHP Patient Demographic Information, 2021<sup>6</sup>

UHP Patient Population		N = 84,735
<b>Ethnicity and Race</b>		
Hispanic or Latino		69,724 (83.0%)
Two or More Races		20,954 (64.5%)
Black or African American		9,567 (29.5%)
<b>Language</b>		
Language Other than English Preferred		53,930 (63.7%)
<b>Payer Mix</b>		
Medicaid/CHIP		54,347 (64.1%)
Medicare		6,619 (7.8%)
Other Third-Party Patients		5,850 (6.9%)
Self-Pay/Uninsured		17,919 (21.2%)
<b>Federal Poverty Guideline and Income Level*</b>		
Below 200% of Federal Poverty Guidelines		66,613 (98.5%)
Below 100% of Federal Poverty Guidelines		61,362 (90.7%)

\*Family of 2: \$19,580 | Family of 3: \$24,860 | Family of 4: \$30,000<sup>7</sup>

Figure 2. Percentage of UHP population with a diabetes diagnosis, five-year trend.<sup>6</sup>



## The Problem

### High Demand for Annual Eye Exams for Diabetes Exceeds the Capacity of Onsite Eyecare Specialists.

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Diabetic retinopathy (DR) is the primary cause of new cases of blindness among working-age adults (20 -74 years of age) in the U.S. DR often progresses without symptoms, potentially delaying timely treatment and making the recommended annual eye exam for diabetes (EED) of utmost importance.<sup>8</sup> Longer duration of diabetes and higher HbA1c levels are well-known contributors to increased rates and severity of diabetes-related complications, including diabetic retinopathy.<sup>9</sup> Additionally, Medicaid recipients have an increased risk of developing diabetic retinopathy<sup>10</sup> and people living in disadvantaged neighborhoods are less likely to receive an annual EED.<sup>11</sup>

Over one quarter of patients seen at UHP have poorly controlled diabetes as indicated by HbA1c levels exceeding 9.0% (or no test during year)<sup>6</sup>

and 64.1% have Medicaid/Children's Health Insurance Program (CHIP),<sup>6</sup> placing them at increased risk for developing DR. Follow-up care is difficult to manage because of limited eyecare specialist availability; the consequences of which may result in avoidable vision loss.<sup>12</sup>

At UHP, in the first half of 2022, 631 (11%) of the 5,736 annual EEDs needed were completed by eyecare specialists, which fell 40 percent below UHP's goal of 1,000 annual EEDs every six months (see Figure 4). Referring all patients with diabetes needing an annual EED to eyecare specialists proved inadequate to address the low adherence rates due to an upwardly trending percentage of patients diagnosed with diabetes (see Figure 2) and limited availability of eyecare specialists.

## The Solution

### Implementation of Autonomous AI Increases Annual EEDs Without Adding Clinician (full time equivalents) FTEs.

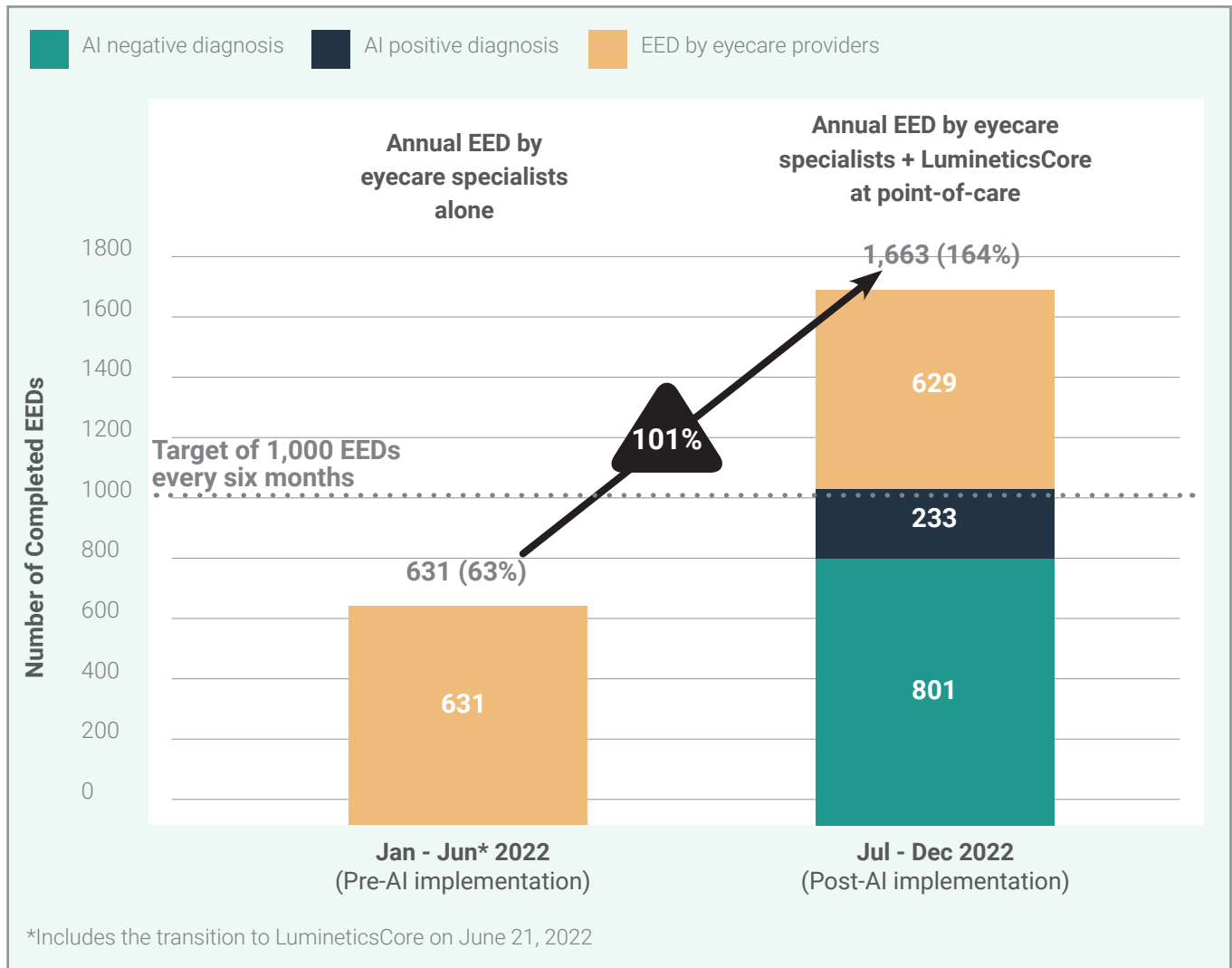
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Knowing a strategic approach was needed to increase capacity for annual EED completion rates, UHP implemented an autonomous AI, LumineticsCore<sup>®</sup>, at three clinics in June 2022. LumineticsCore (Digital Diagnostics, Coralville, Iowa, USA) is the first FDA-cleared fully autonomous AI system for the diagnosis of DR in adults living with diabetes. Consisting of a robotic camera coupled with AI software, LumineticsCore provides a diagnostic result at the point-of-care, without the need for a specialist or remote reading network to interpret the image.

In the six months following deployment of autonomous AI (Jul - Dec 2022), 1,621 (28.3%) of the remaining 5,105 annual EEDs were completed: 629 by eyecare specialists and an additional 1,034 by LumineticsCore. Providing a hybrid model of testing (i.e., combination of eyecare specialists and autonomous AI) resulted in a 164% increase in the capacity to meet the high demand for annual EEDs (see Figure 4).

Of the 1,034 annual EEDs completed by LumineticsCore in 2022, 801 (77.5%) tested negative for more-than-mild DR and did not need a referral to eyecare specialists, 233 (22.5%) tested positive for more-than-moderate DR and were referred for follow-up care with an eyecare specialist (see Figure 4).

Figure 4. UHP exceeded goal for 1,000 annual EEDs within first six months of implementation.



## Conclusions

### Combining Completion of Annual EEDs from Eyecare with an Autonomous AI Moved Rates From 40% Below Target to 60% Over Target (1,000) in Six Months

UHP serves patients in one of the poorest congressional districts in the country. Disproportionately burdened by diabetes and serving high numbers of Medicaid/CHIP recipients, patients seen at UHP have increased risk of vision-damaging DR.

Implementation of an autonomous AI at the point-of-care enhanced patient adherence to annual EEDs by making the exam more accessible. Alone, eyecare specialists completed 631 annual EEDs between January and June 2022. The autonomous AI appended an additional 1,034 exams between July and December 2022, demonstrating a 101% improvement in annual EED completion rates in six months.

Nearly one in four (233/1,034) examined with LumineticsCore was diagnosed with more-than-moderate DR and were referred for follow-up care for timely, vision-saving treatment.

After reaching capacity of onsite optometrists, UHP took an innovative approach by integrating autonomous AI alongside onsite eyecare. This hybrid model allowed for a rapid and significant improvement in annual EED testing rates among New York's most underserved population. By harnessing this hybrid strategy, UHP not only met but exceeded its goals, showcasing the effectiveness of combining autonomous AI technology with existing healthcare resources in achieving enhanced healthcare outcomes. This achievement underscores the potential of autonomous AI in augmenting point-of-care services and addressing disparities in complex healthcare settings.

Combining completion of annual EEDs from eyecare with an autonomous AI, allowed UHP to exceed their goal, increasing access and addressing disparities in a complex healthcare setting.

### About Digital Diagnostics

Digital Diagnostics Inc. is a pioneering AI diagnostics company on a mission to transform the quality, accessibility and affordability of global health care through the application of technology in the medical diagnosis and treatment process. The company, originally founded by Michael Abramoff, MD, PhD, a neuroscientist, practicing fellowship-trained retina specialist, and computer engineer, is led by him and co-founder John Bertrand.

Digital Diagnostics is paving the way for autonomous and assistive AI technology that is free of bias to become a new standard of care, contributing to democratizing health care and closing care gaps. The company works closely with patient advocacy groups, provider organizations, regulators, and other quality of care and ethics-focused stakeholders to enable the adoption of health care AI.

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