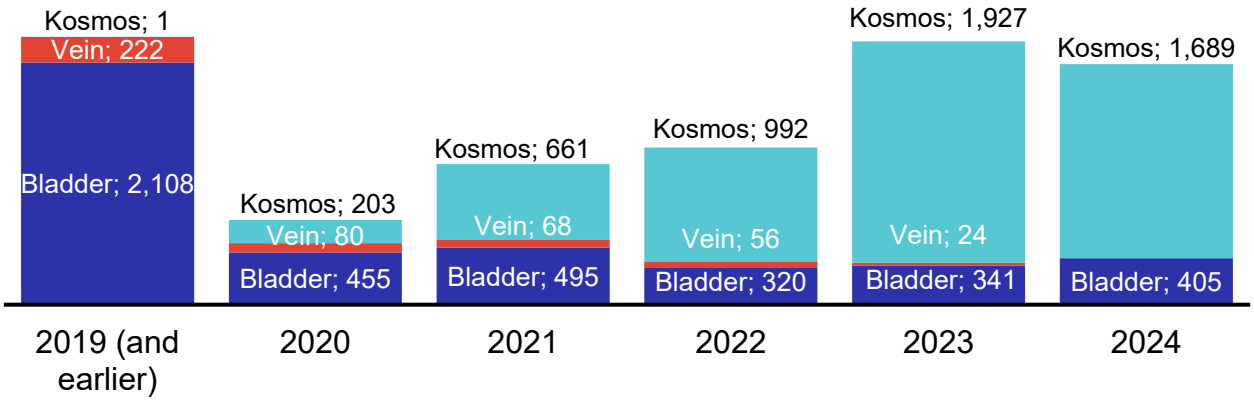
Prepared 9/5/2025

Developer of Kosmos, an AI-based point-of-care ultrasound device enabling healthcare professionals to make heart, lung and abdominal assessments in minutes. EchoNous is redefining the physical exam, cardiovascular screening, and user training and is improving patient access globally.
Visit EchoNous website

I. FY 2024 IMPACT GRAPHICS

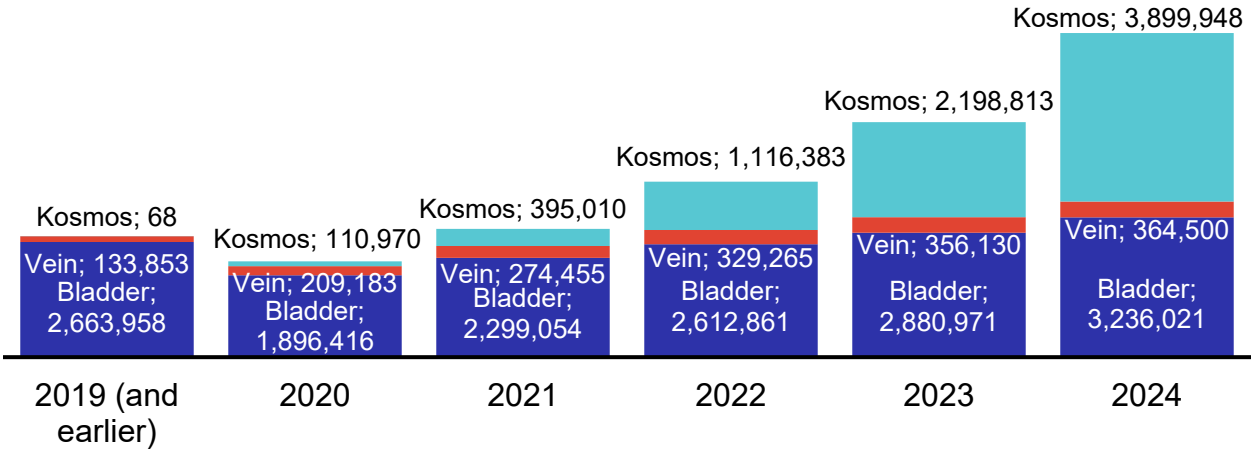
A. Units distributed by product and year[1,2]

N = 2,094 (2024); 10,047 (cumulative)



B. Estimated patient scans by year and product[3]

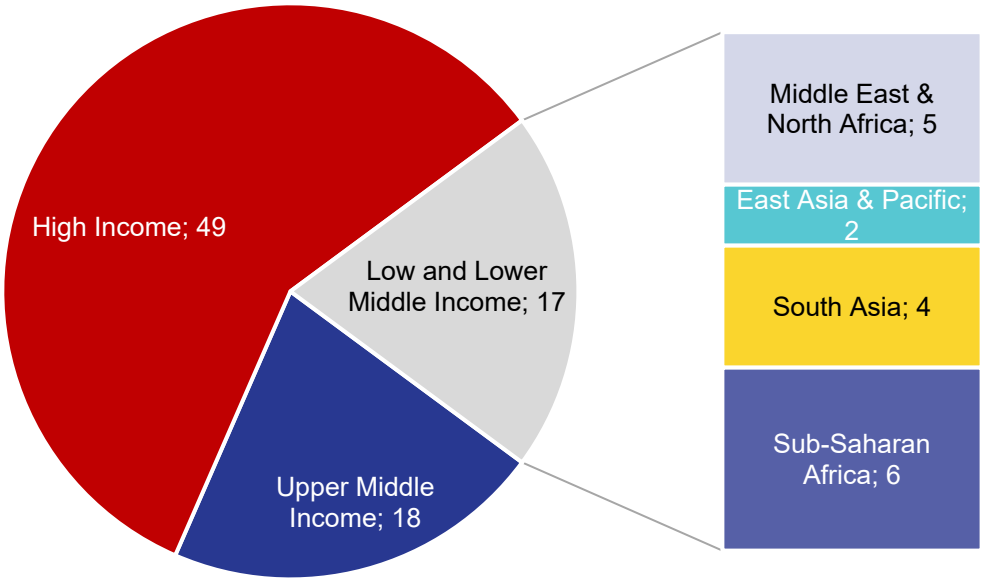
N = 7,500,469 (2024); 24,977,857 (cumulative)



[1] The final quarter of our FY 2023 reporting period included two large European Kosmos tenders (150+ units) for a legacy version of the product Echonous no longer offers. Excluding those one-time tenders, the Kosmos unit volume was up overall in FY 2024.
[2] Starting in 2024, Echonous discontinued its dedicated vein product (as the functionality it offered is available in the Kosmos product). By YE 2025, the Kosmos Combo will include a Bladder application; therefore, we expect most sales will fall under the 'Kosmos' category in future reports.
[3] See appendix for detail and support for estimation methodology.

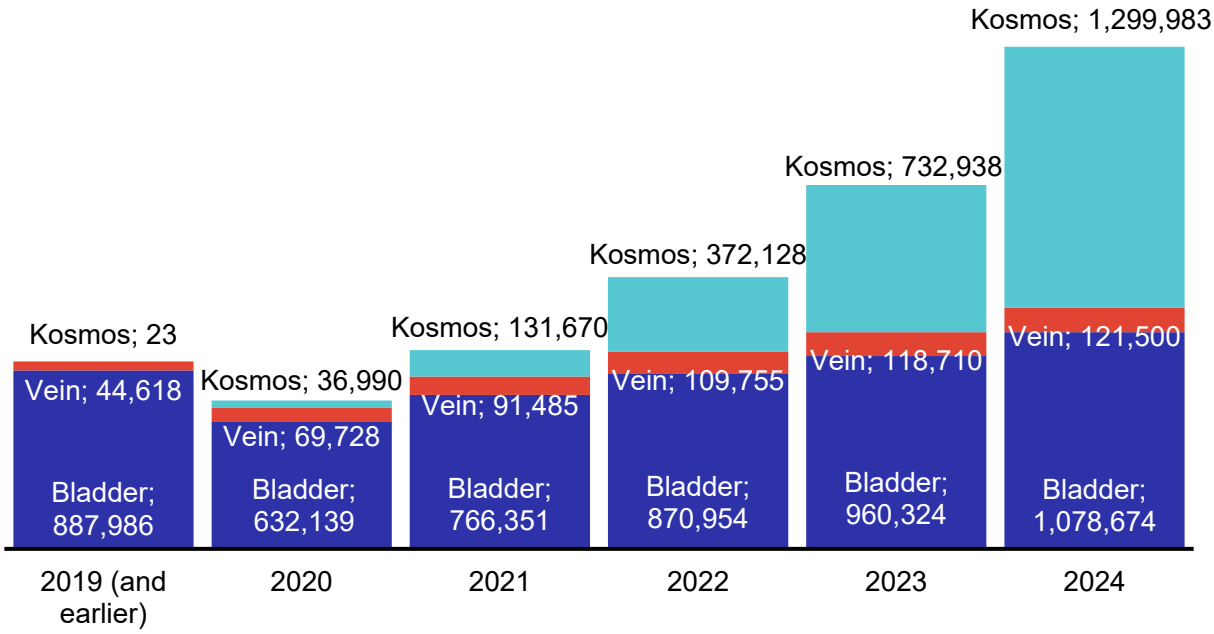
C. Geographies with Commercial Distribution by Type and Region[4]

78 countries across 6 continents; 10,047 units (cumulative – see appendix)



D. Estimated unique patients by product and year[5]

N = 2,500,156 (2024); 8,325,952 (cumulative)

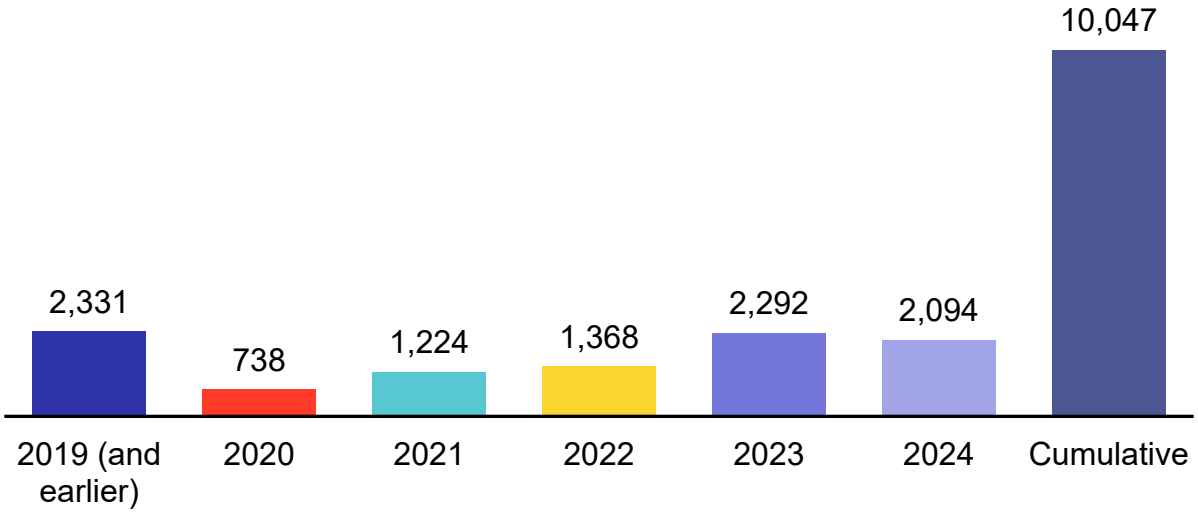


[4] New countries added included: Bulgaria, Estonia, Iceland, Liechtenstein, Slovakia, Switzerland, Trinidad and Tobago, Malta, Indonesia, Bosnia-Herzegovina, and Bangladesh.

[5] Precise unique patients are unknown because some portion of scans could involve the same patient (i.e., management vs. diagnosis). For this reports' purpose, we assume that only a third of scans are attributable to 'unique' patients.

E. Estimated healthcare professionals trained by year[6]

N = 2,094 (2024); 10,047 (cumulative)



[6]We have conservatively estimated that only 1 healthcare professional has been trained per unit sold.

Appendix – Impact Metric Assumptions and Estimate Methodology

Units Billed by Product

Units Billed by Product				
Calendar Period	**Bladder**	**Vein**	**Kosmos**	**Total**
2019 and Earlier	2,108	222	1	2,331
2020	455	80	203	738
2021	495	68	661	1,224
2022	320	56	992	1,368
2023	341	24	1,927	2,292
2024	405	0	1,689	2,094
Cumulative	**4,124**	**450**	**5,473**	**10,047**

Estimated Patient Scans by Product and Year

Estimated Scan 'Units' by Product and Year				
Calendar Period	**Bladder**	**Vein**	**Kosmos**	**Total**
2019 and Earlier	2,663,958	133,853	68	2,797,878
2020	1,896,416	209,183	110,970	2,216,569
2021	2,299,054	274,455	395,010	2,968,519
2022	2,612,861	329,265	1,116,383	4,058,509
2023	2,880,971	356,130	2,198,813	5,435,914
2024	3,236,021	364,500	3,899,948	7,500,469
Cumulative	**15,589,282**	**1,667,385**	**7,721,190**	**24,977,857**

A. Methodology for Estimating "Unit" Tests[7]

To estimate scans per active unit in the field, we reviewed a clinical study of real-world POCUS usage that sited observed average daily scans per GP between 0.6 and 3.9. We took the midpoint of that to arrive at an assumption of 67.5 scans per month, per device and multiplied that by the active units for each month to estimate scans.

Key Assumptions		
Product	**Scans Per Provider Per Month**	**Providers Per Unit**
Bladder	67.5	1
Vein	67.5	1
Kosmos	67.5	1

Reported Scan Frequency		
Range	**Average Daily Use Per GP**	**Implied Monthly Use**
High	3.9	117.0
Mid	2.3	67.5
Low	0.6	18.0

[7] Andersen CA, Brodersen J, Rudbæk TR, Jensen MB. Patients' experiences of the use of point-of-care ultrasound in general practice - a cross-sectional study. BMC Fam Pract. 2021 Jun 18;22(1):116. doi: 10.1186/s12875-021-01459-z. PMID: 34144701; PMCID: PMC8214303. We had previously relied on an older study, linked here.

B. Calculations for Estimating Scan "Units"[8]

1. Bladder

Vintage by	# Units	Avg. Active Months						Scans Per Unit	Est. Scan "Units" by Reporting Period					
Calendar Quarter	Billed	2019 (and Earlier)	2020	2021	2022	2023	2024	Per Month	2019 (and Earlier)	2020	2021	2022	2023	2024
2017	533	33	12	12	12	12	12	67.5	1,187,258	431,730	431,730	431,730	431,730	431,730
Q1 2018	143	26	12	12	12	12	12	67.5	249,278	115,830	115,830	115,830	115,830	115,830
Q2 2018	163	23	12	12	12	12	12	67.5	253,800	132,030	132,030	132,030	132,030	132,030
Q3 2018	211	20	12	12	12	12	12	67.5	281,678	170,910	170,910	170,910	170,910	170,910
Q4 2018	236	17	12	12	12	12	12	67.5	268,988	191,160	191,160	191,160	191,160	191,160
Q1 2019	130	14	12	12	12	12	12	67.5	122,580	105,300	105,300	105,300	105,300	105,300
Q2 2019	133	11	12	12	12	12	12	67.5	98,955	107,730	107,730	107,730	107,730	107,730
Q3 2019	232	8	12	12	12	12	12	67.5	124,810	187,924	187,924	187,924	187,924	187,924
Q4 2019	167	5	12	12	12	12	12	67.5	57,173	135,270	135,270	135,270	135,270	135,270
Q1 2020	160	2	12	12	12	12	12	67.5	19,440	129,600	129,600	129,600	129,600	129,600
Q2 2020	107	0	11	12	12	12	12	67.5	0	81,000	86,670	86,670	86,670	86,670
Q3 2020	84	0	8	12	12	12	12	67.5	0	44,348	68,040	68,040	68,040	68,040
Q4 2020	125	0	5	12	12	12	12	67.5	0	44,753	101,250	101,250	101,250	101,250
Q1 2021	139	0	2	12	12	12	12	67.5	0	18,833	112,590	112,590	112,590	112,590
Q2 2021	150	0	0	11	12	12	12	67.5	0	0	107,865	121,500	121,500	121,500
Q3 2021	126	0	0	8	12	12	12	67.5	0	0	67,635	102,060	102,060	102,060
Q4 2021	100	0	0	5	12	12	12	67.5	0	0	30,578	81,000	81,000	81,000
Q1 2022	119	0	0	2	12	12	12	67.5	0	0	16,943	96,390	96,390	96,390
Q2 2022	97	0	0	0	11	12	12	67.5	0	0	0	71,820	78,570	78,570
Q3 2022	70	0	0	0	8	12	12	67.5	0	0	0	36,788	56,700	56,700
Q4 2022	51	0	0	0	5	12	12	67.5	0	0	0	17,550	41,310	41,310
Q1 2023	102	0	0	0	1	12	12	67.5	0	0	0	9,720	82,620	82,620
Q2 2023	69	0	0	0	0	11	12	67.5	0	0	0	0	50,490	55,890
Q3 2023	99	0	0	0	0	8	12	67.5	0	0	0	0	52,988	80,190
Q4 2023	83	0	0	0	0	5	12	67.5	0	0	0	0	29,228	67,230
Q1 2024	90	0	0	0	0	2	12	67.5	0	0	0	0	12,083	72,900
Q2 2024	196	0	0	0	0	0	11	67.5	0	0	0	0	0	147,825
Q3 2024	79	0	0	0	0	0	8	67.5	0	0	0	0	0	42,188
Q4 2024	83	0	0	0	0	0	5	67.5	0	0	0	0	0	28,755
Q1 2025	47	0	0	0	0	0	2	67.5	0	0	0	0	0	4,860
Total	**4,124**								**2,663,958**	**1,896,416**	**2,299,054**	**2,612,861**	**2,880,971**	**3,236,021**

[8] Calculations performed based on monthly billing data with the exception of 2017 (for which we assume units were active for six months). Data presented on a calendar quarter basis for readability.

2. Vein

Vintage by	# Units	Avg. Active Months						Scans Per Unit	Est. Scan "Units" by Reporting Period					
Calendar Quarter	Billed	2019 (and Earlier)	2020	2021	2022	2023	2024	Per Month	2019 (and Earlier)	2020	2021	2022	2023	2024
2017	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q1 2018	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q2 2018	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q3 2018	7	19	12	12	12	12	12	67.5	9,180	5,670	5,670	5,670	5,670	5,670
Q4 2018	35	17	12	12	12	12	12	67.5	41,175	28,350	28,350	28,350	28,350	28,350
Q1 2019	37	14	12	12	12	12	12	67.5	33,953	29,970	29,970	29,970	29,970	29,970
Q2 2019	9	11	12	12	12	12	12	67.5	6,480	7,290	7,290	7,290	7,290	7,290
Q3 2019	39	8	12	12	12	12	12	67.5	21,533	31,590	31,590	31,590	31,590	31,590
Q4 2019	48	5	12	12	12	12	12	67.5	16,335	38,880	38,880	38,880	38,880	38,880
Q1 2020	47	2	12	12	12	12	12	67.5	5,198	38,070	38,070	38,070	38,070	38,070
Q2 2020	12	0	10	12	12	12	12	67.5	0	8,235	9,720	9,720	9,720	9,720
Q3 2020	16	0	8	12	12	12	12	67.5	0	8,438	12,960	12,960	12,960	12,960
Q4 2020	26	0	5	12	12	12	12	67.5	0	8,843	21,060	21,060	21,060	21,060
Q1 2021	26	0	2	12	12	12	12	67.5	0	3,848	21,060	21,060	21,060	21,060
Q2 2021	23	0	0	11	12	12	12	67.5	0	0	16,403	18,630	18,630	18,630
Q3 2021	9	0	0	8	12	12	12	67.5	0	0	5,130	7,290	7,290	7,290
Q4 2021	16	0	0	5	12	12	12	67.5	0	0	5,265	12,960	12,960	12,960
Q1 2022	20	0	0	2	12	12	12	67.5	0	0	3,038	16,200	16,200	16,200
Q2 2022	24	0	0	0	12	12	12	67.5	0	0	0	18,765	19,440	19,440
Q3 2022	14	0	0	0	8	12	12	67.5	0	0	0	7,560	11,340	11,340
Q4 2022	6	0	0	0	5	12	12	67.5	0	0	0	1,890	4,860	4,860
Q1 2023	12	0	0	0	2	12	12	67.5	0	0	0	1,350	9,720	9,720
Q2 2023	6	0	0	0	0	11	12	67.5	0	0	0	0	4,388	4,860
Q3 2023	9	0	0	0	0	8	12	67.5	0	0	0	0	4,793	7,290
Q4 2023	4	0	0	0	0	5	12	67.5	0	0	0	0	1,283	3,240
Q1 2024	5	0	0	0	0	2	12	67.5	0	0	0	0	608	4,050
Q2 2024	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q3 2024	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q4 2024	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q1 2025	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Total	**450**								**133,853**	**209,183**	**274,455**	**329,265**	**356,130**	**364,500**

3. Kosmos

Vintage by	# Units	Avg. Active Months						Scans Per Unit	Est. Scan "Units" by Reporting Period					
Calendar Quarter	Billed	2019 (and Earlier)	2020	2021	2022	2023	2024	Per Month	2019 (and Earlier)	2020	2021	2022	2023	2024
2017	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q1 2018	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q2 2018	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q3 2018	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q4 2018	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q1 2019	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q2 2019	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q3 2019	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q4 2019	0	0	0	0	0	0	0	67.5	0	0	0	0	0	0
Q1 2020	1	1	12	12	12	12	12	67.5	68	810	810	810	810	810
Q2 2020	128	0	11	12	12	12	12	67.5	0	95,175	103,680	103,680	103,680	103,680
Q3 2020	14	0	9	12	12	12	12	67.5	0	8,100	11,340	11,340	11,340	11,340
Q4 2020	5	0	4	12	12	12	12	67.5	0	1,485	4,050	4,050	4,050	4,050
Q1 2021	56	0	1	12	12	12	12	67.5	0	5,400	45,360	45,360	45,360	45,360
Q2 2021	83	0	0	11	12	12	12	67.5	0	0	59,738	67,230	67,230	67,230
Q3 2021	161	0	0	8	12	12	12	67.5	0	0	82,283	130,410	130,410	130,410
Q4 2021	219	0	0	4	12	12	12	67.5	0	0	66,353	177,390	177,390	177,390
Q1 2022	198	0	0	2	12	12	12	67.5	0	0	21,398	160,380	160,380	160,380
Q2 2022	242	0	0	0	11	12	12	67.5	0	0	0	180,428	196,020	196,020
Q3 2022	267	0	0	0	8	12	12	67.5	0	0	0	139,590	216,270	216,270
Q4 2022	216	0	0	0	5	12	12	67.5	0	0	0	67,905	174,960	174,960
Q1 2023	267	0	0	0	2	12	12	67.5	0	0	0	27,810	216,270	216,270
Q2 2023	310	0	0	0	0	11	12	67.5	0	0	0	0	225,180	251,100
Q3 2023	298	0	0	0	0	8	12	67.5	0	0	0	0	158,288	241,380
Q4 2023	759	0	0	0	0	5	12	67.5	0	0	0	0	237,263	614,790
Q1 2024	560	0	0	0	0	2	12	67.5	0	0	0	0	73,913	453,600
Q2 2024	660	0	0	0	0	0	11	67.5	0	0	0	0	0	500,513
Q3 2024	367	0	0	0	0	0	8	67.5	0	0	0	0	0	200,948
Q4 2024	282	0	0	0	0	0	5	67.5	0	0	0	0	0	90,518
Q1 2025	380	0	0	0	0	0	2	67.5	0	0	0	0	0	42,930
Total	**5,473**								**68**	**110,970**	**395,010**	**1,116,383**	**2,198,813**	**3,899,948**

II. IMPACT SPOTLIGHT
Bringing patient care to remote geographies: digital deployment of AI-enabled portable ultrasound in Latin America and the Caribbean

Background

Bridging the Rural Health Divide: A Spotlight on Innovation in Latin America and the Caribbean

This Impact Spotlight marks a departure from previous reports, in that it is the first time TEAMFund has profiled a portfolio company's experience in the Latin America and Caribbean ("LAC") region, using **Guyana** as our case study. Our report profiles the widening health disparities between urban and rural populations in low- and middle-income countries ("LMICs"), especially in some of the most remote, hard-to-penetrate geographies the world has to offer: Guyana's **densely forested Amazon hinterlands**. Against the backdrop of harsh geographic barriers to access, we tell the story of the country's successful **public/private partnership** with **19Labs**, a platform provider hosting a full array of digitally connected medical innovations, including Echonous' Kosmos POCUS. The platform of products is intended to **support and strengthen primary care** in low-resource settings, with the assistance of **telemedicine**, **artificial intelligence ("AI")**, and **satellite connectivity**. For Echonous, this represents the **first country-wide deployment** of Kosmos in an LMIC. Guyana is primarily a rural country, at least **80%** of Guyana's population, and virtually **everyone living in rural environments leverage the government funded public healthcare system**,[1] and as of this writing, 19Labs' platform has been deployed across **81** public sites.

[1]World Bank (2025) *Guyana launches One Health Project to boost health resilience*. [Press release] 26 March. Washington, D.C.: World Bank. Available at: ⟨World Bank press release online⟩ (Accessed: 7 July 2025).

We will examine the key access challenges that confront rural regions of Guyana and similarly situated LMICs, and describe how telehealth innovations like the 19Labs' platform and Echonous' Kosmos, can upscale primary care health workers, expand specialists' reach, and improve the quality and frequency of diagnosing, triaging, and managing patient care in primary care settings. The public/private partnership between Guyana, 19Labs, Echonous and other innovator companies on the platform, serves as an important early model for LMICs seeking to strengthen their more rural and remote primary healthcare systems through digital innovation.

The crucial nature of point-of-care ultrasound in LMIC healthcare

Although we have written regularly about point-of-care ultrasound ("POCUS") in recent years, we remind our readers again of its transformative application in LMICs over the last several decades. Its compact lightweight design, affordability, and diagnostic versatility, make it especially valuable in resource-constrained settings. Impactful clinical applications of this medical device span a wide array of uses – from detection of fluid collection, to assessments involving cardiac function, diseases and conditions of the lung, trauma, and obstetrics.[2]

The extensive range of clinical applications provided by POCUS, tells only part of the story in LMICs. The true strength behind POCUS is not merely in the scope of its service capabilities, but in the game-changing impact it can have on **reducing barriers to access** in LMIC settings. Multiple studies have shown that POCUS, among other achievements, can:

(a) support **task-shifting** to lower cadre healthcare workers[3];

(b) extend the reach of **scarce specialists[4];**

[2] Chelikam N. et al (2023). Past and Present of Point-of-Care Ultrasound (PoCUS): A Narrative Review. Cureus. Dec 8;15(12):e50155. doi: 10.7759/cureus.50155. PMID: 38192958; PMCID: PMC10771967.
[3] Huang, W. et al. (2024) Point-of-care AI-enhanced novice echocardiography for screening heart failure (PANES-HF). Sci Rep 14, 13503. https://doi.org/10.1038/s41598-024-62467-4
[4] Pellikka, P.A. (2023) 'Broadening perspectives of artificial intelligence in echocardiography', Journal of the American Society of Echocardiography, 36(3), pp. 263–264. Available at: https://onlinejase.com/article/S0894-7317(23)00019-6/fulltext (Accessed: 7 July 2025).

(c) **close gaps in diagnostic capability** caused by limited access to advanced imaging modalities such as CT and MRI in focused trauma assessment ("FAST") exams;

(d) expand capabilities to **strengthen primary care systems; and**[5]

(e) help to **better manage** the ever-increasing burden of **noncommunicable diseases ("NCDs"), especially cardiovascular disease**

Those POCUS innovations that advance **affordability**, **simplicity**, and **portability** of handheld systems, while also ensuring **quality** and **performance** of **cart-based ultrasound**, are the innovations that have greatest impact potential, and are most urgently needed, in LMICs.

Workforce shortages demand novel, AI-driven, technological solutions

One of the key challenges that has plagued virtually all health sectors seeking to expand support, has been the lack of health professionals[6,7]. The global shortage of healthcare professionals has led highly qualified staff trained in LMICs to pursue opportunities abroad. This trend is exacerbated by extremely low national healthcare worker training rates (2.4

[5]Point of care ultrasound (POCUS) devices such as the KOSMOS platform created by Echonous provide key medical diagnostic and screening tools to monitor a huge range of conditions. Ultrasound platforms are among the most commonly used devices in hospitals and clinics, providing key functions such as:

1) **Obstetrics and prenatal monitoring** – Ultrasound is the standard of care in prenatal care globally, used at multiple stages of pregnancy. Safe for mother and fetus, it is critical for determining fetal viability, heartbeat monitoring, detecting twins, conducting anatomical scans and guiding procedures (such as amniocentesis), among other essential aspects.
2) **Cardiovascular monitoring** – Echo ultrasound is indispensable in cardiology, and among the most common uses of this technology. It provides real-time evaluation of heart structure, stress echocardiography can identify ischemia or coronary artery disease under physical stress, and rapid bedside evaluations to identify acute heart failure or cardiogenic shock.
3) **Emergency care** – Focused assessment with sonography can identify internal bleeding to guide urgent surgical decisions, evaluate heart function to determine presence or absence of cardiac motion in pulseless patients, and be used to identify detection of lung injuries at the bedside.

[6]Saluja, S. et al. (2020) 'The impact of physician migration on mortality in low and middle-income countries: an economic modelling study', BMJ Global Health, 5, p. e001535. doi:10.1136/bmjgh-2019-001535.

[7] Eaton, J. (2023). The negative impact of global health worker migration, and how it can be addressed. Public Health, 225, pp.254–257. https://doi.org/10.1016/j.puhe.2023.02.012

nurses/100,000 population in Guyana[8]) and budgetary constraints that limit countries' ability to offer competitive salaries to retain existing staff. In the Latin America and Caribbean region, persistent health workforce shortages threaten healthcare delivery[9]. Recent Pan American Health Organization ("PAHO") estimates suggest a **current shortfall of at least 600,000 health professionals in the region**, which could grow to **2 million by 2030** without urgent action.[10]

Despite urgent efforts to train and hire more healthcare staff, the trends driving low graduation and retention rates are not likely to change in the near future. For this reason, it is imperative for countries like Guyana to embrace innovation, including point-of-care diagnostic devices, that successfully screen, diagnose, triage, and support management of patient care, including for chronic diseases. This is particularly urgent, as the elimination of the US Agency for International Development could result in the loss of tens of thousands of healthcare workers in LMICs, forcing remaining ministry healthcare staff to take on expanded responsibilities across HIV, malaria, and TB programs.[11,12].

Artificial intelligence ("AI") and telehealth technologies have been proven to mitigate the impacts of staffing shortages by expanding the reach and efficiency of existing professionals through remote consultations with

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[8] Pan American Health Organization (2025) 'PAHO warns of dramatic decline in nursing graduates', *Kaieteur News*, 13 May. Available at: https://www.kaieteurnewsonline.com/2025/05/13/paho-warns-of-dramatic-decline-in-nursing-graduates/ (Accessed: 14 July 2025)

[9] Vansell, H.J., Schlesinger, J.J., Harvey, A., Rohde, J.P., Persaud, S. and McQueen, K.A. (2015) 'Anaesthesia, surgery, obstetrics, and emergency care in Guyana', Journal of Epidemiology and Global Health, 5(1), pp. 75–83. doi:10.1016/j.jegh.2014.08.003.

[10] Pan American Health Organization (2022) 'The Americas has a shortfall of 600,000 health professionals, affecting access to health in rural and underserved areas', PAHO News Release, 27 May. Available at: https://www.paho.org/en/news/27-5-2022-americas-has-shortfall-600000-health-professionals-affecting-access-health-rural-and (Accessed: 14 July 2025).

[11] Mersie, A. (2025) 'Thousands of African health workers lose jobs due to US aid funding freeze', Devex, 13 February. Available at: https://www.devex.com/news/thousands-of-african-health-workers-lose-jobs-due-to-us-aid-funding-freeze-109384 (Accessed: 14 July 2025).

[12] Fraser, S. (2025) 'Cuts to USAID – the Fallout Continues (Part 2)', Global Policy Journal (blog), 10 June. Available at: https://www.globalpolicyjournal.com/blog/10/06/2025/cuts-usaid-fallout-continues-part-2 (Accessed: 14 July 2025).

community health workers, without requiring a physical presence. **More than any other setting, rural healthcare has much to gain from AI.** In the past, rural patients would attend their local health clinics, but due to poor diagnostic infrastructure, might be referred to district or regional hospitals. These hospitals could be many hours worth of travel from a patient's home, leading to significant out of pocket expenses and lost wages for the patient. The more arduous the journey, the greater the expenses and lost wages, and the less likely a patient is to attend follow-up appointments. Today, diagnoses previously took place at regional hospitals can occur at the patient's local clinic. In extreme scenarios, telehealth could even prompt medical evacuation and urgent drone deliveries of life saving medications such as vaccines, therapeutics, or snake antivenom, as has occurred in Malawi previously, and is now starting in Guyana with 19Labs[13].

Early success stories, and crucial infrastructure investments, have set the stage for Guyana and other LMICs, to leverage telehealth and AI to improve rural health personnel shortfalls.[14]

Health challenges in Guyana - reaching hard-to-access populations

Guyana is a relatively small country on the northern edge of South America. Although part of the South America mainland, it is generally considered a Caribbean country, due to strong cultural and historical ties to that region. To underscore this point, Guyana was a founding member of the Caribbean Community ("CARICOM"). It is one of nine countries connected by the Amazon, with over **85%** of the country covered in **dense tropical rainforest** (see **Figure 1** below). This region, known as "the hinterlands," is largely impassable and contains a collection of loosely connected small communities, most with populations of less than **400 individuals**. While **over 72%** of all people in Guyana are estimated to live in **rural areas**, only **100,000 people** are estimated to live in the internal hinterland regions.

[13] https://wingcopter.com/project/malawi_medical_delivery

[14] Jemal, Kemal et al. (2024) "Implementation and evaluation of a pilot antenatal ultrasound imaging programme using tele-ultrasound in Ethiopia." Journal of telemedicine and telecare vol. 30,6: 1005-1016. doi:10.1177/1357633X221115746

Many hinterland villages are poorly connected to regional hubs and rely on Health Huts—local clinics staffed by community health workers with limited training and education[15]. These facilities offer basic preventive and curative services, health education, and referrals to higher-level care (**Table 1**). Reaching Primary Health Centers, as well as Level II and III hospitals with medical extension workers, nurses, and midwives may require arduous travel involving river travel, air transport, and unpaved roads (only 7–20% of highways in Guyana are paved), with unreliable public transportation.[16]

These challenges expand the divide between rural and urban healthcare access. Studies and systematic reviews consistently highlight that rural patients tend to be sicker and have more advanced disease at the time of diagnosis, compared to their urban counterparts[17,18]. This is not always a matter of disease prevalence, but rather a reflection of deeply entrenched disparities in the availability and quality of healthcare services. Rural populations often face significant barriers in accessing even basic outpatient care, exacerbating health inequities and contributing to poorer outcomes[19].

[15] Pan American Health Organization ("PAHO"). (2003) Health Sector Analysis: Guyana. Washington, D.C.: PAHO. Available at: https://www3.paho.org/hq/dmdocuments/2010/Health_Sector_Analysis-Guyana_2003.pdf (Accessed: 26 June 2025).
[16] Inter-American Development Bank Group (IDB Group), 2023. IDB Group Country Strategy with Guyana 2023–2026. [PDF] Available at: https://idbinvest.org/sites/default/files/2023-12/IDB%20Group%20Country%20Strategy%20with%20Guyana%202023-2026%20-%20Public.pdf (Accessed: 7 July 2025).
[17]Flood, D. et al. (2022) 'Rural-urban differences in diabetes care and control in 42 low- and middle-income countries: A cross-sectional study of nationally representative individual-level data', Diabetes Care, 45(9), pp. 1961–1970. doi:10.2337/dc21-2342.
[18]Rai, P., Sahadevan, P., Mensegere, A.L., Issac, T.G., Muniz-Terrera, G. and Sundarakumar, J.S. (2024) 'Rural-urban disparities in the diagnosis and treatment of hypertension and diabetes among aging Indians', Alzheimer's & Dementia, 20(4), pp. 2943–2951. doi:10.1002/alz.13771.
[19] Evans, M.V. et al. (2022) 'Geographic barriers to care persist at the community healthcare level: Evidence from rural Madagascar', PLOS Global Public Health, 2(12), p. e0001028. doi:10.1371/journal.pgph.0001028.

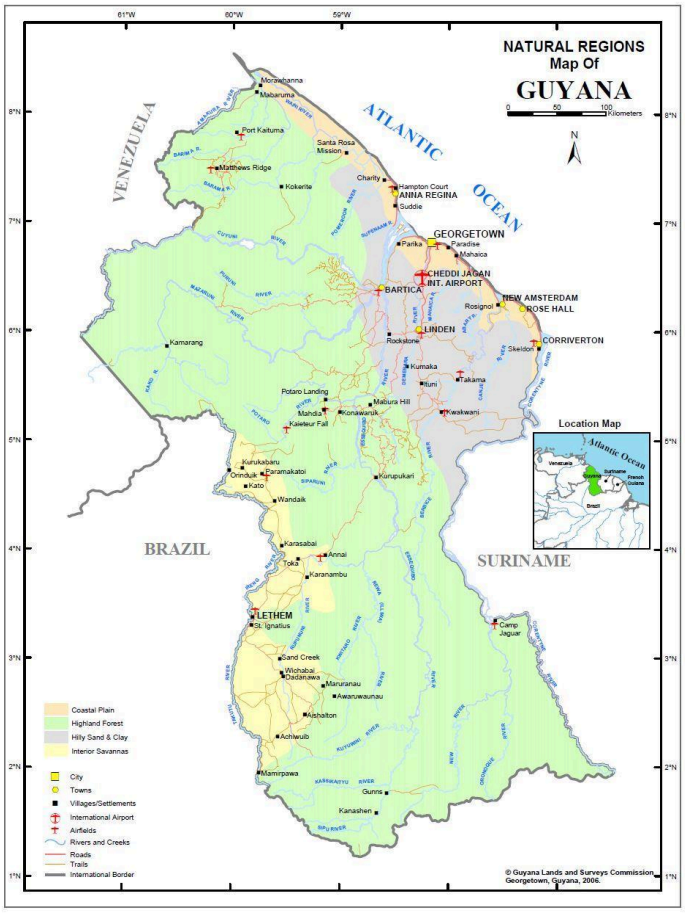

Figure 1 - Map of Guyana shows most of the country covered by dense rainforest (in green), with small villages and limited connections in the hinterlands (courtesy of the Guyana Lands and Surveys Commission)

Emerging solutions like AI-enabled diagnostics, supported by telemedicine, offer promising opportunities to improve equity. Telemedicine enables rural clinics to connect with specialists in urban centers, expanding the reach of expert care without the need for patient travel. **When paired with AI-driven diagnostic tools, these systems can offer immediate, high-quality diagnostic support at the point-of-care, improving triage and allowing patients to receive earlier, more accurate, and more regular assessments close to home.** As we describe below, this combination of digitally connected innovations is already showing success in Guyana by improving diagnosis and eliminating unnecessary referrals.

Tackling the problem - EchoNous + 19Labs: Innovations for Rural Healthcare Access in Guyana

In recent years, the Government of Guyana has dedicated significant funding to expand healthcare services and provide infrastructure upgrades to the hinterlands. The health system is a classic tiered public system, with universal healthcare available to all citizens and residents. Primary care is typically available at most locations, but most specialized services such as advanced diagnostics and surgeries are limited to level II/III and more capable facilities, which are concentrated in urban areas (**Table 1)**. Transportation connectivity is generally considered to be poor, limiting travel and access to higher quality services. In 2022, the government announced an ambitious **USD$600 million plan** over three years to upgrade healthcare facilities in the hinterlands by improving infrastructure, establishing electronic medical records, and expanding telehealth using Low Earth Orbital ("LEO") satellite connections at remote facilities.[20] Combined with dedicated solar panels, LEO has rapidly expanded internet connectivity and **reportedly reaches over 120,000 locals in 126 remote villages**. By the end of this year it is expected to reach **300** healthcare facilities[21]. Enhanced connectivity for healthcare centers provides new opportunities for telehealth, linking healthcare facilities with specialists in Georgetown, the capital, and the only large urban center in the country.

In June 2023, EchoNous and 19Labs announced a partnership to support expansion of enhanced telemedicine capabilities to rural communities via that partnership[22]. Kosmos was added to the 19Labs platform of supported

[20] LEO satellite internet is a broadband connectivity technology that uses a network of satellites orbiting 500–2,000 km above the Earth to deliver low-latency, high-speed internet access, particularly useful in remote or underserved areas

[21] Department of Public Information (2024) Bridging the digital divide: 146 ICT hubs completed in the hinterland. Available at: https://dpi.gov.gy/bridging-the-digital-divide-146-ict-hubs-completed-in-the-hinterland/?utm_source=chatgpt.com (Accessed: 26 June 2025)

[22] EchoNous, 2023. EchoNous and 19Labs partner to offer AI-enhanced point-of-care telemedicine platform. [online] EIN Presswire, 14 June. Available at: https://www.einnews.com/pr_news/639298106/echonous-and-19labs-partner-to-offer-ai-enhanced-point-of-care-telemedicine-platform [Accessed 19 Jun 2025].

devices,[23] including the mobile support units distributed to improve health outcomes for patients in remote healthcare clinics. **Now operating in over 80 communities, 19Labs works closely with governments through a public-private collaboration to deliver digital telemedicine clinics, providing** operational dashboards to support rural information systems and remotely connecting community healthcare workers in the hinterlands to medical professionals in regional hospitals.

Table 1 - Healthcare services & staffing patterns at Guyana facilities

Facility Level	Typical Services Provided	Typical Staff/Cadres
Community Level	Health promotion, home visits, basic care, referrals	Community Health Workers (CHWs), Traditional Birth Attendants (TBAs)
Health Post / Dispensary	Basic outpatient care, antenatal services, immunizations, health education, minor illnesses	CHWs, Health Extension Workers, Nurses, Midwives
Primary Health Center (PHC)	Preventive and curative outpatient care, uncomplicated deliveries, basic labs, minor procedures	Nurses, Midwives, Clinical Officers, Lab Technicians, Pharmacy Technicians
Health Centre (Level II/III)	24-hour care, basic inpatient services, minor surgery, maternal care, disease screening	Medical Officers, Nurses, Clinical Officers, Midwives, Lab Technicians, Radiographers
District Hospital	Comprehensive inpatient care, surgeries, advanced maternity care, NCD and infectious disease management	Physicians, Surgeons, Anesthetists, Specialists, Lab and Imaging Staff, Pharmacists
Regional / Provincial Hospital	Specialized services, blood bank, ICU, comprehensive diagnostics	Specialist Doctors, Surgeons, Imaging Technicians, Advanced Laboratory Staff
Tertiary / Referral Hospital	Advanced diagnostics and surgical services, specialist clinics, teaching and research	Sub-specialists, Consultants, Academic Staff, Teaching Faculty

[23] 19Labs POC platform that includes both diagnostic devices, video conferencing, tablet, and proprietary software. Designed to be used on the ground by non-healthcare professionals with limited infrastructure and optimized for low bandwidth and intermittent connectivity.

Telemedicine is particularly crucial for more complicated and high risk applications such as emergency medicine, trauma, and prenatal health issues monitored by Kosmos. To complement this approach, Guyana has recognized the need for lower cadre staff to be well versed in the application of telemedicine as a support vehicle. The government has implemented telemedicine training sessions for healthcare workers in five of the most remote regions in Guyana to enhance the capacity of primary healthcare and regional health service workers[24]. These sessions train staff on 19Labs telemedicine platform and underscore the Ministry's commitment to promote advanced healthcare through innovative technologies.

Although 19Labs does not monitor patient usage data, it is clear from our conversations with their team that **Kosmos is used by community healthcare workers on a daily basis**, and in combination with telehealth visits, the device provides key support for patients in these hard to reach locations. To date, most of the use is related to obstetrics[25], but there is a goal to formalize further training, particularly for emergency medicine.

Echonous' collaboration with 19Labs has expanded its footprint in LMICs, and provided the company new opportunities through public-private partnerships not just in Guyana but also in Mexico, where a similar collaboration is ongoing.[26,27]

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[24] Ministry of Health, Guyana (n.d.) MoH conducts telemedicine training for health care workers. [Press release] Available at: https://health.gov.gy/press_release/moh-conducts-telemedicine-training-for-health-care-workers/ (Accessed: 9 July 2025).

[25] In high-income countries, most women have routine ANC visits throughout their pregnancy, ultimately giving birth in a hospital. This is remarkably different in LMIC settings, where 15% of women do not have at least one ANC visit, and half of women have four or more visits prior to the birth of a child. Therefore, it is crucial to make every visit count, particularly as some women need to walk or travel for over an hour to reach a local clinic. When used together with telemedicine, the AI technology included in the Kosmos platform can be a force multiplier. It links local healthcare workers in a rural setting to a medical professional hundreds of miles away, resulting in a two way conversation, providing the patient with immediate diagnosis, support, and guidance, on any complications, rather than requiring follow up visits or long travel to regional hospitals.

[26] Baum, E. et al. (2023) 'Use of artificial intelligence for acquisition of limited echocardiograms: A randomized controlled trial for educational outcomes', medRxiv preprint. doi:10.1101/2023.04.12.23288497.

[27] Huang, W. et al. (2024) 'Point-of-care AI-enhanced novice echocardiography for screening heart failure (PANES-HF)', Scientific Reports, 14, p. 13503. Available at: https://doi.org/10.1038/s41598-024-62467-4 [Accessed 19 Jun. 2025].

EchoNous' medical technology offerings and strategic partnerships continue to grow

What makes EchoNous uniquely suited to solve challenges in rural healthcare, are precisely what make it capable of expanding to other LMICs. Guyana's unique and thoughtful approach to expanding services to regional clinics should be a model for other LMICs. Leveraging low earth orbit satellites, telehealth, and AI technology will be crucial in this post-USAID world where countries will need to become more efficient with the healthcare staff they can afford to field. The Kosmos platform remains a best-in-class product that combines high quality ultrasound with the affordability, simplicity, and portability of a handheld system. The mobile system is uniquely suited to supporting the challenges of rural and remote communities, and the built-in AI system provides added flexibility and functionality to improve quality of care for patients. In terms of imaging quality, Kosmos has the same capabilities of cart based ultrasound systems due to (a) a proprietary ultrasound-specific ASIC chip, (b) image quality benchmarked against cart-based systems, and (c) cutting-edge material science to prevent overheating.

Also, of significant value in low-resource regions, is a recently added **Auto Preset** feature, which automatically recognizes the part of the body to be measured, adjusting the depth and optimizing the settings. This feature is of particular value in venues where lower-skilled health personnel are assisting **only with placement of the probe**, with specialists remotely supervising. Use of the device is additionally aided, as needed, by real-time video sharing, and other forms of AI-driven, "on-system" guidance, further simplifying placement and navigation.

The future - cardiovascular disease and beyond

Based on our discussions with 19Labs and EchoNous, the majority of procedures currently being performed in Guyana are obstetrics-related, and to a lesser extent emergency care. In the future, a key challenge will be to increase training of healthcare staff to extend Kosmos use applications to cardiovascular imaging, as well as to leverage the Kosmos unique AI

software. In Guyana, cardiovascular diseases ("CVDs") are the leading cause of disease burdens, both with respect to morbidity and mortality (**Table 2**). Ischemic heart disease and hypertensive heart disease are major contributors to this burden.[28] Significantly, Guyana has one of the highest rates of age-standardized disability adjusted life years ("DALYs") related to CVDs on the South American continent (**Figure 1**).[29]

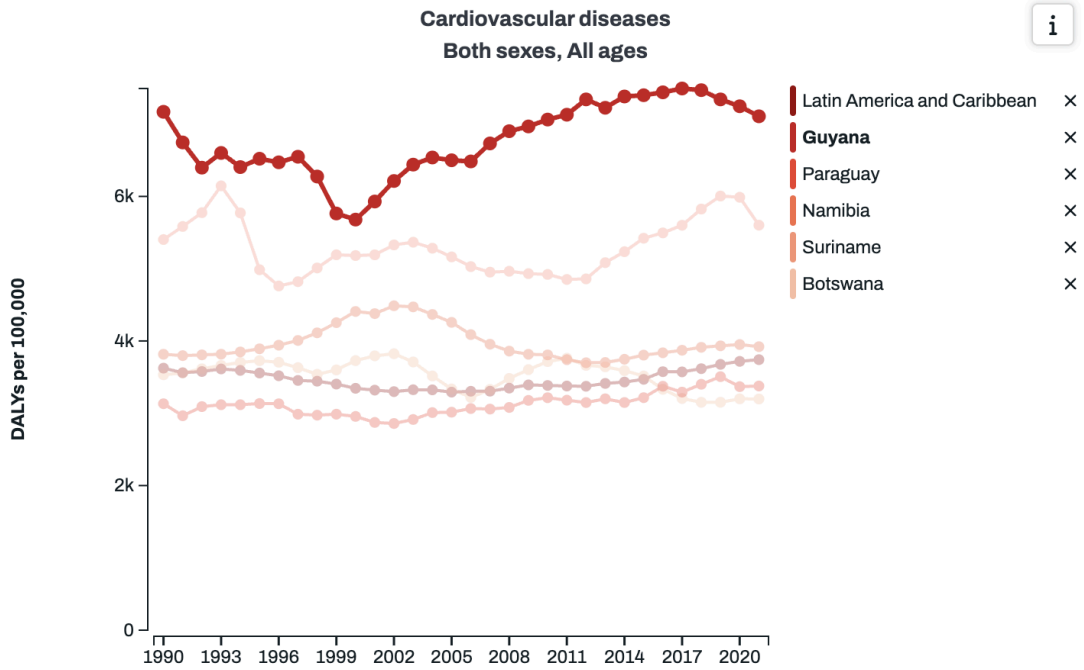

Figure 1 - Disability adjusted life years (DALY–number of years lost due to premature mortality) due to all non-communicable diseases in Guyana and other comparable countries

The toll from these diseases is not limited to health alone, as the economic burden of CVDs and other NCDs is already enormous in the LAC region. NCDs are estimated to cost the Caribbean between 1.4% and 8% of GDP annually, excluding indirect losses like reduced productivity.[30,31] These

[28]Sockalingam, L. et al. (2021) 'The rise in cardiovascular risk factors and chronic diseases in Guyana: A narrative review', Annals of Global Health, 87(1), p. 46. doi:10.5334/aogh.3060.
[29] Pan American Health Organization. Cardiovascular disease burden in the Region of the Americas, 2000-2021. ENLACE data portal. Washington, D.C.: PAHO; 2025. Available from: https://www.paho.org/en/enlace/cardiovascular-disease-burden.
[30] Collins TE, Karapici A, Berlina D. Investing in Addressing NCDs and Mental Health Conditions: a Political Choice. Ann Glob Health. 2025 Apr 29;91(1):22. doi: 10.5334/aogh.4649. PMID: 40321458; PMCID: PMC12047628.
[31]World Bank (2024) The Economic Impact of Non-Communicable Diseases in the Caribbean. World Bank Caribbean Brief, 5 April. Washington, D.C.: World Bank. Available at:

pressures are intensifying amid ongoing reductions in global health financing and compounding fiscal constraints for countries already operating with limited resources.Guyana faces a significant and growing burden of non-communicable diseases (NCDs)[32], which account for the majority of deaths and disability in the country **(Table 2)**. The impact of NCDs is particularly severe in rural and low-income populations, where access to regular screening and care is constrained. As a result, many individuals are diagnosed at advanced stages of disease, further complicating treatment and increasing health system costs (**Table 3**).

Table 2: Top ten diseases by death rate in Guyana (age standardized)*

Rank	Disease	Death Rate (per 100,000)
1	Coronary heart disease	192.95
2	Stroke	149.26
3	Diabetes mellitus	82.6
4	Hypertension	45.77
5	Influenza and pneumonia	42.19
6	Prostate cancer	41.13
7	Suicide	40.85
8	HIV/AIDS	34.94
9	Chronic kidney disease	32.95
10	Liver disease	26.93

In order to combat the rising NCD challenge, Guyana's Ministry of Health, in partnership with international organizations, has prioritized addressing NCDs through national strategies and community-level interventions. As an example, the evidence-based HEARTs program has expanded from an 8-site pilot to 237 sites as of February 2025. Significant investment and

https://www.worldbank.org/en/country/caribbean/brief/the-economic-impact-of-non-communicable-diseases-in-the-caribbean (Accessed: 9 July 2025).

[32] Klassen, S.L. et al. (2023) 'The Guyana Program to Advance Cardiac Care: A model for equitable cardiovascular care delivery', Global Heart, 18(1), p. 22. doi:10.5334/gh.1193.

innovation will continue to be necessary to reverse current trends and improve population health outcomes.

Table 3 - Benefits of early diagnosis for cardiovascular disease		
Aspect	**Early Diagnosis**	**Late Diagnosis**
Treatment Approach	Lifestyle changes, medications, minimal intervention	Complex procedures, possible surgeries
Prognosis	High likelihood of disease control, reduced events	Poorer outcomes, higher mortality
Quality of Life	Maintained or improved	Severely impaired
Healthcare Costs	Lower due to outpatient management	Substantially higher due to advanced care needs
Disease Progression	Often reversible or manageable	Often irreversible
Complications	Preventable	Common and life-threatening

Going forward, it will be important for LMICs to embrace “infrastructure leapfrogging”[33] – adopting technology-driven solutions that extend NCD care capacity to help counter workforce shortages, severely constrained budgets, and growing NCD burdens. As noted, Guyana has already taken several steps towards this future, and with plans to extend additional telehealth training modules to healthcare workers in remote sites, the country is on the right track to expand cardiovascular diagnostic and monitoring services to even the most remote clinics.

A large and growing body of literature on NCDs has shown that **distance, time, and transport barriers** all significantly impact patient awareness, retention, diagnosis, and continuity of care for chronic diseases, including

[33] **Infrastructure leapfrogging** refers to the adoption of advanced technologies or systems in places that have not developed traditional infrastructure, allowing them to bypass outdated models. This approach enables LMICs to accelerate development by directly implementing modern solutions—such as mobile banking or decentralized renewable energy—without first investing in legacy systems.

CVDs.[34,35,36] Crucially, both the WHO and PAHO – normative technical bodies whose recommendations are considered a benchmark for most LMICs – have recently supported AI use for routine diagnosis/management of CVDs and other chronic diseases. This support extends to clinical decision-making and risk stratification, task-shifting to non-specialists, remote monitoring and triage, and improved efficiency and accuracy of routine care[37,38] all offering new opportunities to support rural communities.

Kosmos stands ready to assist in this area, and is **uniquely capable** of providing POCUS service in the **cardiovascular** context. As previously noted, its Auto Preset, released in August of 2024, automatically recognizes which part of the body is being measured, and refines imaging in that context – an important feature to simplifying use.

Another feature just released in August of 2024, is Kosmos' **Auto Doppler**, allowing, automatically placing the sample gate at the appropriate cardiac valve location, adjusting baseline and taking a recording. Additional CVD imaging features include: Continuous Wave Doppler, Pulsed Wave Doppler, Color Powered Doppler, Color Tissue Doppler imaging – all features essential to clinical-grade cardiovascular diagnosis, triage, monitoring, and management of CVDs. Taken together, these innovations position Kosmos as a transformative tool in cardiovascular care, capable of expanding access to high-quality diagnostics while streamlining clinical workflows[39]

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[34]Evans, M.V. et al. (2022) 'Geographic barriers to care persist at the community healthcare level: Evidence from rural Madagascar', PLOS Global Public Health, 2(12), p. e0001028. doi:10.1371/journal.pgph.0001028.
[35]Rachlis, B. et al. (2016) 'Identifying common barriers and facilitators to linkage and retention in chronic disease care in western Kenya', BMC Public Health, 16, p. 741. doi:10.1186/s12889-016-3462-6.
[36]Varela, C. et al. (2019) 'Transportation barriers to access health care for surgical conditions in Malawi: a cross-sectional nationwide household survey', BMC Public Health, 19, p. 264. doi:10.1186/s12889-019-6577-8.
[37] Pan American Health Organization (PAHO), 2021. *Artificial Intelligence in Public Health: Readiness Assessment Toolkit*. Washington, DC: PAHO. Available at: https://iris.paho.org/handle/10665.2/53732 (Accessed: 9 July 2025).
Sources
[38] World Health Organization (WHO), 2023. Ethical and Governance Framework for Digital Health Technologies. Geneva: WHO. Available at: https://www.who.int/publications/i/item/9789240084759 (Accessed: 9 July 2025).
[39] **EchoNous** (n.d.) *Clinical benchmarking of the Kosmos platform*. Available at: https://echonous.com/clinical-benchmarking-kosmos-platform/ (Accessed: 7 July 2025).

Conclusion

Figure 2 – 19Labs and Guyana Ministry of Health – Training Community Health Workers (“CHWs”) in ultrasound technology to improve healthcare access in remote areas (March 2024)

Although the full impact of global health curtailment remains to be seen, what is already understood is the urgent need for LMICs to prioritize reassessment of their healthcare strategies, doubling down to ensure those strategies are **cost-effective**, **scalable**, and **digitally connected**. Private/public partnerships, as seen with 19Labs and Guyana (and more indirectly with platform innovation providers like Echonous), offer a pathway to:

- deliver advanced diagnostic tools
- expand access to care, including to the world’s most remote regions
- strengthen primary care infrastructure
- provide new training opportunities
- help bridge critical financing gaps.

Echonous’ Kosmos exemplifies the sweeping potential of the 19Labs Guyana platform. As a global leader in portable clinical cart-like echocardiographic imaging, Echonous is now able to deliver high-quality

imaging directly to primary health centers and community clinics in even the most remote locations. Aided by AI, telemedicine, and LEO satellite connectivity, it can help address workforce shortages, and enable task-shifting to community health workers, who can assist with placement and movement of Kosmos under the guidance of digitally accessed specialists overseeing the process from many miles away.

We commend Guyana and 19Labs for their partnership and digital vision to advance healthcare access: creating a platform providing an important array of digitally-enabled medical innovations, essential to strengthening primary care. As noted in the introduction, this deployment has been throughout the country, including to some of the most rugged, hard-to-penetrate geographies the world has to offer. Together with telemedicine, the platform serves as a model for other LMICs seeking to reimagine and grow their more rural primary healthcare systems through digital strategies.