Today's Healthcare Consumption: The changing landscape of consumer interest and access to providers, testing and information.

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Agenda:

1. How Consumers are changing the way they access healthcare providers
   - Virtual Exams
   - Telehealth Visits
   - Access to Symptom Checkers
   - Interest in Consumer Initiated Testing

2. How labs enable Consumer access to healthcare: Boston Heart Diagnostics Experience

3. Today's consumer willingness to pay out of pocket for home/work draw

4. How labs align with Virtual Care models: Boston Heart Diagnostics Experience

5. Evolution of patient self collection options, DBS, Tasso, YourBio…Is this an option for you?

The Changing Structure of the Physician-Patient Relationship:

- 68 years ago, Szasz and Hollender[1] Outlined 3 basic models-

  - Active-Passive Model – Physician acting upon the patient (Emergency scenario)
  - Guidance-Cooperation Model – Physician expected to decide what is in patient's best interest (Comply)
  - Mutual Participation Model – Equal partnership between the physician and patient (Goal Oriented)

- Today's Healthcare Consumer[2] shift:

  - Expectations for convenience, affordability and quality
  - Younger consumers not satisfied with status quo, willing to try non-traditional services
  - Non-traditional healthcare, such as ***virtual care*** and retail walk-in clinics gaining in popularity

1. Szasz TS, Hollender MH. A contribution to the philosophy of medicine: the basic models of the doctor-patient relationship. *AMA Arch Intern Med.* 1956;97(5):585–592. [PubMed] [Google Scholar]

2. Accenture 2019 Digital Health Consumer Survey

Overview of Virtual Health

Virtual Care: Telehealth, RPM, online appointments, virtual visits with HCPs

Telemedicine or Telehealth: Technology to provide remote clinical healthcare services, consultations, diagnosis and treatments, using electronic communication tools such as videoconferencing, phone calls or secure messaging.

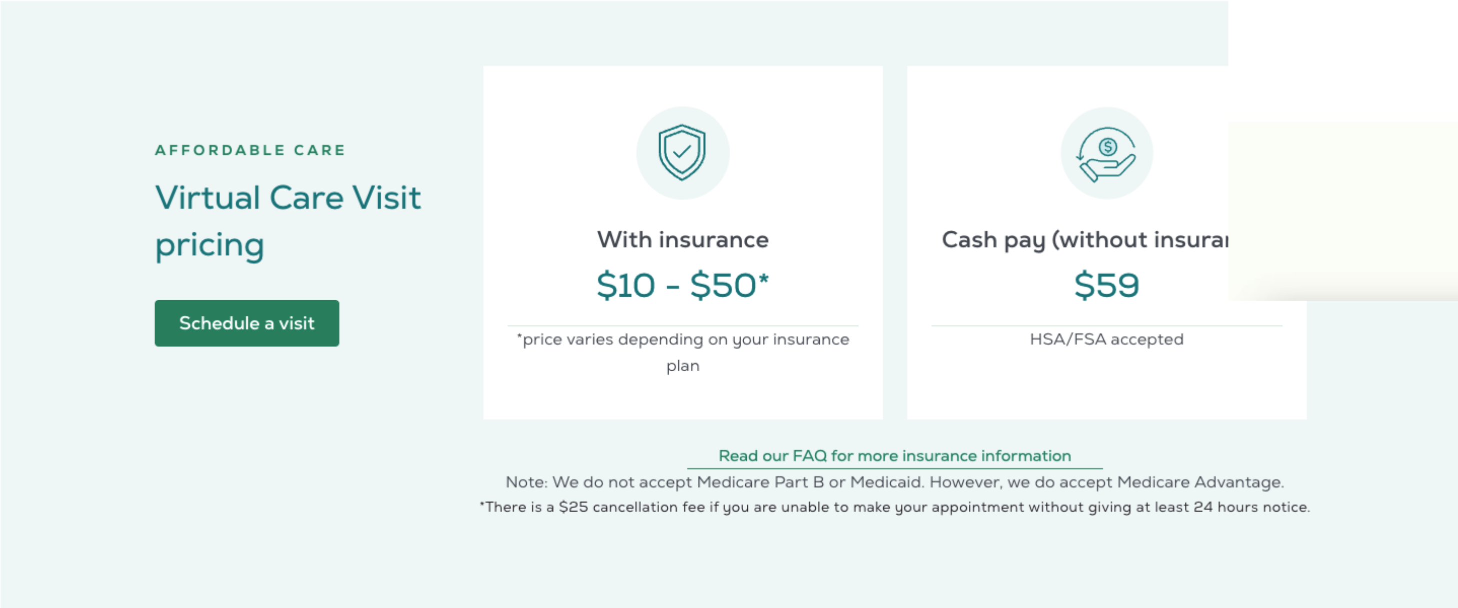
CDC reported that in 2021, 37% of adults had used Telehealth within a 12-month period.

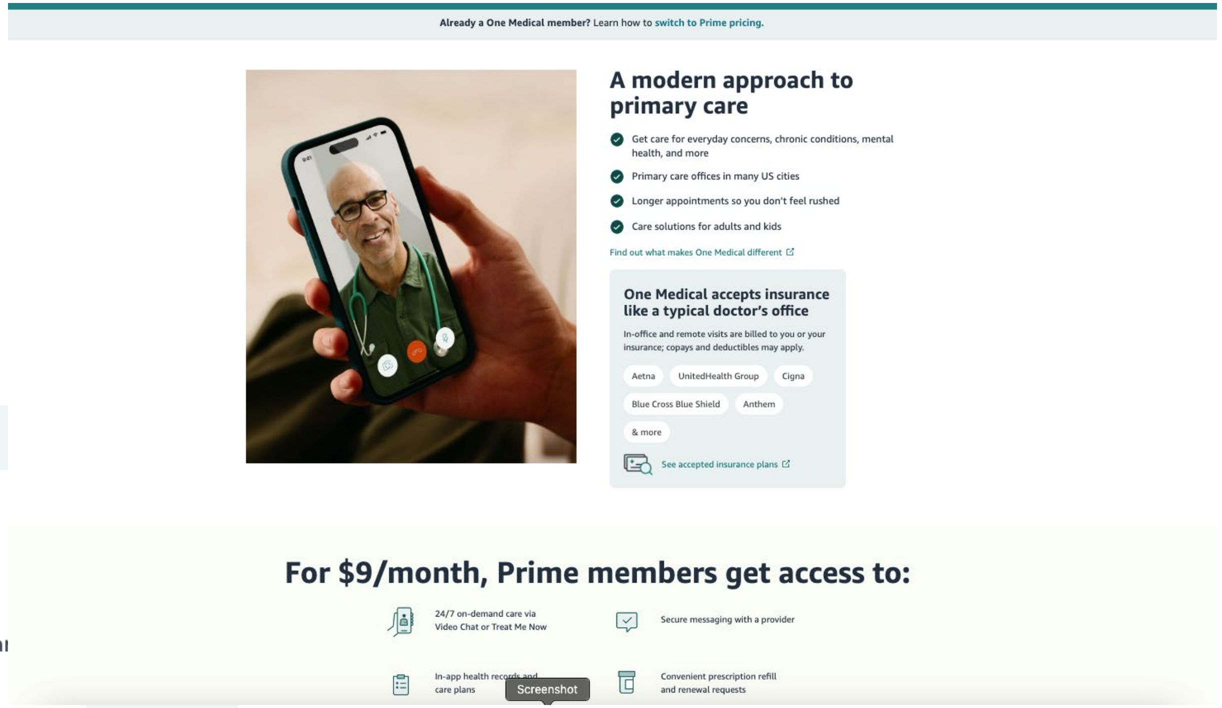
Digital health: Use of digital technologies, such as mobile apps, wearables, ePrescribing capabilities, and electronic health records, to improve health outcomes and patient care. Digital health technologies can also be used to monitor patients remotely, provide health education, track health data and enhance communication between patients and providers.

According to an article published by Fierce Healthcare, looking back to 2021 results, digital health startups raised over $29.1 billion dollars.

Source: dosespot.com

Virtual Health becoming more accessible,
And more affordable as a first point of care.





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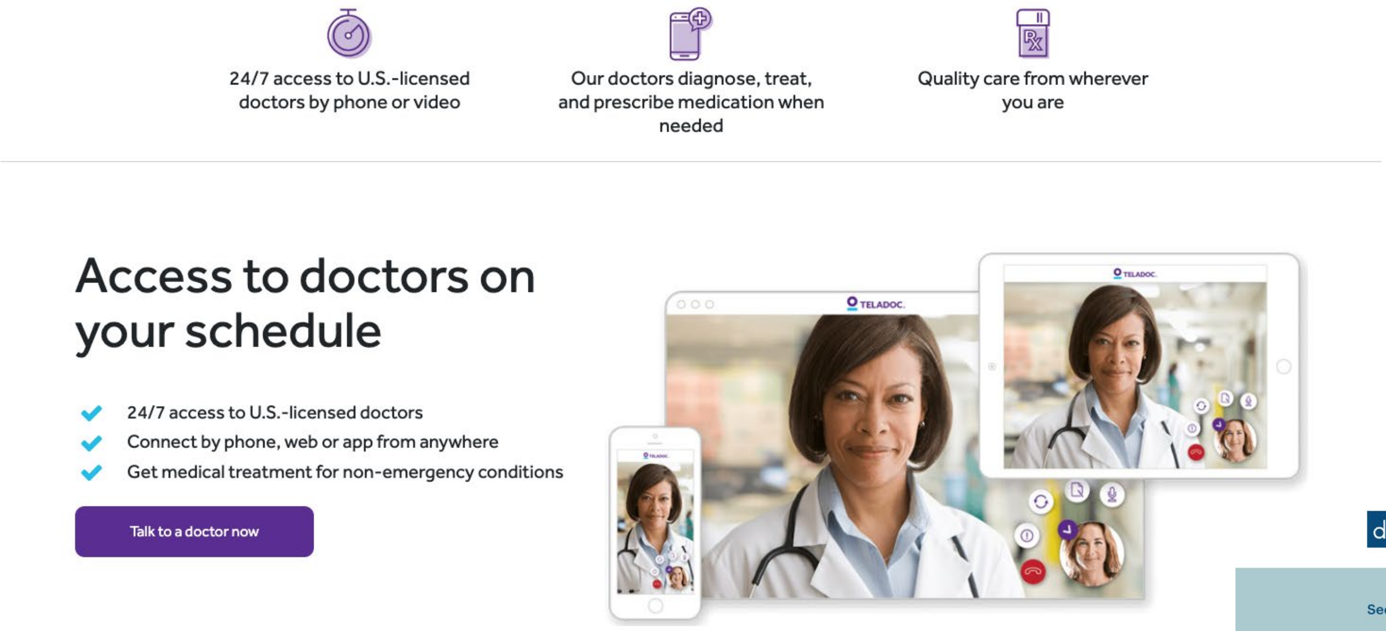
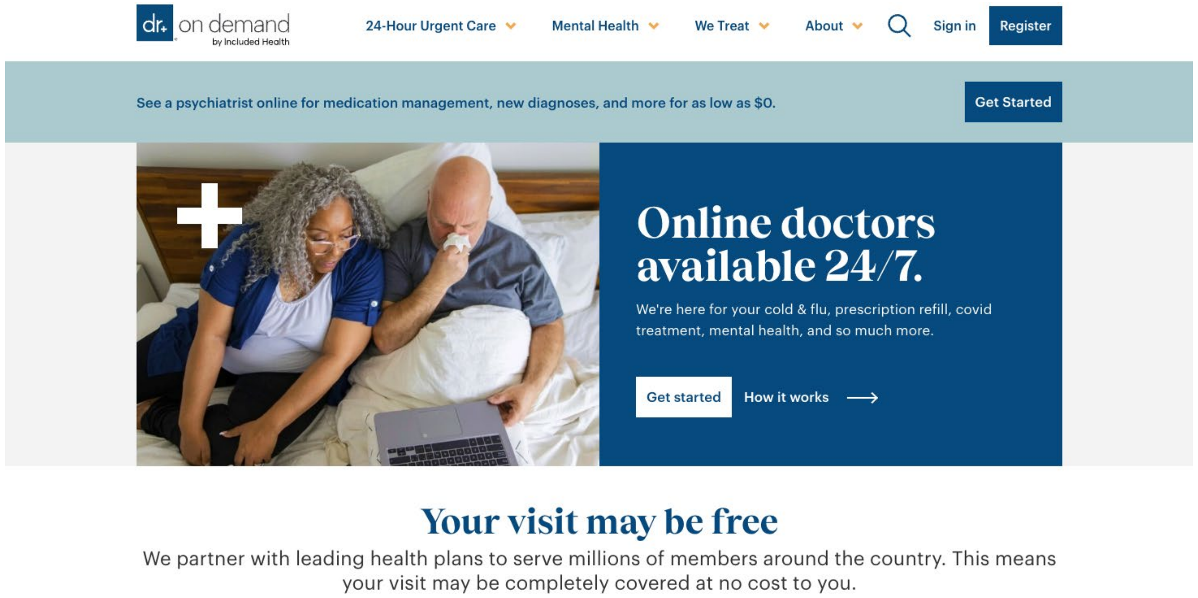


Telehealth more accessible and affordable



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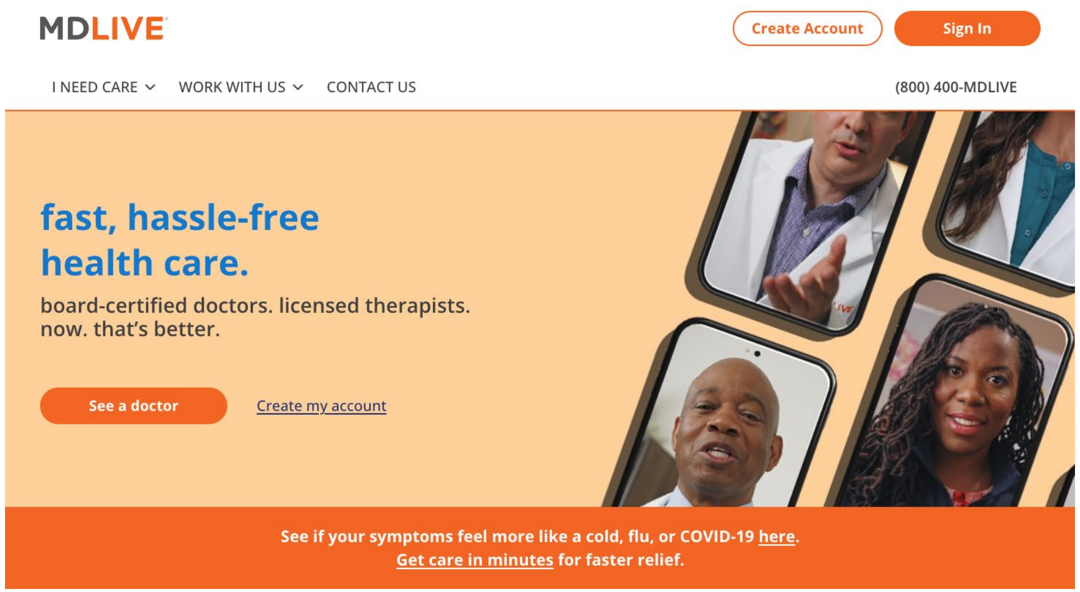
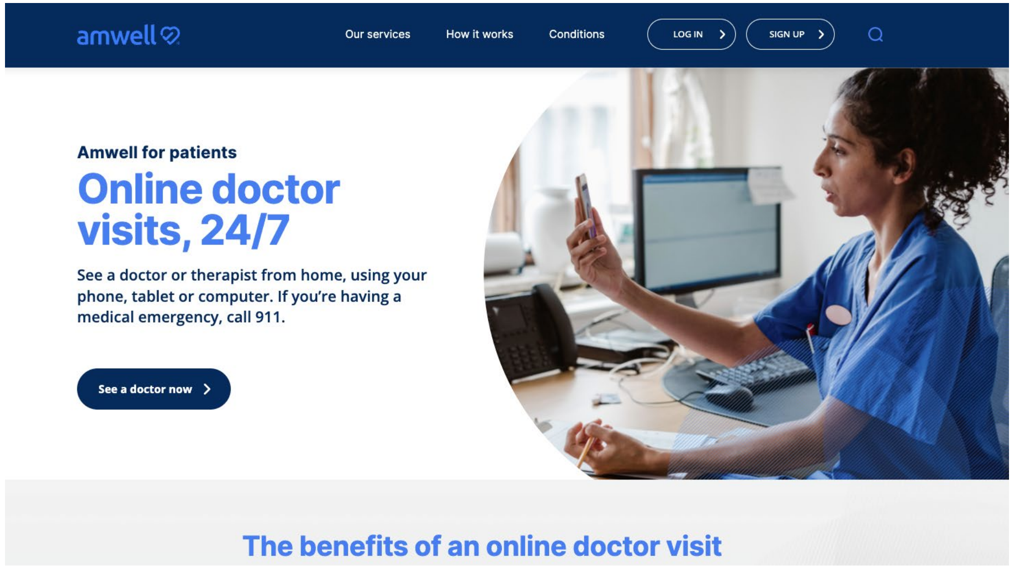
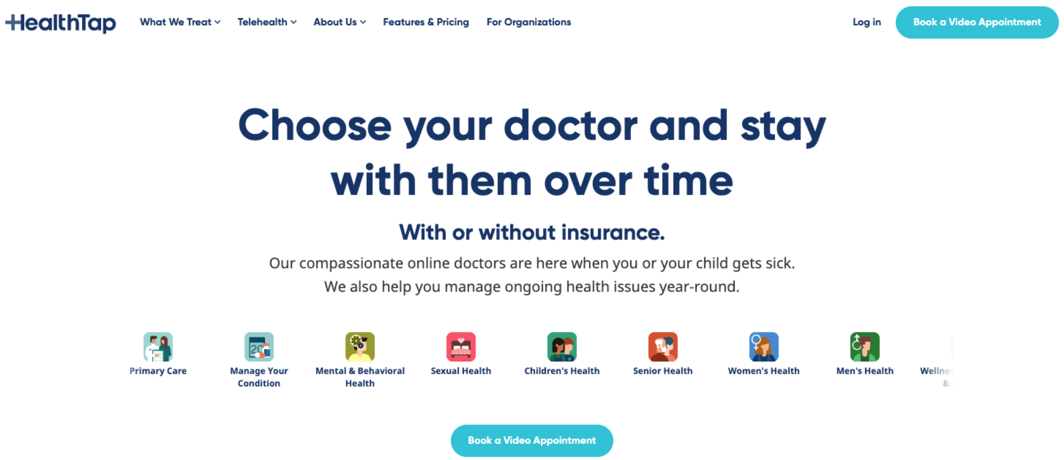
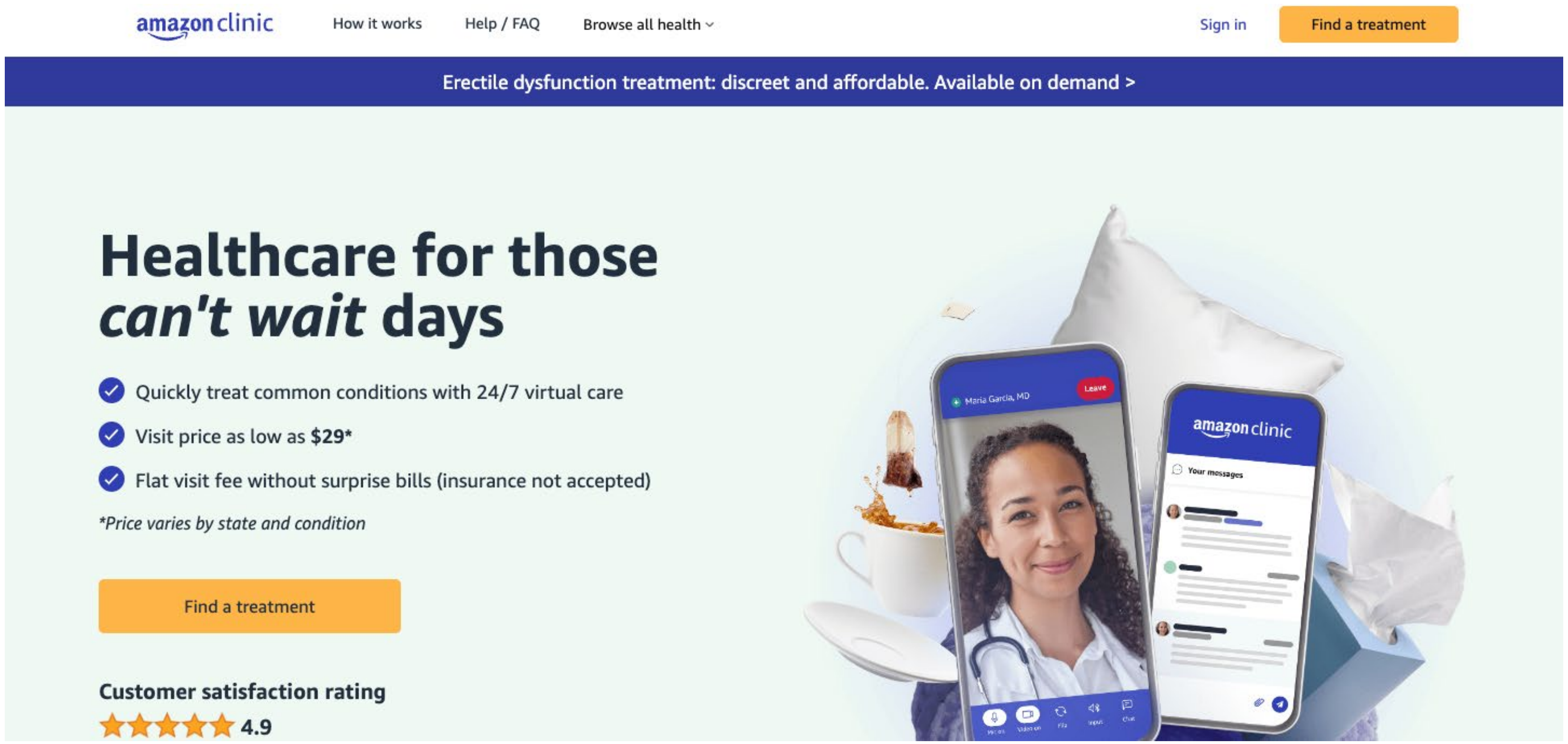


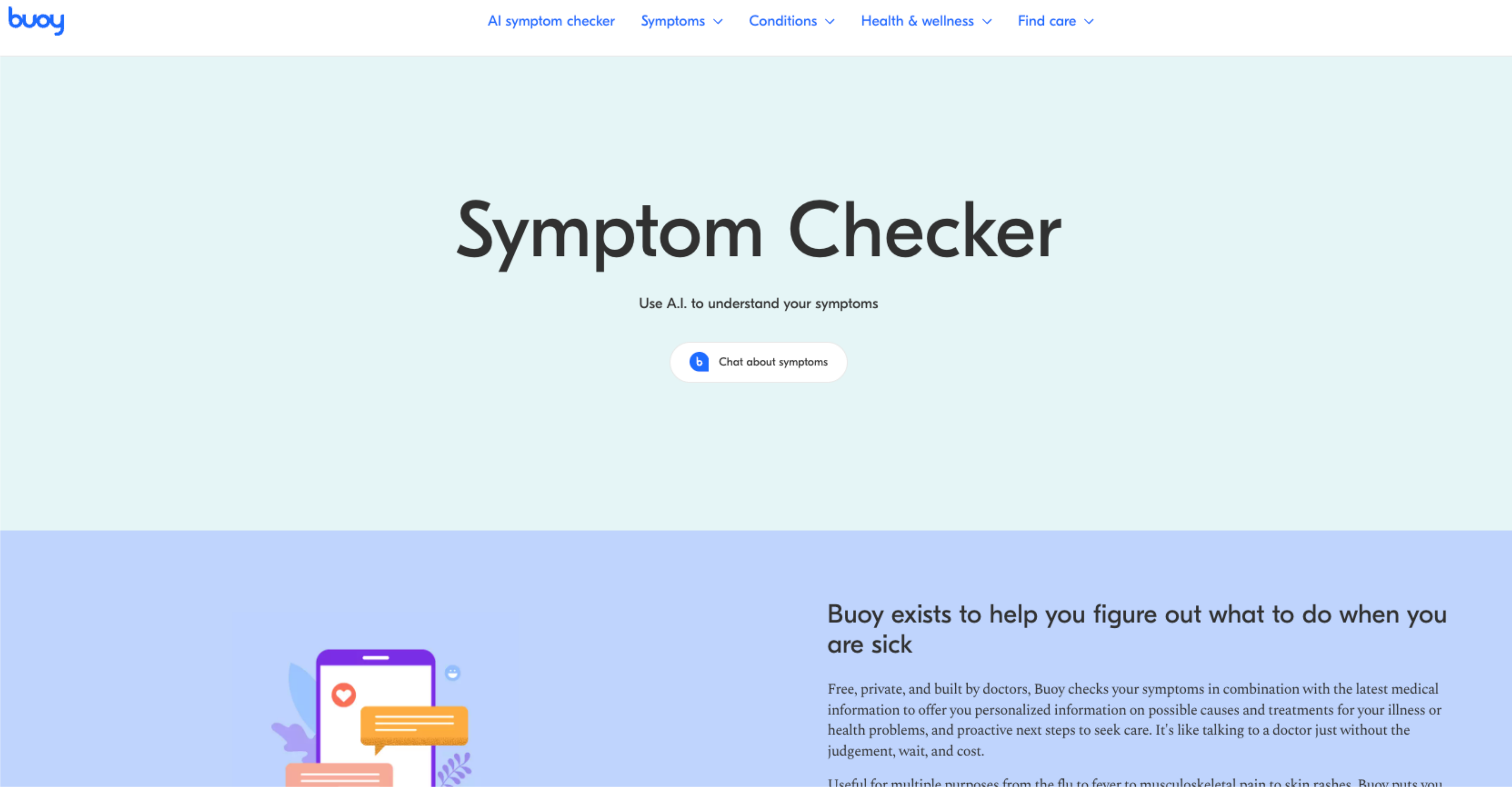




Amazon In Play



Buoy Health

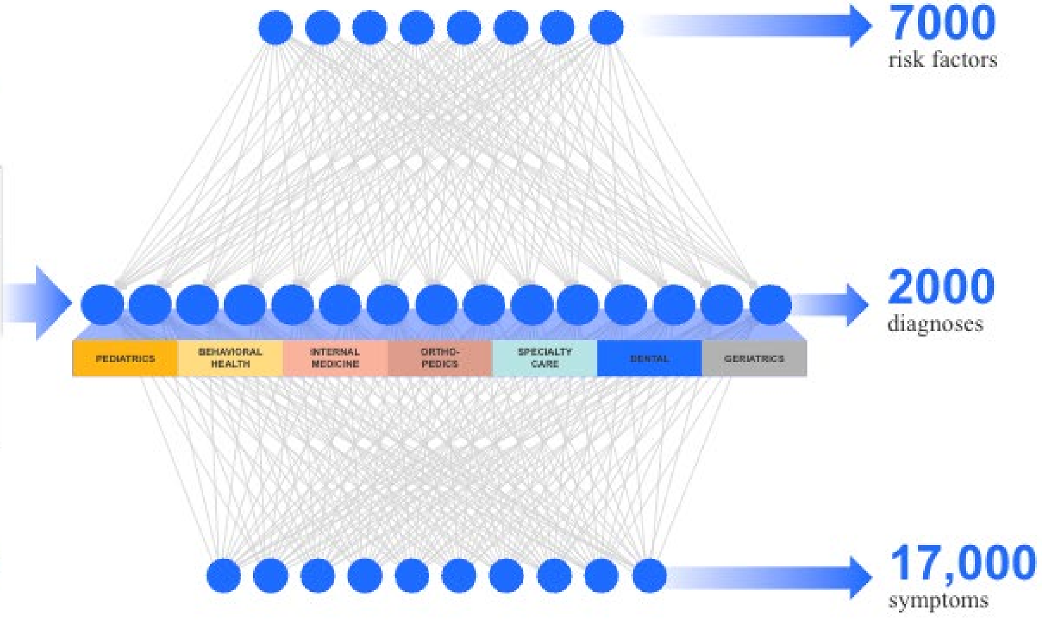

buoy
AI symptom checker
Symptoms
Conditions
Health & wellness
Find care
Symptom Checker
Use A.I. to understand your symptoms
Chat about symptoms
Buoy exists to help you figure out what to do when you are sick
Free, private, and built by doctors, Buoy checks your symptoms in combination with the latest medical information to offer you personalized information on possible causes and treatments for your illness or health problems, and proactive next steps to seek care. It's like talking to a doctor just without the judgement, wait, and cost.

Buoy Health

Buoy’s Artificial Intelligence is powered by a transparent, learning network of information.

Over 4 years, thousands of clinical papers and guidelines were used to train the Buoy AI.

And now, with over millions of uses from 2017-present, we’ve built a fully machine-learned map of diagnoses, symptoms, and risk factors.



buoy

Buoy Health

Consumer Traction

46M+
consumer visitors per year

9/10
user satisfaction rating

Cost Reduction

65%
Reduction in urgency of care setting (e.g. ER and urgent care)

50%
Reduction of nurse call line volume

Engaged Users

67%
Of users who start Buoy complete an entire assessment

76%
Of surveyed users intend to follow Buoy's advice

Validated / Backed By

HARVARD MEDICAL SCHOOL
UNIVERSITY OF CALIFORNIA MERCED
JAMA

UnitedHealthcare
Cigna
Humana

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Direct-to-Consumer Laboratory Testing Market Grow at Highest CAGR of 25.3% to 2032

DTC Testing Market estimated to reach $22.3 B by 2032!

Is this a play for your Lab?

The direct-to-consumer laboratory testing market has grown significantly in recent years and is expected to increase at a **CAGR of 25.3%** from 2022 to 2032, with a market value of **USD 22.3 Billion** by 2032, up from **USD 2.2 Billion** in 2022. Factors such as the rising incidence of chronic illnesses, the increasing need for convenient and affordable healthcare services, and the growing awareness of preventative healthcare are driving the market.

Where is Virtual Health Popular?

Who uses telemedicine services?

- 80% of people have accessed care via telemedicine at least once in their lives[1]
  - Telemedicine adoption grew particularly strongly among groups that are often underserved in healthcare:
    - 12% increase in telemedicine adoption among over 55's
    - 13% increase in telemedicine adoption among people living in rural areas

- 74% of millennials prefer teleconsultations to in-person appointments[2]

- 55% of people believe they receive better care via teleconsultations[3]

- 52.5% of clinicians believe they deliver more effective treatment and follow-ups via teleconsultations[4]

1 – Rock Health report, Feb. 2023
2 – GlobalMed report
3 - McKinsey Report, Feb. 2022
4 – ResearchGate paper, Jan. 2019

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The survey was conducted with a nationally representative group of U.S. residents from April 19 to 28, 2023. The number of respondents totaled 4,037, of which 49% were male and 51% were female. Participants were asked about the types of healthcare they received in the last 12 months, then one type of care was identified for them to pick the top five factors in their decision and rate 12 aspects of their experience on a scale of one to five.

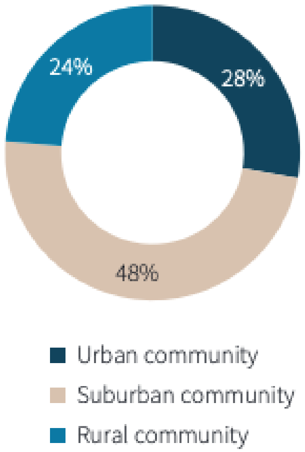
JLL 2023 Patient Consumer Survey

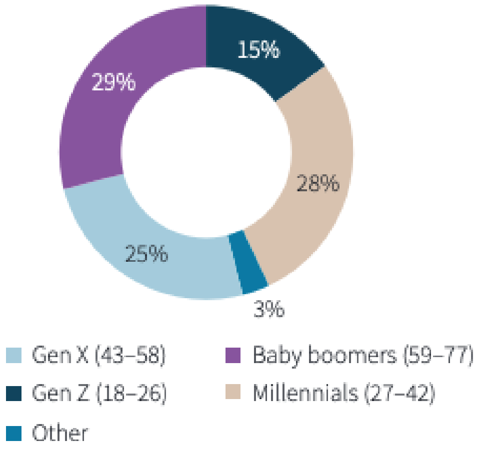
Jll.com/healthcare

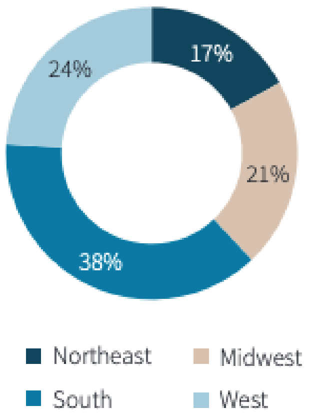
4,037
Survey respondents

49%
Male

51%
Female





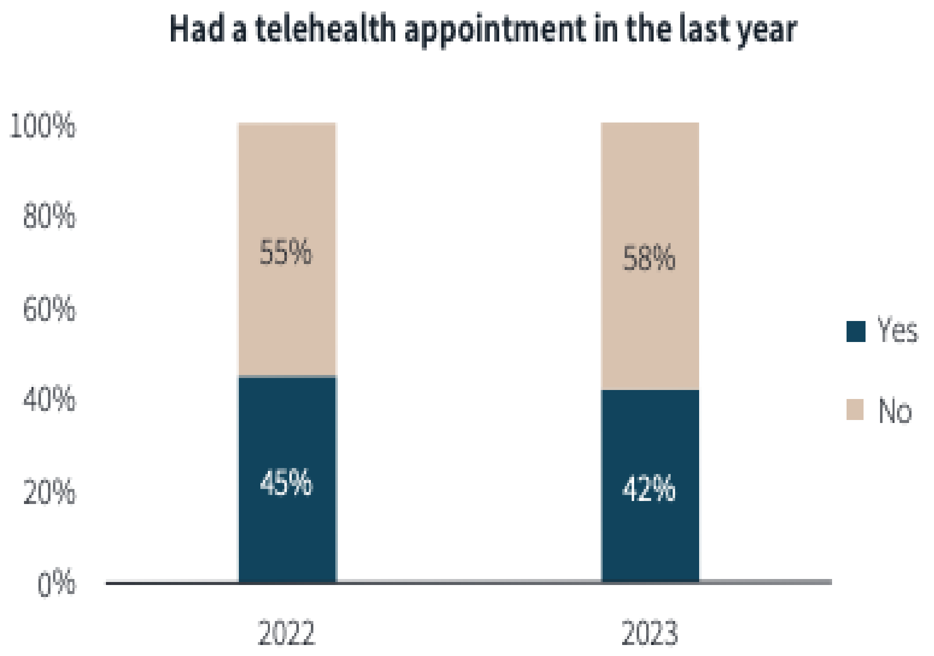


The overall experience was evaluated using a Net Promoter Score (NPS), which asks respondents to rank on a scale of 0–10 "How likely is it that you would recommend this provider to a friend or colleague?" A score of 9–10 is considered a promoter, 7-8 are passives, and 0–6 are detractors. The overall NPS score is the percent of promoters minus the percent of detractors.

JLL 2023 Patient Consumer Survey

Jll.com/healthcare

In the LAST YEAR, have you had a telehealth visit for any of the following reasons? n=4,037



JLL 2023 Patient Consumer Survey

Jll.com/healthcare

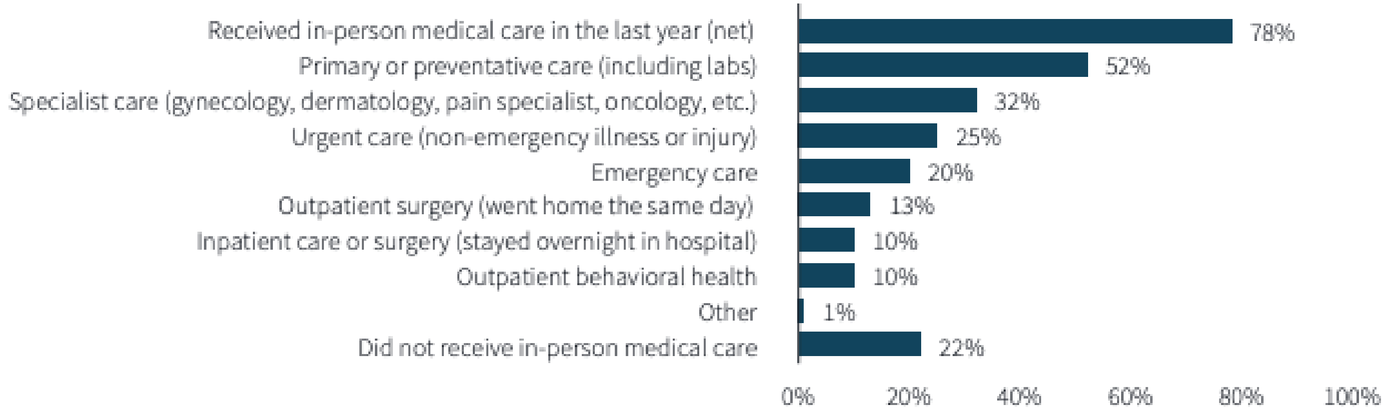
Types of care

In the last year, 78% of respondents received one or more types of care in the last year, with primary and preventative care the most common category, followed by specialist care. This is similar to the results from last year's survey, where 75% of respondents had sought care in the last six months.

22%
Did not receive in-person medical care in the last year

78%
Received in-person medical care in last year

? **What types of in-person (non-dental) medical care did you receive in the last year?** n=4,037

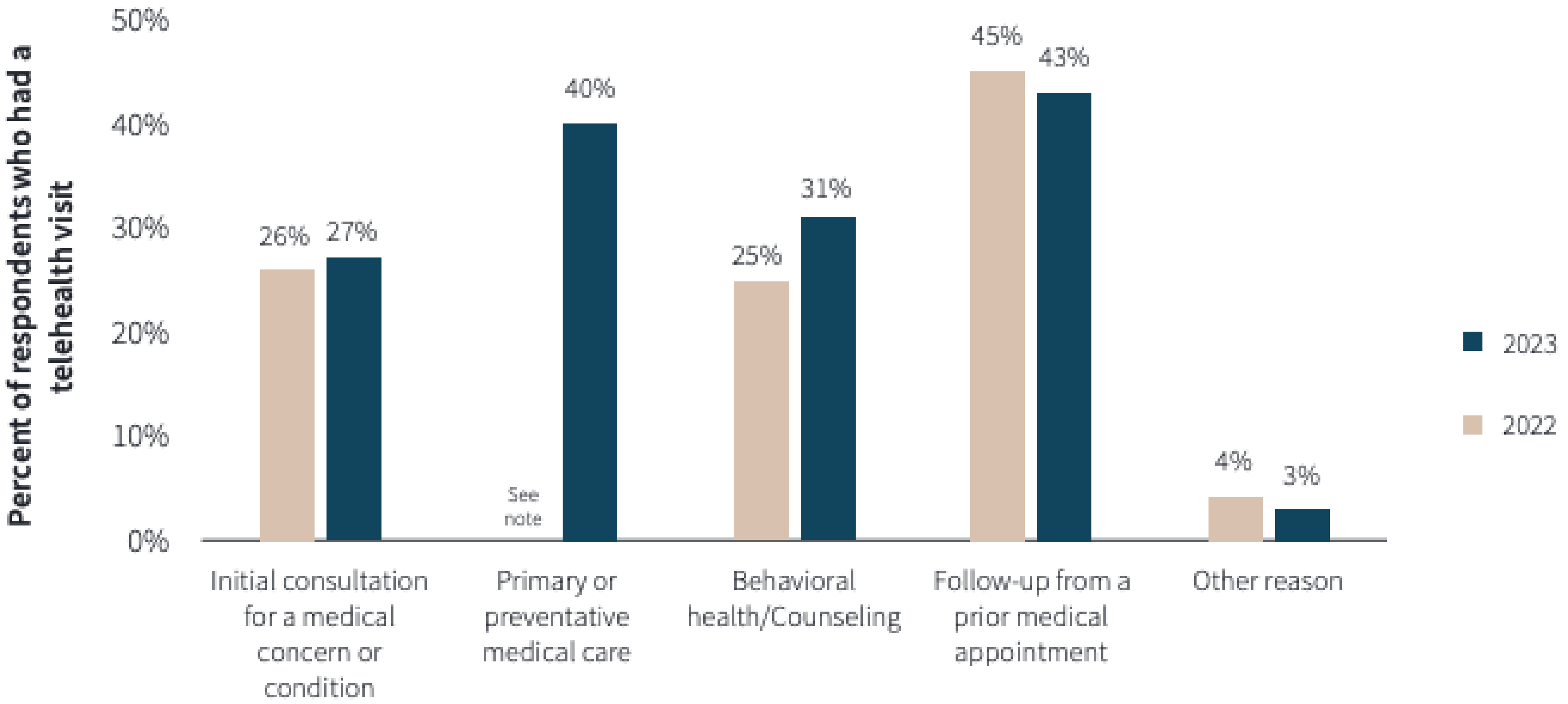


Note: Total exceeds 100% since respondents were asked to select all types of care received over the last year.

JLL 2023 Patient Consumer Survey

Jll.com/healthcare

Type of visit for those that had a telehealth visit in the last year



Note: Primary or preventative care was a new option in 2023, so these would be included in "other reason" or "initial consult" in the 2022 survey.

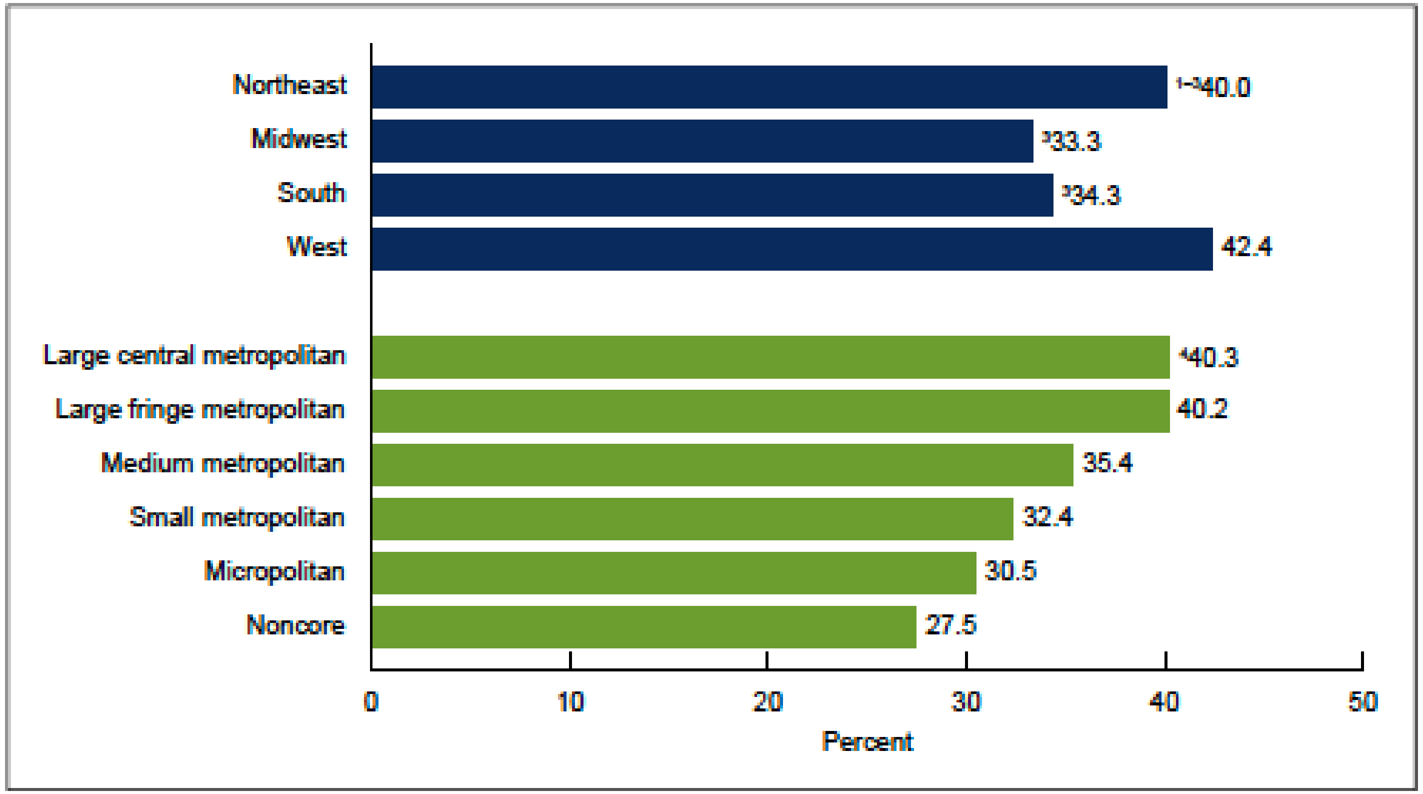
[4] https://www.chartis.com/insights/telehealth-tracker-new-normal-rate-telehealth-adoption

Where are telemedicine services being used?

- Adults living in the Northeast (40%) and West (42.4%) were more like to use telemedicine than adults living in the Midwest (33.3%) and South 34.3%)

- Telemedicine use by adults decreased with decreasing urbanization level, from 40.3% among adults living in central counties of large metropolitan areas to 27.5% among adults living in noncore areas.

Figure 4. Percentage of adults aged 18 and over who used telemedicine in the past 12 months, by region and urbanization level: United States, 2021



[1]Significantly different from the Midwest ($p < 0.05$).
[2]Significantly different from the South ($p < 0.05$).
[3]Significantly different from the West ($p < 0.05$).
[4]Significant linear trend by urbanization level ($p < 0.05$).
NOTES: Telemedicine use is defined as an appointment with a doctor, nurse, or other health professional by video or phone. Estimates are based on household interviews of a sample of the U.S. civilian noninstitutionalized population. Access data table for Figure 4 at: https://www.cdc.gov/nchs/data/databriefs/db445-tables.pdf#4.
SOURCE: National Center for Health Statistics, National Health Interview Survey, 2021.

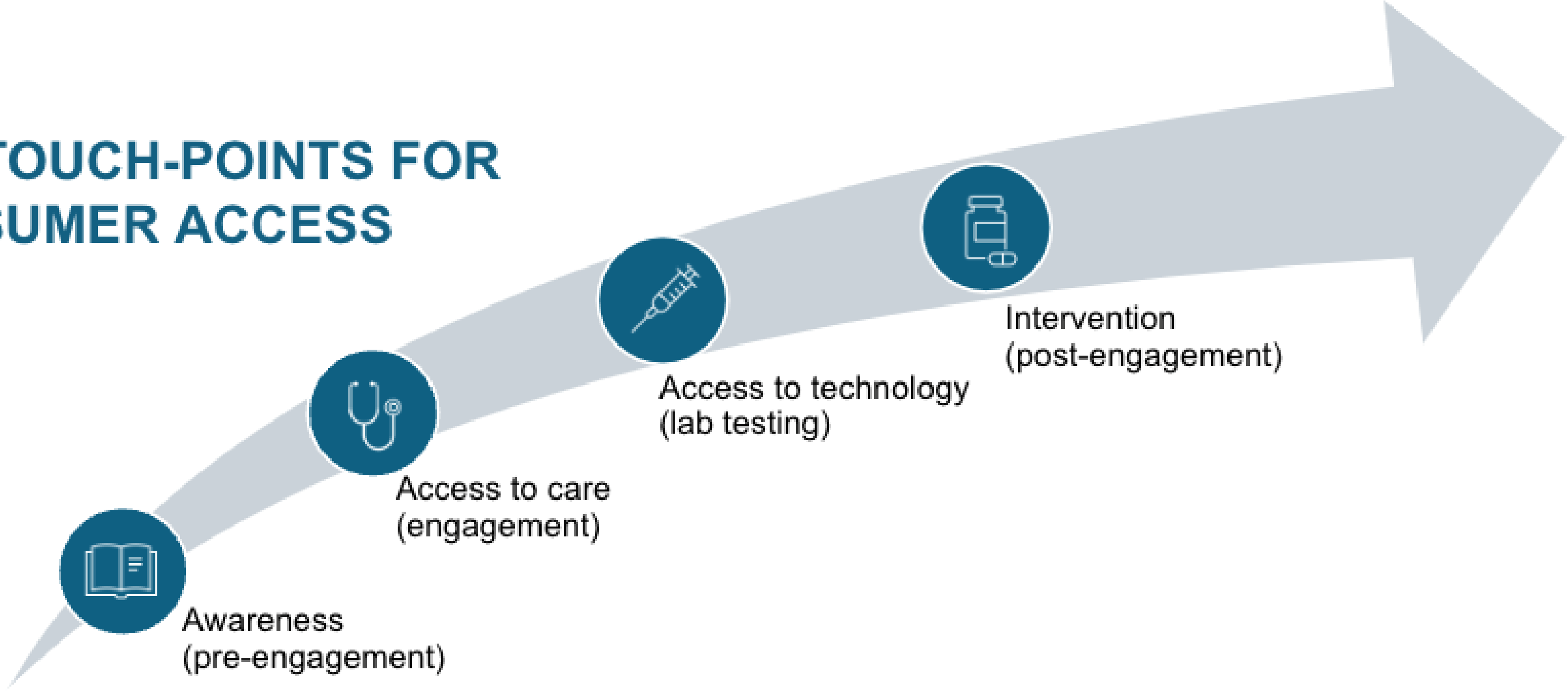
Enabling Access to Healthcare:

Boston Heart Diagnostics Experience

We have experienced patients that are…

- Becoming more engaged in their healthcare, disease management, and wellness
- Demanding more convenient ways to engage (do not want to disrupt their daily lives)
- Have developed their own value drivers that may diverge from those of doctors and payers

LAB TOUCH-POINTS FOR CONSUMER ACCESS



HOW WE SEE AND IMPACT CONSUMER'S ACCESS TO HEALTHCARE

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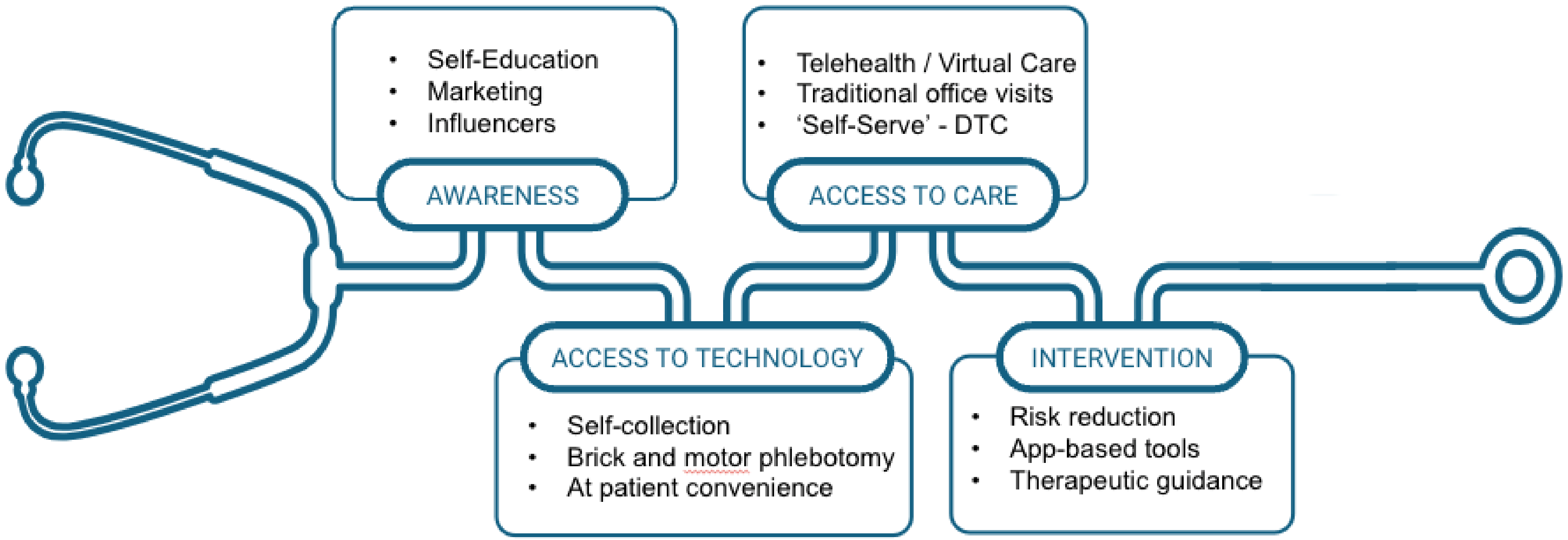
PATIENT
receiving treatment

PASSIVE → ACTIVE

CONSUMER
seeking out treatment

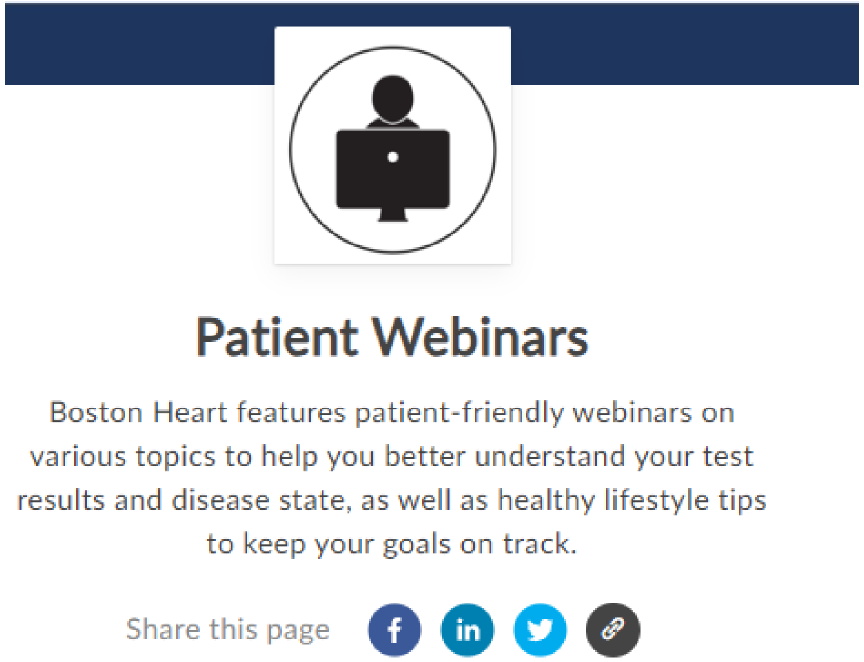


SUPPORTING CONSUMER AWARENESS

- **Educational content available online**
  - Disease progression
  - Logistical implications
  - Publications and research

- **Literature available in clinician’s offices**

- **Social Media**
  - Educational content, webinars, etc. to motivate decision and compliance
  - Follow Marketing/Awareness campaigns of others: Advocacy groups, Pharma, Influencers, etc.



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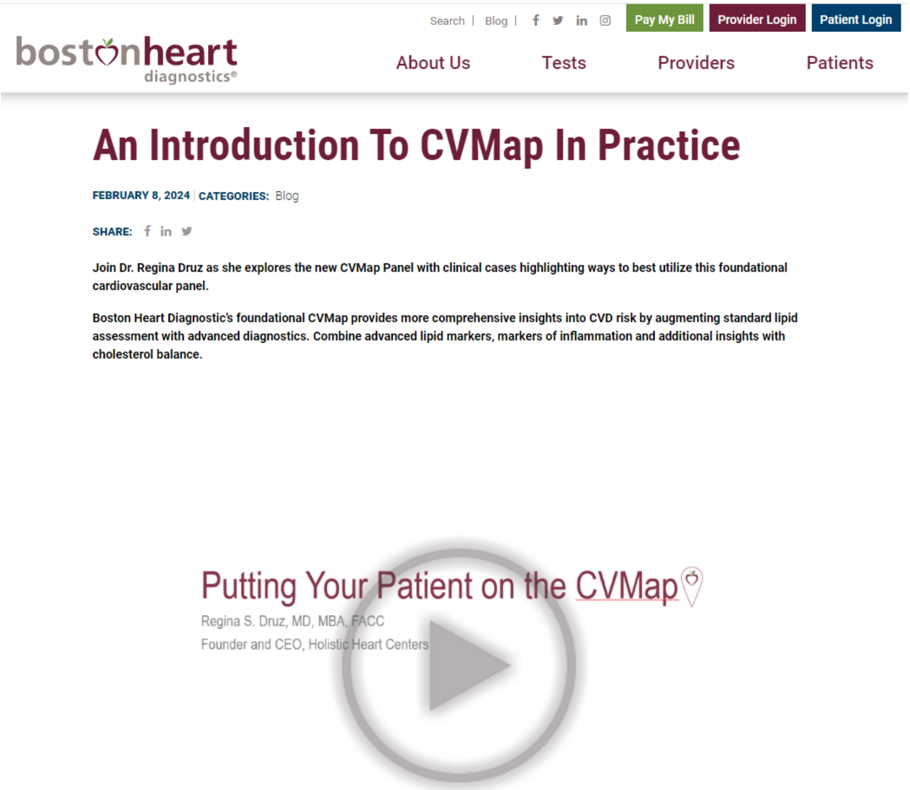
ENABLING THE CLINICAN AS A RESOURCE

- **Educational content available online**
    - Assay technology
    - Clinical interpretation
    - Therapeutic intervention

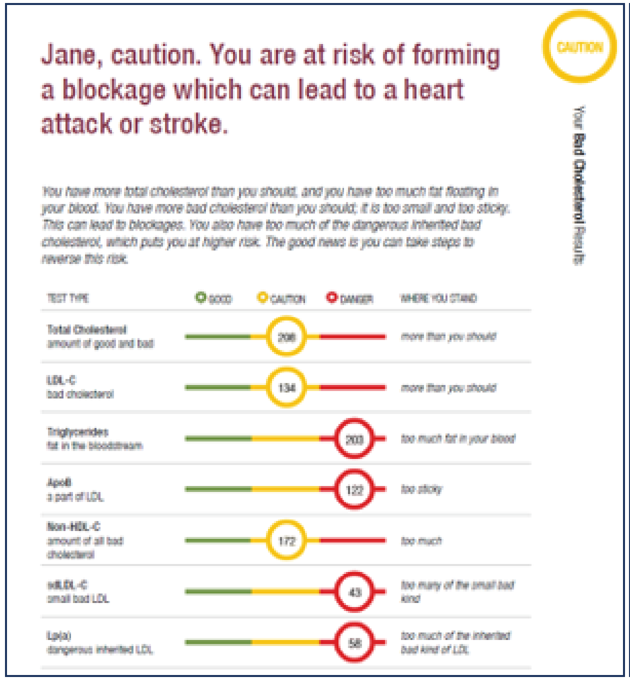
- **Events**
    - Podium presentations
    - Trade shows
    - Webinars

Considerations: *Patient demographics: age, technical sophistication, location, etc.*



SUPPORTING CONSUMER ACCESS

- Linking consumer to telehealth services
- Direct to Consumer app offering
- DTC Direct access to telehealth services
- Physician referrals: Find a local ordering practitioner



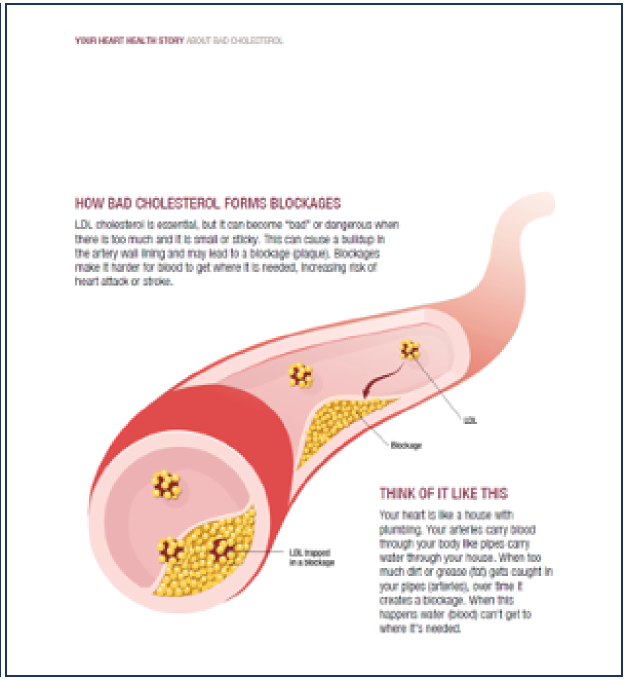
CAUTION

Your Bad Cholesterol Results

Jane, caution. You are at risk of forming a blockage which can lead to a heart attack or stroke.

You have more total cholesterol than you should, and you have too much fat floating in your blood. You have more bad cholesterol than you should; it is too small and too sticky. This can lead to blockages. You also have too much of the dangerous inherited bad cholesterol, which puts you at higher risk. The good news is you can take steps to reverse this risk.

TEST TYPE	GOOD / CAUTION / DANGER	WHERE YOU STAND
Total Cholesterol amount of good and bad	208	*more than you should*
LDL-C bad cholesterol	134	*more than you should*
Triglycerides fat in the bloodstream	203	*too much fat in your blood*
ApoB a part of LDL	122	*too sticky*
Non-HDL-C amount of all bad cholesterol	172	*too much*
sdLDL-C small bad LDL	43	*too many of the small bad kind*
Lp(a) dangerous inherited LDL	58	*too much of the inherited bad kind of LDL*



YOUR HEART HEALTH STORY ABOUT BAD CHOLESTEROL

HOW BAD CHOLESTEROL FORMS BLOCKAGES

LDL cholesterol is essential, but it can become "bad" or dangerous when there is too much and it is small or sticky. This can cause a buildup in the artery wall lining and may lead to a blockage (plaque). Blockages make it harder for blood to get where it is needed, increasing risk of heart attack or stroke.

THINK OF IT LIKE THIS

Your heart is like a house with plumbing. Your arteries carry blood through your body like pipes carry water through your house. When too much dirt or grease (fat) gets caught in your pipes (arteries), over time it creates a blockage. When this happens water (blood) can't get to where it's needed.

ENSURING ACCESSABLITY OF INFORMATION

- Commentary in results
- References and links to relevant research/studies
- Clinician enabling efforts
  - Webinars
  - Clinical educators
  - Laboratory support

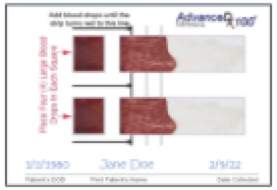
ENSURING CONSUMER ACCESS

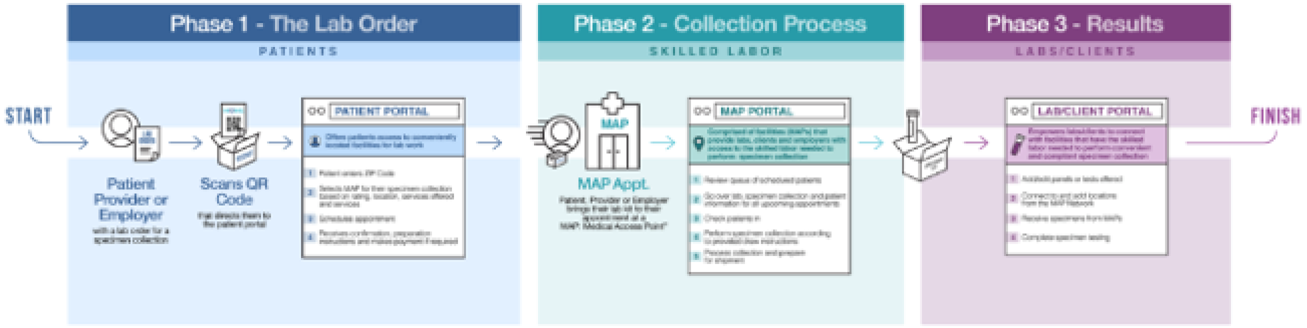
Test Ordering

- Third party DTC resellers: e.g. Everlywell, EmpowerDx, Rupa, etc.
- DTC app: Boston Heart ‘HeartMap’
- Physician referrals: Find a local ordering practitioner
- Medical Review Officer: Direct access testing
- Telehealth providers

Sample Collection

- 1099 phlebotomy network
  - Disease progression
  - Logistical implications
  - Publications and research
- 3[rd] party phlebotomy
  - My One Medical Source
  - Large lab patient service centers
- Small-Volume Self-Collection
  - Dried blood card
  - Capillary collection with microtainers
  - Capillary collection with suction device





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SUPPORTING CONSUMER HEALTH STRATEGIES

- DTC in-app guidance
- Personalized Lifestyle Intervention: Boston Heart 'Life Plan'
- Easy to understand synthesis of results
- Clinician-enabling efforts
  - Medical Science Liaisons
  - On-demand online learning modules
  - Webinars
  - Podcasts
  - Report synthesis

WHAT HAS WORKED: 'SUCCESSES'

- Engaging patients in novel ways to address the unique challenges of CVD (app-based, subscription service using self collection and delivering personalized guidance and consistent visibility)

WHAT HASN'T WORKED: 'CHALLENGES'

- Reducing patient burden increases lab burden and cost to deliver services

WHERE ARE WE EXPLORING FOR THE FUTURE

- Leveraging AI to create more impactful prognostics in CVD
- Animated/Personalized/Interactive reporting to better engage the patient

Consumer Willingness to Pay for Convenience

- 70% of customers would pay more if they knew the experience would be convenient. 75% would switch companies if they found out a competitor was more convenient to do business with. 68% say a convenient customer experience alone will make them return to a brand or company.

June 13, 2022, CMSWire.com

- Customers are willing to pay more for the experience qualities that matter most to them: 43% of consumers would pay more for greater convenience, 42% would pay more for a friendly, welcoming experience and 65% of U.S. customers find a positive experience with a brand to be more influential than great advertising.

PWC.com/consumer-intelligence-series

If you have a Direct-to-Consumer Strategy, have you decided on how to address the following:

- Kit logistics:
    - Direct to patient
    - Provider distribution
    - Do you have a kit?

- Phlebotomy performed?
    - Mobile
    - Brick and Mortar solution
    - In Office Phlebotomy

- Who is paying for the collection?
    - Patient Pay?
    - Lab Pay?
    - Split Pay?

If you have a Direct-to-Consumer Strategy, have you decided on how to address the following:

- Where are your biggest needs?
    - National
    - Regional

- Results delivery options?
    - Print
    - Mail
    - Secured portal

- Critical values handling

- Other?

Aligning with Virtual Care Models:

Boston Heart Diagnostics Experience

Virtual care demands that we deliver more value, by reducing the disruption to a patient's daily live, while maintaining service levels and cost centers.

As patients become more engaged in their healthcare, they also are taking on more of the financial burden. This results in more sophisticated consumers, who demand experiences with seamless care, lower costs, and novel solutions. Value has a different (and individualized) meaning.

LAB TOUCH-POINTS FOR VIRTUAL CARE

Challenges for smaller / specialty labs

- Patient expectations are developed from outside of healthcare, e.g. apple and google user experience
  - Low cost
  - Convenient
  - Innovation
- Practitioner expectations are developed from experience with large laboratories or healthcare networks
  - Seamless integration with EHR
  - Insurance coverage
  - Collection solutions

Ways that smaller labs can compete through innovation

- Increased convenience for sample collection
  - At home collections
  - Simplifying phlebotomy solutions
- Creating Value: More impactful result interpretation
  - Novel LDTs and Prognostics
  - Synthesis of and personalization of results
- Meeting cost expectations
  - Cash-pay options
  - Effective payer strategies
  - Price transparency

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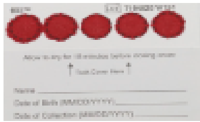
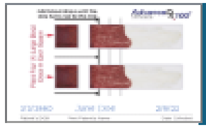
VIRTUAL CARE SAMPLE COLLECTION

	Method	Description	Ease of Use	Patient Impact	Cost	Lab Ops Impact	Volume
	**PHLEBOTOMY**	Collection performed by trained medical staff in patient service center or at patient's location	High	High	High	Low	High
	**CAPILLARY / MICROTAINER**	Blood is collected by capillary action or directly into microtainers after finger lancing	Low	Medium	Low	Low	Medium
	**DRIED DEVICE**	Proprietary devices designed for collection and/or storage on an internal filter paper	Medium	Low	Medium	High	Low
	**DRIED SPOT**	Blood from finger lancing is collected directly onto a filter-paper integrated card, applying one drop per exposed circle	Medium	Low	Low	Medium	Low
	**DRIED CARD**	Blood from finger lancing is collected directly onto a filter-paper integrated card, applying 3 – 5 drops in exposed section	Medium	Low	Low	High	Medium
	**SUCTION**	Self-collection device applied directly to patient's skin which uses suction to draw blood from capillaries into the device	High	Low	Medium	Medium	Medium

Consumer Expectations

- Others absorb the cost
- The experience doesn't disrupt their lives
- Minimal personal effort

- **Phlebotomy**
  - Contribute a negotiated rate to 1099s
  - Arrange mobile draws when necessary – added patient responsibility
  - Discontinued all IOP arrangements - due to compliance risks
  - Seamless platform solutions, like MOMS, help to improve patient experience
  - Using a PSC is still a disruptive and unpleasant process

- **Self-Collection**
  - Dried Blood Card: allows sufficient volume to perform numerous tests on WB and Serum
  - Microtainer: Can be used on automated platform and provides additional volume vs DBS
  - Alternative devices: Presently evaluating/supporting development of alternative self collection devices with lower cost, higher volume, and multi-matrix
  - Suction devices: Can be used for all tests validated on capillary blood, but don't use regularly due to high failure and high cost

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BOSTON HEART SMALL-VOLUME SELF COLLECTED CAPABILITIES

boston heart diagnostics®

CURRENT OFFERINGS

Lipids

- Total Cholesterol
- Direct LDL-C
- sdLDL-C
- HDL-C
- Triglycerides
- apoB
- Lp(a)

Genetics

- SLCO1B1 (Statin-Induced Myopathy)
- ApoE (CVD/Dementia Risk)
- MTHFR (Folate Metabolism)
- Haptoglobin (Vitamin E in Diabetes)
- Factor V Leiden (Clot Formation)
- Factor II (Clot Formation)
- CYP2C19 (Clopidogrel Response)
- LPA Aspirin (Aspirin Benefit)
- KIF6 Statin Benefit (Statin Benefit)
- 9p21 CVD Risk (Premature CVD Risk)
- 4q25 Atrial Fibrillation (Atrial Fibrillation Risk)

Chemistry

- Creatinine with eGFR
- Uric Acid
- Homocysteine
- Vitamin-D
- Vitamin-B12
- Folate
- Albumin

Metabolics

- Glucose
- HbA1c
- Insulin with HOMA-IR, S and B

Inflammation

- hs-CRP
- LpPLA2

Hormones

- TSH
- LH
- FSH
- SHBG
- Testosterone (men only)
- Free Testosterone (men only)
- PSA
- Anti-Muellerian Hormone
- DHEA-S
- Cortisol

Essential Fatty Acids

- EPA
- DHA
- Omega-3 Index
- Omega-6 Index
- Omega-3/Omega-6 Ratio
- Monounsaturated Index
- Arachidonic Acid (AA)
- AA/EPA Ratio
- EPA/AA Ratio

UNDER CONSIDERATION

- Bilirubin, Direct
- Bilirubin, Total
- Blood Urea Nitrogen (BUN)
- Calcium
- Cystatin C
- Ferritin
- Gamma-glutamyl transferase (GGT)
- Amylase
- Iron
- Iron Binding Capacity, Unsaturated (UIBC)
- Magnesium
- NT-proBNP
- Phosphorus
- Prolactin
- Antithyroglobulins
- Troponin T
- Aldosterone
- TMAO
- BHD HDL Map Assay
- NMR Serum Metabolomics
- Apolipoprotein A-1
- C-Peptide
- Glycated Serum Protein (GSP)
- Adiponectin
- Parathyroid Hormone (PTH)
- PSA, Free
- T3, Free and Total
- T4, Free and Total
- OXPL-apoB
- IL-6

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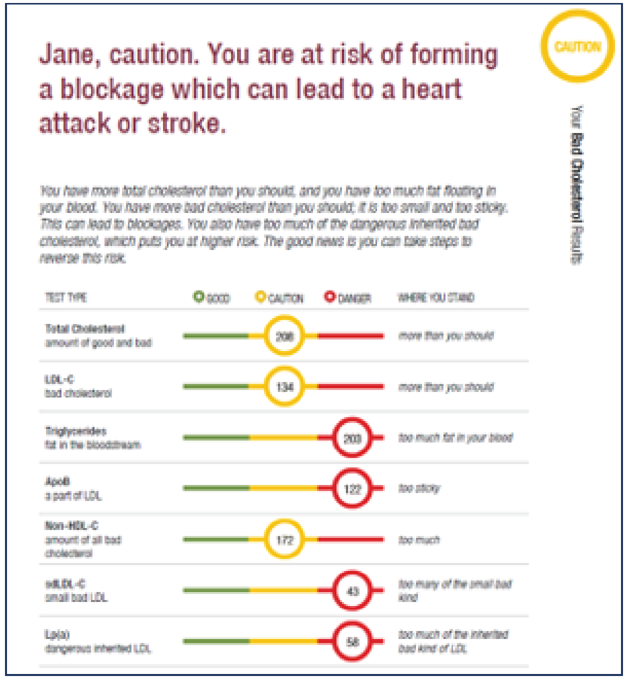
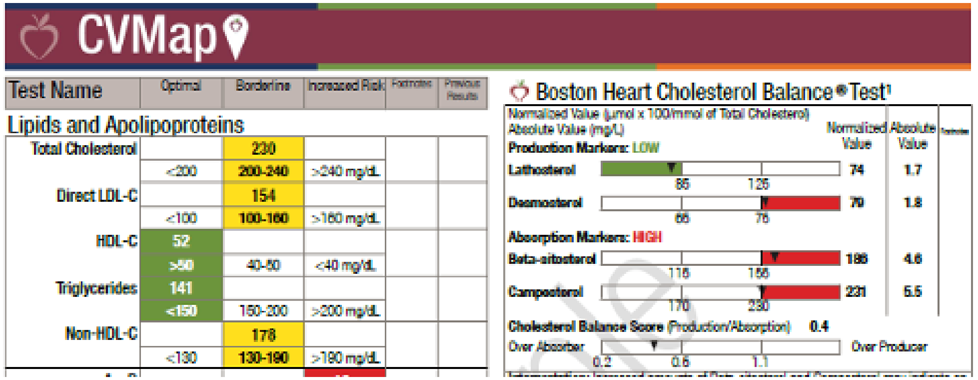
bostonheart diagnostics®

VIRTUAL INTERFACE – RESULT REPORTING

- **Communicate results more effectively**
    - Color-coded results
    - Animated reporting
    - EHR connections (challenging for smaller labs)
- **Drive Patient compliance**
    - Provide personalized recommendations for lifestyle modifications
    - Enable seamless transition to therapeutic intervention
    - Maintain visibility of health trajectory for chronic conditions (HeartMap)
- **Increase utility of results**
    - Map results across various labs (Rupa Health)
    - Use AI to identify patterns across population meta data
    - Using Algorithms (Genova Diagnostics) and AI to power interpretation and personalization of result interpretation (Jona Health)





We are finding it more important to demonstrate value to the consumer to overcome price sensitivity.

- Patients are willing to pay for services that result in a positive health outcome
- Providing tools to the clinicians to communicate this value supports consumer buy-in

MEETING PAYMENT EXPECTATIONS IN A VIRTUAL ENVIRONMENT

- Ensure that payment process is as effortless as possible – captured at time of service
  - Mobile links and payments
  - Immediate price transparency
  - Easy payment portals using links, QR codes, other easy ways to pay directly
- Monthly subscription for recurring DTC offering
- Offer flexible payment plans
- Cash-pay and Pre-pay discounts
- Provide discounts from Medicare for up-front patient paid tests

WHAT HAS WORKED: 'SUCCESSES'

- Validating numerous standard of care tests using small-volume, self collection

WHAT HASN'T WORKED: 'CHALLENGES'

- Self collection is wrought with user error regardless of device

WHERE ARE WE EXPLORING FOR THE FUTURE

- Implementing alternative self collection devices which reduce cost and errors, while increasing collection volumes

Lab Connectivity

Options to address need for Lab Order generation, Results Delivery, HCP follow up:

DTC Options

Enterprise Options

Many others……

Specimen Collections

With over 70% of all clinical decisions based upon a lab result, lab testing is a vital first step towards determining a patients current health condition. Access to phlebotomy has been a barrier for traditional collection requirements, venipuncture. With the needs to address AKS compliance, Stark, Safe Harbors, EKRA, agreements, invoicing, etc., it can be challenging

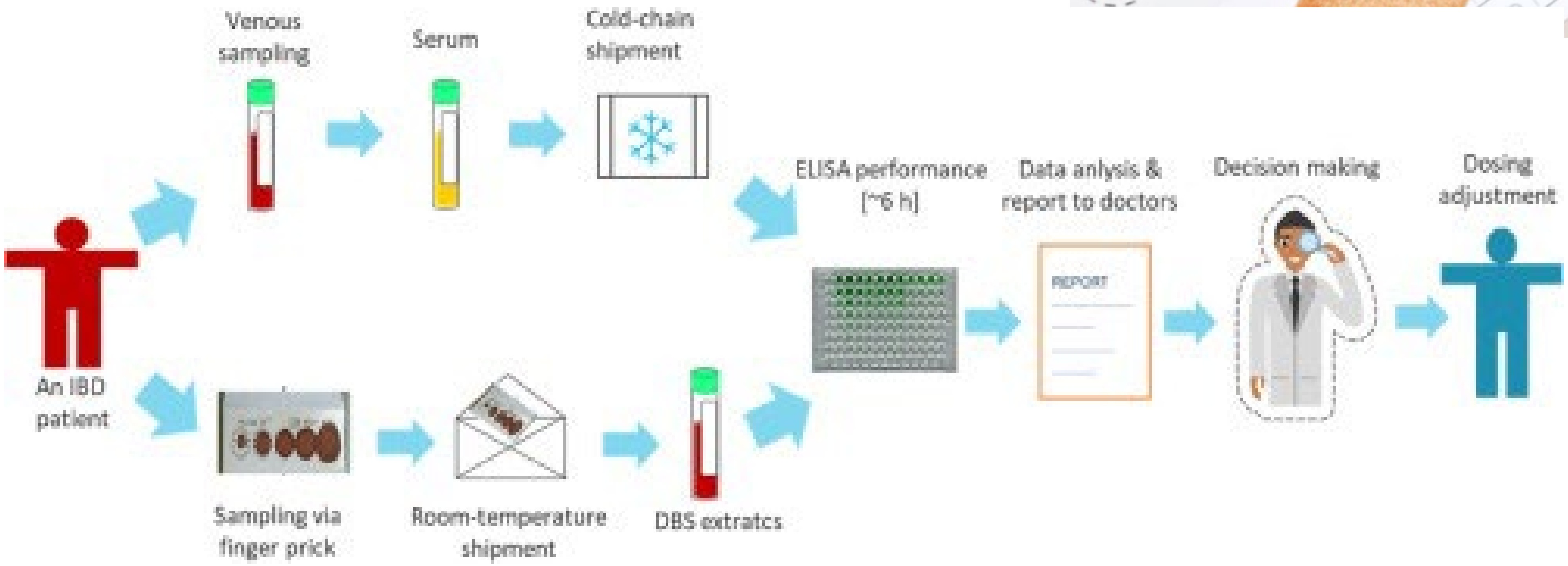
New collection methods have evolved, are they viable for your use?

Will patients comply?

Can you validate for your needs?

Dry Blood Spot

Pro's/Con's?



yourbio

yourbio

Clinical Trials   Wellness Testing   Clinical Grade   Product

PRODUCT OVERVIEW

We offer high-volume blood collection devices, kits, and sample tracking services that can be customized for a broad range of clinical trials, wellness, and clinical-grade blood sampling. Our HALO™ technology is bladeless, and a virtually painless way to collect whole, capillary blood that can be processed at any central lab.

Contact Us

OUR TECHNOLOGY & PRODUCTS

Our virtually painless devices have always been high volume with the ability to collect up to 500 µL.

TAP® Micro

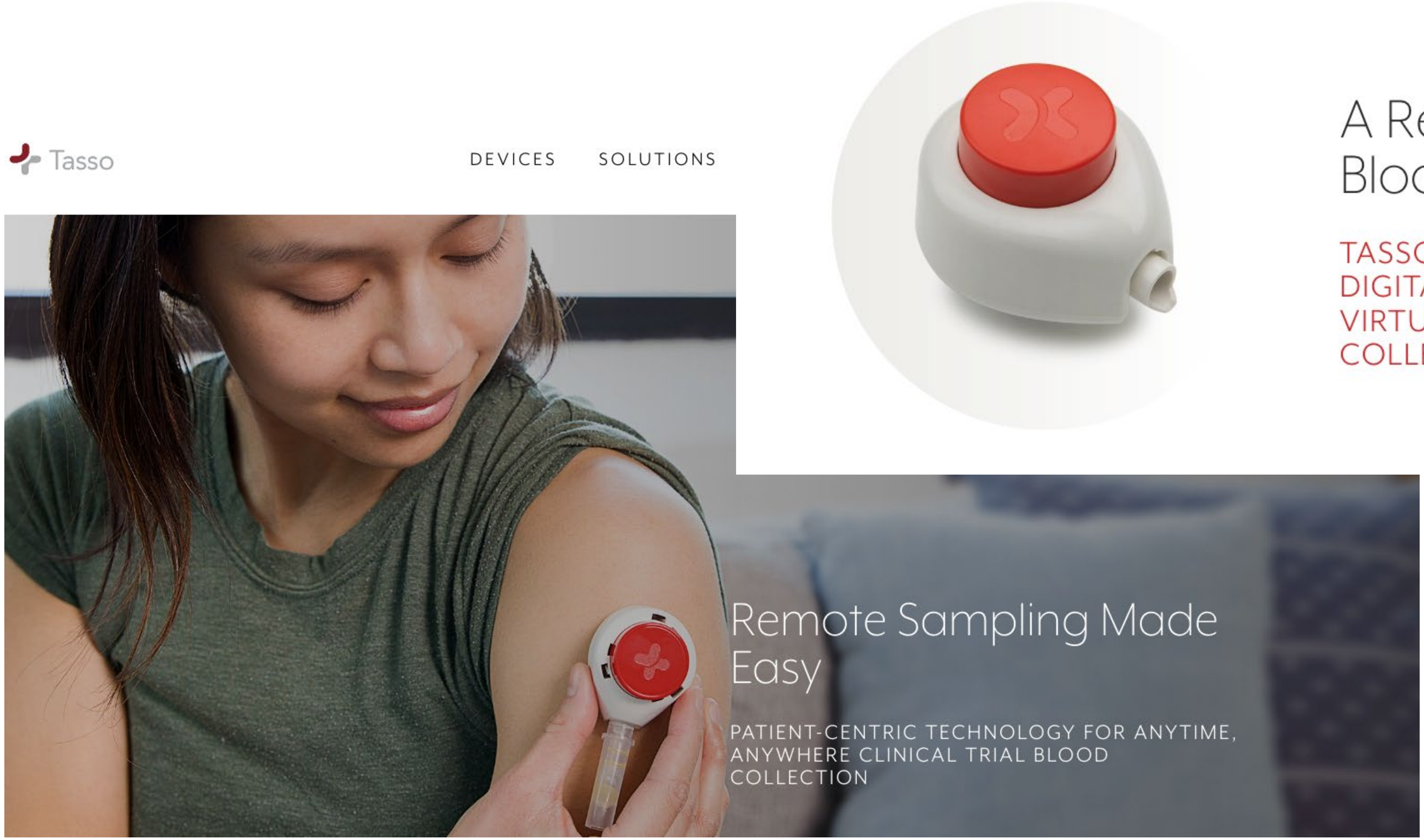
- CE Marked
- Investigational Use Only in the US
- Pre-attached collection tubes
- HALO™ Technology bladeless microneedle array

Tasso

Tasso DEVICES SOLUTIONS

A Revolution in Decentralized Blood Collection

TASSO'S PATIENT-CENTRIC DEVICES ARE A DIGITALLY-ENHANCED SOLUTION FOR EASY, VIRTUALLY PAINLESS REMOTE SAMPLE COLLECTION



Q & A and Industry Comments

Question:

Would your lab benefit by exposing your test offerings to today's healthcare consumer?

Conclusions:

- Today's healthcare and testing environment is evolving, what are you doing to position yourself to succeed with some of the technology, processes and solutions available to you today?

- Are you ready to invest the time, money and resources to adapt to the evolving healthcare consumer?

- ***The definition of insanity is doing the same thing over and over and expecting different results.***

  - ***Albert Einstein***

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