

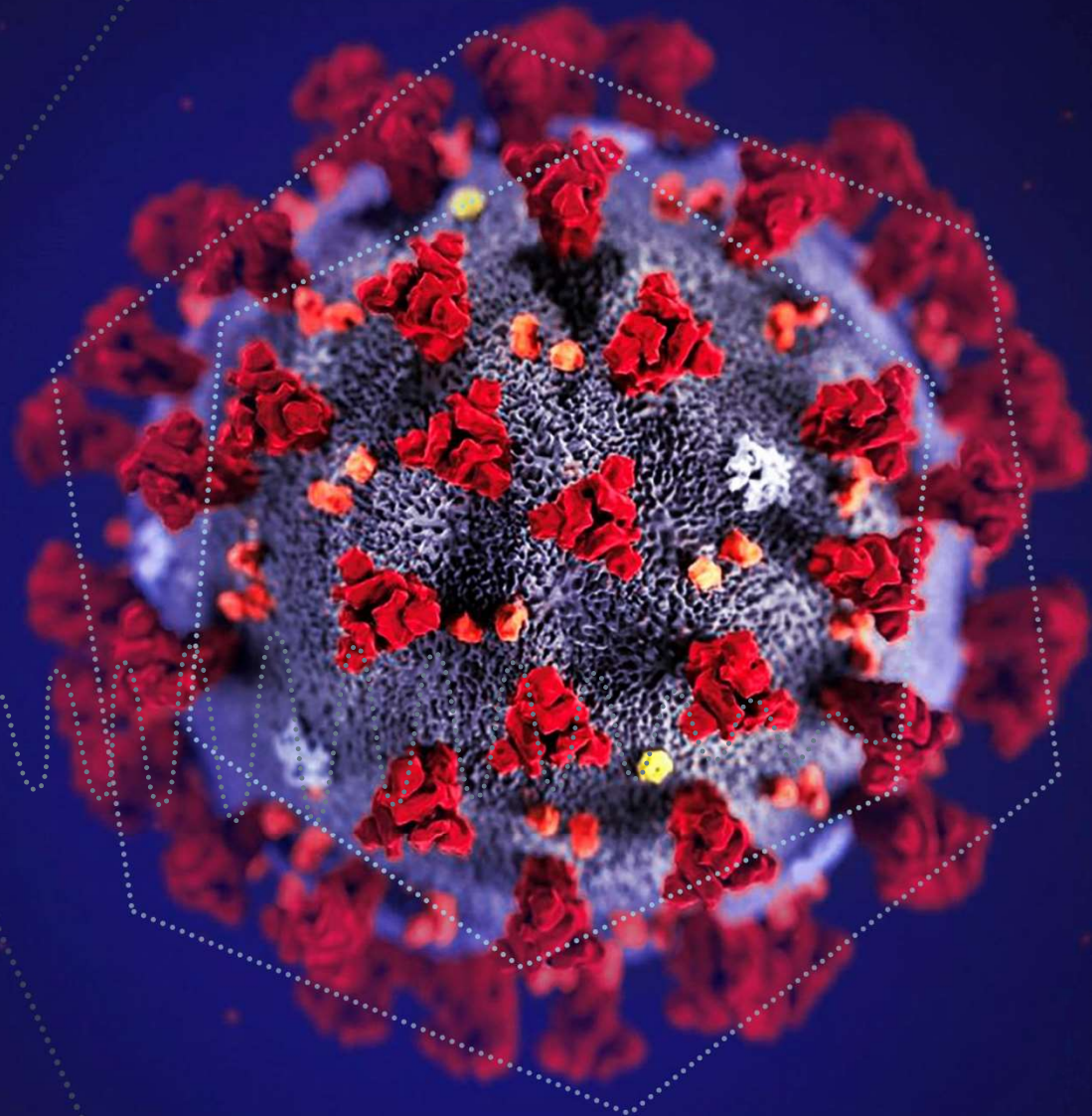
*LIVE WEBINAR*

*Combat the Spread of  
COVID-19 with  
Binah.ai's REAL-TIME,  
REMOTE VITAL SIGNS  
MONITORING*

*David Maman, Co-Founder and CEO*

*April 16, 2020*

**binah.ai**  
AI YOUR FUTURE TODAY



# David Maman, Co-Founder and CEO

*Spearheading the team in fulfilling Binah.ai's vision and mission. A serial entrepreneur who has taken numerous start-ups from vision to international success: Hexatier (acquired by Huawei), Precos, Vanadium-soft, GreenCloud, Teridion and others. Binah.ai is my 13th start-up where I set the strategy and manages the execution of the company's mission to enable healthcare services to anyone, anywhere.*



# Binah.ai Traction and Execution

**Founded  
2016**

**Funding:  
A Series**



**Offices: Israel, USA, UK, Tokyo**



**45 employees**



**14 PhDs**



## Customers

Over 20 customers WW in  
Healthcare and Insurance

Japan's leading Insurance  
company - **SOMPO**

Japan's largest automotive  
Tier-1 supplier - **DENSO**



## Customer Acquisition

Global consultancy firms  
and partners

Ready-to-use Digital  
Health Applications

Up to 90% cost and  
time savings



## Market Recognition



# Leadership



**David Maman**

Co-Founder,  
CEO and CTO



**Michael Markzon**

Co-founder and  
Chief Scientist



**Konstantin Gedalin, PhD**

Co-founder and Chief  
Research Officer



**Alon Shem-Tov**

VP Sales, ROW



**Sam Friedman**

VP Sales, North  
America



**Mitsuhiro Hirao**

VP Sales, Japan



**Ido Sher**

VP Product Management

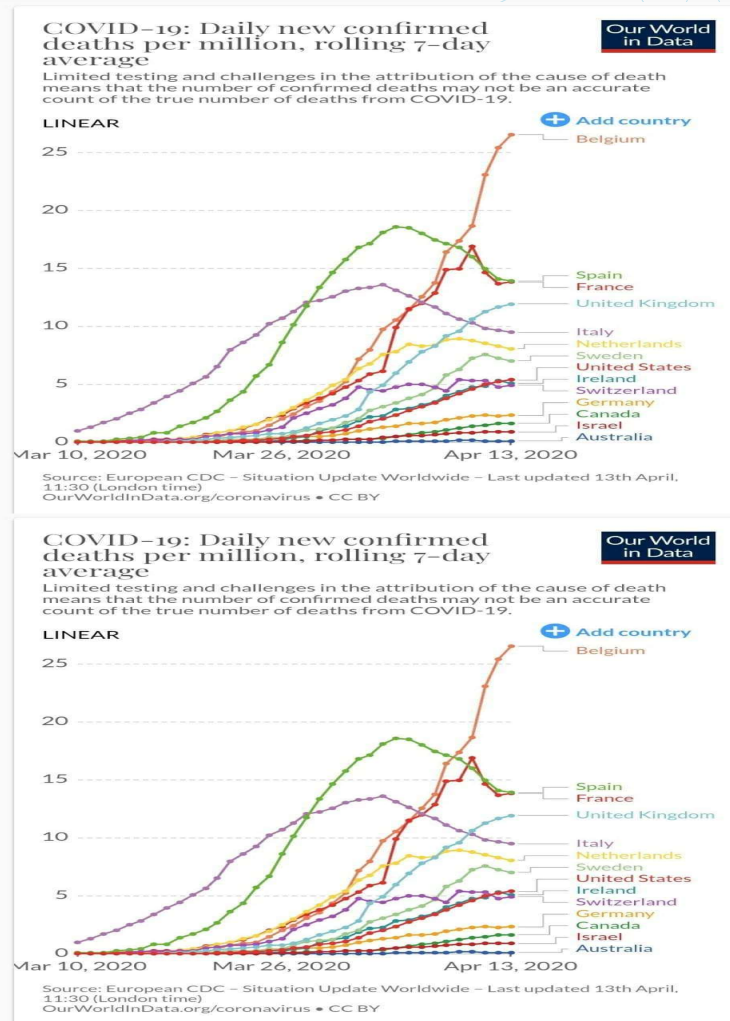


**Udi Ben Senior**

VP R&D



# The Curve Is Not Flattening...



# *Global Telemedicine*

## The Virtual Response to COVID-19 Pandemic



Teleconsultations boomed in China and are now booming in USA and France, mostly for people who are afraid to be contaminated at doctor's office.



NHS111 online made available a teletriage questionnaire tool as well.



USA recently voted on an emergency law to change telemedicine regulations for Coronavirus.



French Minister of Health announced support for teleconsultations for outbreak management.

# COVID-19-related Symptoms

## Mild Disease Symptoms

- ✓ Fever
- ✓ Tiredness
- ✓ Dry cough
- ✓ Some patients: runny nose, sore throat, nasal congestion and aches, and pains or diarrhea
- ✓ Some people report losing their sense of taste and/or smell



Source: WHO

# Monitor and Support Early: 0-8 Days

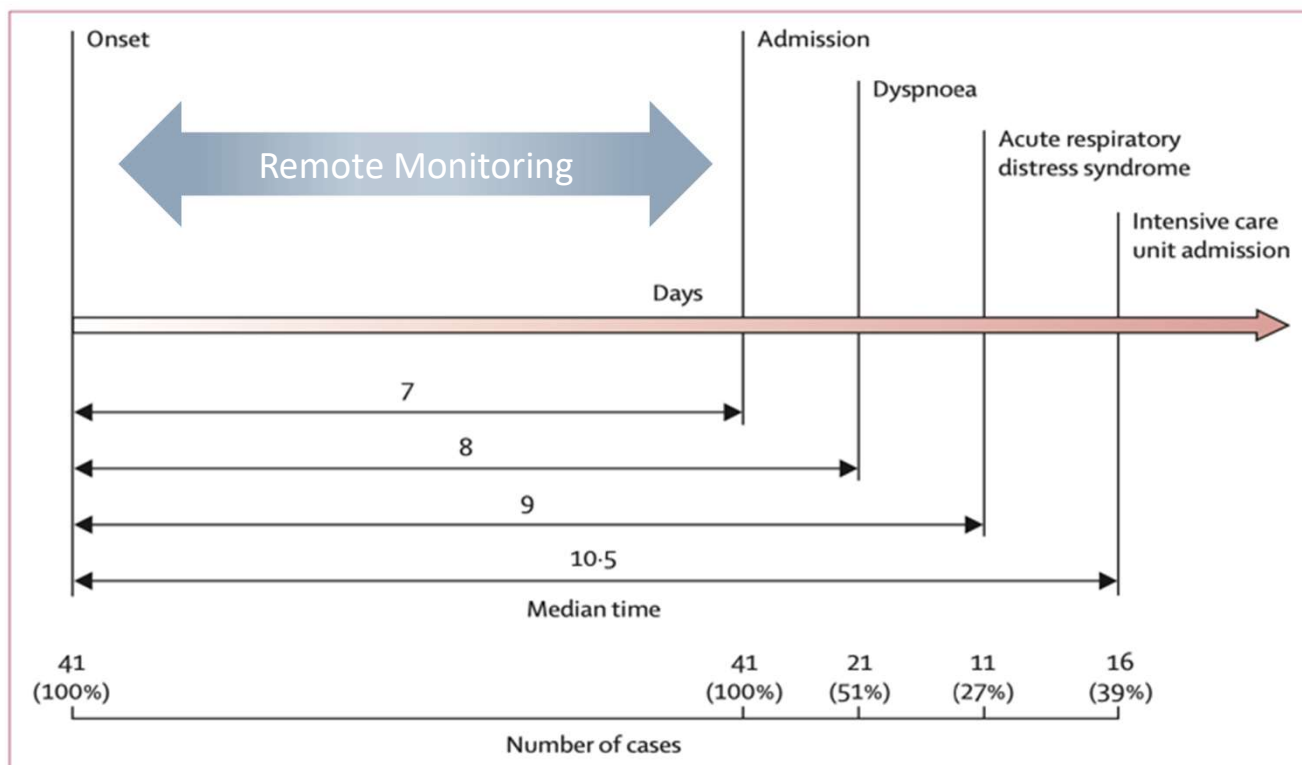



Figure 2: Timeline of 2019-nCoV cases after onset of illness

- Monitor patients *from day of diagnosis*
- Most patients are likely to recover but 20-30% may develop moderate or severe symptoms - *detect early and prevent complications*
- Reduce mortality by *early risk assessment and triage*
- Home monitoring, patient education and consultation



# Early Signs of Deterioration



“Tachycardia, tachypnoea and **reduced oxygen saturation** are the early indicators of deterioration.”

“A temperature higher than 37.8°C/100.04 Fahrenheit, a crackling sound in the patient’s lungs, a **pulse rate of more than 100 beats per minute, and oxygen saturation in the blood lower than 95%**. It was found that **86.1%** of patients with pneumonia exhibited at least one of these signs.”

# Disease Progression

- **Mild disease** - Approximately 60-70% of laboratory confirmed patients - includes non-pneumonia
- **Moderate disease** - **15-20% Lower respiratory** tract and pneumonia cases - Tachycardia/Tachypnea/Low oxygen saturation
- **Severe disease** - **4-8%** have dyspnea, **respiratory frequency  $\geq 30/\text{minute}$ , blood oxygen saturation  $\leq 93\%$** , PaO<sub>2</sub>/FiO<sub>2</sub> ratio  $< 300$ , and/or lung infiltrates  $> 50\%$  of the lung field within 24-48 hours
- **Critical** - **2-6%: respiratory failure, septic shock, and/or multiple organ dysfunction/failure**
- Crude Death rates varying from 0.45% to 3.8%
- Crude Death rates with pre-existing comorbidity or age group more than 60 varies -7.6 to 13%

# The Missing Link in Telemedicine and Remote Patient Monitoring



**Oxygen Saturation**



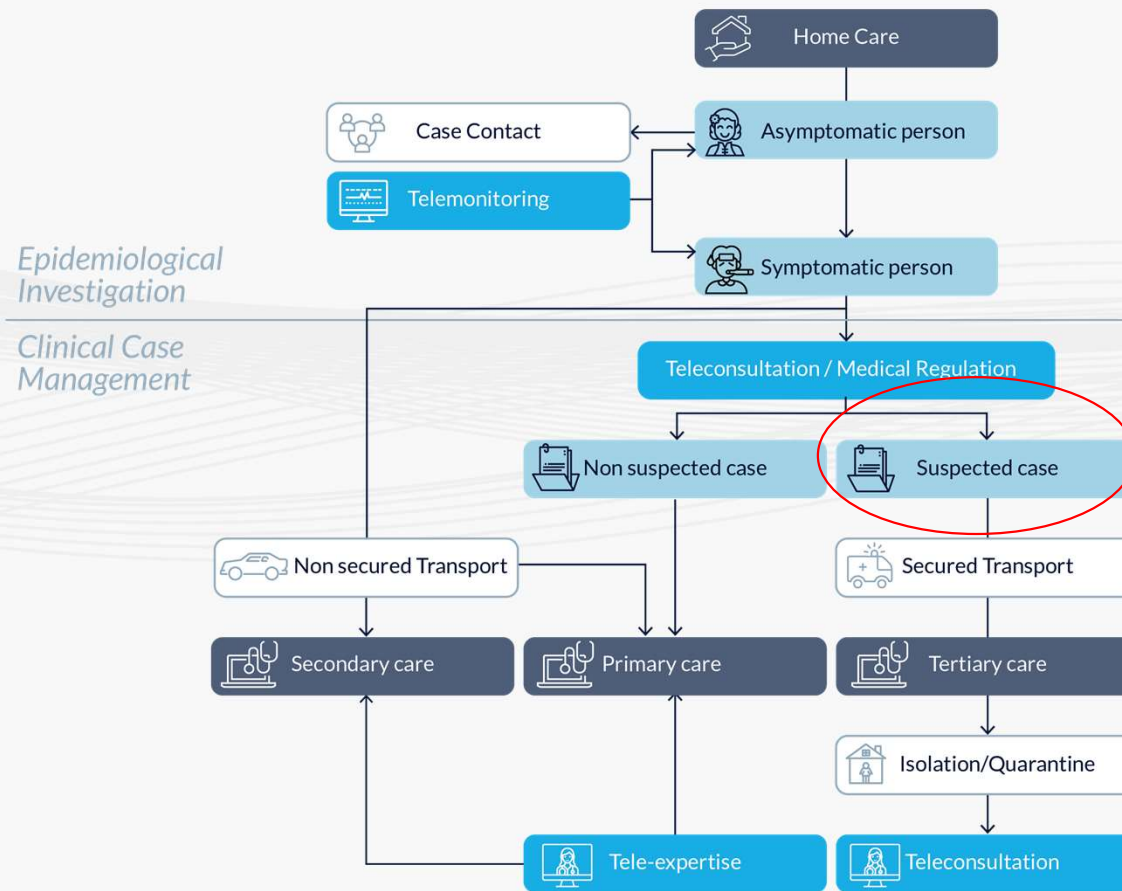
**Respiration Rate**



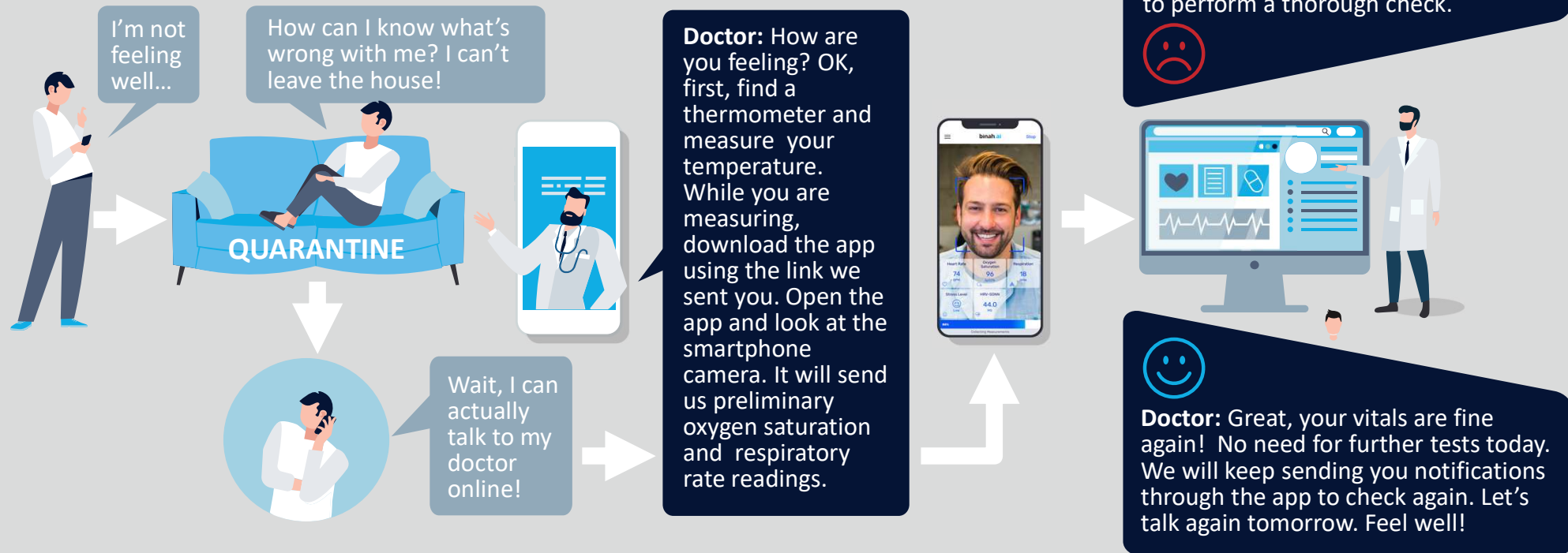
**Heart Rate**



# Monitoring COVID-19 with Telemedicine



# Remote Triage of COVID-19-suspect Patients



## COVID-19 Management

- Register and monitor all suspected and positive cases in isolation
- Remote vital and clinical monitoring to detect early deterioration of patients and intervene early
- Virtual consultation, patient education and counselling
- COVID-19 structured documentation and data collection with advanced analytics



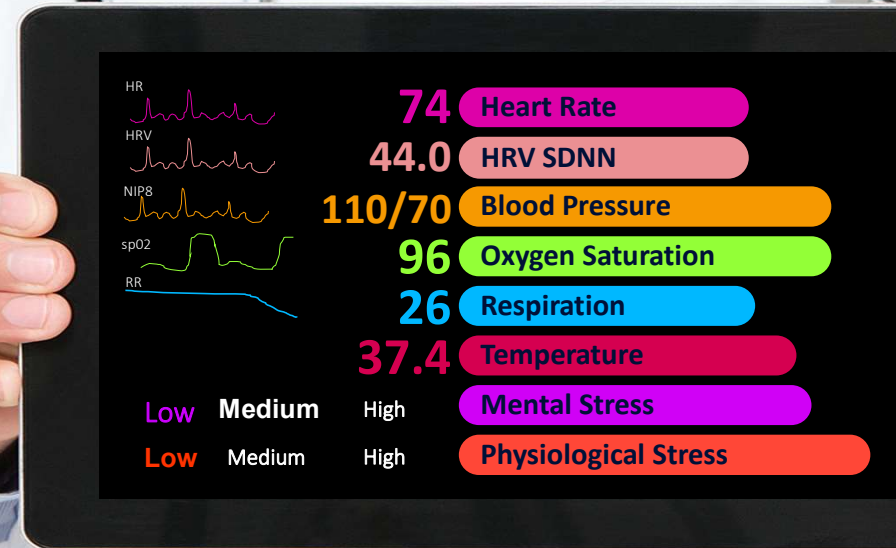
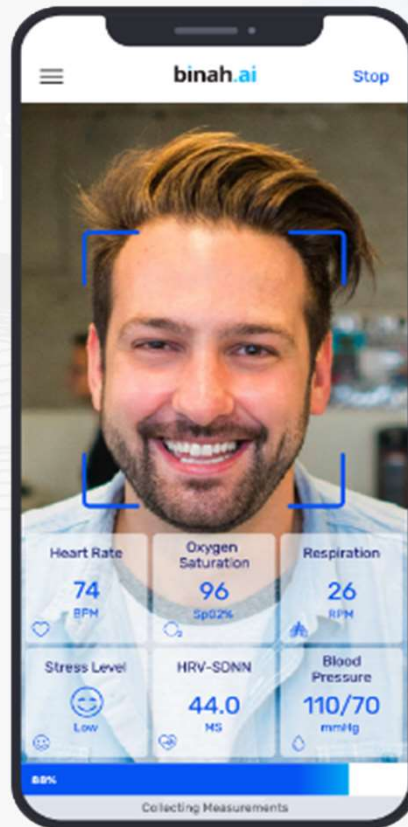
# Binah.ai's Video-based Vital Signs Monitoring

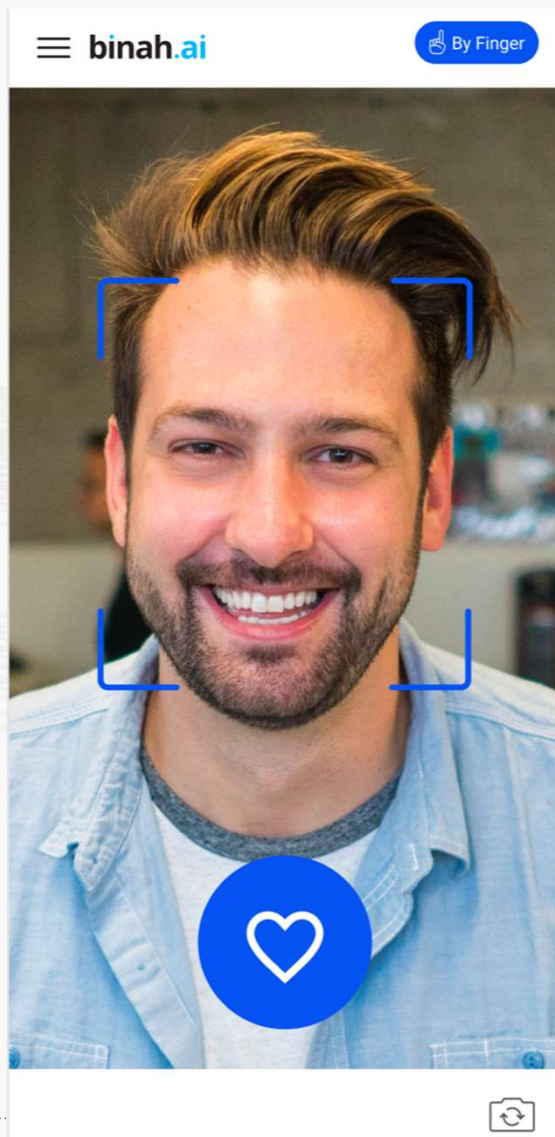
Binah.ai provides an easy way to remotely measure Vital Signs

Runs in Real-Time or Offline

The solution works on any mobile phone/camera and does not require additional wearables

Supports any gender, age and skin color





**Working in  
Real-Time  
On any  
Smartphon**

# Patient Side

*Equipment needed: Smartphone*



**Good conditions:**  
Video-only  
Front facing camera



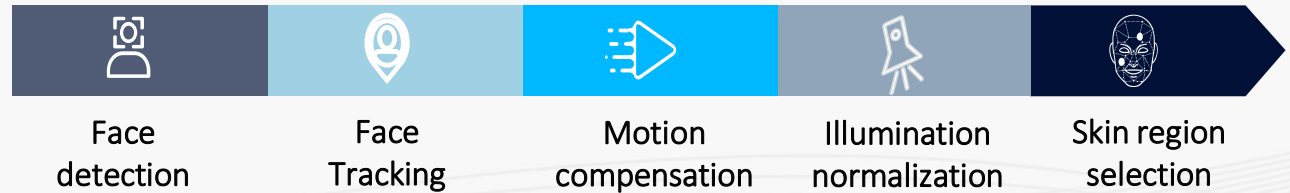
**Challenging conditions:**  
Finger touch  
Back camera





# Runs in Real-Time on Any Smartphone

rPPG – Front Facing Camera (Face extraction), or PPG – Back Camera (Finger)



**Heart Rate**



**Oxygen Saturation**



**Respiration Rate**



**Mental Stress Level**



**HRV (Heart Rate Variability)**

## Coming Soon:

- Blood Pressure – Q2/20
- Hemoglobin Level – Q2/20
- Alcohol Blood Level
- Temperature
- And More..

**Trend Detection and Historical View**



# Per User Health Score and Predictions

Understand, score and monitor your customers' physical and mental health.

Generate alerts and recommendations per customer, and/or high-risk group.

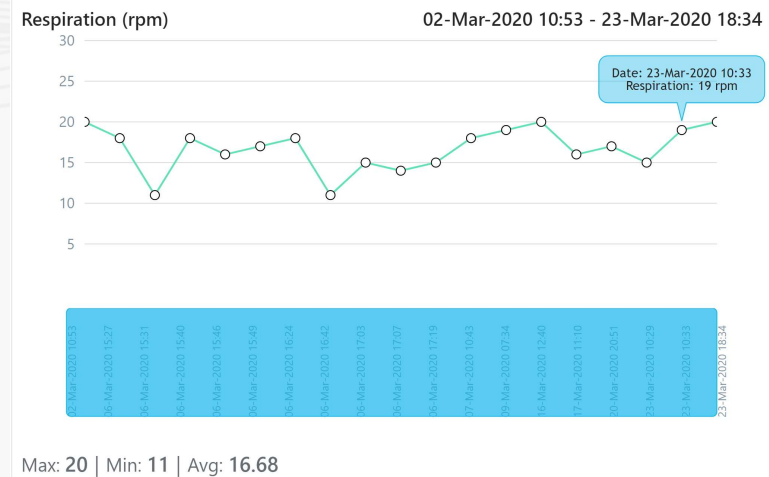
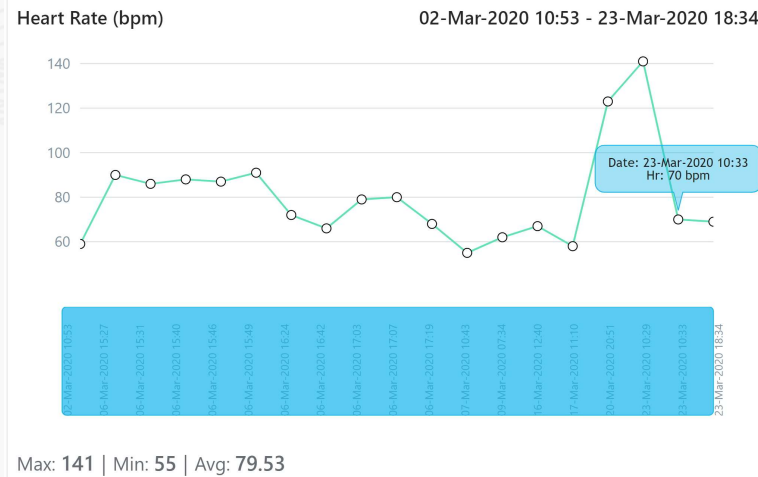
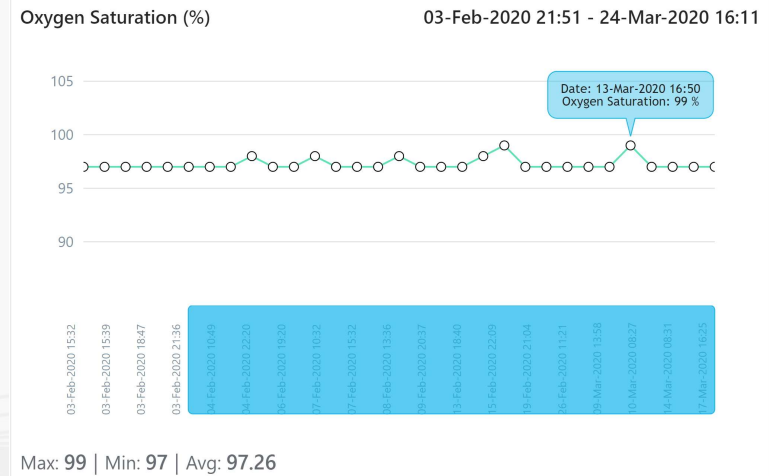
Population health monitoring, ambulatory continuous monitoring, diabetic health scoring and monitoring.

Advanced algorithms automatically translate collected health data into personalized values and unique insights for every customer within a personalized profile.





- ✓ Risk Assessments and Scoring
- ✓ Trend Analysis
- ✓ Early Warning Alerts
- ✓ Predictive Analytics
- ✓ Demand and Capacity Planning



# Accuracy Verification

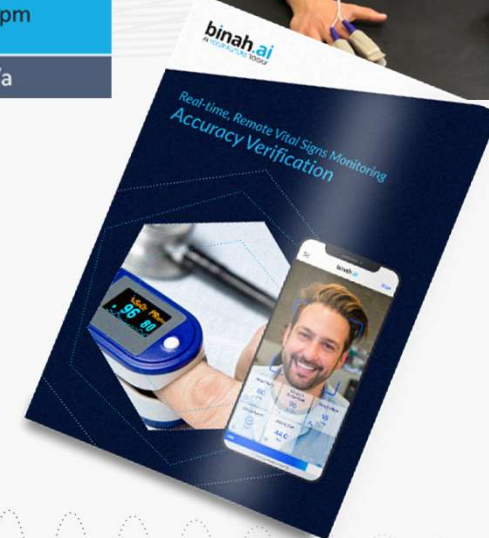
#	Vital sign	/Motion No motion	First results appear after ~X seconds	Measurement range		Error level
				Minimum	Maximum	
1	Heart rate (bpm - beats per minute)	No Motion	8	60	120	±2 bpm
			8	40	60	±3 bpm
			8	120	240	±3 %
2	SpO2 (% oxygen saturation)	No Motion	8	85	100	±2 %
3	Respiration (rpm – respiration per minute)	No Motion	30	8	25	±3 rpm
4	HRV	No Motion	End of test	n/a	n/a	n/a

## Clinically Tested

- Indira Gandhi government General Hospital - India
- Jewish Central Hospital – Canada – In progress
- Several trials by “high-end” customer, such as SOMPO, etc.

## Regulatory Approval – in process

- Canada Health
- FDA
- CE



# Binah.ai Uniqueness



## Accessible

Runs on any smartphone/tablet/pc



End-to-end solution that can run on-demand or continuously

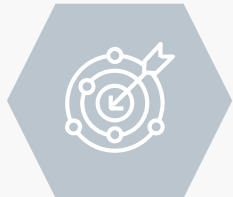


## Camera(s) only!

Supports any age and skin color



Works in daylight (FF Camera)  
Night time (Back Camera)



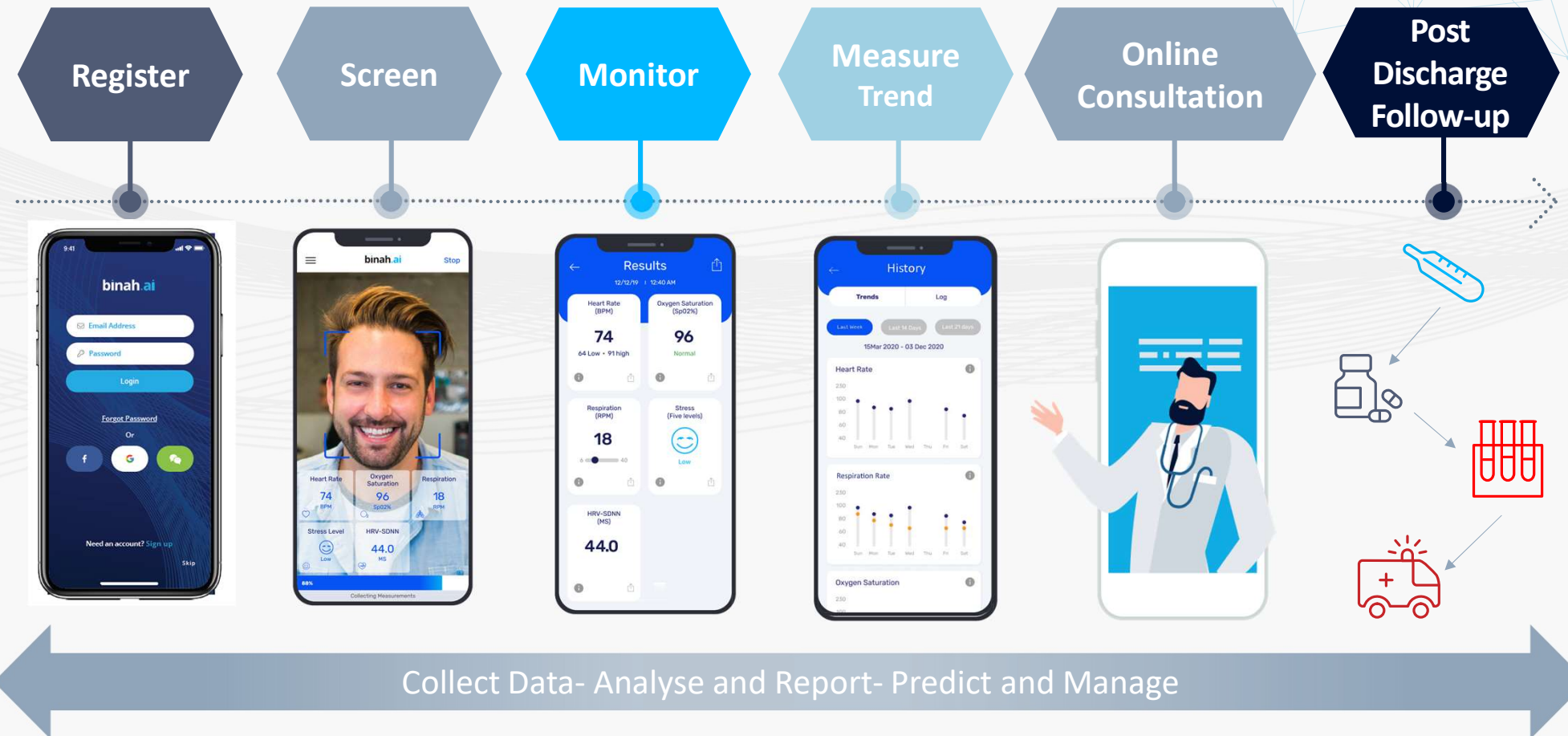
## Accurate

Deliver unprecedented levels of accuracy with 1-2 BPM error level



Runs on the device, no need for internet connectivity!

# Process Flow - Fully Remote, Virtual, Contact-less and Automated





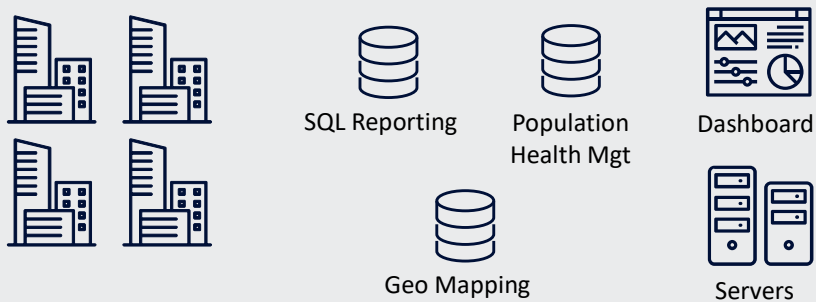
## Self-management at Home (Isolation)



## Co-ordination, Monitoring and Management



## Reporting and Data



## Escalation and Recovery

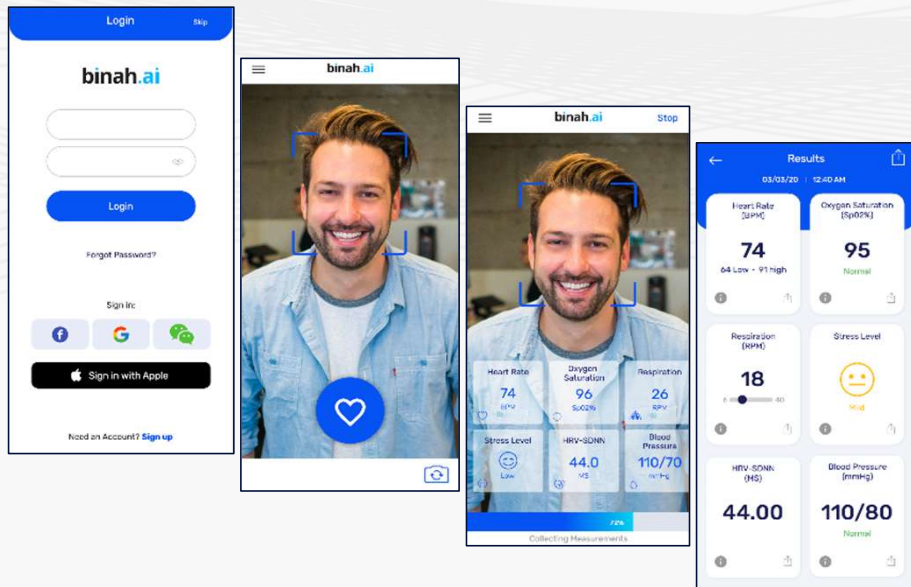




# Delivery

## White Label Platform

*Available as a customized mobile application and cloud service platform*



## Software Development Kit

*Allows any application owner to embed Binah.ai's capacities into their app*

SDK for Android and iPhone

Available for Windows, MacOS and Linux

- Implementation usually takes a few days
- The application runs on the device itself and does not require internet connection
- Available in 12 languages



# Success Story

MONTREAL GAZETTE

## Jewish General set to roll out game-changing app in coronavirus battle

Aaron Derfel • Montreal Gazette  
2 days ago • 5 minute read



The hospital is completing the testing of the app's accuracy on-site and, given the early positive results, has shared it with the Quebec Health Ministry. The provincial government is considering introducing the smartphone technology across the province with the goal of reducing the size of a possible second wave of COVID-19 cases in the next few months.

Had the app existed widely in the general population before the pandemic struck this year, its developers say, the technology could have slowed the spread of the novel coronavirus since some infected users would have known to self-isolate at home.



CORONAVIRUS • Published 18 hours ago

## Canadian hospital battles coronavirus outbreak with 'revolutionary' app

"For example, triage nurses can check vital signs (heart rate, respiratory rate and the blood's oxygen saturation) without touching patients; the condition of certain hospitalized patients can be monitored from their beds; and the vital signs of patients at home can be checked remotely," he explained. "The technology can even detect subtle changes that might otherwise go unnoticed. As a further bonus, with staff entering quarantined rooms less often, stocks of protective equipment will last longer."

# Binah.ai's Video-based Vital Signs Monitoring Benefits



Identify disease deterioration earlier for home-quarantined patients



Slow the spread of the pandemic



Prevent overloading medical facilities and transportation



More efficient use of protective equipment



Better protect medical staff



Ensure business continuity

The background is a solid dark blue. In the center, there are two concentric hexagons formed by dotted white lines. A horizontal dotted white line with a wavy pattern passes through the middle of the hexagons. Two solid dots are placed on the left hexagon: a grey one on the upper-left side and a blue one on the upper-right side.

THANK YOU and  
STAY HEALTHY!

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