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## Metatrend #15: Disrupting Healthcare. Dematerializing, Demonetizing & Democratizing Health

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Today's blog is brought to you by Abundance360, my year-round leadership program designed for founders, executives, and investors who are ready to create meaningful impact and leave a legacy.

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What if you could detect cancers, heart disease and diabetes *before* they've cost you a single dollar or a hospital visit?

What if the physician diagnosing you were an AI who understood your physiology and blood chemistry in precise detail, and was monitoring you 24x7—free of charge?

What if the surgeon delivering *your* lifesaving procedure was an AI-driven robot, providing you the most consistent results, at the lowest possible cost?

In the decade ahead, we are going to move healthcare out of the hospital, out of the doctor's office, and into YOUR home, with biometric sensors *on* your body (wearables), *in* your body (implantables and consumables), and *throughout* your environment (home and office). These sensors are always on, always feeding your medical AI, and always helping you optimize your health and prevent disease before it ever starts.

This Metatrend is driven by the convergence of increasingly affordable and precise AI (machine learning), robotics, next-generation sensors, advanced gene therapies, genome sequencing, and the increased use of telemedicine for speed and convenience.

While the COVID-19 pandemic began the disruption and reinvention of the healthcare industry, the aforementioned exponential technologies will finish the job.

In today's blog, we'll explore the coming healthcare revolution/disruption, and its ability to deliver demonetized and democratized best-in-class medicine to you, your family, and eventually everyone on Earth.

***Let's dive in!***

*(This blog is written by Peter H. Diamandis, MD and Raiany Romanni)*

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## **HEALTHCARE IS SUPER-BROKEN! HERE'S THE DATA:**

The United States spends a whopping 18% of its GDP on healthcare. That's twice as much as most other industrialized countries.

Yet we hardly receive a decent return on investment. America has the *highest maternal mortality rates* and the *shortest life expectancy*

among *all* developed countries.

Much of the capital we invest in healthcare is going towards administrative costs involved with insurance; defensive care (when doctors order exams in fear of litigation); and towards the upkeep of a fragmented system, with an unparalleled number of different payers, billing staff, and specialized providers, resulting in significant inefficiencies and a lack of coordination.

The administrative costs of America's National Health Expenditure (NHE) amount to roughly 30% of its total spend, *or \$1 trillion dollars every year.*

If the rise of artificial intelligence helps solve just the administrative costs, then the United States could save *one quarter* of its health spend yearly.

***But AI won't stop there.***

Drug prices, too, are exceedingly high in the United States—2x to 6x higher than in most countries. Yet this lack of governmental regulation, which allows pharmaceutical companies in America to charge what the market calls for, is also what allows for the discovery of new drugs and innovation.

Artificial intelligence may also help to solve this puzzle, by cutting down the costs of drug discovery, while speeding up costly clinical trials.

The world's biggest problems are the world's biggest business opportunities. For all the pain it caused, the COVID-19 pandemic will have served as a catalyst for one of the most transformative periods in the history of healthcare. Not only did the pandemic highlight the inefficiencies and inequities of medical systems worldwide, but it also showed us the ability of entrepreneurs, technologists, and government leaders to rapidly mobilize solutions.

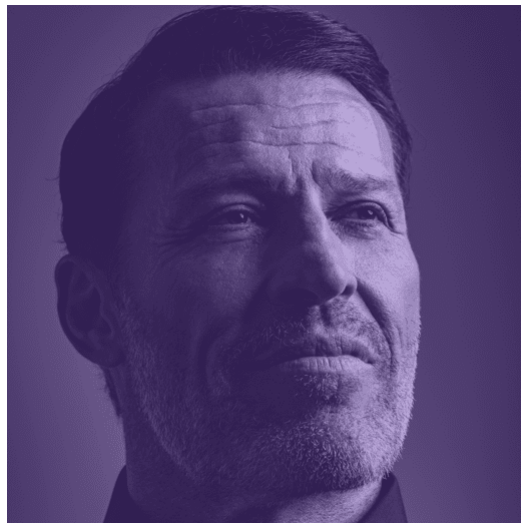
*Get ready for a healthcare revolution. It's coming and it will be disruptive.*

## 2023 A360 SUMMIT SPEAKER SNAPSHOT

Here's a sneak peek of the A360 speaker lineup. This will be an exciting year!

**Note:** *At the time of this email, we have 34 remaining spots to attend the Summit live in March.*

[LEARN MORE ABOUT PETER'S MEMBER COMMUNITY & SUMMIT](#)



### Tony Robbins

#1 *New York Times* bestselling author and life & business strategist. He is a leading philanthropist and through his 1 Billion Meals Challenge, he has provided over 945 million meals in the last 8 years and is ahead of schedule to provide 1 billion meals by 2025.



## Andrew Yang

2020 Democratic presidential candidate and 2021 New York City mayoral candidate. He is the Founder of Humanity Forward, and his *New York Times* bestselling book *The War on Normal People* helped introduce the idea of universal basic income (UBI) into the political mainstream.



## Jacqueline Novogratz

Founder and CEO of Acumen, whose mission is to change the way the world tackles poverty. She is a *New York Times* bestselling author and was named by *Insider* as a top 30 global leader working on climate solutions.



## Mark Hyman, MD

Family physician and internationally recognized thought leader in the field of functional medicine. He is a fourteen-time *New York Times* bestselling author, and Board President for Clinical Affairs of The Institute for Functional Medicine.

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## ADVANCED DIAGNOSTICS WILL SAVE YOUR LIFE

### Diagnostics: Full Body Upload

All of us will eventually develop some of the diseases of aging—whether heart disease, cancer, or dementia. Your job is to find that disease at its earliest point and take action to cure it, or at least delay its impact. It's with this early diagnostic mindset in mind that I co-founded (and now Chair) a company called Fountain Life.

Fountain Life is building a global platform delivering the most advanced diagnostics and vetted therapeutics to those who seek a longer, healthier, and more vital life. The company offers its members an annual 150 GB “Upload” of imaging, genetic and blood-related diagnostics. Fountain Life’s goal is to reliably predict future disease, and to detect any such disease at the earliest moment possible,

thereby stopping and ultimately reversing its progression, returning our member to peak performance.

Data from those who have undergone such advanced diagnostics yield a pretty shocking realization. For the first 1,500 “seemly healthy adults,” we have found that 2% of those tested have a cancer they don’t know about, and 2.5% discover an unknown aneurysm. Ultimately, a total of 14.4% of seemingly healthy members have an actionable, life-threatening finding.

You really don’t know what’s going on inside your body until you look. And, unfortunately, most of us are optimists, and never bother to look inside. In fact, you probably know more about what’s going on in your car than you do your own body!

Incredibly, the human body is very effective at *hiding disease*.

Early-stage cancers (stage 0, stage 1 and even stage 2) typically produce zero symptoms. You don’t realize there’s an issue until your diagnosed with stage 3 or stage 4 when it is sometimes too late. *Parkinson’s* disease, for example, only becomes apparent in its late stages, once 70 percent of dopamine-producing *neurons* in the substantia nigra have been lost.

How, then, do you catch early cancer, neurologic or heart disease?

The uncomfortable answer is, *by actively looking for it*.

The Fountain Life Upload includes a full-body and brain MRI, the AI-powered-coronary-CT scan (*Cleerly*), a DEXA Scan (which measures bone density, fat, and muscle levels), full blood work-up, a Grail (liquid biopsy) test detecting 50 different cancers, genomic analysis,

wearable, quarterly blood tests and much more—as well as a dedicated Concierge Physician to help you understand the results and take action.

Admittedly, Fountain Life Membership isn't cheap (around \$19,500 per year, including a Concierge Physician for the full year). To help Democratize and Demonetize this approach, I'm very proud that we also developed something called Fountain Health Insurance, for self-insured companies with at least 50 employees. For the cost of a regular health insurance policy (typically \$1,000 per month) your employee base can get all the key advanced diagnostics at no additional cost. The idea behind Fountain Health Insurance is to prevent your employees from getting sick in the first place (i.e., prevent the costly impact of Stage 4 cancer treatments).

## **Diagnostics: Out of the Doctor's Office and Into Your Home**

The practice of medicine is about to shift away from the hospital and doctor's office into the comfort of your home. It will shift from a yearly check-up, to an ever-present, 24x7 monitoring of your health through sensors and your medical AI.

A new generation of advanced biometric sensors *on* our bodies (**wearables**); *in* our bodies (**implantables and consumables**); and throughout our environment (**home and office**) will increasingly feed continuous data to our medical AIs, and through them to you and our physicians.

The goal here is to make you “The CEO of your own health.”



In the future, biometric sensors will be able to understand your blood chemistry and physiology in great detail. And while this is under development, and expected this decade, allow me to share (in brief) 15 of the commercial options available today:

**1. MyLifeForce.com:** After writing *Life Force*, Tony Robbins and I, along with M13 venture partners, started a company called Life Force. Life Force offers a quarterly at-home blood draw that measures 40+ biomarkers. The annual service also includes virtual consultations (4 per year) with a Functional Medicine M.D. who will review and interpret your results over Zoom. Next, you'll get physician-recommended medicines, hormones, peptides and supplements to help optimize your health. Go through this cycle of test—optimize—test and dial yourself into optimal health from the comfort of your home.

**2. OncoWatch:** This wearable offers real-time diagnostics for prostate cancers, leading to improved care, faster treatment, and cost savings. Current, hospital-based prostate cancer diagnostics lead to high mortality rates and unnecessary treatments. This device revolutionizes the ability to monitor and prevent malignant tumors, at home.

**3. Spire Stone:** is a respiration sensor worn on clothes. It uses biometric sensors to track and analyze the user's breathing patterns. The sensor is designed to help you manage stress and anxiety, and improve focus.

**4. Neurotrack:** is a cognitive-screening app that non-invasively helps you detect early signs of cognitive decline and dementia—*in your home*. The tool uses computer vision and machine learning to track and measure changes in visual attention, one of the earliest indicators of cognitive decline.

**5. AliveCor:** (a BOLD Capital portfolio company) has created the first and only FDA-cleared six-lead personal EKG, KardiaMobile 6L, which detects Atrial Fibrillation anytime, anywhere. As a small, portable device, attached to the back of a smartphone, it allows users to record and share EKG readings with their provider.

**6. Patchables:** A new class of wearables, these are sensorized patches worn on the skin, set to revolutionize medical imaging. By collecting data such as blood flow, these patches can effectively prevent life-threatening conditions, such as deep vein thrombosis.

**7. Levels:** Levels is a company designed to optimize your metabolic health using advanced Continuous Glucose Monitors (CGMs), which measure blood glucose levels in real-time using Dexcom G6. This kind of continuous monitoring allows you to learn which foods spike your blood glucose levels. This is critical to understanding your metabolic health, and crucial for delaying the onset of chronic diseases.

**8. Apple Watch:** The most popular wearable in the world, it has saved countless lives due to the mere fact that it connects directly to emergency services. Watch sensors track metrics including heart rate, steps, PO2 levels, and calories burned. Advanced health monitoring features include ECG, fall detection, menstrual cycle tracking, built-in GPS, and even the ability to monitor the early signs of Parkinson's disease.

**9. BioBeat:** FDA-cleared wearables that effectively monitor vital signs at home. Their devices use photoplethysmography (PPG) technology, which is a non-invasive method of measuring blood flow, to monitor a

variety of physiological parameters such as heart rate, blood oxygen saturation, and blood pressure.

**10. Smart pacifiers:** Equipped with sensors and technology to monitor the baby's feeding and sleeping patterns, smart pacifiers link to an app which allows parents to track their baby's feeding, sleeping, and crying habits, including temperature sensors and accelerometers to track the baby's movements and activity levels.

**11. Siren Socks:** These sensor-rich socks are designed for people with diabetes. By detecting temperature and pressure changes in the feet, these socks warn patients of circulation problems or foot ulcers. They are FDA-approved and can prevent amputation.

**12. Oura Ring:** This sleep wearable, considered best in class, is packed with a range of sensors that can accurately understand your sleep patterns (REM, Deep and Light sleep). It also measures heart rate, heart rate variability, body temperature and oxygen saturation. Oura Ring tracks movement, calories burned, and spots pregnancy. It's a significant catalyst for wellness and productivity.

**13. Breathables:** Electric noses are being developed to detect and identify chemicals which may indicate signs of cancers in a patient's breath. Early studies show the tool accurately identified ovarian cancer with 95% accuracy and pancreatic cancer with 90% accuracy.

**14. Upright Posture:** Upright is a device worn on the back to improve posture by tracking and vibrating when the user slouches. It connects to an app that tracks progress and helps office workers and people

with conditions like scoliosis, kyphosis, or lordosis reduce risk of back pain.

**15. InBody H20 Whole Body Composition Scale:** A connected digital scale that measures whole-body composition including total weight, muscle mass, and body fat percentage. It can connect and send your data directly to your table and your physician.

Sensors will become more powerful, measuring more, with greater accuracy. All of this data will be fed into an ever-increased catalogue of health apps monitoring and advising you—ultimately, with advanced versions of Siri/Alexa/ChatGPT helping you to make continuous and better choices about your food, meds, workouts, and sleep.

## **WHEN AI, GENE THERAPIES & and VACCINES CONVERGE...**

The cost of genome sequencing has been demonetizing at a rate five times faster than Moore's Law. In 2001, Craig Venter, PhD sequenced his own genome for \$100 million in 9 months of time. Today it costs about \$200 and takes 7 hours. That's 500,000-fold cheaper and 1,000x faster.

At the same time, the cost of gene therapies and CRISPR treatments is also beginning to demonetize.

Combine this with the continuous (unabated) growth of generative AI models and we have the formula for a spectacular revolution.

Insilico Medicine (a BOLD Capital investment), for example, is revolutionizing the pharmaceutical industry by introducing AI-powered drug discovery into the multi-trillion-dollar opportunity of age-reversing therapies. Led by the brilliant AI scientist Alex Zhavoronkov, PhD, Insilico is discovering and developing new drug candidates 100x faster and 100x cheaper than traditional pharma. Increased use of AI in drug discovery is set to disrupt the long and expensive drug-discovery cycle. With an increased understanding of the genetic and epigenetic factors that govern human aging, cancers, Alzheimer's, and diabetes will become increasingly preventable—until they are *eradicated*.

Vaccines by a company called Vaxxinity (where I serve as a co-founder) are in human trials (phase 1, 2 & 3) to address and prevent chronic diseases like Alzheimer's, Parkinson's, and hypercholesterolemia. In a similar fashion, Moderna's and Merck's new vaccine against cancer has successfully treated patients with high-risk melanoma—the deadliest form of skin cancer—showing positive and significant clinical results in a Phase 2 trial.

Breakthroughs in early detection and new therapeutics have made a dent in the war on cancer. Since 1991, cancer death rates have decreased by 33%, according to a report by the American Cancer Society.

That's an estimated *3.8 million deaths averted*.

How many more lives can be saved?

How many trillions of dollars will America save as we avert chronic diseases?

## YOUR ROBOTIC SURGEON... 10X CHEAPER, 100X SAFER

Let's examine one more unique area we are likely to see in the decade ahead: the convergence of AI, robotics, and surgery.

If some day you should require an important surgery, do you know *THE MOST IMPORTANT QUESTION TO ASK surgeons as you interview them??*

“How many times did you do this specific surgery yesterday?” Without question, those surgeons with the most experience, are the best. They've seen every variation and have experience when things go wrong and how to fix them.

Typically, a skilled surgeon will do hundreds of cases per year. But what if your surgeon is an “AI-Robotic platform” that has done *millions* of operations per year?

Such an AI-Robot platform would have a multitude of other advantages. First, it can view the surgical field in infrared and ultraviolet, and perform any operation with extraordinary accuracy and dexterity. Second, that robot will not suffer from drinking too much coffee, not getting enough sleep, or having a fight with their spouse that morning. Third, the 6D's of exponentials will ultimately demonetize and democratize such a service, making it scalable to thousands of hospitals worldwide.

As a first demonstration towards this future, in 2022, a team of researchers at Johns Hopkins successfully designed a robot which, in a first, performed laparoscopic surgery on a pig with *zero* assistance

from a human surgeon. Dubbed STAR—short for Smart Tissue Autonomous Robot—the system is unique in that it requires little to no training on the side of humans.

In the meantime, until AI is fully up to the task of 100% autonomous surgeries, an “Avatar Robotic System” called **da Vinci by Intuitive Surgical**, enables a skilled surgeon to remotely deliver their services at a distance in a tele-operation mode. To date, over 60,000 surgeons have completed **more than 10 million** surgical procedures using the da Vinci system.

There’s another kind of medical robot that is microscopic in size called the Bionaut. Bionaut Labs, one my venture fund’s portfolio companies, has developed a robot which is the size of a grain of rice and is navigated and propelled through your body using magnetic fields. For example, inject the Bionaut into your spinal fluid, and you can move it up into a specific location inside the brain where it can deliver a chemotherapy treatment. If you remember that epic 1966 fiction film called *Fantastic Voyage*, which chronicled the adventures of a submarine crew who were shrunk to microscopic size and placed into the body of an injured scientist to repair damage to his brain, then you’ve got the idea. This technology importantly holds the promise to deliver hyper-local treatments without systemic side effects. Bionaut is now entering clinical trials for use in the treatment of Alzheimer's Disease, Huntington's Disease, and gliomas.

## FINAL THOUGHTS

The shift towards remote, at-home medicine, outlined in this blog will ultimately benefit all of humanity. With the promise of digitized, dematerialized, demonetized, and democratized next-generation healthcare, we will have the ability to create unprecedented abundance in this area.

There is no greater wealth than your health.

Do you find these changes outlandish? Unrealistic? If so, just remember how far medicine has come in the past 100 years. Then, consider that fact that in the next decade we're going to see as much technological change as we've seen the past century.

The future of medicine will not be linear, it's exponential and to a large degree maybe rather shocking.

Perhaps there's no greater example than the news that on January 22, 2023, OpenAI's ChatGPT (a free service) was able to pass the United States Medical Licensing Exam (USMLE), an exam that normally takes 4 years of medical school and 2+ years of clinical rotations to pass. (Worth noting that in the same period of time, ChatGPT also passed the Law Bar and Wharton University's MBA exam.)

If you're in the medical field, how will you navigate these coming disruptions?

If you're not in the medical field, how will the transformation of healthcare impact your business? What opportunities will it create?

Ultimately, for you personally, are YOU ready to become CEO of your own health, partnered with your medical-AI copilot?

In our next blog in this Metatrend series (#16 of 20), we'll move on to the category of **Energy, Environment & Food**.

Metatrend #16 will explore the notion of **Globally-Abundant, Cheap Renewable Energy**.



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