



KIN HEALTH & WELLNESS FORUM

at KIN GLOBAL 2013

Improving health effectively and affordably over the next ten years...



AON Hewitt

 **Kellogg**
School of Management

NORTHWESTERN UNIVERSITY





SESSION OVERVIEW

The KIN Health & Wellness Forum explored key trends, cost and access issues and the opportunities for innovation over the next ten years.

In the developed world, we are faced with an aging population confronted with multiple chronic conditions and costs that are rising so fast they are crowding out other needed investments. Conversely, the developing world struggles with simple access to quality care and technological advances. However, important innovation opportunities are to be found in both.

The format consisted of 8 experts describing an element of the challenge followed by facilitated working discussions. In breakout sessions, and later in the KIN Forum breakouts during the main session, key themes were explored and discussed in greater depth.

Below is a summary of insights and trends presented by KIN Forum contributors, as well as a synthesis that pulls together several themes heard in the forum and general sessions into a set of key trends and forces that will shape the future, along with challenges and questions for leaders.

KEY TRENDS SHAPING THE FUTURE

Over the next decade, wellness will increasingly become:



We are on the front-end of the genomic revolution, which will enable radical new possibilities in health & wellness personalization. We're also collecting massive amounts of data about our experience and context which will lead to what KINian Vivek Wadhwa referred to as "the quantified self."



We will see the shift from backward-looking diagnostic to increasingly forward-looking prognostic assessments of health. Big data will become our friend, as we look for powerful new ways to mine data, using agent-based simulation & modeling to improve our programs and policies.



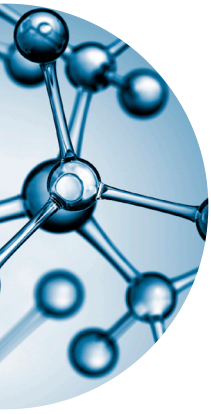
With lifestyle-related chronic illness costing us \$1.7 trillion globally, we're becoming aware as individuals, organizations and governments about the need to move from therapeutic care to wellness. Employers, who often bear the cost impact of chronic illnesses are seeing the connection between wellness and workforce resilience and productivity. And, new science and new tools are enabling this shift.



Consumers will become increasingly interested and motivated to take charge of their future health. New understanding into the science of motivation will help us target programs that address the basic needs of survival, purpose and context. And, health & wellness related devices will enable us to become more engaged in our health daily.

EFFICIENCY → EFFECTIVENESS

This 4P framework supports an important shift from a narrow focus on efficiency to a holistic focus on effectiveness. Some of the biggest gains for both healthcare corporations and the communities they serve will come from using data to drive effectiveness in the years to come.



Forces shaping these trends

These trends will be enabled and shaped by several key underlying forces:

Sensors & machine intelligence: Devices will continue to proliferate creating what has been referred to as “the internet of things.” These will be inserted, implanted, worn and passive/environmental. These devices, especially when combined with user-generated information, will lead to proliferation of data.

Computational power: Both the computational processing power and storage capabilities (increasingly lower cost, nearly free) will create powerful new possibilities leveraging big data.

Ubiquity of computing technology: This will enable new levels of global connectivity. Virtual communities will become powerful mechanisms for socialization and behavioral change related to wellness. Additionally, ubiquity of computing will enable new possibilities in the developing world, bringing information, education and solutions to the masses in ways not previously envisioned.

Mobile technology: Cell phones will create new experiences and even entirely new business models. The power of mobility is in its ability to be highly personalized, location based and real time.

Human insight: Increased understanding of human behavior will enable new models for motivation, engagement. We’ve known for some time what behaviors are health-promoting; yet, we’ve struggled with how to drive compliance. The next decade will see powerful advances in human insight and motivation, enabling new possibilities, new business models and perhaps even new policies.

Challenges and questions we will need to address

Economic: How do we make a meaningful reduction in the \$1.7 trillion current impact of chronic illness accelerated by an aging population?

Societal: How do we bring innovative and cost-efficient health solutions to the poorest of the poor, bridging the divide between the developed and developing world?

Organizational: What should the role of business be as an agent of change?

Technological: What are the possibilities and threats that will be brought about through the application of big data?

Political: What should be the role of governments and public policy in enabling innovation?

Additionally, in what ways will the practice of medicine need to evolve in the future in light of such transformational change?





Perspectives
from
KINians



MITCH HIGASHI

Chief Economist, GE Healthcare

Topic: The need to create a supply of next generation global data scientists

Big data offers us the potential to solve big problems on a global scale. Indeed, with the proliferation of human and machine generated data – the internet of things – we now generate more than 2.5 quintillion bytes of data every day. And growth is exponential. It has been estimated that 90% of the data that exists in the world has been created in just the last 2 years.

Yet, for all its advances in recent years, big data remains focused on “now” insights: customer segmentation, traffic analysis and in the healthcare arena, the use of patient data for decision making. However, to unleash the power of big data and create transformation in health & wellness, we need to move from analysis of the now to prediction, forecasting and agent-based modeling. Agent-based modeling helps simulate the behaviors and interactions of agents to provide information about the impact of decisions on the ‘real world’ system being modeled. It enables us to create a digital construct, or silhouette – an approximation of individual agents based on publicly available data – and apply a system of rules to create scenarios or simulated projections.

A powerful example of this can be seen in the Corvix system currently being piloted in India. Corvix creates a virtual world in which population needs can be defined, big data can be imported (demographic, economic, and epidemiologic) and scenarios can be developed to predict the impact of decisions. Corvix generates evidence based insights that empower decision makers to improve quality of care, access to health-care services and expand the economic potential of a region.

However, this shift in the application of big data toward more predictive uses will require new capabilities. We will need a new workforce of “big data scientists” capable of helping us leverage and learn from big data sets as well as a fusing of roles, bringing together public health professionals with technical experts skilled in data modeling, cloud programming and software-as-a-service (SaaS). We need powerful business cases, showcasing the possibilities with big data in action. We also need awareness and incentives for students.

As we look ahead, big data has the potential to create powerful innovations in the future of health & wellness, especially in public health efforts. The critical question for the future is: will we find sufficient supply of the new global data scientists to turn the possibilities of big data into reality?



PAUL EPNER

Strategy Consultant and Advisory Board & Healthcare Lead, KIN
Topic: The need to reinvent the clinical laboratory profession

We are facing a crisis in the US healthcare system: we waste \$750 billion annually (30% of total healthcare spending), part of which emanates from the fact that 10-15% of the time physicians miss diagnoses, get them wrong, or delay diagnoses, creating patient harm. And yet, we run over 6 billion laboratory tests per year – nearly 19 tests per capita. Where do we go wrong?

One challenge is a lack of awareness and knowledge. Nearly 5,000 tests exist, and studies have shown physicians are only able to know 20 to 40 tests well. Another challenge is that the laboratory model will need to evolve to better support the medical profession, and improve healthcare outcomes. Laboratories have become 'factory-driven': tubes in, numbers out. And the laboratory business model has focused primarily on preparation, analysis and reporting – only a portion of the patient engagement cycle. There exist multiple points of patient interaction and multiple hand-offs in the total patient cycle – from ordering & collection to analysis & reporting, to interpretation and action. No one really owns these hand-off points. Information is collected at the point of care and expertise exists at multiple points in the system, yet the process cycle remains fragmented – contributing to missed diagnoses, wrong diagnoses and delayed diagnoses. So what role should the 'laboratory of the future' play in bringing about change?

The clinical laboratory model will need to be re-invented. The mission of the lab of the future should not be to provide accurate, timely, low cost test results. Although necessary, this is not sufficient. A focus exclusively on process efficiency and cost limits our ability to meaningfully impact patient outcomes and healthcare generally. Instead, the clinical lab's mission should be to rapidly and efficiently enable the accurate diagnosis of conditions, the selection of appropriate treatments and the effective monitoring of health status.

Such change in the laboratory model can and will create powerful change in the future of healthcare. The question facing the industry is how do we make this transition?



JOHN ZERN

Executive Vice President & Americas Practice Director for Health & Benefits, Aon
Topic: Healthcare change through the employer lens

Employee population health is now a C-suite issue. Chronic illness, especially those that result from lifestyle-related causes, have a profound impact on the corporation—worker's comp claims, general health claims (many large corporations are self-insured, thus bearing the impact of such claims), lost productivity and work safety issues. As a result, employers are increasingly realizing that real business benefits accrue to those who invest in the health of their employees. Looking ahead, employers realize that evolving population health helps drive workforce resiliency – creating more desirable, productive work places.

Fostering a healthy & resilient workforce requires a focus on wellness, choice & personal accountability and improving education levels within the employee population. However, for real change to be effected, behavioral change is needed at the individual level. Achieving such change can be accomplished by focusing on avenues of influence. The first avenue is the work environment: incorporating appropriate activity and health practices into daily job functions. Second is the provision of individual health resources: making services accessible, easy, meaningful, confidential and personal. Third is the workplace culture, making healthy the new organizational norm. And finally, community involvement, supporting health practices outside of the work environment.

To be successful, critical issues for employers to solve will be: population health design, incentive structures that reward, teams with both financial and social recognition, and engagement approaches that leverage social media, web and mobile. As a practical matter, employee population data and segmentation approaches can begin to help us create solutions for targeted population groups.

Looking ahead, employers will increase in their influence given their access, relationship and role with health consumers (their employees). They will realize that employee health is a key driver of having a productive and resilient workforce and a productive, resilient society in general.



JOHN PETERS

Chief Strategy Officer & Professor, Anschutz Center for Wellness, University of Colorado
Topic: Creating a culture of health - where is the motivation?

One of the central problems we need to resolve to make progress in the wellness movement is that of human motivation. Although the behaviors that promote health and wellness are rather well known, what is not as well known is how to get independent agents, known commonly as human beings, to do them in any persistent way. However, the science of motivation is becoming better known, and therefore our ability to affect motivation is increasingly within reach.

Three factors that will help address the motivation deficiency - survival, purpose and context, or S-P-C. The first, survival, has been at the root of human existence from the dawn of mankind, as is the "operating system" that drives us even today. Many scientists believe the urge to eat sugar, salt and fat is driven from by survival instincts wired into our biology. In the same way, we tend to avoid activity and remain in a sedentary state because doing so helps conserve energy. The second factor, purpose, relates to the goal-orientation of humans. Creating real change will require we create meaning and purpose, but do so with a sense of immediacy, rather than addressing the long-term benefits. Finally, context brings meaning and understanding. We must take context into account in order to create real behavioral change. Context must go beyond culture to social structure, the relationship and influences of community and other factors.

We can rise above our biology to create meaningful change, but we must create new approaches to motivation that align the forces of SPC. We need rewards systems that can align purpose and bring immediacy of benefit (e.g. personal energy, productivity, positive social rewards, etc.). We also need to change our mindset about health, looking at health as an input for other things such as personal productivity. Only then will we create lasting change in the trajectory of wellness.



DARSHAK SANGHAVI, MD

Chief, Pediatric Cardiology

Associate Professor of Pediatrics University of Massachusetts Medical School

Topic: Can data mining heal the medical malpractice mess?

Much has been written and discussed about medical malpractice and its impacts on healthcare costs. And yet, little has been said about the role of technology and big data to reducing the med-mal dilemma. Technology and data mining, supported by intelligent systems, can give us a path forward in reducing errors and thereby malpractice costs.

At the core, most patients are looking for information and compassion, not revenge. A recent Michigan-based pilot program found that by demonstrating empathy and offering an apology when errors were made, liability costs were able to be reduced by 59%. What would happen if we doctors simply demonstrated greater compassion and empathy and apologized when they made mistakes?

In addition to empathy, data mining and intelligent systems could be the ounce of prevention we need to reduce the incidence of medical errors in the first place. One study of medical errors, found that patient assessment, selection and management of therapy, patient monitoring and communications among providers are all leading causes of medical errors and are also all able to be improved through better use of data mining and information systems. Data mining, analytics and better information systems can help us improve outcomes and reduce errors.

Medical errors are far more common than the data on malpractice rates would suggest. In fact, one study published in the New England Journal of Medicine found that just 2% of adverse patient events due to negligence advanced to malpractice claims; the vast majority went unreported. Change is needed.

Perhaps a little empathy, a few more apologies and more intelligent systems capable of data mining & decision support are just what the doctor ordered.



AMY LOCKWOOD

Deputy Director, Stanford Center for Innovation in Global Health

Topic: Bridging the divide: healthcare in developed and developing nations

The world we live in is divided. Life in the developed and developing world are very different and for us to make a meaningful difference in global prosperity we must find new ways to bridge the divide between developed and developing nations.

The differences between the two are pronounced: physical infrastructure, healthcare access, availability of foods and basic nutrients, access to technology and other health-promoting innovations. As a result, we see significant differences in the health of people in developed vs. developing nations. Despite improvements in recent years, the developing world still suffers from high levels of infant mortality as compared with the developed. In addition, the drivers of mortality vary greatly: infectious diseases, HIV/AIDS, food and water-borne diseases are among the biggest factors in developing nations; lifestyle-related chronic illness and cancer in developed nations.

And yet, powerful innovations are occurring in both the developed and developing world. In the developed world we see such advances as ingestible sensors and wellness monitoring devices. In the developing world, we see very different kinds of innovation: a \$50 prosthetic knee, rural clinics and new types of point of care diagnostics (e.g. ultra-low cost EEG machine in India, now used in developed markets).

How can we foster collaboration to support the invention and implementation of high quality, low cost solutions that address the healthcare needs of people in both developing and developed countries?

Bridging this gap will require several things. First, it requires changing mindsets: we need to get rid of the “third-world mindset” and approach these markets with respect, realizing that they can be the source of powerful innovations. It also requires identifying commonalities while embracing diversity and adapting for the local context. Powerful innovations such as a \$50 prosthetic knee come about when leading expertise found in the developed world is paired with a rich understanding of the local context and constraints needing to be solved for.

Finally, bridging the gap requires new business models designed with the developing market in mind, leveraging scale to achieve new kinds of benefits previously unseen (e.g. Narayana Hospitals in India, which has been able to re-invent the process of heart surgery, delivering \$2,000 surgeries with better outcomes than found in many developed nations). These new models must bring credible approaches that address the barriers inhibiting innovation (culture, access, awareness, education, infrastructure, lifestyle and other factors). They must also balance profit and impact and be designed for sustainability.

Bridging the developed and developing world is essential for creating a prosperous world. We've made great advances in recent years and pockets of powerful innovation are occurring. The question for us all to consider is how do we bridge this gap on a broader scale to create meaningful change?



ROBIN FELDER, PHD

Chair, Medical Automation

Professor of Pathology, The University of Virginia

Topic: Ensuring patient interest and compliance with wellness initiatives

A powerful next horizon exists for the future of health and wellness. Over the next ten years, wellness medicine will increasingly become technology-enabled and personalized. Consumers will become increasingly interested and motivated to take charge of their health and well-being, maintaining a positive balance among the physical, social and cognitive states of being. Enabling this next horizon will be four distinct trends:

- Ubiquitous computing will enable portable health
- Sensors will be inserted, implanted, worn and passive/environmental
- Interpretation will be automated by intelligent systems
- Wellness motivation will be self-directed or coached by a variety of providers

Many of these trends are emerging even today – wellness focused devices such as FitBit, external sensors connected to smart phones (e.g. CellScope providing Otoscope features when connected with an iPhone). Certain of these technologies will be evolutionary.

In some cases, transformational technologies will emerge where technology evolution is out-pacing the business models required to make them commercially viable. Examples include: passive voice sensors enabling cloud-based diagnosis of early-onset Parkinson's disease; implantable wireless sensors for tear ducts that provide active monitoring of glucose and transmit data to a smart phone; and wearable sensors, such as First Warning Systems' heat distribution sensing sports bra that is able to detect early-onset breast cancer.

As these technologies emerge, new capabilities and even business models will be needed to support them. There will be a growing need for new sources of data interpretation. Health and wellness professionals will be required to integrate multiple diagnostic sources: lifestyle, self testing, doctor's office testing. Data proliferation will bring to the forefront the need for an integrated wellness and health record. And finally, a new category of professionals will need to be in place to support ongoing coaching for healthy lifestyles.

As has been said, "there are decades where nothing happens and there are weeks where decades happen." Health and wellness related technology seems to be an example of the latter. Only time will tell how far we can go in a decade.



JEFFREY R. DAVIS, MD

Director, Human Health & Performance, NASA

Topic: Collaborative & Open Innovation - Overcoming Resistance

The mission of NASA Health & Human Performance is to “Optimize human health and productivity for space exploration. Explore space, enhance life.” That’s a big mission. When you have a mission this broad and projects of this magnitude and importance, innovation must be open, collaborative and break down conventional biases and thinking. And, it’s important to realize that there is not a one-size-fits-all solution.

NASA H&HP has used a variety of approaches to create powerful innovations: from the Innovation Pavilion, a platform it uses to engage 2,900 problem solvers from 80 countries; to Yet2.com, a platform it used to create next generation solutions for bone imaging; to the NASA@Work pilot project, a portal solution it is using to engage audiences and co-create solutions. NASA has found that engaging the crowd has power: NASA used crowd co-creation to develop a mobile, Android-based 12-lead ECG data viewer using a prize of \$22,000. Powerful.

Looking ahead and translating these experiences to the future of health and wellness, the NASA team defined several key principles that are critical for creating open and collaborative innovation:

- Overcome the not-invented-here syndrome through a clear strategy, aligned communication and supporting education
- Uncouple the problem owner from the problem solver and reward internal solvers regardless of the mechanism they used to get to the solution
- Build awareness and education through ongoing communication
- Ensure that organizations are comfortable with new tools and solutions



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