TRANSFORMING BODIES AND LIFESTYLES

response innovation deck

HEALTH HORIZONS PROGRAM | SR-1337
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Transforming bodies and lifestyles is a complex challenge facing global health over the next decade: the impacts of the burden of chronic diseases, an aging population, and steep social expectations for healthy lifestyles create an area ripe for innovative responses. The goal is larger than achieving health: it is building well-being. Sickness and well-being are not just opposites; they will co-exist in the complex decade ahead.

This deck will help your organization respond to this challenge and promote well-being with strategic deliberation by engaging with new capabilities offered by science and technology (S&T) advancements. The Institute for the Future’s Health Horizons Program offers this Foresight-Insight-Action Process as a tool to help you innovate new products, services, initiatives, and partnerships, identify strengths and areas in which to build competence, and see your place on the response landscape and where you can participate most effectively.
from foresight to insight to action

a dynamic process for thinking about the future
This is your guide to the Response Innovation Deck. Place this card on the table while you work.

GETTING STARTED | In the landscape of responses to the challenge of Transforming Bodies and Lifestyles, where are you, and where do you want to go? ............................................. cards 3–4

FORESIGHT | What emerging capabilities will you add to your current competencies to create innovative responses? ......................... cards 5–30

INSIGHT | Applying your organizational experience to this foresight, what paths do you see for your organization to move with deliberation and purpose to promote well-being? ....... cards 31–35

ACTION | Imagine in detail your best ideas for responding to the challenge strategically through prototyping future actions. ............... cards 36–39

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Responding to the challenge of transforming bodies and lifestyles opens up new opportunities to develop a wider variety of products, services, and practices. Moving through this deck, reflect on how you and your organization are addressing the challenge in the present, and will need to act in the future.
how to use this section

**STEP 1 |** Examine the *Response for Well-Being Framework on the next card.* You can use this framework on the next card as a tool for understanding how you can develop innovative responses aimed at improving health capacities among individuals, and networks in the environment.

**STEP 2 |** Plot a point on the diagram where you (or your brand or organization) are currently intervening for well-being.

**STEP 3 |** Plot a second point where you see your organization heading in the next ten years.
well-being response landscape

Immediate

Long-term

Capacity

Illness

Well-being

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WELL-BEING | Greater satisfaction and happiness: improve psychological and social, as well as physical health

Below are descriptions of broad descriptions for responding to the challenge.

ILLNESS | Your responses directed at illness can range from the sudden need to respond to a health emergency to the ongoing process of navigating and managing chronic illness.

CAPACITY | Your responses that enable individuals, organizations, or communities to become healthier and happier, and be better prepared for the potential impact of illness.

IMMEDIATE | From triggering a burst of joy to treating an acute medical emergency, immediate responses grab our attention.

LONG TERM | Long-term health stems from carefully planned efforts as well as unintended consequences accumulating over time.
Developing foresight involves looking forward and sensing what may happen before it does. Foresights, which are sometimes referred to as forecasts, are plausible, internally consistent views of the future. They should provoke your imagination. This section offers 25 cards presenting mini-forecasts of Science and Technology (S&T) advances.
STEP 1 | Identify approximately three S&T advancements, through random draw or participatory selection, and consider what emerging capability they represent together.

STEP 2 | Is the emerging capability an area of core competency—or areas to explore and grow—for your organization?

STEP 3 | Identify how the emerging capability enables you to build well-being.

STEP 4 | Consider, how might this move you closer to your desired area on the response framework?

_HINT: If you are using this with the 2020 Forecast Map, the icons on the image-side of the card link the S&T advancement to the forecast on the map._
3D printing
Technologies are emerging that deposit successive layers of material into 3-dimensional objects, enabling us to “print” actual physical materials, foods, and even organs. These technologies will fuel regenerative medicine, personalized food processing, and new recycling efforts. Imagine engineering a custom heart instead of waiting for a transplant, computer-generating meals programmed to conform to specific dietary requirements, and fabricating helpful household items out of everyday trash.

OTHER FORECASTS TO CONSIDER:

- **Eating with a Purpose:** Customized nutrition can focus on diverse outcomes, from managing a chronic illness to optimizing performance or modulating energy.

- **Health Innovation:** Personal, commercial, and shared 3D printing services create new opportunities for offering designs and licensing for fabricated food and self-care items.
Mobile devices are playing an increasingly pivotal role in our health management strategies. Smart-phone applications help remind us of our goals, support our decisions, and track our health activities. Always-on, Internet-connected devices will be powered by wireless and body-generated electricity and will host increasing processing power, turning our mobile phones into portable health tracking and feedback devices.

OTHER FORECASTS TO CONSIDER:

- **Information Ecologies Convergence:** Abundant mobile computing enables seamless analysis and delivery of just-in-time health information.

- **Personal Health Simulation:** Advances in mobile computing capabilities can make health simulations more powerful, personal, and precise.
advanced prosthetics
Biomechatronics is an interdisciplinary field aimed at fine-tuning the interfaces between our bodies and machine extensions to them, integrating mechanical elements and electronics with human muscular, skeletal, and nervous systems. This research will enable advanced prosthetics that connect nerve endings to motors in prosthetic devices, so that we’ll be able to control cyborg limbs simply by thinking about the motion. Neuroprosthetics, like implanted computer chips, will open up new avenues of aiding and improving cognitive functions, such as memory.

OTHER FORECASTS TO CONSIDER:

- **Extreme Enhancement Technologies:** Prosthetics could come to be viewed as enhancements rather than as disabilities.

- **Boomer Future-Proofing:** Interest in prosthetics could increase among baby boomers looking to maintain physical activity levels.
augmented reality
Powerful augmented reality (AR) tools are emerging that enable us to interact with a world in which digital media is tagged to specific points in space, facilitating the identification of health assets and risks in our surroundings. These tools form the platform for applications that will allow us to sense and understand how our bodies interact with our environments and networks at any time and place. Digital overlays on the world will shape the context of our choices and vividly display our personal and collective health futures.

OTHER FORECASTS TO CONSIDER:

- **Mobile Health:** AR tools will further cement the role of mobile devices in personal health management.

- **Ecological Health:** Visualizations will emerge as a potent means for communicating place-based health information.
Bioinformatics translates biological data into mathematical and computational languages to help us analyze and understand complex processes. Biosensors, high-throughput labs-on-a-chip, and other advances are generating huge databases of biological information. This data can be mined to uncover hidden patterns and mechanisms of disease, biological functions, and evolutionary change. Bioinformatics-powered decision support will incorporate multiple sources of biological data to suggest optimal choices.

OTHER FORECASTS TO CONSIDER:

- **Innovation Ecosystem**: Low-cost bioinformatics could shift where and how health innovations evolve.

- **21st Century Epidemiology**: High-powered evolutionary models of humans and disease will allow for useful simulations of outbreaks.
The distribution of computing resources through the Internet “cloud” will enable on-demand, mobile access to supercomputing storage and processing power. Over the next decade, pervasive access to supercomputing will enable various new types of data-mining efforts. Potential applications include biometric measurement and imaging and the creation of high-resolution simulations for education and therapy.

OTHER FORECASTS TO CONSIDER:

• **Information Ecology Convergence**: Linking clinical data with data generated by people in their everyday lives could become an important means of improving health and generating medical insight.

• **Dark Mobs**: The Conficker virus was the most powerful cloud computing resource created at the time of its inception in November 2008—some deployments of this technology may pose a threat to human health and personal health security.
continuous biosensing
Always-on biosensors are giving us more fine-grained data about our bodies and their interactions with food, drugs, our activities, and our surroundings. Sensors integrated seamlessly into our lives will interface with our nervous, muscular, and endocrine systems to develop continuous feedback mechanisms. In addition to building vast troves of information about our biological health, analyzing such data will make it easier to identify and correct for short-term lapses in diet, attention, and medicines.

OTHER FORECASTS TO CONSIDER:

- **Health-aware Environments**: Biosensors on our bodies and in the environment may give us a more granular understanding of environmental health risks.

- **Balancing Proprietary and Open Data**: The vast quantities of information generated, and the various players involved, will intensify debates over privacy, data ownership, and fair use of data about people’s bodies.
By visualizing data produced by neural activity, blood flow changes, and pre-symptomatic signals of neurodegenerative diseases and infections, scientists will be able to uncover processes and structures that were previously unknown. Functional magnetic resonance imaging (fMRI), microfluidics, magnetometers, and quantum dots (nanostructures that can seek targeted cells and glow fluorescent when they bind to one) will deliver diagnostic capabilities that are more powerful, precise, prompt, and persuasive.

OTHER FORECASTS TO CONSIDER:

- **Neurointerventions**: Understanding the brain through imaging will advance to enable new interventions targeted to neural processes.

- **Global Health Technology**: Microscopes and imaging devices designed as low-cost accessories for mobile phones will democratize some of these diagnostic breakthroughs.
epigenetics
Epigenetics is the emerging exploration of how the expression of genes is influenced by factors other than DNA sequence, and in some cases how these different patterns of expression are passed down through generations. It puts genetics in the context of our environments and can help us understand the impact of factors such as air quality and early childhood nutrition will have on our health and that of our grandchildren.

OTHER FORECASTS TO CONSIDER:

• **Probabilistic Medicine:** Epigenetics is yielding new information about our risk probabilities for developing diseases (though it may highlight inequities without providing power to change them).

• **Ecological Health:** Insights resulting from epigenetics will reveal not only how different layers of our environments affect our own health but also how these impacts persist through time.
genetic diagnostics
Genetic diagnostics examine points of difference in specific genes (single-nucleotide polymorphisms, or SNPs) that are associated with predicted outcomes in our bodies and our health profiles. The growth of direct-to-consumer genetic testing will make genetic tests dramatically more accessible in consumer settings. Spot checks for disease susceptibility and possible drug reactions will become more common, as will determining the potential efficacy of therapies by testing personalized cell lines.

OTHER FORECASTS TO CONSIDER:

- **Validation of the Quantified Self**: Linking individuals with rare mutations through distributed tools could propel the understanding of genetics.

- **Health Workforce Imbalance**: There are more trained astronauts than genetic counselors in the United States. As a result, we may struggle to accurately interpret genetic tests.
genomics
Genomics is the study of mapping whole genomes and determining how genes and proteins interact. As this field advances, we will expand beyond examining individual genes responsible for diseases and disease susceptibility. We will be able to understand how our cells and tissues grow and function, and we will begin to decipher more complex processes. For example, nutrigenomics will enable personalized understandings of which foods and food processing techniques are most nutritious and appropriate.

OTHER FORECASTS TO CONSIDER:

- **Probabilistic Medicine**: Genomics provides new information about our risk probabilities for developing diseases (although this information may be difficult to translate into insight).

- **Networked Health**: Genomic commonality is one of a variety of new ways individuals are connecting and networking in the areas of health and identity.
interactive data visualizations
Not only are sensors, data analytics, and diagnostic imaging advancing, but so is our ability to present information in a dynamic and accessible form. Interactive data visualizations will help individuals manipulate information about their bodies and health to extract meaning and share insights with others. Imagine seeing a pandemic spread in real time around a city, instantly gauging the collective patient mood in a hospital, or sharing nuanced health data with online communities.

OTHER FORECASTS TO CONSIDER:

- **User-generated Media**: Creative and sophisticated health visualizations may become a key medium through which people share information about their own health and connect to others.

- **Personal Health Previews**: Advancing from the effective but crude avatars of today, we’ll be able to interact with persuasive data-driven images of ourselves to predict and react to our future health states.
life extension technologies

Source: Flickr user pagedooley
Life extension supplements are being found in unlikely places. Resveratrol, for example, is a component of red wine that’s now cheap and readily available over the counter. In clinical trials with mice, resveratrol has been found to extend life span, prevent obesity, and improve endurance. If it’s proven effective and safe for humans, we can imagine athletes, people with diabetes, and life-extension enthusiasts pursuing this drug to different ends.

OTHER FORECASTS TO CONSIDER:

• **Boomer Future-proofing:** As baby boomers move into older age, they may be eager to self-experiment with life extension drugs.

• **Translocal Medicine:** Advances in life extension technologies may be unevenly distributed, inciting increased medical travel.
nanotechnology
Nanostructures offer new capabilities for diagnosing and treating disease at a molecular and atomic level, although by the end of the decade we will likely be only just opening these doors. In more everyday contexts, we may see nanomaterials in fabrics: clothing that conducts electricity to monitor heart rates, gloves that deliver medicine, and jackets that change color to reflect our mood.

OTHER FORECASTS TO CONSIDER:

- **Mobile Health**: Personal objects made “smart” with nanomaterials could interface with our mobile devices and vehicles.

- **Theragnostics**: Operating at the cellular level could eliminate barriers between diagnostics and treatment.
Neuromodulation is the intentional alteration of activity in the brain and the extended nervous system for treatment of medical conditions, behavioral modification, and cognitive enhancement. Neuromodulation can be accomplished through electrical, magnetic, and optogenetic stimulation, psychotropic drugs, and neural prosthetics to restore or augment motor, sensory, or cognitive capabilities.

OTHER FORECASTS TO CONSIDER:

• **Body Hacking**: Neuromodulators could become popular tools for self-experimentation and augmentation.

• **Neurocentric Health Backlash**: While findings in neuromodulation offer unprecedented interventions into everything from PTSD to weight loss, neurointerventions may be misapplied, abused, or just avoided until the hype settles down.
nutritional science
Nutritional Science

Over the next decade we’ll learn more about the effects of micronutrients and whole-food interactions on our health, especially on our brains and immune systems. Assessments of our individual nutritional needs throughout daily activities will become easier and more common.

Other Forecasts to Consider:

- **Food Transparency:** Scientific advances in nutrition, when brought into our everyday lives without much visibility, will be awash in political contention.

- **Food Identity:** It’s important to consider how our growing knowledge of nutrition will map onto personal or corporate identities that may exaggerate or reject scientific findings.
peer-to-peer research
Distributed-research paradigms bring fresh eyes and collective intelligence to numerous medical, scientific, and technical endeavors. From self-organized clinical trials to the experiments of DIY biology, collaborative and lightweight technologies are enabling innovation to move from research labs into living rooms and garage labs. Rather than wait for traditional, slow sources of funding and research, patients and hackers will create outlets enabling their untapped energy and resources to generate novel discoveries.

OTHER FORECASTS TO CONSIDER:

- **Eco-risk Tracking:** Peer-to-peer tools could offer new ways for people to connect around place and risk.
- **DIY Biology:** The democratization of biological tools may advance health research and innovations.
programmable matter
Programmable matter is material with embedded computational qualities that can change physical shape on command. These tools can also reconfigure themselves at larger scales, so that the same materials can adapt to different specific purposes. For example, groups of reconfigurable robots could rearrange themselves into new structures in the body to excise a tumor.

OTHER FORECASTS TO CONSIDER:

- **DIY Biology**: The ability to reconfigure materials could enable new types of lightweight experimentation.

- **Unbundling the Hospital**: Claytronics creators envision programmable matter making telemedicine tangible, with a reconfigurable lump of matter able to extend a practitioner’s ability to do anything from take vital signs to perform basic surgery.
Regenerative medicine will enable us to engineer different tissue types—still living tissues even though they exist in vitro. These cultures will help us restore, maintain, and enhance tissue and organ functions by stimulating the body's natural healing reactions or integrating with them. Imagine building new cells, organs, joints, and other body parts to replace aging, diseased, or damaged ones.

OTHER FORECASTS TO CONSIDER:

- **End of Blockbuster Therapies:** Cell cultures could offer tools to advance tailored and personalized therapies.

- **Regulatory Interventions:** While regenerative medicine holds incalculable promise for some, regulatory responses to ethical questions will vary widely between states and countries over the next decade.
sensors and sensor networks
The ever-decreasing size and cost of sensors is setting the stage for detection, processing, and communication technology to be embedded throughout our environments and living spaces. These low-cost sensors will be linked with each other and with the Internet, enabling biometric and lifestyle data to be collected seamlessly. Imagine effortless monitoring and analysis of everything from heart rate to food flows, building increased intelligence in our bodies, devices, and environments.

OTHER FORECASTS TO CONSIDER:

- **Validation of the Quantified Self:** Having more accurate, easily deployable tracking and monitoring can expedite integrating real-world data into clinical research.

- **New Cartography of Health:** Sensor technology may enable the precise identification of environmental factors that produce or detract from health.
Simulations re-create the key characteristics or behaviors of real systems in an artificial environment. As they become more advanced and accessible, simulations will transform how we interact with the world and make decisions. From virtual patient panels for clinical trials to personalized health previews, we will face future health risks with greater visibility and understanding of possible outcomes.

OTHER FORECASTS TO CONSIDER:

- **Probabilistic Medicine:** Advanced simulations could help individuals understand complex genetic risks in more intuitive ways.

- **Eco-risk Tracking:** Eco-risk data could be used to create simulations that help us understand how to navigate our environments more healthfully.
stem cell therapy
stom cell therapy

A rapidly developing field with a wide variety of possible applications, stem cell therapy has the potential to personalize treatments and advance efforts to heal disease. In the next decade, we may see these therapies being used to test the effects of chemicals and environmental factors on cell lines and tissues. In the longer run, stem cell therapies may prove useful in repairing and regenerating damaged organs.

OTHER FORECASTS TO CONSIDER:

• **Deep Polarization**: Sharp political and religious clashes will continue to color the perceptions of this and many other health technologies.

• **Prognostic Treatment**: More treatments and reactions to chemicals will be vetted outside the body before we subject ourselves to stressful treatments in vivo.
synthetic biology
Synthetic biology is the design and construction of new biological forms not found in nature. In the next decade we may see applications of this fledgling science that manufacture pharmaceuticals, identify and mark environmental contaminants, or create beneficial bacteria for therapeutic purposes such as bolstering the functions of our immune systems.

OTHER FORECASTS TO CONSIDER:

- **Open-source Biology**: Standardizing biological forms will enable diverse collaborators in biology to work in a way modeled after open-source software.

- **DIY Biology**: Home tinkerers and hobbyists may begin experimenting with standardized biological forms.
Moving beyond blockbuster approaches to medicine toward more tailored treatments has been a key challenge. Over the next decade, ongoing self-experiments and advances in life sciences will reaffirm efforts to develop more personalized forms of medical interventions. Imagine cancer treatments tailored to an individual’s genetics and biomarkers, or personalized antibodies to enhance individual immunity.

OTHER FORECASTS TO CONSIDER:

• **Neurointerventions**: Personalizing treatments based on mental state could be an early arena for tailored medicine.

• **Innovation Ecosystem**: Scaling down the nature of interventions to a more personalized and customized level will be both a driver and an artifact of new innovations.
virtual reality
Immersive virtual environments open up a number of possibilities for health, from programs for improving the skills that enable good health to the persuasive power of avatars. Working with avatars in virtual environments will be a way of not only accessing future-health simulations but also translating recommendations into personalized, visible, and persuasive cause-and-effect observations around exercise, eating habits, and strategies for managing chronic disease.

OTHER FORECASTS TO CONSIDER:

- **User-led Innovation**: Widespread simulation of the health states of individuals could lead to new insights to speed innovation.

- **Health Workforce Evolution**: Simulations of new kinds of encounters may be a valuable tool in equipping the health workforce for challenging interactions with patients and colleagues.
Insight involves focusing on the opportunities and threats that arise from Foresight and demand an open-minded response in terms of future possibilities, ideas, and innovations. Drawing on what you’ve learned from Foresight, identify insights for your organization. Use the Resource cards as filters to identify capabilities you can develop to respond to the challenge.
STEP 1 | Review the emerging capabilities from the S&T cards. Select a Resource to, or build well-being cards (Information, Practices, People, or Tools) as a lens to focus on how your organization will build well-being.

STEP 2 | Consider, where are the opportunities and threats? Keep a list of all the different kinds of responses these suggest. Keep a list on a flip-chart or sticky notes.

STEP 3 | Now brainstorm specific initiatives, products, operational strategies, and brand strategies that could be enabled or strengthened by converging Science and Technology advances.

STEP 4 | Choose the most promising idea, or small set of ideas, to prototype. Choose something that is realistic, but stretches you in a new direction.
From the elaborate and growing structures of data that we’re amassing and using to the bite-sized communications that support health decisions, information is an invaluable resource for creating meaning, insight, and incentives toward meeting the challenge of transforming bodies and lifestyles.

Explore how you can apply this resource area at different levels, scaling up as follows:

- **BODIES** | Greater well-being begins with greater awareness of ourselves. How can you help illuminate our bodies and minds to motivate and assist in meeting the challenge?

- **NETWORKS** | We’re learning more all the time about how those around us influence our health. How can your efforts leverage this participation and the resulting wisdom?

- **ENVIRONMENTS** | What we learn about environmental health risks and assets is becoming increasingly embedded in our surroundings. How will you contribute to these new capacities?
PRACTICES:
tinkering to well-being
Over the next decade, our health practices will change as we experiment with incremental improvements to our bodies, networks, and environments. Our ability to test and iterate new practices is a central resource in the quest for well-being.

Explore how you can apply this resource area at different levels, scaling up as follows:

• **BODIES** | The state of our health is in perpetual beta testing. How can you support people’s efforts to find paths to well-being and customized health approaches?

• **NETWORKS** | People share successful practices with each other. How will you help the safest and most useful practices spread?

• **ENVIRONMENTS** | We humans have always tinkered with our surroundings. How can you contribute to the creation of environments that are healthier and make healthful behaviors easier?
PEOPLE: discovering diverse capacities
In the end, the question of well-being is all about ourselves and those around us. Our identities will expand to reflect new awareness that we gain about our bodies. Ideally, our diverse capacities will be respected and valued by society.

Explore how you can apply this resource area at different levels, scaling up as follows:

• **BODIES** | Having a high-resolution awareness of our similarities and differences will change the ways we relate to each other. How can you apply these understandings to reduce disparities and optimize well-being?

• **NETWORKS** | People in communities are resilient and effective when their roles are understood and valued. How can you help support the roles we play in our own care and in the well-being of our communities?

• **ENVIRONMENTS** | Our environments shape us in profound ways. How can you connect people to place to encourage healthy practices and minimize harm?
TOOLS:
anticipating health risks
The tools we bring together to produce good health will expand, enabled by life science breakthroughs, new imaging techniques, and other fields that deliver rapid innovations. We’ll perceive and respond to our risks with ever-sharper implements.

Explore how you can apply this resource area at different levels, scaling up as follows:

- **BODIES** | Tools that are more precise and less invasive and have fewer tradeoffs are always on the horizon. How will you bring them to bear in narrowing the gap between treating illnesses and pursuing well-being?

- **NETWORKS** | We connect to and care for each other through an evolving array of interfaces. How can you equip people with the most appropriate support for these connections?

- **ENVIRONMENTS** | The tools for maintaining health and promoting well-being are being unbundled from centralized enclaves. In what surroundings can your efforts maximize the benefit of these individual yet converging technologies?
Now you’re ready to consider opportunities for moving from Insight to Action through prototyping and iteration. Prototypes can take different forms: products, services, demonstrations, initiatives, collaborations, and so on. They should provoke discussion about the opportunities and threats inherent in strategic actions.
how to use this section

**STEP 1** | Review the selections you’ve made to shape your response in the Insight brainstorming process. What specific form would this take in your organization’s response to the challenge?

**STEP 2** | Looking at the Action card Prototype the Future, describe your new product, service, or initiative in Scene 1 of the storyboard. Facilitate a group discussion by working through all the steps of the storyboard to imagine your prototype in the future.

**STEP 3** | Present your prototyped ideas to each other, and discuss the implications and action steps for your strategic plans. Plot them on the Response for Well-Being Framework. Do they push you in new directions?

**STEP 4** | Optional Steps
- Adapting to Alternative Futures
- Creating Resilient Responses
SCENE 1 | What’s your response (product, service, or initiative) to the challenge of transforming bodies and lifestyles? Describe its goals and features. Choose a name for it that captures its essence or novelty.

SCENE 2 | What foresights are driving your response? What combination of S&T advances are you adding to your capabilities?

SCENE 3 | At what scale does your response operate: bodies, networks, environments, or some combination of these? Who are the participants, and how does your response improve their well-being?

SCENE 4 | How do people encounter or interact with your response? How do people react to it, both inside and outside your organization?

SCENE 5 | What are the consequences of your response, whether intended or unintended?

SCENE 6 | Your response has been around for a few years. What’s the story now?
SCENE 1

SCENE 2

SCENE 3

SCENE 4

SCENE 5

SCENE 6

Source: IFTF
ADAPTING TO ALTERNATIVE FUTURES

Our future is full of possibilities. How would your response adapt to radically different yet plausible future conditions? One way to systematically test and improve your idea is to place it in four alternative futures that constitute fundamentally different possibilities. We at IFTF have envisioned four futures for health and health care in the U.S. in 2020. To see videos encapsulating the four scenarios, go to www.hc2020.org.

As you re-play the Insight and Action steps, ask these questions for each alternative future:

- What unique types of opportunities does each scenario present?
- What unique challenges does each present?
- What are the value propositions of your response that could transcend the volatility of the future and yield success?
IFTF’s four scenarios of the future of health and health care in 2020 are:

**GROWTH** | Major breakthroughs for treating chronic diseases did not reduce costs. Health and wellness continue to be one of the most profitable sectors of the economy.

**DISCIPLINE** | Care is rationalized: optimized to each individual’s requirements, genetic indicators, and projected contributions to society. Services abound to ensure that best-value care is provided, including remote consultations or travel abroad.

**COLLAPSE** | A series of natural and social disasters were the last thing our struggling economy needed. Infectious strains worsened by global warming have increased demand for acute care, while chronic illness remains widespread.

**TRANSFORMATION** | People, companies, communities, and our nation as a whole recognize that they have a responsibility to work together to create health. Health is understood as a fundamental part of everyday life.
CREATING RESILIENT RESPONSES

Our world is full of volatility, uncertainty, complexity, and ambiguity. We can’t possibly understand and quantify all the risks we’ll face. Resilience is about preparing for unknown risks. Having a more resilient response to the challenge of transforming bodies and lifestyles will improve your chance of succeeding under any circumstances.

As you go back to Scene 1 of the Prototype the Future card ask these questions to re-imagine the features of your response to better utilize diversity, flexibility, and feedback.

- How could your response leverage the diversity of people and approaches?
- What specific features or strategies could allow you greater flexibility?
- What kinds of continuous feedback would help your response thrive over time?
CORE PRINCIPLES FOR RESILIENCE:

• **DIVERSITY** | Diversity is not just something to be accommodated; it’s an asset. How can we harness the power of diversity—human diversity, asset diversity, opinion diversity, and practice diversity—to innovate and distribute new strategies for well-being?

• **FLEXIBILITY** | Flexibility is the core of agility within resilient strategies, but it sometimes runs counter to accepted business wisdom. Expanding efforts in modular, distributed steps rather than centralized rollouts leads to more flexible responses.

• **FEEDBACK** | Every outcome, intended or unintended, feeds back into the system. How can this feedback become more open and transparent? Does the feedback perpetuate cycles of wellness and continuous health improvement on multiple scales?
The Response Innovation Deck works best when used with other materials produced by IFTF’s Health Horizons Program in 2009 and 2010.

**EXPLORE:**

- *The Health and Health care 2020 Strategic Action Toolkit*, of which this deck is an expansion that focuses on the challenge of transforming bodies and lifestyles.

- *The 2020 Forecast Map, the Future of Science, Technology, and Well-being*, whose components this deck unbundles.

- *The Future of Science, Technology, and Well-being Artifacts from the Future*, which serve as provocations and inspirations for the outputs of this process.

- *The Future of Science, Technology, and Well-being Perspectives Report*, which expounds on the four Resources for building well-being, with forecasts in greater depth and variety.

These materials and larger working templates of the prototype storyboard, are available at [www.iftf.org](http://www.iftf.org) or by contacting Neela Nuristani at nnuristani@iftf.org.
INSTITUTE FOR THE FUTURE
We are an independent, non-profit strategic research group with more than 40 years of forecasting experience. We are located in Palo Alto, California.

HEALTH HORIZONS PROGRAM
We offer clients a deep understanding of the global health economy in the next three to ten years. The core of our work is identifying trends and discontinuities that will reshape health and health care systems, technology and the workplace, and human identity.

For more information about us, or if you would like additional support in using this Deck, please contact Dawn Alva, dalva@iftf.org. Follow us on Twitter @IFTFHealth.

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