EXPO 2020 إكسبو
دبي، الإمارات العربية المتحدة
DUBAI, UNITED ARAB EMIRATES

المجلس العالمي
WORLD MAJLIS

WORLD MAJLIS REPORT

INSIGHTS FROM HEALTH AND WELLNESS WEEK

27th January to 2nd February 2022

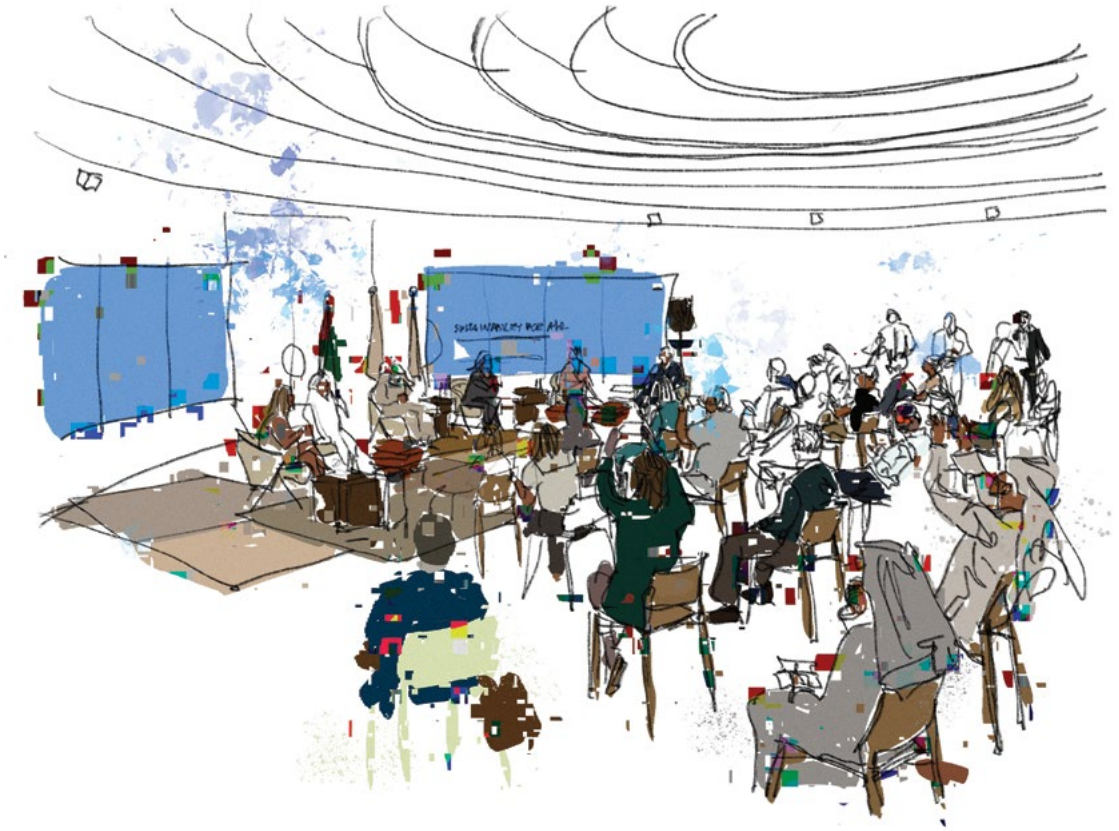
What if the health of others
became our number one priority?

Download the report or watch the full World Majlis session at:
virtualexpodubai.com/about-history/detail/world-majlis

SUMMARY AND CONTENTS

Deeply rooted in the traditions of the UAE, the majlis is one of the cornerstones of Emirati society, a space that welcomes friends and strangers to share news and ideas.

The Expo 2020 Dubai World Majlis is an inclusive, open and informal conversation space, physical and digital; one that brings together diverse voices from all over the world to reflect on complex challenges for the wellbeing of people and planet.



Between 27th January and 2nd February 2022, Expo 2020 hosted five World Majlis sessions to explore the theme of Health and Wellness week through the lenses of planetary health, medical innovation, mental health, youth and women

1 **Healthier World, Healthier People**
Designing Spaces that Heal our Planet
Co-curated with Portugal and Switzerland
Population growth combined with global development require more and more energy. How can we power growth with the least damage to the planet?

2 **Women on the Frontline or in the Line of Fire?**
On the Explicit and Implicit Challenges Faced by Female Healthcare Workers
In collaboration with the Women's Pavilion
Co-curated with the ICRC and Switzerland
This is for my lorem ipsums.?

3 **At the Speed of Life**
The Future of Faster and Safer Medical Innovations
Co-curated with the USA
Can the Fourth Industrial Revolution power a new sharing society driven by the Global Goals, or will technology continue to widen inequities?

4 **A Good Place to Work**
Balancing Personal and Professional Lives
In collaboration with the Expo School Programme
Can empowered women be the real changemakers on a path that places profit on equal footing with positive social and environmental impacts?

5 **Chemistry of Happiness**
Mental Health and the Science of Happiness
Co-curated with the UK
What matters most in education to prepare for a more sustainable world?

PARTICIPANTS

Healthier World, Healthier People

Designing Spaces that Heal our Planet

Co-curated with Portugal and Switzerland

PORTUGAL EXPO 2020 DUBAI

SWISS PAVILION EXPO 2020 DUBAI

Terra – the Sustainability Pavilion
30th January 2022

Prof Nino Künzli
Dean Swiss School of Public Health; Senior Environmental Epidemiologist, Swiss Tropical and Public Health Institute, Switzerland

Royal Pineda
Overall Artistic and Theme Director of the Philippines Pavilion (Bangkota), Principal Architect+CEO of BUDJI+ROYAL Architecture+Design, Philippines

Ahmad Abdulrahman Bukhash
Chief Architect and Founder, ARCHIDENTITY, UAE

Joaquim Cunha
CEO of Health Cluster Portugal

Professor Tom Loney
Associate Professor of Public Health and Epidemiology, Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU), UAE

Angaangaq Angakkorsuaq
Shaman and traditional healer, Greenland

David Harland
Chief Executive Officer, Eden Project, UK

Habiba Al Marashi
President of Arabia CSR Network; Co-Founder and Chairperson, Emirates Environmental Group (EEG), UAE

Dr Federica Busa (Moderator)
Senior Vice President, Visitor Experience Integration, Expo 2020 Dubai, UAE

Women's World Majlis:

Women on the Frontline or in the Line of Fire?

On the Explicit and Implicit Challenges Faced by Female Healthcare Workers

Co-curated with the ICRC and Switzerland

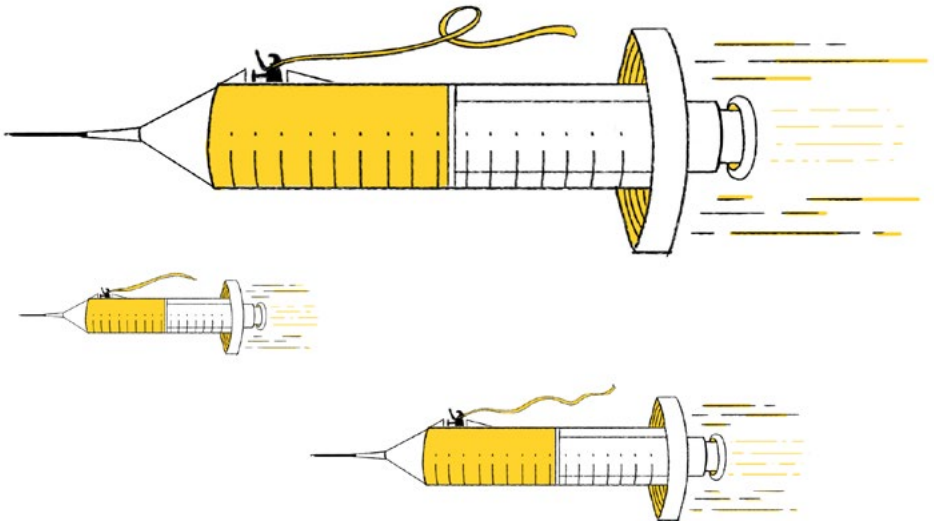
جناح المرأة
WOMEN'S PAVILION

Women's Pavilion
31st January 2022

Dr Micaela Serafini
Global Public Health Expert;
Head of Health in the International Committee of the Red Cross, Switzerland

HE Mrs Peggy Vidot
Minister of Health, Seychelles

Hind Alowais (Moderator)
Senior Vice President of International Participants for International Organizations and Non-Official Participants, Expo 2020 Dubai, UAE



At the Speed of Life

The Future of Faster and Safer Medical Innovations

Co-curated with the USA

Terra – the Sustainability Pavilion
1st February 2022

Sergio Abrignani MD
PhD, Immunologist, University of Milan, Italy

Dr Mahender Nayak
Area Head, ICMEA & Senior Vice President, Takeda, Japan

Dr G. Anton Decker
MBBCh, MHA, MRCP (UK), President, Mayo Clinic International, USA

Dr Yvonne Cagle
Physician, professor, retired Air Force Colonel, and former NASA Astronaut, USA

Dr Walid Al Zaher
Chief Research Officer, G42 Healthcare, UAE

Dr Federica Busa (Moderator)
Senior Vice President, Visitor Experience Integration, Expo 2020 Dubai, UAE

Prof John Fraser
Founder/Director of the Critical Care Research Group (CCRG), The Prince Charles Hospital & University of Queensland; Director of ICU St Andrew's War Memorial Hospital; President Asia-Pac Extracorporeal Life Support Org; Founding member of the global clinical trials ECMOnet & CoChair Queensland Cardiovascular Research Network, Australia

Prof Dr Raghib Ali
Director & Principal Investigator of the Public Health Research Center & Associate Research Professor, NYU Abu Dhabi, UAE

Next Gen World Majlis:

A Good Place to Work

Balancing Personal and Professional Lives

In collaboration with the Expo School Programme

Portugal Pavilion
2nd February 2022

Hossein Malek Mohammadi
Al Adab Iranian Private School for Boys, Dubai

Fatima Belhoul
Al Mawakeb School Al Garhoud, Dubai

Fatma Al Ali
Zayed University, Dubai

Achal Mohandas
GEMS Our Own English High School – Sharjah Boys, Sharjah

Zakhar Subkhankulov
GEMS Wellington Academy Al Khail, Dubai

Amal Alsayegh
Zayed University, Dubai

Hishaam Abdul Razik
GEMS Our Own High School – Al Warqa'a, Dubai

Caelan Webster
GEMS Dubai American Academy, Dubai

Lara Matossian (Moderator)
Host, emcee, storyteller

The Chemistry of Happiness

Mental Health and the Science of Happiness

Co-curated with the UK

GREAT
BRITAIN & NORTHERN IRELAND

UK Pavilion
10th February 2022

PARTICIPANTS

HE Hessa Bint Essa Buhumaid
Cabinet Member, Minister of Community Development, UAE

Glen Stollery
CEO, Les Mills International for the Middle East, India and Africa, New Zealand

Professor Vikram Patel
Pershing Square Professor of Global Health; Wellcome Trust Principal Research Fellow, Harvard Medical School, USA

Dr Alex George
Doctor, author, and Youth Mental Health Ambassador for the Government of the United Kingdom

Professor Gal Yadid
Head of the Laboratory of Neuro-psychopharmacology, Bar-Ilan University, Israel

Elise Labott (Moderator)
Founder and CEO, Zivvy Media

Elisha London
Entrepreneur and Global Mental Health advocate; CEO and Founder, Prospira Global, UK

Dr Natalie Lotzmann
Global Vice President People & Operations, SAP SE, Germany


EXPO

SUGGESTED ACTIONS AND INITIATIVES

For Government

COLLABORATION AND DATA AS PUBLIC GOOD	Create an environment and policies that encourage data sharing for future preparedness [p17, 22, 27]
	Encourage the collaboration we have seen during Covid 19 to other health challenges [p33]
	Support the development of ecosystems for innovation [p35]
ACCESS AND EQUITY	Ensure equitable access to medical innovations [p63]
	Address gender differences in the impact of healthcare [p65]
EXPLORE DEEPER PERSONALISATION	Explore policy-making and ethical considerations related to genomics and personalised health [p31]
	Integrate the notion of 'precision public health' in planning, and environmental monitoring [p27]
FOCUS ON MENTAL HEALTH	Consider mental health in youth in relation to climate change, economic uncertainty and existential threats [p41]
	Increase actual investment in mental health [p45]
	Actively engage youth and listen to them in planning the future [p42, 47]
	Make happiness a public good [p44]
URBAN PLANNING	Promote policies that place health and well-being at the core of city planning, both indoor and outdoor quality of spaces [p20, 51, 57]
	Consider housing and affordable housing key to health and well-being planning [p57, 58]
	Enforce building standards focussed on sustainability and well-being [p59]
SPACE RESEARCH	Leverage space programmes to benefit from their impact on health innovation [p67]
COMMUNICATION	Work alongside the scientific community to better explain medical advances to the general public [p61]

For Businesses (including healthcare)

DATA SHARING	Share data with governments and other organisations, especially to support and develop awareness of 'precision public health' [p22, 27, 31]
	Apply the collaboration we have seen during Covid 19 to other health challenges [p33]
ACCESS	Work with government to ensure equitable access to medical innovations [p63]
MENTAL HEALTH OF EMPLOYEES BUT ALSO CUSTOMER	Invest in employees' mental health [p45]
	Consider mental health a new frontier for Corporate Social Responsibility and innovative philanthropic initiatives [p45]
INTERDEPENDENCIES	Real estate developers should also see themselves to be in the business of creating well-being [p58]

For Academia

CROSS-DISCIPLINE	Integrate health with other disciplines, including economics, law and possibly urban planning [p18, 20]
	Teach natural history from the early years to make the most out of the benefits of nature [p58]
COLLABORATION	Apply the collaboration we have seen during Covid 19 to other health challenges [p33]
	Interface with innovation ecosystems [p35]
COMMUNICATION	Innovate in the way medical science is explained to the general public [p61]

Connecting the ideas from 37 thought leaders from 12 countries has sparked new lines of inquiry for future conversations and research.

FUTURE INQUIRIES

Learning from the COVID-19 context, how can healthcare stakeholders enable collaboration and data sharing in the best interest of everyone's health?

How can we get better at helping the public understand future medical innovations, to ensure the real and perceived safety of new innovations?

How can the collaborative spirit of Covid 19 carry on in other areas of health challenges, including making health more inclusive?

What new areas should enrich a health innovation ecosystem?

How can various stakeholders, from governments to the private sector, work together for greater impact in the mental health space?

What does it mean to make happiness a public good?

What tools do we need to balance youth expectations and deeper uncertainty towards the future?

Do we need a new generation of philanthropists focussed on mental health?

How can we get to spend more time outside of buildings, in healthy places, even in cities?

How can building standards focus on wellbeing become the norm in urban development?

How can we apply design innovation to build high-quality low-income housing?

CONTEXT

What if the health of others became our number one priority?

With a growing and more connected world population living longer, focussing on the health of the planet and of all of its inhabitants, is both a moral imperative and a necessary pragmatic choice.

"We have a whole new problem on our hands and not everyone likes it when I say this. But we are victims of our success. We now have people living into their 80s, 90s and beyond and in relatively good health. Then the diseases of a growing middle class and lifestyle diseases start becoming a big problem, and they are very much a big problem globally."
Dr Anton Decker

Today's health is perhaps one of the biggest achievements of mankind. Life expectancy has doubled in the past century thanks to innovations in medicine and nutrition, and, at the same time the population has quadrupled. While people are living longer and with a better quality of life, the pressures on the health of our planet and its ecosystems are evident.

"Preparedness is a word which was absent in the medical world before. Now everybody is talking about the preparedness for the next one. This is very important because of the fragility we showed."
Sergio Abrignani

As some of the scientists in the Majlis stated, this will be the century of coronaviruses, as a result of our growing intrusions in to nature. Covid-19 was the evolution of previous SARS viruses and it is inevitable that we will encounter more in the future.

Alongside the many challenges and human tragedies brought about by the Covid-19 pandemic, there are also important innovations that are benefiting patients, as well as new best practices for collaboration and data sharing. If Covid-19 caught the entire world unprepared, we have learned how to equip nations and communities with the tools for a better response in the future.

Today with advances in medicine like antibiotics and vaccines, we have an ageing global population. Deaths caused by communicable diseases and lack of nutrition have dramatically decreased. Globally, a growing urban middle class is adopting a life of relative luxury, which is creating new health threats due to diet and sedentary lifestyle. The result is an increase in chronic diseases– with illnesses like cancer, coronary artery disease, diabetes. These will require a whole new paradigm of care based on prevention.

"When we learn about omics, we're finding out as we map that there are bridges and links to our environment - certain environmental exposures and toxins that can influence some of the chronic diseases that we're seeing. If we can identify those relationships and links, we may be able to intervene in them as well."
Dr Yvonne Cagle

Health is increasingly viewed as having many dimensions: physical, mental and spiritual. While these were previously seen as separate realms, medicine is showing how they are instead highly connected. New scientific domains, specifically in the area of epigenetics, are linking the impact of both environmental and physiological chemistry on our brains, exploring how our mental health is 'physically' linked to our environment and to the state of our bodies.

Mental health is itself a rising issue specifically amongst young people due to a combination of factors that include climate change and uncertainty for the future, alongside changes in lifestyles and expectations.

Addressing some of these systemic issues, including by engaging people in designing spaces that can heal them and the planet, has potential to impact several dimensions of health.

THINKING DIFFERENTLY ABOUT HEALTH AND WELLNESS

Driven by rapid advances in the application of genomics and data analytics, the future of healthcare will be proactive, preventive, personalised and distributed.

From "sick care" to healthcare

As advances in healthcare, such as antibiotics and vaccines, are globally shifting diseases from infectious to non-communicable, we face a surge in chronic conditions such as diabetes, autoimmune conditions and cardiovascular diseases. Managing the health of a population based on a hospital-care model geared towards treating acute illness causes can prove costly and resource-intensive. With technological advances and big data, healthcare systems can leverage patient data for prediction and prevention of disease as well as a distributed home care model.

The future of health is personalised

Advances in our ability to sequence the genome are reaching a point where the cost of DNA sequencing can be under a $1000. This along with the study of epigenetics opens up huge potential for precision medicine by both enabling prevention by identifying individuals at risk for illness, as well as targeting therapies for chronic illnesses based on the specific genetic makeup of the individual.

Integrating the physical and mental

Health is increasingly viewed as having many dimensions: physical, mental and spiritual. The Swiss School of Public Health, for example, is based on the vision that public health sciences are shaped by many disciplines (over 40) ranging from health lawyers, to health economists and spiritual health. While these were seen as separate realms, medicine is increasingly showing how they are connected. As physical environment "exposures" can impact physical as well as mental health, the study of 'omics' is also providing ways that we can influence the outcome of an individual's interactions with the environment

Our links to nature

Nature is soothing and greenery supports alertness and productivity. Integrating nature in to the fabric of our cities – both within public spaces and buildings – can greatly enhance the perception of wellbeing for its residents. Many cities across the world are adopting a view of public green spaces as critical urban infrastructure, which is key for public health.

In addition, natural history should be part of the school curricula to help children, from an early age, to learn about the evolution of the natural world and our connection to it and its benefits to our health.

No health without equity

Besides being one of the Sustainable Development Goals, ensuring health and well-being for all at all ages is also good science. While the spread of the COVID-19 pandemic and the emergence of variants in the face of a patchy vaccine roll-out highlighted health inequalities, it also demonstrated the need for strengthening health provision for all in an increasingly interconnected world.

FROM "SICK CARE" TO HEALTH CARE

The biggest transformation in healthcare is moving from a practice that deals with treatment of the sick, to prevention and management of well-being using data and technology solutions available today.

Acute to chronic - treatment to prevention

The structure and function of our medical systems are rooted in the state of the world in the early 20th century and are based on an emphasis on care and treatment of acute disease.

Today with advances in healthcare, deaths due to infectious diseases and lack of nutrition have declined, and we are faced with an ageing population and a shift in burden towards chronic diseases. These illnesses, such as cardiovascular diseases, diabetes, autoimmune conditions and cancer, are on the rise in developed and developing countries for a range of reasons from genetics to diet, lifestyle and other behaviours, and are causing huge resource and cost pressures for governments providing health care for their people.

Technology available today can allow to pivot to prediction, prevention and management of these conditions, with better outcomes both medically and administratively. Healthcare in the future will need to be increasingly centred on the patient, not on hospital-based care, leveraging technology-based solutions for a distributed home-care model, with hospitals being used mostly for acute needs.

"Prevention is the future of medicine. You cannot have therapy for 10 or 20 million people, it's impossible. What you can have is prevention based on a very accessible stratification of individuals based on their risk of developing any disease."
Sergio Abrignani

Data is transformative

The use of health data analytics is transforming patient care by enabling faster and more accurate diagnoses, predicting outbreaks, preventive and personalised treatments and more informed decision-making.

"Although COVID is an acute disease, those who are most likely to have severe disease or end up in intensive care or to die were those with chronic diseases like obesity, diabetes, hypertension, etc. And those chronic diseases are preventable or can be delayed to older age."
Dr Raghib Ali

Big Data and Preventive Medicine

Treating any disease at an early stage is simpler and less expensive. For years gathering huge amounts of patient data for medical use has been costly and time-consuming. With today's technological advancements the time has come for applications such as predictive analytics that can quantify risk of chronic illnesses and advise preventive or treatment measures.

Leveraging patient data across the value chain

To drive value-based care for the patient it is important to have effective data collection and aggregation across the health system or value chain. There has never been a better time to collaborate because technology and the ability to share data are making it so much easier, and the spirit of collaboration and data-sharing driven by the COVID-19 response in the medical industry may have paved the way for future opportunities.

Big data and digital health

Digital health applications in healthcare include telemedicine, electronic health records, wearable, implantable, injectable and ingestible digital medical devices, health mobile apps. It means that access to top level healthcare isn't the privilege of a few. Mayo Clinic Platform, USA

"If we just look at the world of coronary artery disease in cardiology - our cardiologists have looked at EKG (electrocardiogram) data from thousands and thousands of patients and now can predict certain things, such as heart failure before it even clinically happens. The future has already arrived in terms of using modern science knowledge and data to start addressing some of the biggest challenges, which are non-communicable diseases."

– Dr Anton Decker

"During the Covid-19 lockdown whilst we couldn't travel, our data still could travel. What we did was creating a global family of just under 400 Intensive Care specialists and bringing the data together and then asking the clinicians across the globe - how do you want to share this, and how can it help you? And working with industry, IBM and the Gates Foundation, to create a dashboard to democratise the data to assist clinicians in the intensive care."

– Prof. John Fraser

"When we look at the pharmaceutical industry, we have a lot of data. But are we utilising it in the right manner that can end up in saving patients' lives? I'm going back to the collaboration, where data can be pulled in between different pharmaceutical companies because we have data scattered everywhere. And can we have a conscious effort to improve diagnosis, improve treatment and be better at prevention."

– Dr Mahender Nayak

"Of course, sharing data always comes with concerns about data security and privacy. Slowly and systematically, these are being addressed globally to the point that the public is becoming comfortable with how data is being used and to what end."

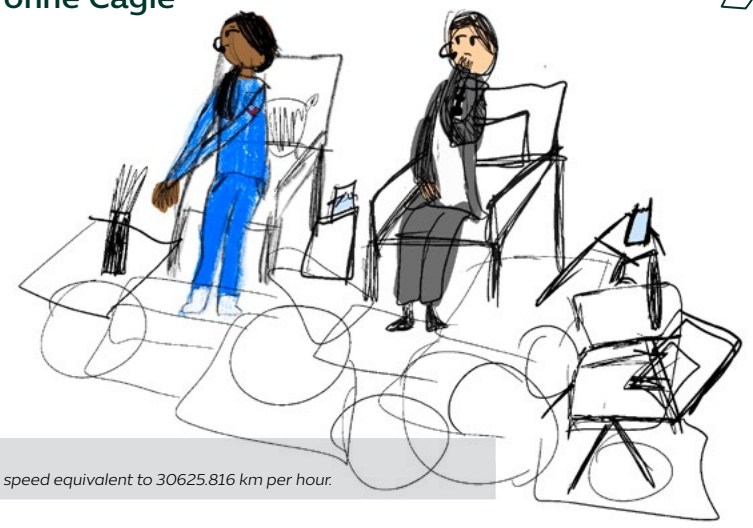
– Dr Anton Decker

"Technology allows that everybody to be "When we look at the pharmaceutical industry, we have a lot of data. But are we utilising it in the right manner that can end up in saving patients' lives? I'm going back to the collaboration, where data can be pulled in between different pharmaceutical companies because we have data scattered everywhere. And can we have a conscious effort to improve diagnosis, improve treatment and be better at prevention?"

– Dr Mahender Nayak

You are amazing because it's been only eight minutes and 31 seconds and you're already approximately 250 miles above the Earth, going seventeen thousand five hundred miles per hour on your way to Mach 25. And your body has already endured and surpassed the equivalent of six count of no less than six 25k marathons that you've just run back to back. And your DNA is already programming you for the recoding of the oxygen depleted, radiation laden, water deprived, hypothermic darkness of our silent cosmos. And as you unbuckled your seat belt, you're floating. Within 90 days, your body is already starting to divest the excess muscle mass and bone density that you're now, albeit two inch tall herself had the audacity to carry with you off planet as you packed for microgravity, going back to the Moon, onto Mars and whatever else lies beyond. But trust that we are wonderfully and unfathomably made coded for resiliency, designed for thrive-ability. So as my good friend Jeff often opines, just how does one begin to access the wisdom of two million years of evolution? Well, you are the future of safer, faster medical innovation. Yes, you. And it is resiliency and longevity. And that future is within reach today because the body has an incredible capacity to renew itself. Very exciting, very intriguing, and I invite you to join with all of us and me as we sometimes hyper accelerate to Mach 25 and continue innovating at the speed of light.

– Dr Yvonne Cagle



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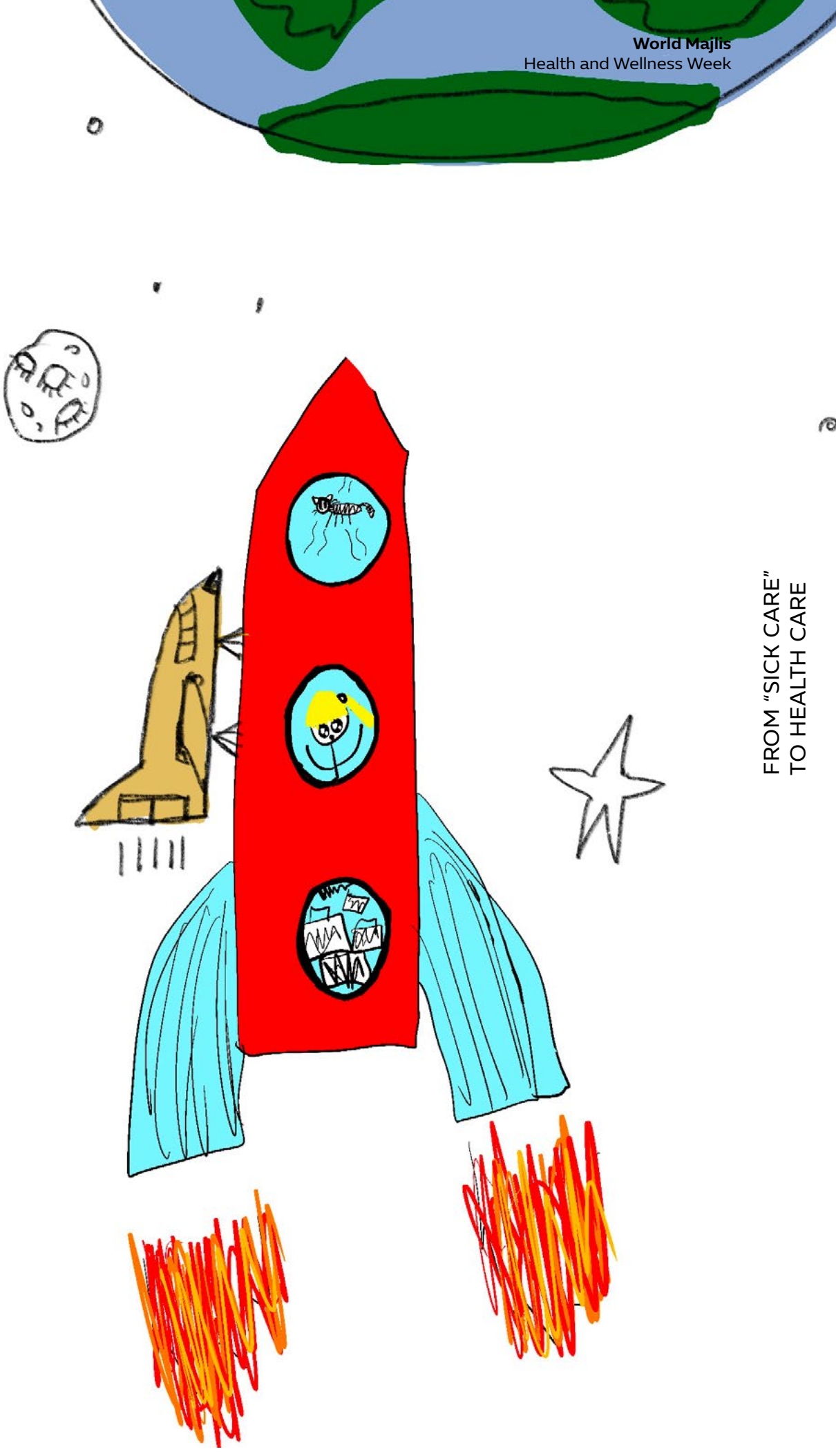
Mach 25 is the speed equivalent to 30625.816 km per hour.



Best practice

Mayo Clinic Platform, USA

The Mayo Clinic Platform, led by Dr. John Halamka, is unlocking the ever-increasing potential of AI and machine learning to draw insights from "big data" in an ultra-secure environment. The platform brings together enormous curated data sets from Mayo Clinic going back over 100 years with other data sets, such as population, industry and so on to start finding answers to some of the most pressing problems in patient care.

COVID-19 Critical Care Consortium, Australia

Harnessing the powers of AI and machine learning to draw insights from "big data", this alliance of more than 380 hospitals and research facilities in 54 countries created a database to consolidate information from the pandemic frontlines, including the hardest-hit ICUs in Italy, the UK, the USA and Brazil. It tracks the long-term progress of discharged patients, empowering governments and healthcare providers to plan more effectively for future outbreaks.

Emerging questions for future conversations

Learning from the COVID-19 context, how can healthcare stakeholders enable collaboration and data sharing in the best interest of everyone's health?

PERSONALISED MEDICINE - THE NEXT FRONTIER

Advances in our ability to sequence the genome will transform the future of individual and community-based healthcare provision.

"What we have now is one pill to fit the mould, while we are all are very different. Think of when you produce cancer therapy. You do not think that while at best a clinical trial is safe and works in most people, what about the unlucky few that are not responsive to this cancer therapy? These are the people we are able to target by personalised medicine. I reckon that within the next 10 years it is going to open the gates of having one pill that fits me and not everyone else."
Dr Walid Zaher

"As we are learning from oncology, if you stratify a patient you know precisely what molecule is affecting the type of cancer and what you should target. Researchers at the forefront of precision medicine qualify the identity of the disease in a way that determines which one molecule should be targeted in therapy."
Sergio Abrignani

The time has come for precision medicine

Completed in 2003, the Human Genome Project (HGP) was one of the great feats of exploration in history. For the first time, researchers were able to successfully sequence and map all of the genes – together known as the genome – and to read nature's complete genetic blueprint for building a human being.

This forms the basis for a whole field of genomic knowledge and "omics" disciplines with very promising potential for treating people in a personalised way.

'Omics' and precision medicine

Sequencing the first genome in 1990 took close to a 100 years and billions of dollars. Since then, the price of doing this has come down to under a $1000, which enables us to launch into a new era of personalised medicine, tailored to our individual genetic code.

While most of the drugs we use are given to everybody and they work in at best, 40 percent of patients, genomics allows for the stratification of people in a precise manner so therapy can be targeted, which has the potential to be hugely disruptive.

As the field of genomics advances and the cost of personalised medicine is going down, a number of ethical and regulatory questions will need to be considered by healthcare administrators.


SAEED
DANA
MARK

"We've known for a long time, for example, that 10 percent of smokers develop lung cancer and 90 percent don't. Similarly for diabetes, obesity and many cancers people that are exposed to the same risk factors don't all develop the disease. Genomics and epigenetics allow us to see which individuals are most at risk of developing diseases."
Dr Raghib Ali

Epigenetics and precision public health

Epigenetics is how genes are expressed. Precision public health will look to apply genomics and epigenetics to understand why people exposed to the same risk factors have different health outcomes, and which individuals are at most risk of developing diseases in the future, which is an extremely valuable tool for public health officials.

For example, higher rates of diabetes may be linked to genetics and we have different kinds of mutations that are based on how our genes are expressed in different parts of the world. Current research is trying to understand what is driving these differences in outcomes and using that information to ensure that our interventions are targeted at the appropriate sections of the population.

Best practice

Emirati Genome Program, UAE

The Emirati Genome Program aims to be the first of its kind world-wide to provide citizens with their own high quality genome as a baseline and incorporate genomic data into healthcare management. This program will produce a reference genome specific to UAE citizens and drive large scale scientific discovery. One of the world's top supercomputers, Group 42's Artemis will be used to analyse the massive amount of data and generate new insights.

INNOVATING AT THE SPEED OF LIFE

"Things must be done properly, effectively, ethically, and they have been at every single step of the way with the vaccine. But we've sped up the other things - where you say to people this piece of paper is waiting for sign off for six weeks. I hope this is one of the good things that comes from the pandemic that we can get better at the other aspects that can delay research."
Dr John Fraser

The COVID-19 pandemic has provided a case study in the pace at which innovation is possible when scientists, politicians, doctors and business come together in pursuit of a common goal. Applying this mind-set to other health challenges will require a great deal of political will.

Exciting innovations based on big data, "omics" and precision medicine are bringing about a new paradigm in healthcare.

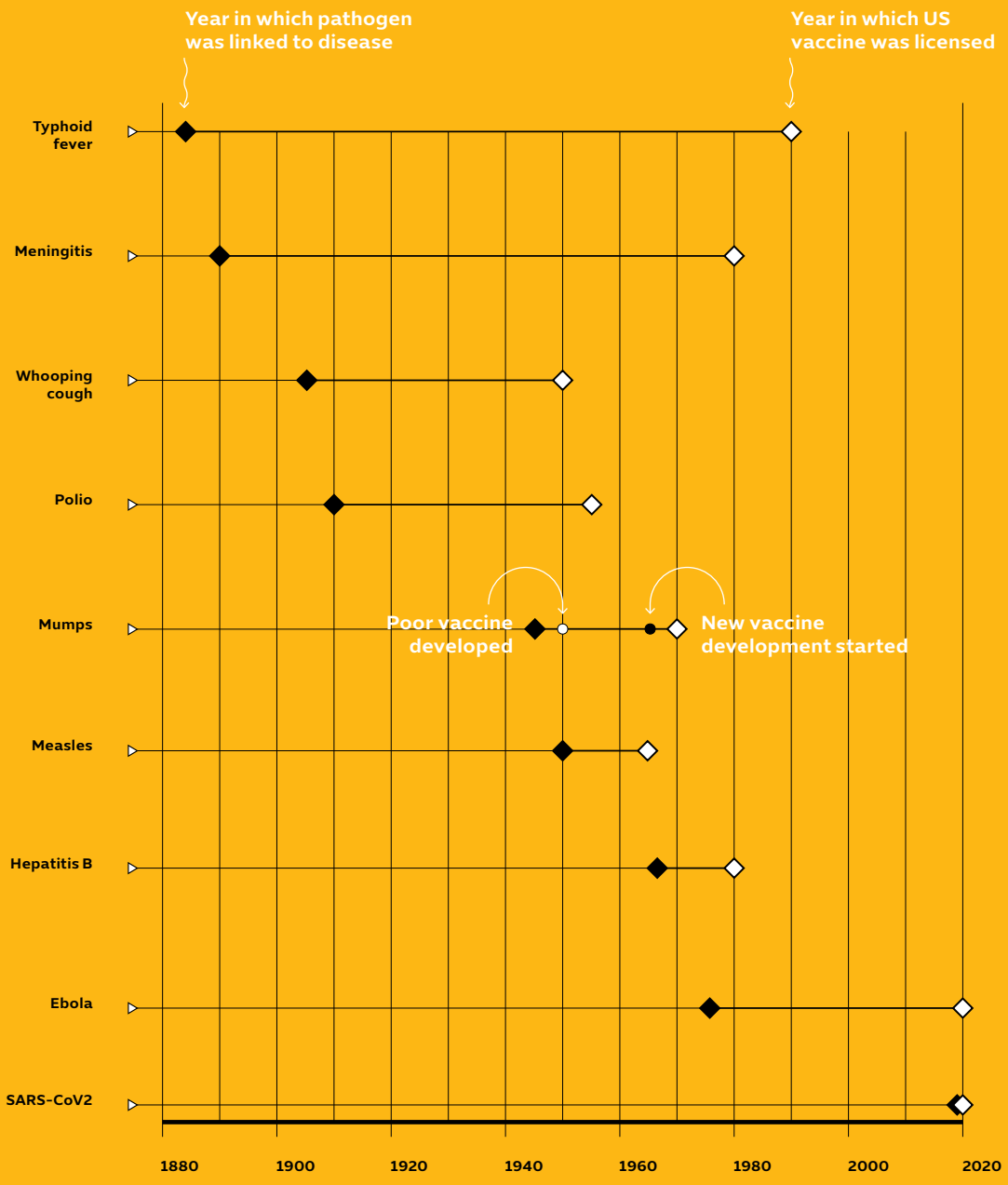
Innovation does not happen overnight

The global efforts for a COVID-19 vaccine resulted in the development and approval of several vaccines in what was considered record time. However, the COVID-19 vaccines were based on 20 years of research in RNA vaccines for cancer and HIV, and it was a case of applying the existing science.

In a year, COVID vaccination production went from zero to 11.2 billion doses, in comparison to 6 billion doses per year produced of all 27 other existing vaccines.

The apparent speed of innovation, however, was largely attributable to reasons beyond the science. Developing the vaccines in eight months was made possible because public sector, private industries, researchers, clinicians, everyone was focusing on getting to the point where a vaccine should have been developed in the shortest time possible, as safely as possible.

The speed of COVID Vaccine Innovation



1. COVID vaccination production went from zero to 11.2 billion doses in a year in 2021

2. We were previously producing 6 billion doses per year of all other (27) vaccines

"The significant investment helped neutralise the safety risk at each stage of vaccine development – pre-clinical phase one, phase two, phase three, registration, production, marketing – to look after the health and safety of people."
Dr Sergio Abrignani

The development of the Covid-19 vaccine was a prime example of how collaboration can accelerate the speed of development and delivery of new health solutions. It involved significant investments (but still smaller than the cost of the pandemic) and carrying out in parallel activities that traditionally take place in sequence.

In discussing risks in the context of vaccine deployment, it is worth acknowledging the difference between actual risks as recognised by the medical community versus the perception of risks as viewed by a lawyer or an administrator.

Innovation ecosystems are key

A two-member start-up company led by scientists collaborating with a global pharmaceutical giant has saved many lives, and several other non-traditional and creative collaborations emerged in the face of the COVID-19 pandemic.

The comparative success of the development of vaccines like Pfizer-Biontech, Aztrazeneca and Moderna may also be attributable to their emergence from places with strong innovation ecosystems, including the presence of active research universities and established avenues for venture capital funding.

> *"I was very interested in seeing some statistics in the last two years. There were around 94 partnerships in support of finding innovative ways to help COVID 19 vaccination research. This, compared to 100 in the previous 20 years."*
>
> **– Dr Mahender Nayak**

Emerging questions for future conversations

How can we get better at helping the public understand future medical innovations, to ensure the real and perceived safety of new innovations?

How can the collaborative spirit of Covid 19 carry on in other areas of health challenges, including making health more inclusive?

What new areas should enrich a health innovation ecosystem?

THE CHEMISTRY OF MENTAL HEALTH

While there is increasing acknowledgement of the importance of mental health as a key component of overall health and well-being, investment in research and development of treatments remains relatively low.

From negative to positive

Mental health, which includes our emotional, psychological and social well-being, affects how we respond to the world around us.

"What do you think of when I say the word physical health here - running, getting outside, walking - lots of positive words. What do you think of mental health? Often you hear depression, anxiety, being sad. There's often a negative connotation with the word mental health, but also very medicalised one."
Dr Alex George

Challenging stigma - building a positive narrative

While the term mental health is often used in common parlance to denote a lack thereof, according to the World Health Organisation (WHO), mental health is "a state of well-being in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community".

It is important to reframe the conversation around mental health to ensure there is no stigma associated with accessing the relevant care.

The pursuit of happiness

While the notion of good mental health is often conflated with happiness the two are actually very distinct.

"Happiness, is the experience of joy, contentment of positive wellbeing combined with a sense that one's life is good, meaningful and worthwhile. And it's the latter part, really, that distinguishes happiness from mental health. Happiness is a state of mind. it is counter-intuitively plausible that people with depression can and do experience happiness."
Prof Vikram Patel

Happiness is not the same as the absence of a mental health problem or a mental illness. It can be influenced by many factors ranging from physical health to material security, control over one's life, including mental health.

An excessive focus on happiness may in fact be detrimental to reducing the stigma around mental illnesses. "Toxic positivity" which is the need to maintain a positive mindset no matter how difficult a situation is, can be particularly grating for people going through a difficult time.


1 Genetic Predisposition
2. Brain Function
3. Physiology
4. Early life experiences
MENTAL HEALTH
HAPPINESS
1. Physical Health
2. Material Security
3. Sense of agency

"If happiness is our end goal, we miss the whole spectrum of human emotion. I think there's joy to be found in the hard times. And if we want to tackle the stigma around some of those mental health conditions, we have to be OK feeling comfortable with the sad as much as the happy. It's about the whole spectrum of emotion."
Elisha London

Physical factors that affect the "chemistry"

Physical factors such as exercise, nutrition and sleep in fact have a significant influence on mental and emotional wellbeing.

Exercise

When you exercise, a number of neurotransmitters, including endorphins, endocannabinoids, and dopamine, are released which contribute to a sense of well-being.

In June 2021, the John W. Brick Foundation released their Move for Mental Health Report, which provided a review of over 1,000 studies conducted over the last 30 years. Out of 1,158 studies examined, 89% found a statistically significant, positive association between physical activity—or exercise—and mental health. Studies have found that the effects of exercise were not different from psychotherapy or antidepressants.

"The study recommended specific frequencies and types of exercise that you could do for specific mental health outcomes - three to five times a week and a mix of flexibility, strength and cardio training. We've got to make it part of the treatment and the prevention as opposed to talking about medication as the only solution."
Glen Stollery

Nutrition

Studies suggest a repeated link between diet quality, gut microbiota, and susceptibility to a variety of mental health ailments. This notion of mental health as an inflammatory disease, with diet adjustments as a key preventative strategy or treatment, is still emerging but is gaining support.
Interesting developments are underway such as the work of Prof Gal Yadid and his team that is based on the use of nutritional supplements to mimic the activity of certain genes that could treat and reverse PTSD in susceptible animals.

We know now some fingerprints in the brain are related to less happiness, as well as the microbiome of the bacteria in our gut. They affect our mood. I'm treating my patients that are post-traumatic and drug-addicted with nutritional supplements, vitamins and diet that actually help specific bacteria (in the gut). It can heal, not treat, but heal – real rehabilitation.

– Prof Gal Yadid

"We often talk about risk factors when it comes to mental health or physical health. But there are also protection factors, and the most powerful protection factor is a sense of belonging. A sense of belonging is connected with trust, respect and a sense of community. And we are social beings - that is the essence of humanity."
Dr Natalie Lotzmann

A hierarchy of needs

Living in sync with your values

People feel better when they feel life has meaning and that there are valuable goals that they can pursue. Values act as a compass for who we are, how we act in particular situations, and where we want to go in life. If we possess a clear sense of purpose and act according to our values as they relate to us individually or as a community, then we are less likely to feel overwhelmed or be knocked off course when we experience challenging situations.

Mental health of young people

Globally it is estimated that 1 in 7 adolescents (10-19 year olds) experience mental health conditions, and suicide is the fourth leading cause of death among 15 to 19 year olds. This youth mental crisis, exacerbated by the COVID-19 pandemic, is often perceived as a by-product of a culture of excessive consumption fuelled by social media. However, there are a number of equally important systemic reasons why young people today are more depressed and anxious than ever before.

"Just ask yourself what your values are and then check in and ask if you're being true to them. It becomes a kind of North star. Off the back of the pandemic, it's actually OK to say you're not OK. And the Great Resignation that we're seeing is all coming from people saying – 'You know what, I'm not going to deal with this anymore. I'm checking out looking after myself and I'm going to walk away."
Glen Stollery

The Social Media Effect

Engaging with the world and having social interaction with others help to develop a sense of purpose and community in people. According to a Pew Research study, 45% of teens admit that they are online "almost constantly." This time spent online and not engaging at school or interacting with peers can undoubtedly fuel anxiety, depression and other mental health problems both by increasing feelings of isolation as well as by perpetuating a "culture of comparison".

On the other hand, social media may just be the popular "bogeyman" deflecting attention away from the very real issues that cause young people stress.

"If you look at particularly social media expectations of what young people believe happiness should look like. They see people who are successful, that they're beautiful, they seem happy, they're achieving so much. And they're fed this information all the time that this is what my life should look like. And you think, well, my life doesn't look like that, it kind of robs that element of joy."
Dr Alex George

An uncertain time to be young

For young people growing up today, the future is a very uncertain place. The COVID-19 pandemic exacerbated existing concerns around the future of the world from the state of the economy, to how technology will transform the future of jobs to climate uncertainty. This sense of having inherited big, bad problem that are not of their making creates a lot of legitimate anxiety and stress in young people today.

Governments need to do more to address and provide support on some of these larger systemic issues to genuinely address the issue of youth mental health and happiness.

During Knowledge and Learning Week, in the World Majlis "Equipping Youth to Thrive", the government of Bahrain explained that it it is essential to create the foundations for resilience and ensure that young people have the support they need to prepare for an uncertain future. This is based on five aspects which are essential to reach self-expression: feeling safe, seen, supported, wanted, trusted, hopeful. The latter being perhaps the most important.

Bahrain uses hackathons between youths and ministers as a tool to help build the sense of hope.

"50 years ago, young people could broadly plan their life in a way which felt more predictable. You could stand up at around 16 and think I could do this job. People would be in the same company for 30 years, get married around the similar age, go on to have children. Life was more predictable - and it is the lack of predictability which drives uncertainty. Young people now are looking around the world, thinking about its future. They're thinking it's bleak and they're thinking - what is the relationship I have to the world around me? How do I deal with all of these issues, which I didn't create but will ultimately inherit? What's the plan for my life and what's the plan for the world and how do those two things connect?"

– Ife Grillo

A society that is fair and just, where wealth is equitably distributed, where all citizens are treated equally well, regardless of race, religion, income and sexual orientation, where there's genuine community and global solidarity for the big issues that affect all of us. As long as all of these issues that concern all of us are not being addressed, the talk about happiness feels like a fig leaf. That's where we need action to make happiness a public good, like education and health, where everyone has a right to live a life with meaning and purpose."

– Vikram Patel

Young people seek both purpose and balance

"Being able to partake in meaningful tasks every day gives you that sense of pride and satisfaction of being able to support yourself and being able to do what you love, and also contributing to a flourishing community. This generation is more aware of that fine line between being actually engrossed in work and being consumed by it, and we realise the vitality of not hindering our work life balance."
Fatima Al Shennawy

"If your passion doesn't bring you the stable financial situation you need to live, you will most likely lose your passion or have it secretly and realize you can have to do nothing with it. It completely destroys the well-being."

– Zakhar Subkhankulov

"I'm a fresh graduate, so I'm trying to find an environment where I feel able to talk, to express, to have ideas, to be with everyone. We want to achieve. We want to thrive. So I think it's really important to have a good workplace environment."
Amal Alsayegh

"Many businesses have a very rigorous structure applied, and I feel that autonomy is key. It is key to be able to work digitally and at home, or to work in an environment where you can have face-to-face interactions with co-workers. It all depends on the individual and how they want to work, and to be able to give employees that kind of flexibility would greatly enhance everything."
Caelan Webster

Investing in mental health

The latest edition of the World Health Organisation's Atlas, which includes data from 171 countries, indicates that the increased attention given to mental health in recent years has yet to result in a scale-up of quality mental health services.

While the COVID-19 pandemic led to a tangible increase in mental health issues as many people lost their livelihoods, experienced financial hardship or complete isolation, the WHO Mental Health Atlas showed that in 2020, global governments spent on average just over 2% of their health budgets on mental health.

"We know with governments that invest in their people, there's at least a 1:4 financial return, but lives are impacted, communities are impacted, culture is impacted. We are better as a whole people when we invest in our mental health which has been underfunded and deprioritised for so long. We're seeing huge companies start to say this is a priority. And new tech philanthropy - we need those resources stepping in. Yes, it's governments, but I have a huge belief that it's also going to be business and the next generation of philanthropy that will come as a result."

– Elisha London

"I think in the modern workplace, we won't have to check in and checkout anymore. Hopefully, because I think at the end of the day, the outcomes of the work are more important than the hours you spent at the office."
Fatma Al Ali

"What makes people give their best - it's all about happiness. It's the sweet spot of what they personally thrive with, combined with the needs of the organisation they work for. Your job and happiness in life are very much connected, and both are clearly linked towards higher performance. It's all measurable and linked to more innovation."
Dr Natalia Lotzmann

Besides governments, corporates are increasingly seeing a convincing business case for investing in the mental well-being of their employees. With the changing nature of work and the Great Resignation in the aftermath of the pandemic, there is a growing focus for corporates on implementing the right support systems for struggling employees.

Private equity and venture capital have been investing record amounts in mental health startups, particularly so since the COVID-19 pandemic. This combined with increasing focus on the space from philanthropists could see some of the gaps in mental health provision being addressed by innovative start-ups.

Best practice

National Program for Happiness and Wellbeing, UAE

The National Program for Happiness and Wellbeing aims to inspire people, government and the broader community in the UAE to cultivate wellbeing as a way of life and enrich the greater happiness of the nation.

The Bahrain Hope Fund

Bahrain has created the Hope Fund. It is a dashboard that gets updated every month, and asks 10,000 youth at a time, whether they feel that today is better than yesterday, and whether tomorrow is going to be better than today. The government looks at it from a very scientific perspective. All of the programmes are targeted to young people feeling safe, seen, supported, wanted, trusted, hopeful. When the hope meter was low on the dashboard the government organised policy hackathons bringing together ministers and youth to discuss the changes that are need.

> **"We conducted a survey and we wanted people to tell us what makes you happy at an individual level? What makes you happy as a community? What would you want from your neighbour? How can the community support you and how can all this contribute to the whole country? And that's what made our national policy and national program for happiness and well-being."**
>
> – HE Hessa bint Essa Buhumaid

Emerging questions for future conversations

How can various stakeholders, from governments to the private sector, work together for greater impact in the mental health space?

What does it mean to make happiness a public good?

What tools do we need to balance youth expectations and deeper uncertainty towards the future?

Do we need a new generation of philanthropists focussed on mental health?

THE BLURRED BOUNDARIES OF HUMAN AND PLANETARY HEALTH

The impact of our physical environment on our health is significant, and designing environments that benefit our health and the health of the planet is key to our future.

The Climate Crisis and Human Health

Studies now show without doubt that an ailing planet has a direct correlation with human health.

1. **In 2015, diseases caused by air, water and soil pollution were responsible for 16% of all global death.**

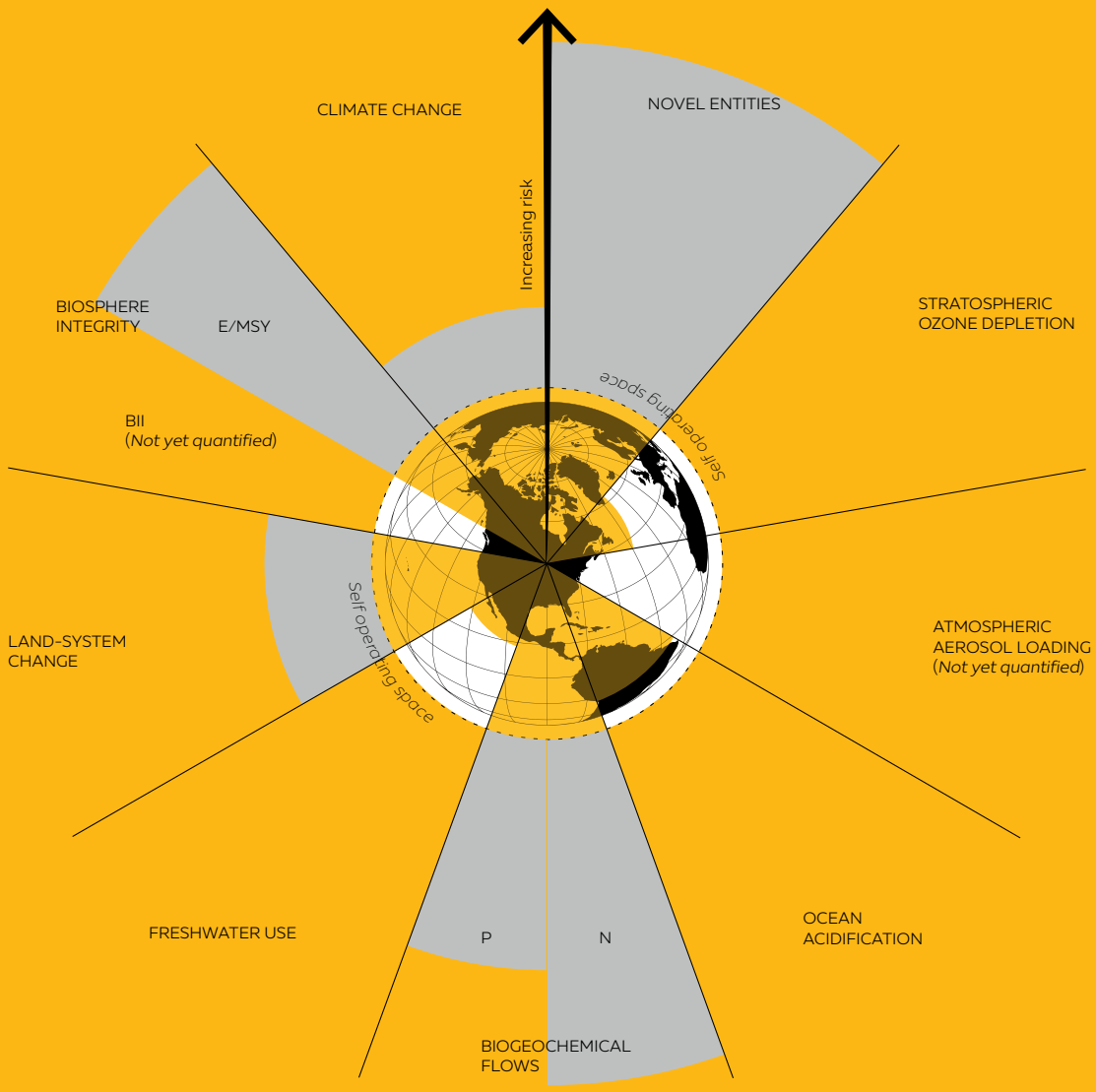
2. **Extreme weather events are increasing in frequency and severity. Eight of the ten hottest years on record have occurred in the past decade, resulting in intense wildfires in different parts of the world.**

3. **Between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year, from malnutrition, malaria, diarrhoea and heat stress.**

COVID-19, more emphatically than other zoonotic (that has jumped from a non-human animal to humans) viruses before it, has shown the disastrous effects of our encroachment into natural habitats which are rendering our planet increasingly unstable.

Over half the world's population lives in cities today. With more than 70 percent of the world expected to live in cities by 2050, they can be powerful agents of change when it comes to creating resilient habitats in the face of climate change.

Planetary Boundaries



The planetary boundaries concept presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come. Crossing these boundaries increases the risk of generating large-scale abrupt or irreversible environmental changes.

As of January 2022, researchers have concluded that 5 out of the 9 planetary boundaries have been breached.

Cities as Laboratories for wellbeing

Future cities can be great laboratories for health – they offer real opportunities for improving health, but managed poorly, they can also create or reinforce significant health deficits while putting severe stresses on the natural systems. From "sponge cities" that soak up rainfall to sidewalks for pedestrians, urban planners need to build with consideration of wellness and local identity alongside our changing climate. This new mindset for urban design can create solutions for "healthier" habitats in an ever expanding world in the face of global warming.

Urban planning for healthy communities

The impact of air pollution on our health is well understood. At the same, the amount of time people spend on roads driving, stuck in traffic jams can also impact our health by creating high levels of stress and anger.

Cities need to provide living, breathing healthy surroundings and nature plays an essential role in this. Nature is soothing and greenery supports alertness and productivity.

Localism and the 15-minute city

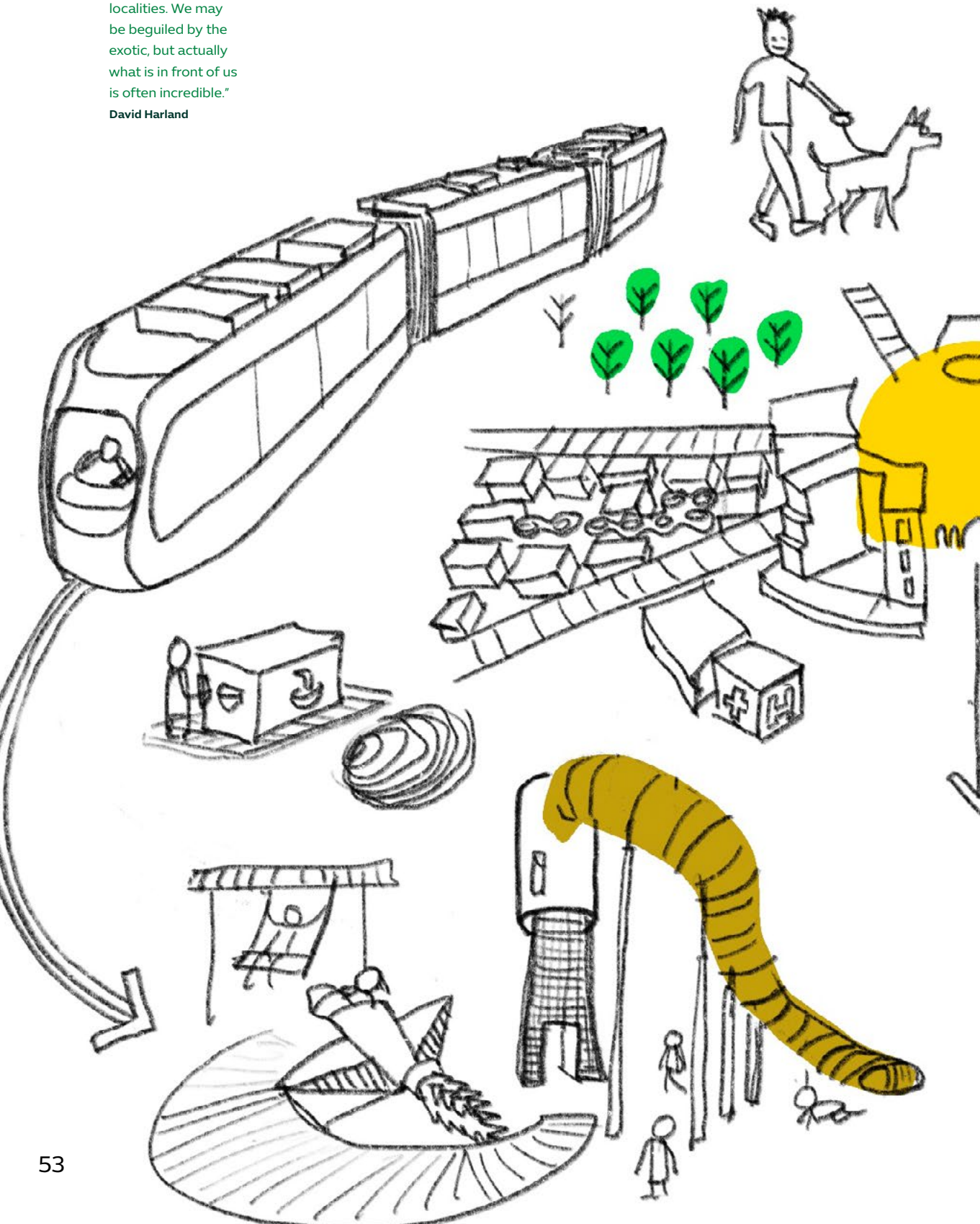
Out of the pandemic we have learnt the importance of our local environment, and as a result a new vision of urban living is emerging.

We really need to think of cities as research and development facilities. Some developers have introduced 'deep gardens' - when there are heavy rains the city, the roads are not flooded, they actually sink into the central garden and get sucked in. Research and development combined with local identity can create solutions in an ever expanding world with global warming. This city is one of the hottest in the world so our solutions can actually benefit the world.

– Ahmed Bukhash

"Localism used to have a negative meaning, connected to an idea of parochialism. But in reality a global solution is a series of local ones added together. We need projects that allow people to live their lives in their localities. We may be beguiled by the exotic, but actually what is in front of us is often incredible."
David Harland

An urban planning model developed by French-Colombian scientist Carlos Moreno to create more sustainable human-centric urban environments, the 15-minute city envisions decentralised cities in which people can access both their home and workplace in either a short walk or cycle. Food, health, education and cultural facilities would also be accessible without a car within a quarter of an hour.



Improved health outcomes from the concept are a result of increased physical activity, better mental health due to improved social and community connections from knowing the neighbours, and reduced vehicle pollution.

Our connections to nature

There is significant evidence about the impact of our interactions with nature on our physical and mental wellbeing.

Cities need to embrace healthy lifestyles. This is pivotal to our mental health, to our physical health and to the way we can actually work together and live together. Design should seek to connect us to each other, but also to the natural world.

Integrating nature into the fabric of our cities – both within public spaces and buildings – can greatly enhance the perception of wellbeing for its residents. Many cities across the world are adopting a view of public green spaces as critical urban infrastructure.

"We're all part of nature, and so much of modern life is about bringing us away from it. We live in boxes, we spend our time in boxes or on phones. So try and get outside, be a part of nature – this is a very powerful thing."
Dr Alex George

Building "green"

Research suggests we spend almost 90% of our time indoors – inside buildings or transportation. In addition, building and construction are responsible for 40% of all carbon emissions in the world.

Therefore, buildings, and the way they are built, can have a significant positive or negative impact on our physical, social and mental health.

Understanding what goes on in the building is essential - specifically the workings of the inside space, the building materials, ventilation etc.

"The best way is to create real examples of good designs that celebrate humanity and nature. The traditional Nipa Huts from the Philippines were very practical and protected people from storms and predators. They were not built by architects - good architecture and design should not only be for the few who can afford to be in that space. The challenge is to scale up this notion of 'practical luxury'."
Royal Pineda

المجلس العالمي
WORLD MAJLIS

In the previous World Majlis "Natural Cities" held during Urban and Rural Development Week, a number of related insights, proposals and best practices were discussed.

"Nature (exposure to) can be linked to different health outcomes: physical, mental and spiritual. Trials in US hospitals during the 1980s showed the positive effect of nature on health. Patients recovering from a range of surgeries recovered at different speeds based on the view from their window. Those with a view of nature generally showed a reduction in self-reported pain medication, lower complaints to the nurses and lower levels of cortisol, which is a measure of stress. In general, those with a view of nature had a reduced time in hospital. Additional clinical trials showed the difference between people who walked on treadmills facing a brick wall, those who had a view of nature on a screen and a third group who actually walked through a forest. They each did 30 minutes of walking. The physiological benefits were greater in the group that walked outside than in the group that had the perception, or at least the view of nature. And the lowest, although there still were some improvements, was in the group that were looking at the brick wall."

– Prof Tom Loney

"The human centric design in traditional Islamic or Arab cities is an organic and cellular pattern. If you get the central core right, you can easily expand it. It's very important for the designers, the urban planners and decision makers to all connect because it takes risk from both sides - it's not your typical feasibility study. You cannot measure it through a return on investment over three, five or 10 years. So it is a joint leap of faith."
Ahmed Bukhash

Indoor air quality

Covid has highlighted the importance of indoor air quality and circulation. Congested places with poor ventilation contribute to spreading diseases. Indoor concentration of some pollutants can be 2 to 5 times higher than outdoors, and has increased in recent decades due to factors such as energy-efficient building construction and increased use of synthetic building materials, furnishings, personal care products, pesticides, and household cleaners. Just like nature outside helps create healthier environments, indoor greenery like green walls and plants act as air purifiers within the built environment.

The importance of light

Spending enough time outside in the sunlight is extremely important - when daylight hits the retina in the morning, the serotonin energises you and makes you feel happy. When people do not get enough sunlight and are not happy, they are also likely to eat carbohydrates with negative health impacts. Exposure to light also affects circadian rhythms. Architects and planners can maximise light coming through into buildings.

In many cases this might be achieved through a return to traditional wisdom and techniques.

"Architects do not just build what we nicely believe should be the right thing - they only do that if there is a policy. We were fighting for bike lanes in Switzerland for 30 years, and it has made huge progress, but not just by coincidence. We need policies which define where we want to go."
Nino Künzli

Affordable housing

One of the strong messages that needs to be underlined is that we should provide affordable healthy housing for everybody, everywhere, all the time. Increased access to affordable housing, i.e. costing 20 to 30 percent of monthly income, promotes physical well-being by alleviating crowding, making more household resources available to pay for health care and healthy food, and limiting exposure to environmental toxins, besides reducing stress and instability leading to better mental health.

Building for the future – Importance of policy and regulations

From planning public spaces to designing buildings, policies must take into account human needs including the social, economic and health needs of residents.

Building with consideration of the wellbeing of both people and the planet requires taking a long-term view and a different perception of returns that does not exclusively focus on profitability and return on investments. Many of the innovations related to reducing the environmental impact of building will come from businesses and private foundations. Policy setting should focus on steering investment in this direction.

Building standards such as LEED and WELL are leading the charge towards ensuring that commercial properties are built with sustainability and occupant wellbeing in mind. In addition, several cities across the world, such as Melbourne, Copenhagen and Seattle, are adopting a view of public green spaces as critical urban infrastructure to build wellbeing as well as resilience to extreme weather events.

"We've got to think - if you look after the environment and human health, then you are our friend. But if you poison our air, if you poison our water, if you do bad things to the environment, then you're treasonous to the future."
David Harland

"We're a part of nature, not apart from nature. And the faster that we start reminding people using stories and the science and data around it, the better it will be."
David Harland

"We need to balance modernity with identity. How do I use the land without destroying it? How do I use the water without losing it? How do I breathe the air without polluting it?"
Angaangaq Angakkorsuaq

Natural History Education
Natural history should be part of the school curricula to help children, from an early age, to learn about the evolution of the natural world and our connection to it.

Best practice

LEED and WELL Guidelines

LEED certification focuses on the sustainability of buildings and infrastructure, including energy efficiency, materials, and the environment. The WELL Building Standard focuses on measuring, certifying, and monitoring features of the built environment that impact human health and wellbeing, through air, water, nourishment, light, fitness, comfort, and mind. These two building standards are leading the charge towards ensuring that properties are built with sustainability and occupant wellbeing in mind.

Emerging questions for future conversations

How can we get to spend more time outside of buildings, in healthy places, even in cities?

How can building standards focus on wellbeing become the norm in urban development?

How can we apply design innovation to build high-quality low-income housing?

TRUSTING SCIENCE

Science communication to the general public is becoming increasingly more important to ensure trust in medical innovation and their positive integration into society.

"There is a big difference in communication through scientists and through other sources, which may not be credible. It is important to build trust in the medical industry and scientists should be out there talking about the science to help people really understand it."
Dr Mahender Nayak

Between August of 2020 and February of 2021, a public opinion survey by Wellcome Trust Group across 113 countries and involved 119 thousand people suggested public trust in science has increased significantly to around 80 percent, and public trust in scientists is close to that same number. The survey also shows that significant group of people who had not much of a background understanding of science are now more engaged and involved in science.

Democratising the access to information

"Today access to data has just exploded. And most of the time it is wonderful to be able to disseminate literature, to democratise data and allow people to have access. But you can also have someone who is a big social media influencer who may not have passed Grade 10, and says that vaccines don't work."
Dr John Fraser

During the COVID-19 pandemic the world also experienced an "infodemic", an information pandemic, which refers to an excess of information, including false or misleading information, around health and medicine in digital and physical environments.

Traditionally, science has been based on peer reviews by experts, and once information is reviewed then it is published. Today, everyone has access to this information before the peer review process is completed or even started. There are instances when access to such information has positive implications, for instance raising global awareness quickly at the start of Covid-19. However, unverified medical information, about treatments for example, can be very dangerous.

Knowing who to trust

Clinicians and scientists tend to stick to disseminating findings through journals and meetings with eminent thinkers. Scientists have a responsibility to go beyond their circle and be part of the conversation where the disinformation is taking place.

A large part of the solution is also developing a knowledge and appreciation of science and the scientific process amongst people, and transparency around the way this process works.

"We have the data, we know what works. There are people that are being taken down a rabbit hole of mischief and we need to be there not to criticise, but to correct. If we just ignore them and stick in our own lane, that's incorrect. It is our responsibility - we have to somehow get help with the lingo, and disseminate the data in the forums where people are getting misled."
Dr John Fraser

"We have an advantage as scientists and clinicians that we get to scrutinise the data and the quality of it. But we can't underestimate the intelligence of the public, whether they are of our same discipline or not. Transparency is very important in not just making the data available, but in helping to bring transparency to the scientific rigour that we are privy to so that everyone can make an informed decision."

– Dr Yvonne Cagle

EQUITY

"It's really bad science if you don't protect the world at the same time. Not doing so is equivalent to creating a variant factory because the variants just change and change, and they will come back to bite everyone."
Dr John Fraser

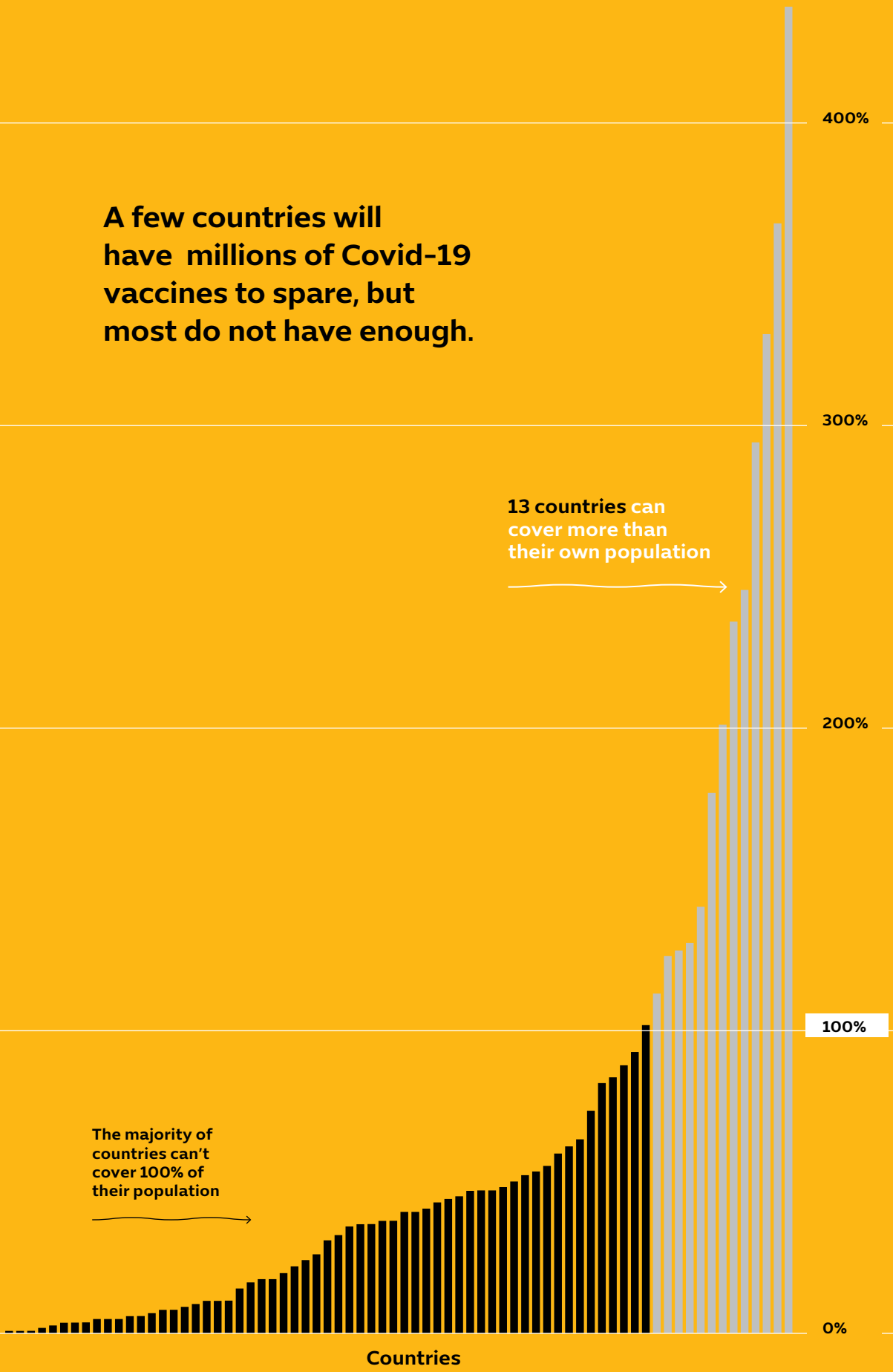
Ensuring everyone can access affordable, competent health care regardless of their gender, ethnicity, location, socioeconomic status and beliefs, is both a moral imperative as well as good science.

The distribution and equity of COVID-19 vaccines was a prime example of inequity, where for example in developed countries a 100 vaccine doses were given per 100 people in comparison to 1.5 doses per 100 people in central Africa.

"Personalised medicine and "omics" projects must also be equitable. We can find ways to personalise customise and tailor medicines that will be responsive for one person. And that's a wonderful opportunity to bring equity and access to the world."
Dr Yvonne Cagle

According to a 2021 paper by the Wellcome Trust governments in high-income countries had purchased 56% of the world's Covid-19 vaccine supply, despite representing just 16% of the global population. These countries should be giving at least half of the doses to the less well-off countries not just because it is the right thing to do, but also because it will protect everyone.

A few countries will have millions of Covid-19 vaccines to spare, but most do not have enough.



"Whilst we do have many women in mid-level management and nursing is led mainly by female nurses, we still have historically a male dominance in the field because most doctors were men. So there are times when policies are being developed, where if one cannot fully empathise with the people the policies are impacting, the policies may be lacking."
Peggy Vidot

Caring for women's health and women in healthcare

Gender equity in relation to health must address inequalities between women and men in terms of their resources and their opportunities for health, including differences in how well health systems meet their specific needs.

The COVID-19 pandemic had a disproportionate impact on the health of women, both due to the fact that a large proportion of frontline health workers are women, and due to the added domestic burden of work on them. It is important to ensure the voice of women at all levels within the field in order to ensure that healthcare priorities and policies reflect a consideration of the needs of all.

"For example, when discussing with a nurse based in Yemen the main difficulties as a woman when treating COVID patients, specifically she came up with the protective equipment. 'The PPE today is very much based on men. They're always large or extra-large. Never small that can fit me and give me the confidence to go around with the right protection. The same with gloves.' Something like that is quite easy to solve but we don't realise that is a problem."

– Micaela Serafini

ON THE HORIZON - LESSONS FROM SPACE

The space sector is thriving with opportunities to gain deeper insights and innovations into how our body works.

"Because there's no gravity, unlike on Earth, there is nothing that slows down the process and delays differentiation of cell lines. And because of that, the cell lines can grow not just larger, but in larger volumes. So, the objective is to scale this up and carry out bio manufacturing in space. We can move forward with our own natural 3D printers, and start to generate tissues and organs to replace those damaged from chronic disease or from degenerative processes."
Dr Yvonne Cagle

The collaboration between space and earth is extremely important because there are innovations that will augment and enable us in space, but also benefit us here on Earth before we even launch.

The Human Genome Project
NASA's Genome Project is working on epigenetic mapping, and building a database that can be shared about not just what happens here on Earth, but how our bodies change and adapt and evolve in space, to leverage opportunities for the well-being of everyone.

Stem cells in Space
NASA in collaboration with the Cedars Sinai Regenerative Medicine Institute is working on the bio manufacturing of stem cells in space, which has exciting implications for batch 3D-printing tissues and organs in space, making things like organ transplants readily available.

"A grade three ankle sprain takes a minimum of 10 to 12 weeks to rehabilitate to retrain. In this case, it wasn't 10 weeks. It wasn't nearly three months. It wasn't even 10 days, not 10 hours, but a single 10-minute session. And why is this important? Think about someone who has a disability, or the aging population or a first responder, or someone in a developing country where they're the working wounded. They have to go to work and they're limited because of the pain or swelling. This is soft tissue, not just release, but activation."
Dr Yvonne Cagle

Precision wearable tech

Based on the body's capacity to heal itself, wrapping an injured limb with a special precision loaded wearable tech that can potentially transform weeks of therapy into days and days of pain into minutes, has a great number of applications on Earth from rehabilitation in competitive sports to the disabled.

Because there is a 20-minute delay in communications from space, there are many non-invasive wearable technologies that, for example, can give your body a break in cases of low oxygen, or too much oxygen or hypoxia, that can be used to improve survivability.

"Sensors where you don't have to do brain surgery in order to see the pressure in the brain - that you can use a very comfortable headband, and instead of an hour under anaesthesia in a few moments you can actually find fairly reliably what the pressures are in the brain."
Dr Yvonne Cagle

Non-invasive and time-critical methods from space

In space, there isn't the "luxury" of being able to do things invasively. Space crews rely on ultrasounds, and ways of imaging that avoid the need for surgery which could have exciting applications because they're fast and they're safe.

Future of sleep

Sleep is the most powerful medicine – the body can leverage deep slep to get lympathic clearance, and clear out waste and toxins from the body. Sleep is so important, not just the number of hours, but the quality of sleep.

Astronauts use innovations to aid their sleep, and studies are ongoing on ways that we can sleep while we're awake. These can help the transportation industry, truck drivers, airliners, astronauts, elderly who have Parkinson's or Alzheimer's to improve their cognitive behaviour and mental wellness.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