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November-December 2020

Obesity

Regional Expert Group publishes treatment recommendations

Diabetes Treatment

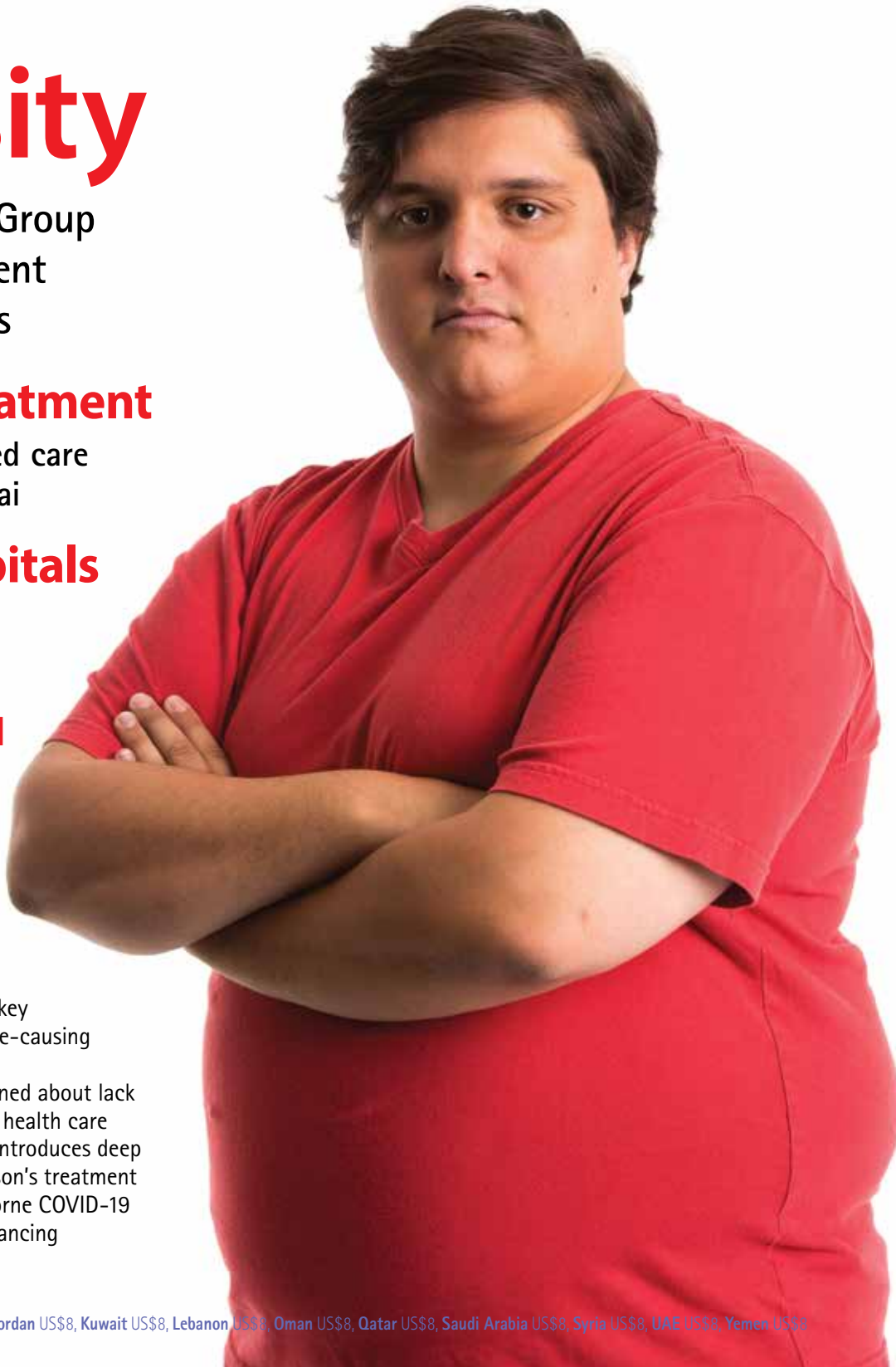
Innovative, integrated care centre opens in Dubai

Best US Hospitals

2020-2021 rankings released

Gargash Hospital

Dr Aws Khidir Jassim discusses obesity lifestyle management



In the News

- NYU Abu Dhabi study finds key protein related to the disease-causing malformation of fat tissue
- Survey: Young Arabs concerned about lack of accessible quality mental health care
- Cleveland Clinic Abu Dhabi introduces deep brain stimulation for Parkinson's treatment
- Study estimates risk of airborne COVID-19 with mask usage, social distancing

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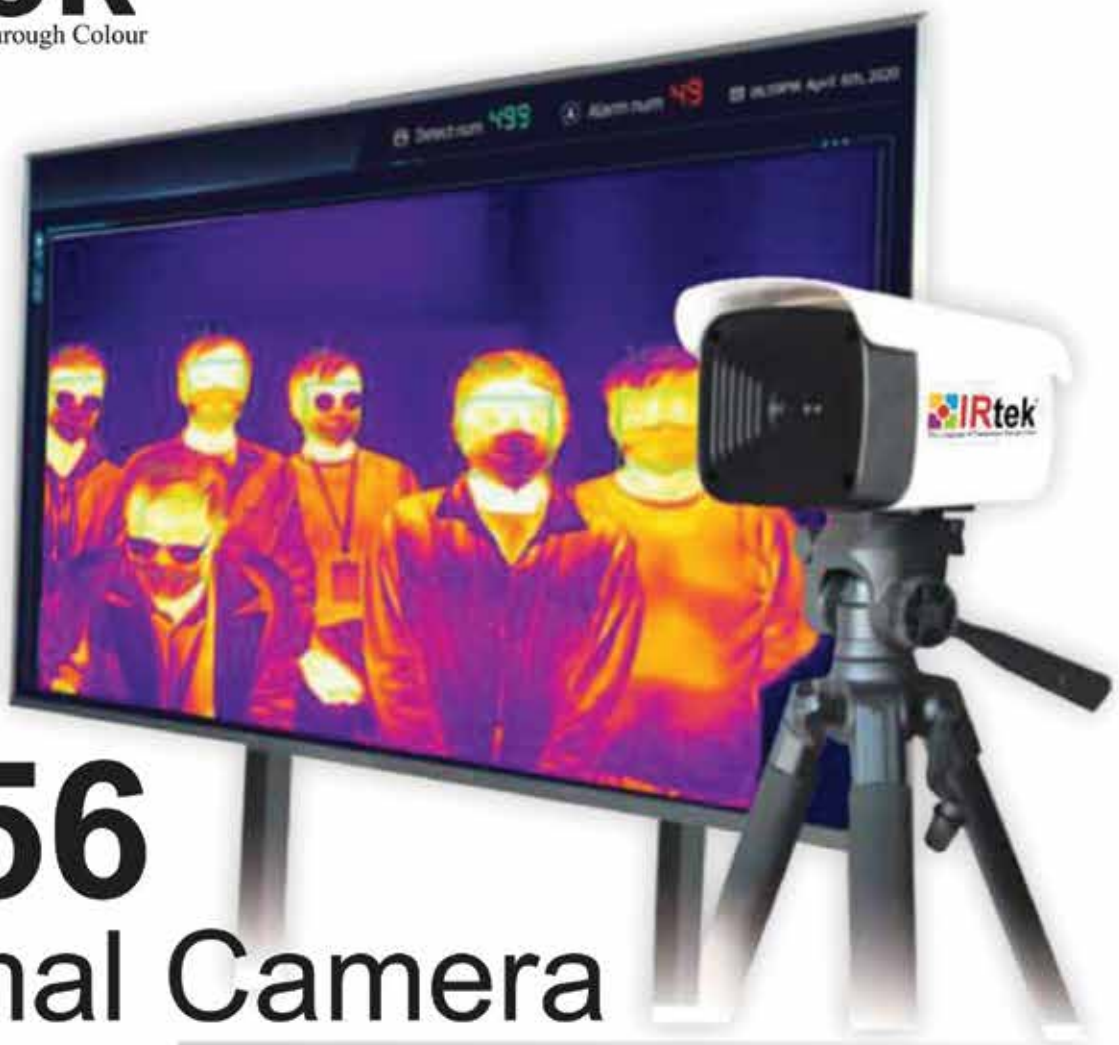

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Prognosis

Obesity treatment

The Gulf & Lebanon Recommendations Expert Group, under the auspices of the World Obesity Federation, has recently published *Regional Recommendations for the Treatment and Management of Adult Obesity in the Gulf & Lebanon*. This is an important publication which should go some way to easing the growing burden of obesity in the region. The Group notes that the provision of obesity care has proved challenging in the region and the hope is that these recommendations will enable healthcare professionals to offer obesity treatment guided by clear clinical pathways. You can read more about this in our focus on lifestyle diseases.

Also, in this issue, we speak to Sjaak Vink, the CEO and Founder of TheSocialMedwork, which he set up to help patients source life-saving medications unavailable in their country of residence. He explains that even though a specific medication may be unavailable in a specific country, patients in that country with an appropriate prescription can obtain the medication under the Named Patient regulation, which is an early access import scheme, available in almost every country in the world. His company, TheSocialMedwork, facilitates this process and has helped thousands of patients around the world.

The Best US hospitals have recently been ranked by *U.S. News & World Report*. You can find the top 20 in our US Hospitals report.

There is considerable stigma attached to seeking healthcare for mental health conditions. This is borne out in a recently published survey of young Arabs across the region with significantly high rates in Morocco, Lebanon and Libya. The survey also highlights the lack of access to quality mental healthcare with more than half of the respondents saying it is difficult to access such healthcare in their countries.

In world news, the World Health Organization has issued a call to more than 100 countries to implement regulations to eliminate industrially produced trans fats from the global food supply. Trans fats are considered to be a key element in the development of coronary artery disease. The call follows an initiative began in May 2018, by the WHO for the global elimination of industrially produced Trans Fatty Acids by 2023 and the release of the REPLACE action framework to guide countries in this process. Although some countries have implemented regulations, many have failed to do so.

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contents

Erratum

In the September-October 2020 issue of *Middle East Health* in The Laboratory news section we mistakenly placed an image of Christian Schuhmacher, CEO, King's College Hospital London in Dubai, in an article about Cleveland Clinic where we should have used an image of Dr Cristiano Quintini, transplant surgeon, Cleveland Clinic.

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middle east monitor

Update from around the region

Mariët Westermann (right),Vice Chancellor at NYUAD, and Majd Abu Zant, Chief Operating Officer at UEMedical, sign the MoU.

NYU Abu Dhabi signs a MoU with United Eastern Medical Services to enhance clinical research

NYU Abu Dhabi (NYUAD) signed a Memorandum of Understanding (MoU) with United Eastern Medical Services (UEMedical) in Abu Dhabi, the parent organization of Danat Al Emarat Hospital for Women & Children, HealthPlus Network of Specialty Centers, and Moorfields Eye Hospital Abu Dhabi. A key point of the MoU is establishing the HealthPlus Diabetes & Endocrinology Center in Abu Dhabi as one of the main clinic sites for the UAE Healthy Future Study (UAEHFS) which was due to start accepting participants from November 1, 2020.

The collaboration will also offer support on current and future research, education, innovations, and workshops in the field of health sciences.

The MoU was signed by Mariët Westermann, NYUAD Vice Chancellor and Majd Abu Zant, Chief Operating Officer at UEMedical; in the presence of Dr. Sadoon Sadoon, UEMedical's Chief Medical Officer and Dr. Huda Ezzeddin Mustafa, Diabetes & Endocrinology Consultant and Director of Academic Affairs at HealthPlus Network of Specialty Centers.

The UAE Healthy Future Study is the first cohort study aimed at understanding the source and cause of the rising cases of obesity, diabetes, and heart disease among Emiratis. The study invites all UAE nationals, between the age of 18 and 40, to participate. Currently, the study clinics are located in Abu Dhabi Blood Bank, Cleveland Clinic Abu Dhabi, Healthpoint, UAE University, and Latifa Hospital Dubai Blood Donation Center.

Westermann said: "Across the disciplines, NYU Abu Dhabi is investigating and investing in solutions to some of the world's most pressing challenges, including public health concerns, such as obesity, diabetes, and heart disease. The UAE Healthy Future Study is mobilizing the scholarly and scientific capabilities of our university along with great local partners such as United Eastern Medical Services towards building a healthier UAE. We are excited at the possibilities afforded by this new partnership and how we might advance our local contributions towards the health sciences."

Abu Zant commented: "We hope this MoU paves the way to a successful and collaborative partnership that will benefit our community. We are confident that HealthPlus Diabetes & Endocrinology Center will provide insightful data for the study. The MoU also opens the door for further collaboration with NYUAD in research, education and innovation particularly in the fields of woman and child health, fertility, eye diseases and genomics."

Abdishakur Abdulle, NYUAD Public Health Research Center Associate Director, commented: "Given the importance of the UAE Healthy Future Study for the nation, we have developed a partnership with various national institutions in both the public and private sectors. [This MoU] marks yet another great milestone which will enable us to work with a key partner in healthcare, namely UEMedical. In part, this collaboration will facilitate accessibility for even more public participation among the nationals of the UAE. It is anticipated that results from this study will also help the development of better prevention and treatment strategies." MEH

Participate in the UAE Healthy Future Study

The UAE Healthy Future Study is the first long-term study aimed at understanding and providing substantive evidence for environmental, lifestyle, and genetic determinants of common diseases in the UAE population, such as obesity, diabetes, and heart disease. To register, study volunteers now have the opportunity to participate through an online-based platform instead of physically visiting clinics. For more information, visit: *www.UAEHealthyFuture.ae*

Young Arabs concerned about lack of accessible quality mental health care

Arabs are concerned about the lack of access to quality mental health care in the region and call on governments to invest in education and awareness campaigns and make quality mental health care more affordable, according to the 12th Annual ASDA'A BCW Arab Youth Survey. The survey was conducted earlier this year and results were released for World Mental Health Day on October 10.

According to this year's findings, nearly

two-in-five (38%) young Arabs say they know someone with mental health issues, compared to 31% of Arab youth surveyed in 2019.

A majority (56%) of Arab youth also say it is difficult to get quality medical care for mental health issues in their country. Young Palestinians (85%), Yemenis (80%), and Syrians (77%) say that quality mental health care is difficult to access. Further, nearly half (48%) of Arab youth say seeking medical care for mental health issues is viewed negatively by most people in their country. With the social stigma associated with seeking mental health care being highest in Morocco (76%), Lebanon (72%) and Libya (70%).

The 2020 ASDA'A BCW Arab Youth Survey includes 4,000 interviews with young Arab nationals aged 18 to 24 in 17 Arab states in MENA with a 50:50 male female split, and was completed in two parts. The first Main Survey was conducted between January 19 and March 3, 2020, before the COVID-19 pandemic fully impacted the region. This survey was conducted in 17 Arab states: five of the Gulf Cooperation Council states (Bahrain, Kuwait, Oman, Saudi Arabia and the UAE), North Africa (Algeria, Egypt, Libya, Morocco, Sudan and Tunisia) and the Levant (Iraq, Jordan, Lebanon, the Palestinian territories, Syria and Yemen). The questions on mental health were asked as part of this survey.

The second, COVID-19 Pulse Survey was conducted between August 18 and 26, 2020. For the COVID-19 Pulse Survey, 600 face-to-face and online interviews were conducted among young Arab nationals of six countries in the region – Algeria, Egypt, Jordan, Lebanon, Saudi Arabia and the UAE.

Sunil John, President – Middle East of BCW and Founder of ASDA'A BCW, said: "Last year, for the first time our survey shed light on the topic of mental health, an issue that had not been widely discussed in the region. With the World Economic Forum highlighting that the economic cost associated with mental illness is the largest of any health issue and set to reach US$6 trillion per year by 2030 globally, timely access to quality mental healthcare is of critical importance. Yet, as our survey shows this year, the region does not appear to have made much progress in addressing this issue."

With 655 of the Arab population under the age of 30, the survey presents evidence-based insights into the attitudes of Arab youth, providing public and private sector organisations with data and analysis to inform their decision-making and policy creation.

• The 12th annual Arab Youth Survey can be downloaded here: *www.arabyouthsurvey.com* MEH

Imperial College of London Diabetes Centre launches type 2 remission clinic in Abu Dhabi

Imperial College of London Diabetes Centre (ICLDC), a Mubadala Healthcare provider in Abu Dhabi, has launched a new programme to tackle type 2 diabetes with a tailored weight-loss programme. The aim of this programme is to bring type 2 diabetes into remission, thereby preventing or delaying complications and increasing patients' life expectancy.

According to Dr Emad George, medical director and consultant endocrinologist and diabetologist at ICLDC, scientists believe that storing too much fat in the liver and pancreas affects how type 2 diabetes develops, and losing this fat can help put the disease into remission.

"Losing at least 15 kg significantly increases your chances of achieving type 2 diabetes remission, and the clinic offers patients a way to do this that is safe, structured, medically monitored and with the necessary support," he explained.

While ICLDC, in partnership with its fellow Mubadala Healthcare provider Healthpoint, already offers weight-loss surgery to patients who qualify for it, this is the first time it is offering a structured diet-based programme at its Abu Dhabi branches.

Dr Emad George, medical director and consultant endocrinologist and diabetologist, ICLDC

Dr Mohgah El Sheikh, a consultant endocrinologist and diabetologist at ICLDC said that the person's current weight and how recently they were diagnosed with diabetes are among factors that can affect the outcome of the programme, and that remission doesn't mean the patient is cured. She defines remission as a state where the patient will not have type 2 diabetes, will not need diabetes medications, and will have normal results on the HBA1c test, which measures the average level of blood sugar over the past two to three months.

"The more recently you were diagnosed, the better the results will be. We do not yet know how long a remission of type 2 diabetes will last, but the key is maintaining the weight loss, and possibly losing more weight at a later stage," Dr El Sheikh explained.

"That is why our programme includes support to assist patients change their lifestyle in the long term. There is also a relapse management plan to help them get back on the right path."

ICLDC dietitian Fatima Al Haliaqa explains that patients will be able to choose between following a very low calorie diet (VLCD), which is a meal-replacement plan, or a low-carbohydrate plan that limits total carbohydrate intake to a maximum of 100 g per day.

"Patients always ask me which is the best diet for type 2 diabetes, and my answer is that it's the one they can stick to," said Al Haliaqa.

The Diabetes Remission Clinical Trial (DiRECT) this year released the second-year results of its study, showing VLCD is effective in inducing sustained remission for at least two years for more than a third of people with type 2 diabetes, with remission greatest in those losing at least 15 kg of weight. MEH

Cleveland Clinic Abu Dhabi introduces deep brain stimulation treatment for Parkinson's patients in UAE

Parkinson's disease patients in the UAE can now benefit from deep brain stimulation, an advanced treatment that can significantly reduce symptoms of the disease.

Cleveland Clinic Abu Dhabi is now evaluating Parkinson's disease patients in the UAE to determine those who could benefit from deep brain stimulation, an advanced surgical procedure that uses electrodes implanted into specific parts of the brain to reduce tremors, stiffness, slowness and other symptoms of Parkinson's disease.

"Motor problems caused by Parkinson's disease can hugely affect a person's quality of life. Once we begin delivering pulses to the part of the brain responsible for causing them, the improvements can be quick. Patients can regain significant control of their movement, allowing them to get back to activities they never thought they'd be able to do again," said Dr. Florian Roser, Chair of the Neurological Institute at Cleveland Clinic Abu Dhabi.

Globally, an estimated seven to 10 million people worldwide are living with Parkinson's disease and this is expected to rise significantly in the coming years. Deep brain stimulation uses electrodes implanted into specific parts of the brain to reduce tremors by blocking the rogue signals that cause them. The complex surgery can significantly improve patients' quality of life.

Following surgery, deep brain stimulation requires programming by a multidisciplinary team of movement disorder specialists to maintain and fine tune the implant, to get the best individual results for each patient.

In order to introduce the complex surgery to the UAE, physicians at the hospital worked closely with their

Dr. Florian Roser, Chair of the Neurological Institute at Cleveland Clinic Abu Dhabi

colleagues at Cleveland Clinic in Ohio, which has more than 20 years of experience in the field, performing more than 150 deep brain stimulation surgeries per year. MEH

UAE embraces telehealth in battle against COVID-19

Stay-at-home restrictions, social distancing and the closure of healthcare facilities, have led to more UAE residents using telehealth services. Recent data from vHealth – one of the UAE's leading telehealth providers – shows a 500% increase in utilisation between March and September 2020, compared to the same period last year.

As well as obvious concerns around the virus itself, Dr. Nairah Rasul-Syed, Medical Director at vHealth confirms that the knock-on effect of COVID-19 has had a substantial impact on the physical and mental wellbeing of UAE residents.

"Whether it's a lack of activity or the fear of losing a job, we have seen a significant increase in cases of weight-gain, hypertension and vitamin D deficiency over the last few months, as well as stress, anxiety and other mental-health concerns," Dr. Rasul-Syed explained. "Services like vHealth provided a much-needed lifeline to those who were confined to their homes but wanted to address their health conditions."

As a case in point, the number of UAE residents using telehealth services for mental health support peaked during key waves of the pandemic. With stress and anxiety on the increase, 60% of vHealth consultations relating to mental health occurred between March and May with a further 23% in August.

Although the pandemic kick-started the increased use of telehealth services, customers throughout the UAE have adapted quickly. vHealth data shows that 25% have already used the service more than once and seem happy to stick with the new system. MEH

Medcare implements unified healthcare information system

The UAE's Medcare Hospitals & Medical Centres has signed an agreement with InterSystems, a data technology provider, to implement InterSystems TrakCare unified healthcare information system across all its four hospitals and 15 medical centres in Dubai and Sharjah.

Deployed in the cloud, the TrakCare Electronic Medical Record System (EMR) will allow the authorised clinical and administrative teams immediate access to integrated electronic patient information from departments and laboratories in the facilities, in addition to streamlining all aspects of patients' admissions and discharges.

The EMR service follows a Pay-Per-Usage model and enables hospitals and clinics to achieve their clinical and financial objectives without making major upfront capital expenditures.

The advanced interoperability that TrakCare provides will enable Medcare to align with the UAE health authorities' plans for Health Information Exchange that connects public and private systems, so patient records can be easily accessible by authorised individuals. MEH

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The new version of the WHO 2020 Global TB Report app is now available for smartphones and tablets. The app reports the latest TB statistics and trends, country and region comparisons and quick search for indicators.

WHO: Global TB progress at risk

Prior to the COVID-19 pandemic, many countries were making steady progress in tackling tuberculosis (TB), with a 9% reduction in incidence seen between 2015 and 2019 and a 14% drop in deaths in the same period. High-level political commitments at global and national levels were delivering results. However, a new report from WHO shows that access to TB services remains a challenge, and that global targets for prevention and treatment will likely be missed without urgent action and investments.

Approximately 1.4 million people died from TB-related illnesses in 2019. Of the estimated 10 million people who developed TB that year, some 3 million were not diagnosed with the disease, or were not officially reported to national authorities.

The situation is even more acute for people with drug-resistant TB. About 465 000 people were newly diagnosed with drug-resistant TB in 2019 and, of these, less than 40% were able to access treatment. There has also been limited progress in scaling up access to treatment to prevent TB.

"Equitable access to quality and timely diagnosis, prevention, treatment and care remains a challenge," said Dr Tedros Adhanom Ghebreyesus, Director-General of WHO. "Accelerated action is urgently needed worldwide if we are to meet our targets by 2022."

About 14 million people were treated for TB in the period 2018-2019, just over one-third of the way towards the 5-year target (2018-2022) of 40 million, according to the report. Some 6.3 million people started TB preventive treatment in 2018-2019, about one-fifth of the way towards the 5-year target of 30 million.

Funding is a major issue. In 2020, funding for TB prevention, diagnosis, treatment and care reached US$6.5 billion, representing only half of the $13 billion target agreed by world leaders in the UN Political Declaration on TB.

Disruptions in services caused by the COVID-19 pandemic have led to further setbacks. In many countries, human, financial and other resources have been reallocated from TB to the COVID-19 response. Data collection and reporting systems have also been negatively impacted.

According to the new report, data collated from over 200 countries has shown significant reductions in TB case notifications, with 25-30% drops reported in 3 high burden countries – India, Indonesia, the Philippines – between January and June 2020 compared to the same 6-month period in 2019. These reductions in case notifications could lead to a dramatic increase in additional TB deaths, according to WHO modelling.

However, in line with WHO guidance, countries have taken measures to mitigate the impact of COVID-19 on essential TB services, including by strengthening infection control. A total of 108 countries – including 21 countries with a high TB burden – have expanded the use of digital technologies to provide remote advice and support. To reduce the need for visits to health facilities, many countries are encouraging home-based treatment, all-oral treatments for people with drug-resistant TB, provision of TB preventive treatment, and ensuring people with TB maintain an adequate supply of drugs.

"In the face of the pandemic, countries, civil society and other partners have joined forces to ensure that essential services for both TB and COVID-19 are maintained for those in need," said Dr Tereza Kaseva, Director of WHO's Global TB Programme. "These efforts are vital to strengthen health systems, ensure health for all, and save lives."

A recent progress report from the UN Secretary General outlines 10 priority actions for Member States and other stakeholders to close gaps in TB care, financing and research, as well as advance multisectoral action and accountability, including in the context of the COVID-19 pandemic.

According to the report, the WHO European Region is on track to achieve key 2020 targets of the WHO End TB Strategy, with reductions in incidence and deaths of 19% and 31%, respectively, over the last 5-year period. The African Region has also made impressive gains, with corresponding reductions of 16% and 19% in the same timeframe. On a global scale, however, the pace of progress has lagged, and critical 2020 milestones of the End TB Strategy will be missed.

The WHO End TB Strategy aims for a 90 per cent reduction in TB deaths and an 80 per cent reduction in the TB incidence rate by 2030, compared to the 2015 baseline. Milestones for 2020 include a 20% reduction in the TB incidence rate and a 35% reduction in TB deaths.

on the WEB Global TB Report 2020
https://www.who.int/tb/publications/global_report

Nobel Prize in medicine awarded to 3 researchers for discovery of Hep C

This year's Nobel Prize in Physiology of Medicine has been awarded to three scientists who have made a decisive contribution to the fight against blood-borne hepatitis, a major global health problem that causes cirrhosis and liver cancer in people around the world.

Harvey J. Alter (senior investigator at US NIH Clinical Center's Department of Transfusion Medicine), Michael Houghton (Canada Excellence Research Chair in Virology and the Li Ka Shing Professor of Virology at the University of Alberta where he is also Director of the Li Ka Shing Applied Virology Institute) and Charles M. Rice (Professor at the Rockefeller University, New York) made seminal discoveries that led to the identification of a novel virus, Hepatitis C virus. Prior to their work, the discovery of the Hepatitis A and B viruses had been critical steps forward, but the majority of blood-borne hepatitis cases remained unexplained. The discovery of Hepatitis C virus revealed the cause of the remaining cases of chronic hepatitis and made possible blood tests and new medicines that have saved millions of lives.

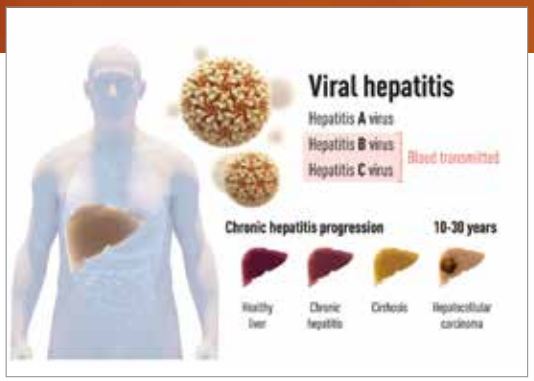

Figure 1: There are two main forms of hepatitis. One form is an acute disease caused by Hepatitis A virus that is transmitted by contaminated water or food. The other form is caused by Hepatitis B virus or Hepatitis C virus (this year's Nobel prize). This form of blood-borne hepatitis is often a chronic disease that may progress to cirrhosis and hepatocellular carcinoma.

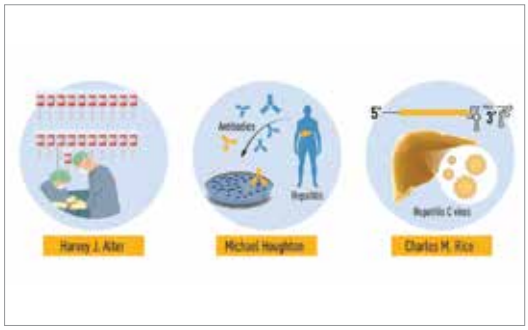

Figure 2: Summary of the discoveries awarded by this year's Nobel prize. The methodical studies of transfusion-associated hepatitis by Harvey J. Alter demonstrated that an unknown virus was a common cause of chronic hepatitis. Michael Houghton used an untested strategy to isolate the genome of the new virus that was named Hepatitis C virus. Charles M. Rice provided the final evidence showing that Hepatitis C virus alone could cause hepatitis.

Illustrations: © The Nobel Committee for Physiology or Medicine. Illustrator: Mattias Karlén

Hepatitis – a global threat to human health

Liver inflammation, or hepatitis, is mainly caused by viral infections, although alcohol abuse, environmental toxins and autoimmune disease are also important causes. In the 1940's, it became clear that there are two main types of infectious hepatitis. The first, named hepatitis A, is transmitted by polluted water or food and generally has little long-term impact on the patient. The second type is transmitted through blood and bodily fluids and represents a much more serious threat since it can lead to a chronic condition, with the development of cirrhosis and liver cancer. This form of hepatitis is insidious, as otherwise healthy individuals can be silently infected for many years before serious complications arise. Blood-borne hepatitis is associated with significant morbidity and mortality, and causes more than a million deaths per year world-wide, thus making it a global health concern on a scale comparable to HIV-infection and tuberculosis.

An unknown infectious agent

The key to successful intervention against infectious diseases is to identify the causative agent. In the 1960's, Baruch Blumberg determined that one form of blood-borne hepatitis was caused by a virus that became known as Hepatitis B virus, and the discovery led to the development of diagnostic tests and an effective vaccine. Blumberg was awarded the Nobel Prize in Physiology or Medicine in 1976 for this discovery.

At that time, Harvey J. Alter at the US National Institutes of Health was studying the occurrence of hepatitis in patients who had received blood transfusions. Although blood tests for the newly-discovered Hepatitis B virus reduced the number of cases of transfusion-related hepatitis, Alter and colleagues worryingly demonstrated that a large number of cases remained. Tests for Hepatitis A virus infection were also developed around this time, and it became clear that Hepatitis A was not the cause of these unexplained cases.

It was a great source of concern that a significant number of those receiving blood transfusions developed chronic hepatitis due to an unknown infectious agent. Alter and his colleagues showed that blood from these hepatitis patients could transmit the disease to chimpanzees, the only susceptible host besides humans. Subsequent studies also demonstrated that the unknown infectious agent had the characteristics of a virus. Alter's methodical investigations had in this way defined a new, distinct form of chronic viral hepatitis. The mysterious illness became known as "non-A, non-B" hepatitis.

Identification of Hepatitis C virus

Identification of the novel virus was now a high priority. All the traditional techniques for virus hunting were put to use but, in spite of this, the virus eluded isolation for over a decade. Michael Houghton, working for the pharmaceutical firm Chiron, undertook the arduous work needed to isolate the genetic sequence of the virus. Houghton and his co-workers created a collection of DNA fragments from nucleic acids found in the blood of an infected chimpanzee. The majority of these fragments came from the genome of the chimpanzee itself, but the researchers predicted that some would be derived from the unknown virus. On the assumption that antibodies against the virus would be present in blood taken from hepatitis patients, the investigators used patient sera to identify cloned viral DNA fragments encoding viral proteins. Following a comprehensive search, one positive clone was found. Further work showed that this clone was derived from a novel RNA

virus belonging to the *Flavivirus* family and it was named Hepatitis C virus. The presence of antibodies in chronic hepatitis patients strongly implicated this virus as the missing agent.

The discovery of Hepatitis C virus was decisive; but one essential piece of the puzzle was missing: could the virus alone cause hepatitis? To answer this question the scientists had to investigate if the cloned virus was able to replicate and cause disease. Charles M. Rice, a researcher at Washington University in St. Louis, along with other groups working with RNA viruses, noted a previously uncharacterized region in the end of the Hepatitis C virus genome that they suspected could be important for virus replication. Rice also observed genetic variations in isolated virus samples and hypothesized that some of them might hinder virus replication. Through genetic engineering, Rice generated an RNA variant of Hepatitis C virus that included the newly defined region of the viral genome and was devoid of the inactivating genetic variations. When this RNA was injected into the liver of chimpanzees, virus was detected in the blood and pathological changes resembling those seen in humans with the chronic disease were observed. This was the final proof that Hepatitis C virus alone could cause the unexplained cases of transfusion-mediated hepatitis.

Landmark achievement

The Nobel Laureates' discovery of Hepatitis C virus is a landmark achievement in the ongoing battle against viral diseases. Thanks to their discovery, highly sensitive blood tests for the virus are now available and these have essentially eliminated post-transfusion hepatitis in many parts of the world, greatly improving global health. Their discovery also allowed the rapid development of antiviral drugs directed at hepatitis C. For the first time in history, the disease can now be cured, raising hopes of eradicating Hepatitis C virus from the world population. To achieve this goal, international efforts facilitating blood testing and making antiviral drugs available across the globe will be required. MEH

More than 100 countries fail to make regulatory progress on eliminating trans fat

Two years into the WHO's ambitious effort to eliminate industrially produced trans fats from the global food supply, the Organization reports that 58 countries so far have introduced laws that will protect 3.2 billion people from the harmful substance by the end of 2021. But more than 100 countries still need to take actions to remove these harmful substances from their food supplies.

Consumption of industrially produced trans fats are estimated to cause around 500,000 deaths per year due to coronary heart disease.

"In a time when the whole world is fighting the COVID-19 pandemic, we must make every effort to protect people's health. That must include taking all steps possible to prevent noncommunicable diseases that can make them more susceptible to the coronavirus, and cause premature death," said WHO Director-General Dr Tedros Adhanom Ghebreyesus. "Our goal of eliminating trans fats by 2023 must not be delayed."

Fifteen countries account for approximately two thirds of the worldwide deaths linked to trans fat intake. Of these, four (Canada, Latvia, Slovenia, United States of America) have implemented WHO-recommended best-practice policies since 2017, either by setting mandatory limits for industrially produced trans fats to 2% of oils and fats in all foods or banning partially hydrogenated oils (PHO).

But the remaining 11 countries (Azerbaijan, Bangladesh, Bhutan, Ecuador, Egypt, India, Iran, Mexico, Nepal, Pakistan, Republic of Korea) still need to take urgent action.

The report highlights two encouraging trends. First, when countries do act, they overwhelmingly adopt best-practice policies rather than less restrictive ones. New policy measures passed and/or introduced in the past year in Brazil, Turkey and Nigeria all meet WHO's criteria for best-practice policies. Countries, such as India, that have previously implemented less restrictive measures, are now updating policies to align with best practice.

Second, regional regulations that set standards for multiple countries are becoming increasingly popular, emerging as a promising strategy for accelerating progress towards global elimination by 2023. In 2019, the European Union passed a best-practice policy, and all 35 countries that are part of the WHO American Region/Pan American Health Organization unanimously approved a regional plan of action to eliminate industrially produced trans fats by 2025. Together, these two regional initiatives have the potential to protect an additional 1 billion people in more than 50 countries who were not previously protected by trans fat regulations.

"With the global economic downturn, more than ever, countries are looking for best buys in public health," said Dr Tom Frieden, President and CEO of Resolve to Save Lives. "Making food trans fat-free, saves lives and saves money, and, by preventing heart attacks, reduces the burden on healthcare facilities."

Despite the encouraging progress, important disparities persist in policy coverage by region and country income level. Most policy actions to date, including those passed in 2019 and 2020, have been in higher-income countries and in the WHO Regions of the Americas and Europe. Best-practice policies have been adopted by seven upper-middle-income countries and 33 high-income countries; no low-income or lower-middle-income countries have yet done so.

Industrially produced trans fats are contained in hardened vegetable fats, such as margarine and ghee, and are often present in snack food, baked foods, and fried foods. Manufacturers often use them as they have a longer shelf life and are cheaper than other fats. But healthier alternatives can be used that do not affect taste or cost of food.

WHO recommends that trans fat intake be limited to less than 1% of total energy intake, which translates to less than 2.2 g/day with a 2,000-calorie diet.

on the WEB WHO report on global trans fat elimination 2020
https://apps.who.int/iris/bitstream/handle/10665/334170/9789240010178-eng.pdf

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Medical research news from around the world

The cast half-shells for resurfacing prostheses are structured on one side to improve bone cell adherence. The other side is completely smooth.

Fraunhofer develops ceramic resurfacing prosthesis for hip joint

The hip resurfacing prosthesis currently used in surgeries is made from an alloy consisting of cobalt, chromium and molybdenum. But this metal is not tolerated well by all patients, some of whom develop allergic reactions or infections. In some cases, the prosthesis may even need to be removed. Through the Ceramic Bonepreserver project, Fraunhofer Institute for Ceramic Technologies and Systems IKTS has developed a new ceramic resurfacing prosthesis consisting of femoral cap and monobloc acetabulum, which have a higher biocompatibility – and yet are just as stable and strong as their metal counterparts.

An alloy consisting of cobalt, chromium and molybdenum is one of the most common materials used. However, metal abrasion often leads to issues such as the dreaded condition metallosis, with the patient ultimately suffering from irritation, allergic reactions, infections or even pseudotumours. Metal ions can also be detected in blood and tissue. If worse comes to worst, the patient may have to undergo another operation and have the prosthesis removed.

An innovative resurfacing prosthesis based on ceramic is much more biocompatible, as ceramic does not cause any allergic reactions or infections. The prosthesis was developed by the Fraunhofer IKTS as part of the Ceramic Bonepreserver joint project, a collaboration with medical devices manufacturer Mathys Orthopädie.

In addition to high biocompatibility, the metal-free resurfacing prosthesis also offers further benefits. "The ceramic resurfacing prosthesis enables bone -preserving endoprosthetic reconstruction of the hip joint," explained Project Manager Martina Johannes of Fraunhofer IKTS at the Hermsdorf location.

This innovative resurfacing prosthesis is a combination of femoral cap and monobloc acetabulum. During the surgery, the femoral cap is implanted into the femur, and its counterpart, the acetabulum, anchored in the hip bone. The surfaces that will ultimately be enclosed by bone are structured to improve bone cell adherence. In contrast, the contact area of the artificial joint between the acetabulum and ball element of the femoral cap is completely smooth to enable effortless and seamless movement of the leg.

Fraunhofer IKTS has many years of experience in the production and processing of ceramic materials, including the forming process used in medical engineering, where requirements in terms of precision and reliability are especially high. Martina Johannes's team has further optimized the process steps for the Ceramic Bonepreserver project. In the first step, the procured ceramic materials – aluminium oxide and zirconium dioxide – are finely dispersed. Using this as a basis, the researchers create an ultrapure suspension. "The particles need to be evenly distributed in the suspension to ensure the quality of the final product, which needs to be entirely free of any pores, impurities or other defects. Medical implants must be free of any flaws," said Johannes.

The acetabulum is then formed using the slip casting process, a method that is common in traditional porcelain production and was further developed at Fraunhofer IKTS. The products achieve their final properties during the sintering process, which is the last step. "With sintered alumina-toughened zirconia (ATZ) dispersion ceramic, we achieve a structure featuring a grain size between 310 and 320 nanometers," says Johannes. By comparison, the very fine coffee grounds used for espresso have a grain size of 250 micrometres, which is around 1000 times larger.

Fraunhofer researchers have conducted a range of tests to determine just how robust and stable the material is. "Bending, pressure and load tests have revealed that the ceramic pros theses are at least as stable and robust as a product made from metal. The result is resurfacing prostheses that demonstrate longer usability and are well tolerated by people," said Johannes. MEH

'Junk' DNA could be rewiring our brains

A new study by neuroscientists at the University of Oxford shows that mobile genetic elements that were active in the genomes of our ancestors could be closely linked to important functions in our brain and might help diversify our behaviour, cognition and emotions.

The human genome contains the instructions to build and maintain all cells in our body. We inherit this "cell manual" from our parents and pass it on to our children. Errors in this manual can change cell properties and trigger diseases, including cancer. More than half of our genome is made up of 'junk' DNA, a large part of which is comprised of potentially mobile pieces called transposons, or "jumping genes", which are believed to have evolved from ancient viruses.

Transposons can be viewed as "loose pages" within our cell manual because they can change their position, and their distribution differs within each person's genome. Transposons inserted in genes can disrupt their function and impair important cell processes. However, more recently it has been proposed that transposons might also play more beneficial roles in our body, such as in the communication between different cells in our brains.

Researchers in the Centre for Neural Circuits and Behaviour in Oxford have now used state-of-the-art single-cell sequencing on the brains of fruit flies, a well-established model organism in neuroscience, to investigate transposon activity in the brain at an unprecedented level of detail. This new analysis revealed that transposons were not uniformly active throughout the entire brain of flies, but rather showed highly distinct patterns of expression. Moreover, these patterns were tightly linked to genes located near transposons. This indicates that transposons might play an important altruistic role in our body.

To further investigate, lead author Dr Christoph Treiber created new software tools for an in-depth analysis of transposon expression. Together with Prof Scott Waddell, Treiber found that segments of transposons were frequently parts of messenger RNAs from neural genes, which suggests these "jumping genes" may frequently alter neural function. Transposons changed genes which have known roles in a wide range of properties and functions of brain cells, including the sleep-wake cycle and the formation of memories. Crucially, individual transposons created many additional versions of these genes that differed between animals.

Dr Treiber said: "We know that animal genomes are selfish and changes that are not beneficial often don't prevail. Since transposons are parts of hundreds of genes in every fly strain that we looked at, we think these physical links likely represent an advantage for the fly.

"We now want to understand the impact of these new alleles on the behaviour of individual animals. Transposons might broaden the range of neuronal function in a fly population, which in turn could enable a few individuals to react more creatively in challenging situations. Also, our preliminary analyses show that transposons might play a similar role in our brain. Since every person has a unique transposon "fingerprint", our findings could be relevant to the need to personalise pharmacological treatments for patients with neurological conditions."

- *https://doi.org/10.1101/gr.259200.119.*

Neo-adjuvant immunotherapy combination effective for non-metastatic bladder cancer

Researchers at the Netherlands Cancer Institute have published the results of the NABUCCO study in scientific journal *Nature Medicine*. In this publication, they show that neoadjuvant immunotherapy using a combination of two drugs (nivolumab and ipilimumab) is a feasible treatment for bladder cancer without harming the scheduled resection, and shows promising results.

With this publication, bladder cancer is officially the third cancer type – following melanoma and colorectal cancer – for which researchers at the Netherlands Cancer Institute have proven the immense added value of this combination of immunotherapy drugs before surgery for patients with non-metastatic cancer. Studies involving other cancer types are currently still running.

This publication is an important milestone in our knowledge of the treatment for bladder cancer (urothelial carcinoma). Patients with this type of cancer often face a return of their illness after surgery. Treatment with immunotherapy before surgery aims to lower the risk of recurrence as much as possible. Immunotherapy does not target the tumour itself, but strengthens the body's own immune system to fight the disease.

Medical oncologist Michiel van der Heijden, research leader, said: "Patients with bladder cancer at this stage have a high risk of relapse but not many good treatment options, especially when the cancer has spread to the lymph nodes. The results of this study can hopefully benefit these patients' prospects."

Twenty-four patients with locally advanced (stage III) operable bladder cancer participated in the NABUCCO trial. Their cancer had not yet spread through the bloodstream. With this trials, the researchers tried to answer two questions. The main one: are all patients able to receive their surgery on time after immunotherapy treatment? Or, in other words: are we wasting valuable time by giving immunotherapy before surgery? The researchers also wanted to know whether this combination of neoadjuvant immunotherapy proves effective for this particular patient group.

The results were promising. Out of the 24 participants, 23 managed to receive their surgery within the planned 12 weeks – even patients with larger tumours. One patient had their surgery postponed for four weeks due to the treatment's side effects. The main research question could be answered with a "yes".

The study also showed that neoadjuvant immunotherapy is effective in treating locally invasive bladder cancer: the majority of tumours shrank significantly. Eleven out of 24 patients (46%) even showed an absence of tumour cells in tissue taken after surgery for analysis by a pathologist: a pathological complete response.

Two out of 24 patients unfortunately relapsed within the year. This percentage is lower than what can be expected at this stage of the illness. One participant has since passed away from their metastatic cancer.

The next important question: why do some patients have a better response to immunotherapy than others? Which biomarkers are involved that can help us predict a good response to the therapy? One of the benefits of neoadjuvant immunotherapy is that it allows for the opportunity to analyse these markers at a molecular level at the start of the treatment (in a tissue biopsy) and after surgery (in the resection margins removed during surgery).

The researchers looked into various known biomarkers that have proven to predict immunotherapy resistance for other cancer types, or (very) early stage bladder cancer. This led to the discovery that T cell density in the tumour, that can be a biomarker predicting the success of monotherapy with check point blockers in patients with (very) early stage bladder cancer, do not affect the combination therapy they researched.

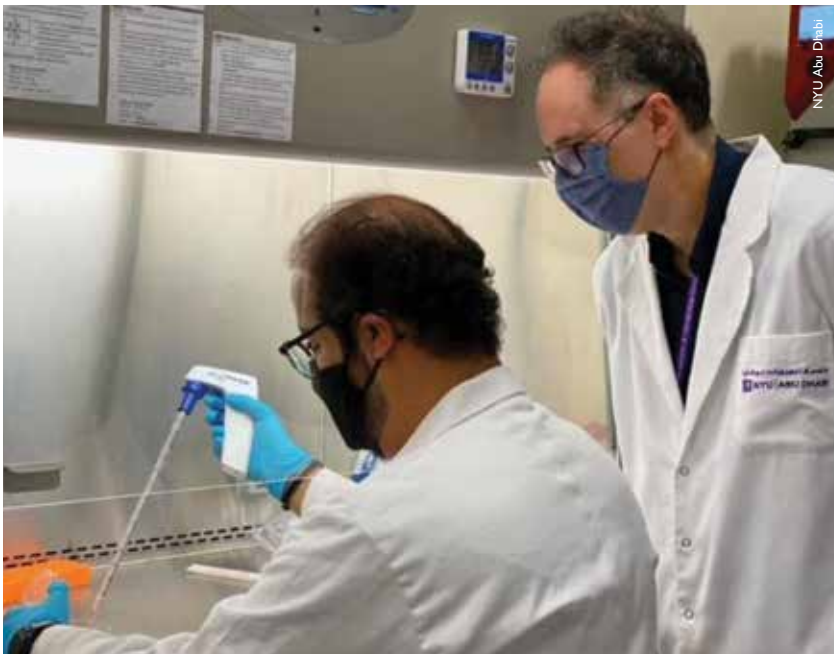
The NABUCCO trial will continue: a follow-up study will try to find the best balance between efficacy and safety by trying to establish the right ratio of drugs that are used in this type of combination therapy: ipilimumab and nivolumab.

Several large-scale trials will need to follow before the results can be validated. Neoadjuvant immunotherapy will only be available as treatment as part of a trial for bladder cancer as well as other types of cancer.

• *https://doi.org/10.1038/s41591-020-1085-z* MEH

NYU Abu Dhabi study finds key protein related to the disease-causing malformation of fat tissue

The impairment of adipogenesis, the process in which fat cells (also known as adipocytes) accumulate to become fat tissue, can lead to many diseases such as diabetes, obesity, and heart conditions. The process of adipogenesis is regulated by a series of signals which program the adipocytes to express specific genes and congregate into adipose tissue.



Mohamed Al-Sayegh, Research Assistant Professor, and Piergiorgio Percipalle, Associate Professor of Biology at NYU Abu Dhabi.

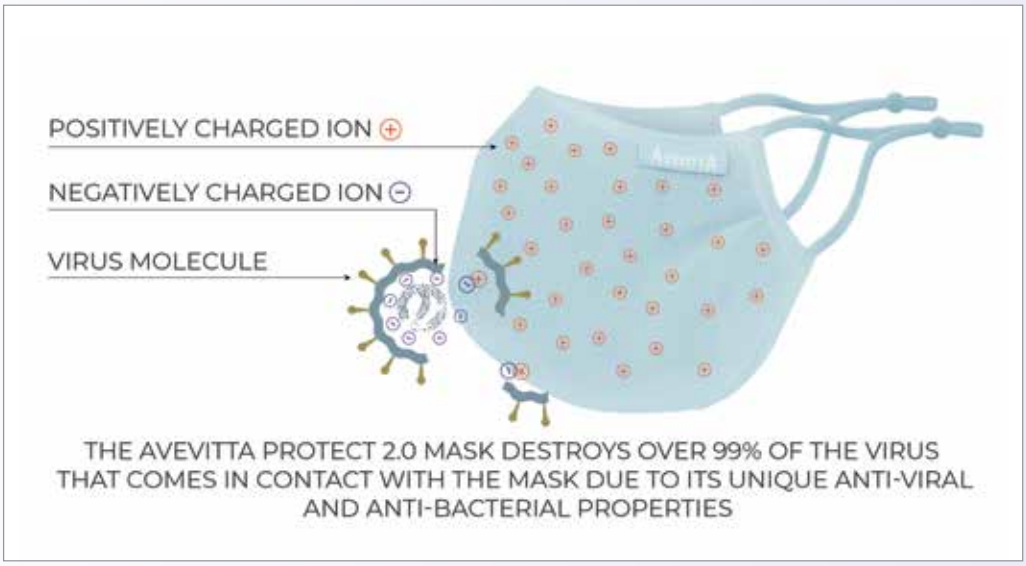
A team of researchers from NYU Abu Dhabi (NYUAD), led by Associate Professor of Biology Piergiorgio Percipalle in collaboration with Research Assistant Professor Mohamed Al-Sayegh, recently studied the molecular basis of adipogenesis and discovered that the protein actin (a specific variant referred to as B-actin) has an important role in activating the genes which need to be expressed in order to create fat tissue. This further understanding of the adipogenesis process can be applied to future research on diseases caused by malfunctioning fat tissue formation.

In the paper titled B-actin contributes to an open chromatin for activation of the adipogenic pioneer factor CEBPA during transcriptional reprogramming, published in the journal *Molecular Biology of the Cell*, Percipalle and his team investigates adipogenesis in embryonic mouse tissue to determine how critical the role of B-actin is in the process. It was found that in the fat cells lacking B-actin, the series of genetic signals was impaired, which affected the expression of the genes needed to form fat tissue.

As many diseases are caused by the accumulation of adipose tissue in certain areas, understanding the molecular process of adipose tissue formation is vital. The details of the connection between impaired adipogenesis and metabolic diseases such as diabetes, obesity, and cardiovascular diseases are currently unknown. This study's findings about the importance of the B-actin protein provide guidance into further tissue-based disease research.

"To understand how to treat diseases, we must have a deeper understanding of the causes of the diseases," said Percipalle. "This research has shown that the signalling pathway within adipose cells is an intricate system in which B-actin plays an important role. With this new knowledge, we can pursue a closer look into the molecular mechanisms of adipogenesis and find new insights into how to treat related diseases."

• *https://doi.org/10.1091/mbc.E19-11-0628* MEH



Discover a unique mask developed in Switzerland, proven to kill viruses

Avevitta Protect 2.0 Mask by SANKOM Switzerland, a best-selling protective mask with 99% filtration efficiency, over 99% anti-viral, over 99% anti-bacterial. A Swiss Class I Medical Device with CE and FDA registration.

The Avevitta Protect 2.0 Mask was developed in Switzerland by a team of medical doctors using an ultra-light, anti-viral and anti-bacterial , water resistant and breathable fabric together with a nanotechnology PTFE filtration system with over 99% filtration (BFE). This mask has an adjustable nose clip and ear loops, and comes in 5 colors.

	AVEVITTA PROTECT 2.0	N95 MASK	MEDICAL GRADE DISPOSABLE MASK	CLOTH MASK
PROTECTION LEVEL	VERY HIGH	HIGH	MEDIUM LOW	LOW
ANTI-VIRAL	✓	✗	✗	✗
ANTI-BACTERIAL	✓	✗	✗	✗
FILTER LEVEL	>99%	>95%	>95%	NO FILTER
WASHABLE & REUSABLE	✓	✗	✗	✓
TIME OF USE	UP TO 20 WEEKS	ONE TIME USE	ONE TIME USE	DEPENDS ON MODEL
ECO-FRIENDLY	✓	✗	✗	✓
ADJUSTABLE FIT	✓	✓	✗	✗

Why is the Avevitta Protect 2.0 mask anti-viral?

All viruses are composed of genetic material contained within a protective protein coat. But without this protective layer, the virus cannot survive or multiply. The outer and inner layer of the Avevitta Protect 2.0 mask is anti-viral, destroying over 99% percent of the virus it comes in contact with, by attacking and denaturing the protective protein coat of the virus. Once the coat is destroyed, the virus's genetic material quickly disintegrates.

Compared to other masks ...

The Avevitta Protect 2.0 Mask protects not only the wearer, but also those around them. With its anti-viral properties, it prevents the surface being contaminated by the virus, but also neutralises viruses a person may breathe out. It can be reused for up to 20 weeks, unlike N95 or surgical masks that have to be disposed after one use due to possible contamination, making it a more eco-friendly and more protective solution. It also does not need to be washed after every single use unlike a regular cloth mask, and offers a much higher degree of filtration.

The Avevitta Protect 2.0 Masks offers the best of all current masks available on the market: Unique virus killing properties, maximum protection, highest filtration and breathability, all while being a durable and eco-friendly solution.

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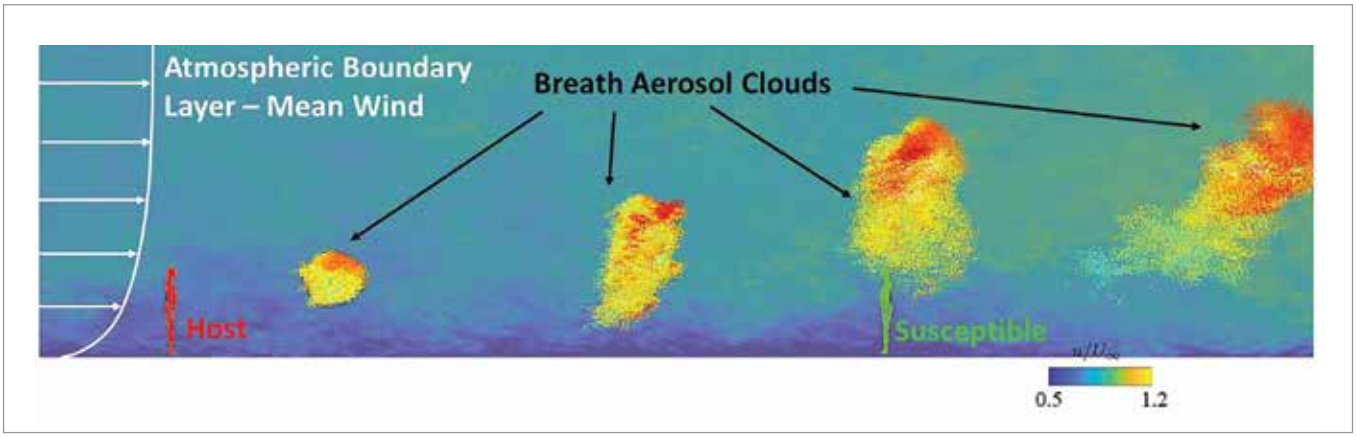

Researchers estimate risk of airborne COVID-19 with mask usage, social distancing

The continued increase in COVID-19 infection around the world has led scientists from many different fields, including biomedicine, epidemiology, virology, fluid dynamics, aerosol physics, and public policy, to study the dynamics of airborne transmission.

Writing in *Physics of Fluids*, researchers from Johns Hopkins University and the University of Mississippi used a model to understand airborne transmission that is designed to be accessible to a wide range of people.

Employing basic concepts of fluid dynamics and the known factors in airborne transmission of diseases, the researchers propose the Contagion Airborne Transmission (CAT) inequality model. While not all factors in the CAT inequality model may be known, it can still be used to assess relative risks, since situational risk is proportional to exposure time.

The researchers write: "Given this complexity of phenomenology and the many factors involved, it is not surprising that even after more than eight months of the world dealing with the COVID-19 pandemic, there are fundamental questions that continue to confound scientists, policy makers, and the members of the public at large. These include the following questions: What factors have enabled the SARS-CoV-2 to spread so much faster and more extensively than other similar viruses in the recent past? Why is the rate of infection so different in different regions/ countries of the world? How much lower is the likelihood of transmission in an outdoor environment compared to an indoor environment? How do policies and societal behaviour such as compliance with mask wearing affect the rate of transmission? Finally, how does the transmission risk reduce with distance between the host and the susceptible?

Using the model, the researchers determined protection from transmission increases with physical distancing in an approximately linear proportion.

"If you double your distance, you generally double your protection," said author Rajat Mittal. "This kind of scaling or rule can help inform policy."

The scientists also found even simple cloth masks provide significant protection and could reduce the spread of COVID-19.

"We also show that any physical activity that increases the breathing rate and volume of people will increase the risk of transmission," said Mittal. "These findings have important implications for the reopening of schools, gyms, or malls."

The CAT inequality model is inspired by the Drake equation in astrobiology and develops a similar factorization based on the idea that airborne transmission occurs if a susceptible person inhales a viral dose that exceeds the minimum infectious dose.

The model includes variables that can be added at each of the three stages of airborne transmission: the generation, expulsion, and aerosolization of the virus-containing droplets from the mouth and nose of an infected host; the dispersion and transport via ambient air currents; and the inhalation of droplets or aerosols and the deposition of the virus in the respiratory mucosa in a susceptible person.

The researchers hope to look more closely at face mask efficacy and the transmission details in high-density outdoor spaces. Beyond COVID-19, this model based on the CAT inequality could apply to the airborne transmission of other respiratory infections, such as flu, tuberculosis, and measles.

- doi: *https://aip.scitation.org/doi/10.1063/5.0025476*

Global tracker of COVID-19 vaccine development

Professor Nicole Basta of Canada's McGill University and her team have created an interactive online COVID-19 vaccine tracker for more than 50 vaccines currently in development. The tracker provides real-time updates on development progress.

"Our goal with the vaccine tracker is to help the public find and access reliable information about COVID-19 vaccines, improve understanding about the vaccine testing process, and manage expectations about when a vaccine may be available," says Prof. Basta, an associate professor in the Department of Epidemiology, Biostatistics and Occupational Health.

The vaccine tracker features weekly, real-time updates to monitor progress on each of the more than 50 vaccines currently in human trials; behind the scenes, the team is developing and updating a comprehensive database detailing the characteristics of the vaccines in development around the world.

Each vaccine candidate has its own card, with an infographic showing whether the vaccine is in phase 1, 2 or 3 of clinical trials or approved, and information about the developers, countries involved, and vaccine type, such as RNA-based, protein subunit, or inactivated virus.

A colour-coded map also updates the number of vaccine candidates, registered vaccine trials, and highest trial stage for each country.

Greater transparency about the strengths and limitations of vaccine candidates are vital to building rather than undermining public trust in vaccines, says Prof. Basta.

on the WEB COVID-19 Vaccine Tracker
https://covid19.trackvaccines.org/

Study estimates exposure to air pollution increases COVID-19 deaths by 15% worldwide

Long-term exposure to air pollution has been linked to an increased risk of dying from COVID-19 and, for the first time, a study has estimated the proportion of deaths from the coronavirus that could be attributed to the exacerbating effects of air pollution for every country in the world.

The study, published in *Cardiovascular Research*, estimated that about 15% of deaths worldwide from COVID-19 could be attributed to long-term exposure to air pollution. In Europe the proportion was about 19%, in North America it was 17%, and in East Asia about 27%.

In their paper, the researchers write that these proportions are an estimate of "the fraction of COVID-19 deaths that could be avoided if the population were exposed to lower counterfactual air pollution levels without fossil fuel-related and other anthropogenic emissions".

They add that this "attributable fraction does not imply a direct cause-effect relationship between air pollution and COVID-19 mortality (although it is possible). Instead it refers to relationships between two, direct and indirect, i.e. by aggravating co-morbidities that could lead to fatal health outcomes of the virus infection".

The researchers used epidemiological data from previous US and Chinese studies of air pollution and COVID-19 and the SARS outbreak in 2003, supported by additional data from Italy. They combined this with satellite data showing global exposure to polluting fine particles known as 'particulate matter' that are less than or equal to 2.5 microns (PM2.5) in diameter information on atmospheric conditions and ground-based pollution monitoring networks, to create a model to calculate the fraction of coronavirus deaths that could be attributable to long-term exposure to PM2.5. The results are based on epidemiological data collected up to the third week in June 2020 and the researchers say a comprehensive evaluation will need to follow after the pandemic has subsided.

Estimates for individual countries show, for example, that air pollution contributed to 29% of coronavirus deaths in the Czech Republic, 27% in China, 26% in Germany, 22% in Switzerland, 21% in Belgium, 19% in The Netherlands, 18% in France, 16% in Sweden, 15% in Italy, 14% in the UK, 12% in Brazil, 11% in Portugal, 8% in the Republic of Ireland, 6% in Israel, 3% in Australia and just 1% in New Zealand.

Prof. Jos Lelieveld said: "Since the numbers of deaths from COVID-19 are increasing all the time, it's not possible to give exact or final numbers of COVID-19 deaths per country that can be attributed to air pollution. However, as an example, in the UK there have been over 44,000 coronavirus deaths and we estimate that the fraction attributable to air pollution is 14%, meaning that more than 6,100 deaths could be attributed to air pollution. In the USA, more than 220,000 COVID deaths with a fraction of 18% yields about 40,000 deaths attributable to air pollution."

Prof. Münzel said: "When people inhale polluted air, the very small polluting particles, the PM2.5, migrate from the lungs to the blood and blood vessels, causing inflammation and severe oxidative stress, which is an imbalance between free radicals and oxidants in the body that normally repair damage to cells. This causes damage to the inner lining of arteries, the endothelium, and leads to the narrowing and stiffening of the arteries. The COVID-19 virus also enters the body via the lungs, causing similar damage to blood vessels, and it is now considered to be an endothelial disease.

"If both long-term exposure to air pollution and infection with the COVID-19 virus come together then we have an additive adverse effect on health, particularly with respect to the heart and blood vessels,

which leads to greater vulnerability and less resilience to COVID-19. If you already have heart disease, then air pollution and coronavirus infection will cause trouble that can lead to heart attacks, heart failure and stroke."

Referring to previous work that suggests that the fine particulates in air pollution may prolong the atmospheric lifetime of infectious viruses and help them to infect more people, Prof. Lelieveld said: "It's likely that particulate matter plays a role in 'super-spreading events' by favouring transmission."

Prof. Münzel added: "Particulate matter seems to increase the activity of a receptor on cell surfaces, called ACE-2, that is known to be involved in the way COVID-19 infects cells. So we have a 'double hit': air pollution damages the lungs and increases the activity of ACE-2, which in turn leads to enhanced uptake of the virus by the lungs and probably by the blood vessels and the heart."

In their paper, the authors conclude: "Our results suggest the potential for substantial benefits from reducing air pollution exposure, even at relatively low PM2.5 levels. . . A lesson from our environmental perspective of the COVID-19 pandemic is that the quest for effective policies to reduce anthropogenic emissions, which cause both air pollution and climate change, needs to be accelerated. The pandemic ends with the vaccination of the population or with herd immunity through extensive infection of the population. However, there are no vaccines against poor air quality and climate change. The remedy is to mitigate emissions. The transition to a green economy with clean, renewable energy sources will further both environmental and public health locally through improved air quality and globally by limiting climate change."

The study is also the first of its kind to distinguish between fossil fuel-related and other human-made sources of air pollution.

• doi: https://doi.org/10.1093/cvr/cvaa288

Multi-organ impact of COVID-19 revealed in new study

Initial findings from a study looking at the longer-term impact of COVID-19 has found that a large proportion COVID-19 patients discharged from hospital were still experiencing symptoms of breathlessness, fatigue, anxiety and depression two to three months after contracting the virus.

The University of Oxford scientists carrying out the C-MORE study have also detected abnormalities on MRI in multiple organs and believe that persistent or chronic inflammation may be an underlying factor for these changes among COVID-19 survivors.

The study, whose initial findings were published online as a pre-print on MedRxiv, is being led by researchers from the university's Radcliffe Department of Medicine and is supported by the NIHR Oxford Biomedical Research Centre (BRC) and the NIHR Oxford Health BRC, as well as the BHF Oxford Centre for Research Excellence and Wellcome Trust. The C-MORE study is also part of the national PHOSP-COVID platform, led by the University of Leicester, which is investigating the long-term effects of COVID-19 on hospitalised patients.

The study took 58 patients with moderate to severe laboratory-confirmed COVID-19, who had been admitted for treatment at the Oxford University Hospitals (OUH) NHS Foundation Trust between March and May 2020. They also recruited 30 uninfected controls from the community, group-matched for age, sex, body mass index and risk factors such as smoking, diabetes and hypertension.

The participants underwent magnetic resonance imaging (MRI) of their brain, lungs, heart, liver and kidneys; spirometry to test their lung function; a six-minute walk test; cardiopulmonary exercise test (CPET), as well as assessments of their quality of life, cognitive and mental health.

The C-MORE study found that two to three months after the onset of the disease, 64% of patients experienced persistent breathlessness and 55% complained of significant fatigue.

On MRI, tissue signal abnormalities were seen in the lungs of 60% of the COVID-19 patients, in the kidneys of 29%, in the hearts of 26%, and the livers of 10%. Organ abnormalities were seen even in patients who had not been critically ill when admitted.

MRI also detected tissue changes in parts of the brain, and patients demonstrated impaired cognitive performance. Their ability to sustain exercise was also significantly reduced, although this was due to a combination of fatigue and lung abnormalities.

The study also found that patients were more likely to report symptoms of anxiety and depression, and a significant impairment in their quality of life compared to the controls.

Dr Betty Raman, who is leading the C-MORE study along with Professor Stefan Neubauer, said: "Our study assessed patients recovering from COVID-19 following hospitalisation, two to three months from disease onset. Whilst we have found abnormalities in multiple organs, it is difficult to know how much of this was pre-existing and how much has been caused by COVID-19.

"However, it is interesting to see that the abnormalities detected on MRI and exercise capacity in patients strongly correlated with serum markers of inflammation. This suggests a potential link between chronic inflammation and ongoing organ damage among survivors."

Dr Raman, a Clinical Research Fellow at the Radcliffe Department of Medicine, added: "These findings underscore the need to further explore the physiological processes associated with COVID-19 and to develop a holistic, integrated model of clinical care for our patients after they have been discharged from hospital.

• doi: https://doi.org/10.1101/2020.10.15.20205054

Maintaining safe IV infusion therapy during the COVID-19 pandemic

Smart pumps with Dose Error Reduction Systems (DERS) reduce the risk of medication error, but the requirement for strict isolation of large numbers of patients during the COVID-19 pandemic has made maintaining the *Rights* of IV medication administration increasingly difficult.

Right Maintenance of continuous critical short half-life infusions (CSHLI), such as Noradrenaline or Glyceryl Trinitrate is also vital as any prolonged interruption of CSHLI delivery could be fatal, and nursing staff must respond promptly to any infusion alarm if serious cardiovascular events are to be avoided. Centralised monitoring of infusions can significantly reduce nurse reaction times to CSHLI alarms.

To reduce nursing time inside SARS-CoV-2 patient rooms we can use long extension lines that allow the patient's pumps to remain outside of the isolation room. Running the IV line under the door and across the room's floor, with taping to prevent tripping or dislodgment, is not ideal but provides protection of the line. However, the technique may cause issues of pressure gradient changes affecting occlusion alarms, and accumulation of air in the line due to the low level of the line in relation to the pump and the patient.

Long lines increase siphonage in the case of large bore lines and increase downstream pressure when microbore lines are used. It is important to maintain the recommended height of the infusion bag above a large volume pump (this is usually 50 centimetres) and any unnecessary resistance in the downstream line should be reduced by limiting the number of extension-set additions whilst achieving a safe working distance, and infusing through as large an IV catheter as possible. Priming of long extension lines can be undertaken by gravity, but it is often easier to control the prime by using the pump. Downstream occlusion pressure limits may need to be increased to avoid nuisance alarms, particularly at higher rates with narrow tubing. This can be done by bedside-users, but with wireless-connected smart pumps changes to default pressure alarms configurations can be made centrally and distributed rapidly via the network to all pumps.

Studies on the cleaning of long-lines and their materials suggest that wiping a PVC extension set 2-3 times daily with 70% isopropyl alcohol solution has minimal impact on the line's function and performance (i.e. there will be no weakening leading to excess kinking or excessive compliance in the line). It is therefore expected that PVC IV extension sets would still deliver their critical function with minimal risk to clinician or patient.

For intermittent infusions nurses should consider priming long extension-sets with the medication rather than with normal-saline or dextrose, to facilitate prompt delivery. Post-medication flushes should be given at the same rate as the medication, the pump's 'restore' function can help achieve this.

Appropriate cleaning and decontamination of pumps between patients, and on a regular basis, is a both vital component of pandemic planning, as well as being central to any 'standard' infection control plan. Selection of infusion pumps is a factor here. There should be no difficult to access areas that can harbour contaminant and that cannot be exposed to disinfectant material. This includes plunger grips on syringe pumps and line or cartridge loading spaces on large volume pumps. Furthermore, the pump's body must be not be degraded by cleaning products that can fight SARS-CoV-2. New polymers released in the last few years by some pump manufacturers have considerably broadened the cleaning products that can be used without fear of damage to the device.

Becton Dickinson

Article supplied by Clinical Resource Consultants, Medication Management Solutions, Eastern Europe, Middle East & Africa. Becton Dickinson.

Huawei and Advanced Global Solution jointly combat global COVID-19 pandemic with AI

2020 will be remembered as the year the novel coronavirus (COVID-19) swept across the world and impacted our public health systems, as well as our daily lives and work. The virus has infected a huge population in a short span of time, which imposes huge pressure on the medical systems of many regions. As a result, the medical industry is looking for ways to improve and expedite diagnosis and treatment. It is inevitable that the use of AI-empowered medical technology can help contain the virus and save more lives.

Medical diagnosis and evaluation using CT images are important to preventing and controlling the spread of COVID-19. When the pandemic peaks, the number of patients requiring hospitalisation every day usually surpasses the maximum treatment capacity of the hospital. This means that not only are most departments overwhelmed, but hindered by traditional CT technology, which is not capable of keeping up with the demand for fast diagnosis. Specifically, the system processes image browsing, compares historical images, and describes impact before generating an analysis report for radiologists. In normal settings, conventional diagnosistic technology takes 15-20 minutes and delivers an accuracy rate up to 90%. However, due to the limited medical resources and heavy workload of doctors, this figure may decline in practice. Consequently, this impacts the future treatment of suspected cases, false negatives, and confirmed cases.

Huawei and partners

At this critical juncture, Huawei is working with medical partners to find a way forward. In March 2020, Huawei and Advanced Global Solution (AGS), an Italian-based enterprise, jointly launched an AI-based medical image diagnosis system to supercharge the diagnosis and treatment for COVID-19. This diagnostic solution runs on an AI foundation and the computing power of the Atlas 800 server and Atlas 300 inference card needed for a wide range of intelligent functions, such as intelligent CT image reading, automatic pneumonia classification, multi-colour rendering of lesions, and intuitive comparison of baseline histograms. Combined with the AI image diagnostic system and the expertise of doctors, the solution quickly identifies the symptoms of patients with COVID-19 within 2 to 3 minutes, and evaluates the treatment effect with an accuracy rate over 98%. Fast and accurate diagnosis is crucial to the treatment of patients during pandemics like COVID-19. With the Atlas-based intelligent solution, doctors can determine the treatment scheme as soon as possible and allocate medical resources based on the severity of the disease, providing effective and timely treatment for patients in critical condition.

Atlas 800 AI server

The open Atlas 800 AI server is an easy-to-use device that offers high performance and adaptive configuration in a secure and trusted manner. It runs on the Kunpeng- and Intel-based AI inference platforms, and can be easily deployed within half a day, allowing hospitals to immediately provide AI-based diagnosis and treatment amid the medical emergency. The diagnostic speed is so impressive that this solution has been widely adopted in many hospitals across the world, such as Italy, Poland, France, and Mexico, to deal with the growing number of patients.

Omar Akar, Regional Vice President & MD, Cloud & AI BG, Huawei ME

Huawei focuses on open hardware, open source software, and partner enablement. Huawei provides the AI development tool and platform to support local ISVs to implement the AI solution. At the HUAWEI CONNECT 2020 held in Shanghai in September, Huawei released the Full-Stack Ascend AI solution, including the Atlas series hardware, CANN AI algorithm architecture, MindSpore AI model framework, MindStudio full-pipeline development toolchain and MindX application development tool for all-scenario AI computing, which helps the local developer/ISV to develop the applications.

The Middle East is an innovative region offering great potential for the use of AI technology, especially in the healthcare field. The battle against COVID-19 is still on-going, and everyone will benefit from the combination of AI technology and cloud computing. The resulting services will not only empower the health foundation of everyone's life, but create safer, more sustainable communities for the future. MEH

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Making healthy lifestyle choices essential to manage weightloss

People who are overweight or obese have an increased risk of developing Type 2 diabetes, which can lead major health problems if left untreated. Obesity and diabetes are common lifestyle diseases, which means that they are generally brought on by an unhealthy lifestyle – that is unhealthy diet and lack of exercise.

At Gargash Hospital, doctors meet patients daily who are looking for treatment for obesity and diabetes, as prevalence of obesity is high in the UAE.

Dr Aws Khidir Jassim, a consultant general surgeon at Gargash Hospital, who has more than 11 years' experience in advanced laparoscopic and bariatric surgery explained that obesity is diagnosed when the Body Mass Index (BMI) is more than 30 kg/m2, the higher the BMI the greater the risk of developing several related health problems, such as Type 2 diabetes..

Dr Aws advises patients to make healthy lifestyle choices to lower the risk of developing diabetes. He suggests the following:

- Eat a healthy balanced diet
- Control food portion sizes
- Read and understand food labels
- Do regular exercise
- Have regular medical check-ups

"For patients who come to our hospital seeking to lose weight, we first put them on a diet protocol and/or weight loss medication. If the patient fails to lose weight or their weight increases after stopping their medication, then bariatric surgery is an option," Dr Aws said.

In cases where surgery is required, Gargash Hospital offers a number of options:

- Sleeve gastrectomy.
- Gastric bypass surgery (mini and classical)
- Revisional surgery – for patients who have had previous surgical procedures that have failed to reduce their weight.

Moreover, Gargash Hospital offers advanced medical therapy that aids in weight reduction for sleeve gastrectomy patients.

After successful bariatric surgery, patients are required to be consistent with their diet by eating low-calorie, high protein meals prepared at home with a total absence of high calorie processed foods.

Dr Aws stated that following treatment patients need to change their behaviour to a healthy lifestyle and maintain their weight-loss.

Nutritional follow-up visits are an essential component of medical management for patients following bariatric surgery.

"I advise my patients to follow up with the nutritionist in our hospital to maintain their weight loss," Dr Aws noted.

One of the most important factors is the diet patients choose after bariatric surgery.

"In my experience, the transition zone will be when the patient starts to eat solid food. I tell my patients they should eat bite size bits of food no bigger than the end part of the thumb and it should be chewed thoroughly until it becomes soft before swallowing."

It is essential that this becomes part of the daily life of the patient.

"I tell them there is a difference between eating and tasting the food. The food that they should eat – and from which they will feel full or satiated – is low-calorie solid food that needs very thorough chewing before swallowing. Patients who do not follow this advice may choose more tasty sweeteners after surgery to feel satisfied, but this will lead to failure of the bariatric surgery," Dr Aws explained.

Dr Aws Khidir Jassim, consultant general surgeon, Gargash Hospital

Dr Aws insisted that a healthy lifestyle incorporates both regular physical activity and a healthy diet.

"The most important advice I give to my patients after weight loss surgery is to stop eating before the feeling of satiety and to avoid carbonated drinks as these will affect the weight loss and lead to future dilatation of the stomach," Dr Aws said, adding: "It is also important to avoid late evening or night meals." MEH

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World Obesity Federation

Middle East expert group publishes recommendations for obesity treatment

The prevalence of obesity in the Middle East is one the highest in the world. It is particularly worrying as obesity is associated with several potentially life-threatening comorbidities which also have a high prevalence in the region, such as type 2 diabetes and hypertension.

A recently published report notes that in the Gulf and Lebanon the provision of obesity care has proved challenging for a number of reasons including: insufficient reimbursement for treatment; a lack of available pharmaceutical options; a heavy reliance on bariatric surgery; a lack of obesity education in medical schools and elsewhere and; in some cases, the lack of formal guidelines and recommendations for the prevention, management and treatment of obesity.

Left unchecked, the projections for the increasing prevalence of obesity and its associated comorbidities in the region are indeed worrying. This prompted the establishment of the Gulf & Lebanon Recommendations Expert Group following a meeting of regional and international clinical and policy experts under the auspices of the World Obesity Federation in Oman in December last year. The key purpose of the expert group was to draw up a set of recommendations for the treatment and management of adult obesity in the Gulf and Lebanon.

The Gulf & Lebanon Recommendations Expert Group comprises representatives of Bahrain, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

Their document – *Regional Recommendations for the Treatment and Management of Adult Obesity in the Gulf & Lebanon* – was published in October by the World Obesity Federation. (See Resources below to download the report.)

It is an important document which should go a significant way to easing the burden obesity by providing clear recommendations and guidelines for the treatment and management of obesity by healthcare workers in the region.

Importantly, it emphasises that our perspective of obesity must change to one in which obesity is viewed as "a chronic, progressive and relapsing disease that is the result of a combination of factors, including genetic susceptibility and environmental influences".

The authors state: "It is hoped that global recognition of obesity as a disease will not only improve understanding of the complexity of the condition, but also provide impetus for effective public health policy and intervention."

They note that with the development of these regional recommendations for obesity this could lead to better co-ordinated efforts to improve care for obese individuals in the region.

Clinical care pathways

The recommendations lay out the ideal obesity care pathway for those living with obesity who may desire medical support to live healthier lives. The recommendations are followed by a synopsis of current activities in the represented countries to highlight progress to date and areas for improvement.

Although the recommendations deal specifically with adult (≥18 years) obesity, they do acknowledge the importance of managing childhood obesity and say they "hope that we will be able to extend the recommendations to children and adolescents in the future".

Without going into the detail of the recommendations – you should download the document for this – the recommendations make use of the Edmonton Obesity Staging System which provides a framework for clinical decision-making, prioritisation and management and can roughly

The 5 A's Model adapted for obesity care

ASK
Ask permission to discuss weight; be non-judgmental; explore readiness for change

ASSESS
Assess BMI, waist circumference, obesity stage; explore drivers and complications of excess weight

ADVISE
Advise on health risks of obesity, benefits of modest weight loss, the need for a long-term strategy, and treatment options

AGREE
Agree on realistic weight loss expectations and targets, behavioural changes using the SMART framework and specific details of the treatment options

ASSIST
Assist in identifying and addressing barriers; provide resources and assist in identifying and consulting with appropriate providers; arrange regular follow-up

determine the healthcare level at which a patient may require treatment: primary, secondary, or tertiary care level.

The recommendations also make use of an adaptation the 5 A's Model to assist patients with behavioural change throughout the course of their obesity care.

Further to the clinical pathways recommended for primary, secondary and tertiary care, the authors note that "these recommendations may not be applicable to all existing healthcare systems in the region and so it is recommended that all countries have local workshops to tailor these recommendations based on national context. They suggest that at a national level, discussions should consider the following:

- Current healthcare coverage for all obesity treatments and the steps required to ensure full coverage (the "reimbursement strategy")
- Availability of basic and specialist obesity training for health professionals
- The availability of anti-obesity medications in-country and how this can be improved
- How to improve the provision of obesity care at primary care level
- Provision of care in public vs private sector
- Existing in-country guidelines and what these recommendations mean for them

Period	2016	
Location	Male	Female
Bahrain	64 [57.1-70.5]	68.5 [62.3-74.2]
Kuwait	72.4 [67.1-77.5]	75.1 [70.2-79.7]
Lebanon	66.9 [60.6-72.8]	69.1 [63.3-74.6]
Oman	60.6 [54.2-67.1]	65.7 [59.5-71.4]
Qatar	71 [65-76.6]	73.3 [67.8-78.5]
Saudi Arabia	68.3 [62.8-73.5]	71.8 [66.8-76.6]
United Arab Emirates	66.3 [60-72.3]	71.1 [65.3-76.6]
Yemen	44.1 [36.3-51.7]	53.3 [46.4-60.1]

Prevalence of overweight adults, BMI ≥25 (age-standardised estimate) (%)

Training

The report also highlights the critical need for the recommendations to be supplemented by frequent basic and specialist obesity care training for healthcare professionals.

For basic training the authors note that it should cover the basic science of obesity, its multiple causes, and the fundamentals of obesity prevention and management. On completion of this training, all health professionals should be able to give basic advice on achieving and maintaining a healthy weight and be competent in assessing, diagnosing and addressing obesity. They should also be comfortable recognising common comorbidities and complications.

Additionally, they add that "primary care staff should receive specialised training that emphasises the key role primary care plays in obesity prevention and early treatment" – and point out that this is essential to prevent patients reaching secondary and tertiary level care without having had standard assessments and prior support.

The authors note: "It is crucial that primary care staff receive training on weight maintenance and relapse prevention so that they can support patients who are referred back from tertiary and secondary care."

Regarding specialist obesity training, the report points out that it is crucial that all specialist obesity training covers: how and why the complexity of obesity as a disease may result in failure to lose weight at primary and secondary care, how to address comorbidities while seeking weight loss, and the importance of an obesity multidisciplinary team.

Obesity prevention

Although the report does not focus on the prevention of obesity, the authors say the omittance of prevention in the report "does not reflect an underestimation of the important role prevention plays. Rather, it was agreed that a report on prevention required a more multi-sectoral and multi-stakeholder expert group."

They referred to the existence of the recently published WHO Eastern Mediterranean 'Regional framework for action on obesity prevention 2019- 2023' as a document that provides guidance to the region on best practice.

Resources

Regional Recommendations for the Treatment and Management of Adult Obesity in the Gulf & Lebanon
https://www.worldobesity.org/resources/resource-library/gulf-lebanon-regional-recommendations

Regional framework for action on obesity prevention 2019- 2023
https://apps.who.int/iris/handle/10665/325833

Innovative diabetes centre opens in Dubai

Glucare co-founders Dr Ihsan Almarzooqi and Ali Hashemi

The GluCare app

The new GluCare Integrated Diabetes Center provides novel Remote Continuous Data Monitoring as part of its standard of care, and is the first facility in the MENA region to use Digital Therapeutics. *Middle East Health* reports.

GluCare Integrated Diabetes Center has opened in Dubai. The innovative facility is one of the region's first healthcare providers to use Digital Therapeutics and empowers diabetic patients through Remote Continuous Data Monitoring as part of its standard of care model.

Remote Continuous Data Monitoring is an innovative and highly personalized 'continuous healthcare' model that provides clinicians with a comprehensive and real-time view of patients and their condition. Digital Therapeutics (DTx) is a new subset of digital health. DTx uses software, often in the form of a mobile app to deliver clinical-grade therapeutic interventions to patients. DTx products may be used independently or as is the case with GluCare, in tandem with in-person or remote clinician-delivered therapy, to optimize patient outcomes. One of the key benefits of DTx is that care can be provided independent of a patient's schedule and in the privacy and safety of their home environment.

In addition, GluCare will be the region's first diabetes clinic to measure and report both remote compliance and clinical outcomes. Compliance to diabetic care plans is a major problem locally and internationally. In a 2014 study (*http://dx.doi.org/10.4314/tjpr.v13i6.24*) of diabetics in the Northern Emirates, 40% reported non-compliance to their care plans.

The opening of GluCare however comes as the global pandemic has underscored the urgent need for fundamental changes in the traditional model of diabetes care. According to the UAE National Emergency Crisis and Disaster Management Authority diabetics represented nearly 40% of Covid-19 fatalities in the UAE with an untold number of others facing interruption and access to care and related services.

Dr Ihsan Almarzooqi, GluCare co-founder and managing director, commented: "Diabetes is a 24/7 condition that traditionally relied on guesswork and a one-size-fits-all approach that we know doesn't work for most patients – a fact that has been tragically highlighted during the pandemic. At GluCare, we're empowering both patients and clinicians through using technology as a humanizing force. Our 'continuous healthcare' model means better outcomes and better health for patients through more personalised care, increased compliance to care plans, and perhaps, a better way of doing things for all."

Wearable tech

For patients, GluCare's Remote Continuous Data Monitoring 'continuous healthcare' model and DTx are delivered in part through wearable and connected technology, and a proprietary platform that measures and assesses more than 10 health parameters.

While care plans are highly personalised for each individual, all new diabetes patients at GluCare receive a starter kit during their first in-clinic visit. This includes a wearable "band" that measures heart rate and heart rate variability, respiration rate, physical activity, skin temperature, and sleep patterns; a wearable Continuous Glucose Monitor or Blood Glucose Device; and may include a smart Blood Pressure Monitor; and smart weight scale. This kit of connected devices collects and collates real-time data in a proprietary phone app that, combined with self-reported factors such as photos of meals and well-being questionnaires, are sent back in real-time to a machine-learning artificial intelligence (AI) platform.

Through AI, real-time insights and risk factors are identified for each patient which, together with individual patient data across all measured parameters, are

The GluCare laboratory

shared with GluCare's expert care team of doctors, health coaches and nutritionists. Access to this information allows the team to make timely decisions regarding the patient's care – especially between routine visits. The identification of risk factors also allows GluCare's care team to make necessary remote or in-clinic interventions to improve care and compliance, or to prevent, or improve outcomes for diabetes-related comorbidities including hypertension, atrial fibrillation, and sleep apnoea. Tailored educational material, as well as communication through the app between patients and health coaches and doctors, also adds a further element of support – boosting care plan compliance and reducing risk factors for patients.

"While technology underscores everything we're doing at GluCare, the real innovation comes with taking that technology, data and AI, and using it to directly impact clinical outcomes in a way that is reflective of the challenges our patients face day in, day out. This empowers both our expert team of medical professionals – giving them access to real-time data – as well as our patients, who will find it easier to successfully manage their condition," said Ali Hashemi, co-founder and chairman.

Along with innovative technology, an in-house lab, pharmacy and unique in-clinic workflows provide a more efficient experience for GluCare patients, with minimal wait-times and no need for unnecessary visits. Each visit to GluCare takes approximately one hour including consultation, diagnosis, investigation, treatment, and prescription.

Outpatient specialties within the centre include endocrinology, ophthalmology, cardiology, and podiatry. Patients are also able to check-in to their appointment in advance via the phone app, and book complimentary non-emergency transport to and from the clinic.

Limitless potential

While Remote Continuous Data Monitoring is a new concept, and DTx is relatively new within the medical sector, data from studies on their application in the United States – measuring blood glucose only – suggest great potential for improved diabetes patient outcomes, including a 21% reduction in death and a 43% reduction in peripheral vascular disease. In the same study (*https://doi.org/10.1080/13696998.2019.1609483*), intermittent tracking of only blood glucose with a DTx platform resulted in a total cost reduction on average of 22%, driven primarily by reduction in unnecessary patient visits (24.6%) and diabetes related medical costs (10.7%).

"Diabetes not only affects those with the condition, it also affects their families and wider society. It is an emotional and financial burden for individuals and their families, and given its prevalence in the UAE, its equally a burden for the country at large," said Dr Almarzooqi. "Since opening in early September, we have seen first-hand rapid improvements in patients, and the promising potential for their long-term outcomes. Through our data-driven and transparent approach, we can deliver continuous, cost-effective and improved quality of care and, in the process, help reduce both the devastating health and emotional costs for patients and their families, as well as the wider socio-economic costs for society at large."

At present, GluCare has partnered with several insurance providers including AXA, as well as Third Party Administrator, Neuron/NAS which includes Cigna Insurance.

Jerome Droesch, CEO MEA and SEA for Cigna, commented: "We have witnessed an explosion of digital health over the past decade fuelled by the emergence of social media platforms, wearables and cloud-based data platforms. This means, patients will expect the medical community to adopt and apply evidence-based behavioural treatments and therapeutic interventions online that are driven by software to manage or prevent a disease either independently or in coordination with medication to optimise health outcomes. This presents us with a unique opportunity to integrate advanced technology with clinical support to empower patients, their healthcare providers and payers."

- For more information on GluCare, visit: *www.Glucare.Health*

Can diabetic retinopathy be affordably managed?

By **Fabrizio D'Esposito**
Senior Diabetic Retinopathy and Research Advisor at The Fred Hollows Foundation

Diabetes is a major public health problem in the Middle East and North Africa, with 55 million people suffering from the disease. If current trends continue, this number will more than double by 2045.

In 2019, the Middle East and Africa had the highest comparative prevalence of diabetes of any region in the world. UAE, KSA, Sudan, Pakistan, Egypt, and Bahrain are all among the top 20 countries with the highest prevalence of diabetes globally.

Diabetic retinopathy (DR) is a common complication of diabetes that affects the eyes, and which can lead to irreversible blindness if not adequately managed. One in three people with diabetes have DR, and one in 10 have a form of DR that is so advanced that vision is threatened. It is estimated that over 90 million people around the world have DR, and this number will continue to rise as more and more people develop diabetes.

DR is the world's leading cause of blindness in working-age adults. It particularly affects people in low- and middle-income countries where the burden of diabetes is high, and management of DR is inadequate. DR has negative socioeconomic impacts for communities and can keep affected people trapped in a cycle of hardship as they are no longer able to participate in the workforce.

The management of DR is a lifelong journey for patients that involves screening, care planning, and treatment. However, limited awareness of the complications of diabetes, financial and geographical barriers to access services, uneven distribution of skilled personnel, lack of medicines and devices, and lack of integration between diabetes and eye health care all impede access to vital sight-saving services for people at risk of DR. This is particularly true among people in rural and remote areas and among those living in low- and middle-income countries.

Integrated people-centred eye care

Designing and delivering integrated people-centred eye care services provides a potential solution to issues of accessibility and affordability of DR care and to address the escalating burden of DR. A coordinated and collaborative response is required so that prevention and early detection of DR becomes well integrated within the ongoing primary care of people with diabetes, so that well-defined and effective referral pathways to specialist care are established for those who need further examination or treatment, and so that treatment is accessible, affordable, and of good quality.

The Fred Hollows Foundation has been supporting the integration of diabetes and DR care in the Middle East and in other regions around the world for more than 10 years. The Foundation also has a dedicated program of research and innovation that seeks to discover, design, and test new and better ways to deliver affordable DR care in low-resource settings.

Health promotion interventions can increase the adoption of healthy behaviours that affect the development of DR and vision loss, as well as the uptake of eye care services. The Foundation is supporting the integration of diabetes and DR health promotion activities and is conducting specialized training for diabetes educators in countries around the world to raise awareness about diabetic retinopathy and encourage people with diabetes to be screened for DR.

DR screening has been shown to be cost-effective when compared to no screening or opportunistic screening. However, cost-effectiveness requires high coverage, and this is challenging in countries where specialist eye health services are few and clustered around large urban centres. For example, a recent survey supported by The Fred Hollows Foundation found that almost one quarter of people with diabetes in Palestine had never received an eye check-up for DR, in spite of the very high prevalence of diabetes.

Task shifting from eye care specialists to other trained health professionals has been recommended as an approach to improve accessibility of DR screening and reduce burden on specialist services at the tertiary care level. Indeed, there is growing evidence for the safety and effectiveness of task shifting for DR screening in low- and middle-income countries as well as in high income countries. For example, the Foundation successfully trained Lady Healthcare Workers in Pakistan to identify people with diabetes and diabetic retinopathy and refer them to the nearest primary health centre for further examination. Lady Health Care workers provide essential primary healthcare services in the community across Pakistan.

New technology

The use of new technologies such as low-cost portable retinal cameras that are used for screening, artificial intelligence, and teleophthalmology can also play an important role in facilitating effective DR

screening by health professionals other than eye health specialists.

Treatment for advanced DR typically consists of multiple laser surgeries, eye injections, and increasingly both. However, in low- and middle-income countries lasers are often not available, and injections are prohibitively expensive. Having to return to the specialists for multiple laser sessions and injections and the high costs involved are all barriers to completing treatment. The limited data available suggests that more than a quarter of people who need DR treatment don't initiate this, and 15 to 20 per cent of those who commence treatment do not complete it. This is problematic because the effectiveness of DR treatment is dependent on the timely initiation and completion of the prescribed treatment course. Innovative approaches are needed to increase the accessibility and affordability of DR treatment, ultimately increasing adherence in low- and middle-income countries.

There has been great interest in developing sustained delivery platforms for the drugs that are normally injected in the eyes of people with advanced DR. If successfully developed, these 'slow release' drug delivery devices would eliminate the need for patients to travel to eye care specialists multiple times to receive injections. However, these innovations are still in their seminal phase, so patients will continue requiring the current treatment for the foreseeable future.

Healthcare workers use teleophthalmology to assist in the diagnosis of diabetic retinopathy

The Fred Hollows Foundation is using artificial intelligence software to detect diabetic retinopathy

Advocacy

Meaningful and sustainable integration of eye health and diabetes care as well as improved accessibility and affordability of DR services will only become operational if an enabling environment is in place. Advocating for and influencing health policy change and development of adequate plans is critical to ensure that DR is in cross-sectoral responses to diabetes and non-communicable diseases. This includes adequate allocations of funds to eye health within health budgets, adequate planning and training for eye health workforce as part of national health and noncommunicable diseases plans, development and implementation of diabetes registries and health information systems that include eye health, and inclusion of DR treatment within essential medicines and technology lists as well as health insurance schemes in countries where it makes sense to do so.

For example, The Foundation also played a central role in the development of the first National Diabetic Retinopathy Strategy and Action Plan in Bangladesh, which have now been endorsed by the Government.

DR is already a significant public health problem in the Middle East and North Africa, and unfortunately, it's likely to continue to grow. Tackling this problem will require a coordinated and integrated response by the diabetes, DR, and health sectors, which should include stepping up evidence-based health promotion efforts, safely shifting DR screening closer to people with diabetes, and promoting take up of and adherence to DR treatment by improving accessibility and affordability of DR care. This cannot happen without creating an enabling environment nor without investment in research and innovation to identify and pilot new approaches to DR care. MEH

The Fred Hollows Foundation
is an international development organization working to eliminate avoidable blindness in more than 25 countries.
Visit: *www.hollows.org*

Can diabetic retinopathy be affordably managed?

By **Fabrizio D'Esposito**
Senior Diabetic Retinopathy and Research Advisor at The Fred Hollows Foundation

Diabetes is a major public health problem in the Middle East and North Africa, with 55 million people suffering from the disease. If current trends continue, this number will more than double by 2045.

In 2019, the Middle East and Africa had the highest comparative prevalence of diabetes of any region in the world. UAE, KSA, Sudan, Pakistan, Egypt, and Bahrain are all among the top 20 countries with the highest prevalence of diabetes globally.

Diabetic retinopathy (DR) is a common complication of diabetes that affects the eyes, and which can lead to irreversible blindness if not adequately managed. One in three people with diabetes have DR, and one in 10 have a form of DR that is so advanced that vision is threatened. It is estimated that over 90 million people around the world have DR, and this number will continue to rise as more and more people develop diabetes.

DR is the world's leading cause of blindness in working-age adults. It particularly affects people in low- and middle-income countries where the burden of diabetes is high, and management of DR is inadequate. DR has negative socioeconomic impacts for communities and can keep affected people trapped in a cycle of hardship as they are no longer able to participate in the workforce.

The management of DR is a lifelong journey for patients that involves screening, care planning, and treatment. However, limited awareness of the complications of diabetes, financial and geographical barriers to access services, uneven distribution of skilled personnel, lack of medicines and devices, and lack of integration between diabetes and eye health care all impede access to vital sight-saving services for people at risk of DR. This is particularly true among people in rural and remote areas and among those living in low- and middle-income countries.

Integrated people-centred eye care

Designing and delivering integrated people-centred eye care services provides a potential solution to issues of accessibility and affordability of DR care and to address the escalating burden of DR. A coordinated and collaborative response is required so that prevention and early detection of DR becomes well integrated within the ongoing primary care of people with diabetes, so that well-defined and effective referral pathways to specialist care are established for those who need further examination or treatment, and so that treatment is accessible, affordable, and of good quality.

The Fred Hollows Foundation has been supporting the integration of diabetes and DR care in the Middle East and in other regions around the world for more than 10 years. The Foundation also has a dedicated program of research and innovation that seeks to discover, design, and test new and better ways to deliver affordable DR care in low-resource settings.

Health promotion interventions can increase the adoption of healthy behaviours that affect the development of DR and vision loss, as well as the uptake of eye care services. The Foundation is supporting the integration of diabetes and DR health promotion activities and is conducting specialized training for diabetes educators in countries around the world to raise awareness about diabetic retinopathy and encourage people with diabetes to be screened for DR.

DR screening has been shown to be cost-effective when compared to no screening or opportunistic screening. However, cost-effectiveness requires high coverage, and this is challenging in countries where specialist eye health services are few and clustered around large urban centres. For example, a recent survey supported by The Fred Hollows Foundation found that almost one quarter of people with diabetes in Palestine had never received an eye check-up for DR, in spite of the very high prevalence of diabetes.

Task shifting from eye care specialists to other trained health professionals has been recommended as an approach to improve accessibility of DR screening and reduce burden on specialist services at the tertiary care level. Indeed, there is growing evidence for the safety and effectiveness of task shifting for DR screening in low- and middle-income countries as well as in high income countries. For example, the Foundation successfully trained Lady Healthcare Workers in Pakistan to identify people with diabetes and diabetic retinopathy and refer them to the nearest primary health centre for further examination. Lady Health Care workers provide essential primary healthcare services in the community across Pakistan.

New technology

The use of new technologies such as low-cost portable retinal cameras that are used for screening, artificial intelligence, and teleophthalmology can also play an important role in facilitating effective DR

screening by health professionals other than eye health specialists.

Treatment for advanced DR typically consists of multiple laser surgeries, eye injections, and increasingly both. However, in low- and middle-income countries lasers are often not available, and injections are prohibitively expensive. Having to return to the specialists for multiple laser sessions and injections and the high costs involved are all barriers to completing treatment. The limited data available suggests that more than a quarter of people who need DR treatment don't initiate this, and 15 to 20 per cent of those who commence treatment do not complete it. This is problematic because the effectiveness of DR treatment is dependent on the timely initiation and completion of the prescribed treatment course. Innovative approaches are needed to increase the accessibility and affordability of DR treatment, ultimately increasing adherence in low- and middle-income countries.

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Pharmacogenomics – the new age of personalised medicine

Alaa Darwish of Wolters Kluwer, discusses the potential for pharmacogenomics to transform the efficacy of prescribed drugs.

One of the toughest challenges facing clinicians is which drugs to prescribe to their patients, and at what dosage. While most clinician/patient interactions end with a positive outcome, there are inevitably instances where treatment plans fail to achieve their objectives.

One emerging field that seeks to tackle this problem – and opens the door to a more a personalised approach to medicine – is pharmacogenomics. This is the study of how an individual's genetic profile can influence the effectiveness or side-effect risk of a particular drug.

By targeting drug therapies to an individual's genetic profile, health bodies in the GCC and across the world are seeing how they can improve outcomes and lower treatment costs. Pharmacogenomics replaces a "one-size fits all" approach to medicine with a far more efficient model of individually targeted therapy.

Across a wide range of clinical disciplines, including cardiology, psychology and oncology, pharmacogenomics is potentially a game-changer. Following pioneering work in the U.S. and UK, pharmacogenomics is now quickly gaining ground in the GCC. For example, in Saudi Arabia, the Centre of Excellence in Genomic Medicine Research (CEGMR) at King Abdulaziz University, Jeddah, is conducting some of the world's most advanced research into personalised medicine, including pharmacogenomics.

The pace of advances in the field is also increasing as more genetic variations that have a clinically important impact on drug choices are documented. To cite one example, there is now comprehensive data to show how the enzyme cytochrome P450 2C19 impacts on an individual's ability to metabolise many widely-used drugs, including the antiplatelet drug clopidogrel. Clearly, a person's genetic ability to 'turn on' a drug like clopidogrel may have serious implications for patients with acute coronary syndrome.

For clinicians, the challenge is to identify these important drug-gene interactions. Lexicomp – an internationally respected point-of-care drug information resource from Wolters Kluwer – is helping in this task by building genomics information into its internationally-respected drug reference resources, highlighting possibly important drug-gene pairings to clinicians in a clear, concise form, with actionable recommendations.

International working groups, like the US Food and Drug Administration (FDA), are encouraging the healthcare sector to embrace genomics. By providing guidance to drug companies on how to introduce biomarker information to their labelling, the FDA is helping legitimise the role of pharmacogenomics among the wider clinician community.

National initiatives, such as the 100,000 genomes project in the UK, the All of Us programme in the U.S., and The Saudi Human Genome Project, are also making it easier for the mainstream population to have their genomic data applied to medication decisions. Indeed, a recent report from Allied Market Research predicts that the global pharmacogenomics market will grow 8.6% from 2018 to 2025 – rising in value from $5.3 billion in 2017 to $10.2 billion by 2025 (almost double).

Of course, there are challenges ahead for the advancement of pharmacogenomics. The sheer scale of the task involved in building mass genomics data into national health systems is one. Genetic data privacy is another. And the risk of a two-tier health system, in which only some have access to personalised medicine, is a further concern. However, there is no doubt that pharmacogenomics and personal medicine carry huge promise, not only in the treatment of society's most prevalent diseases, but in making healthcare more efficient, targeted and effective.

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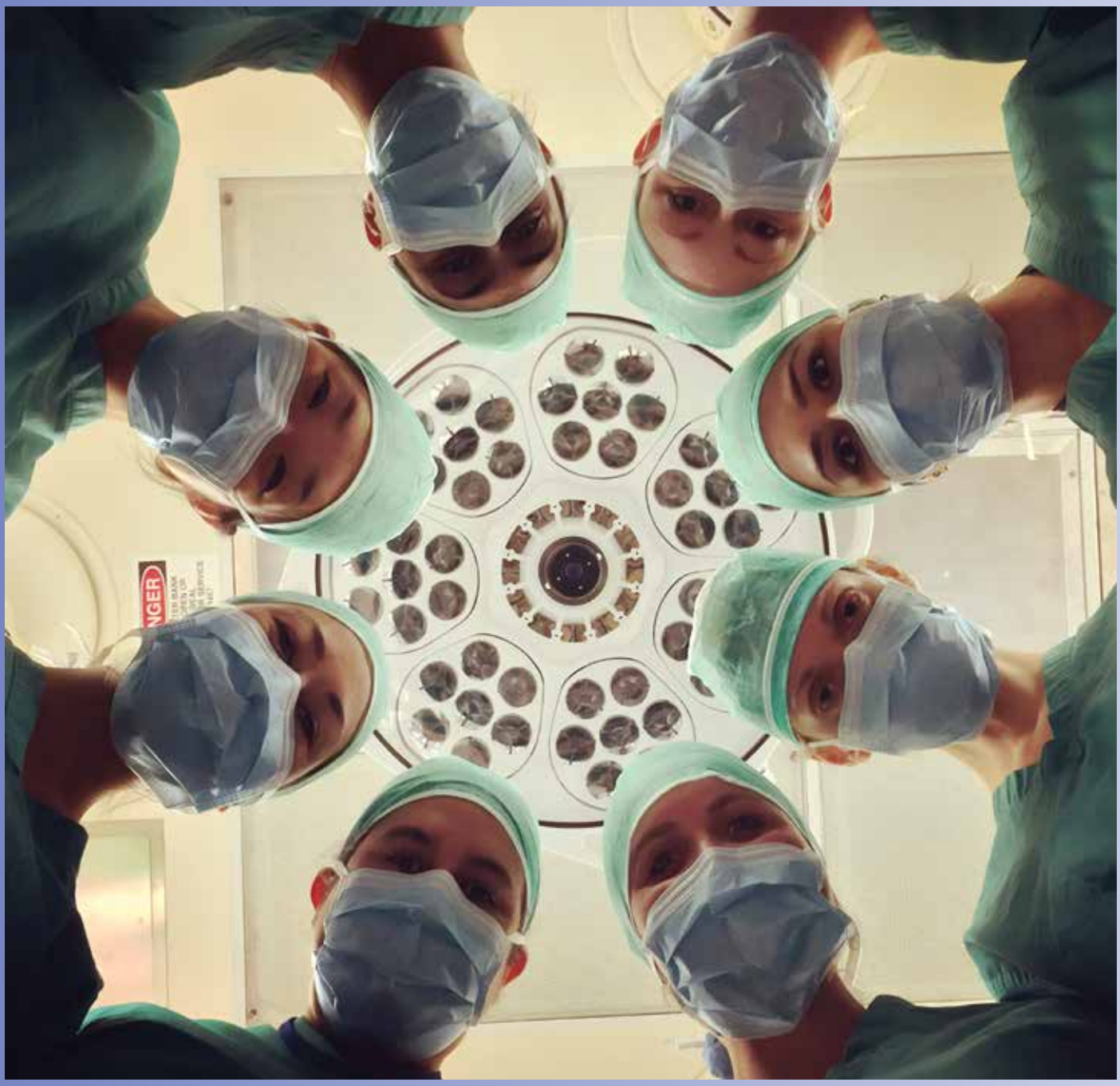

United States Hospitals

COVID-19 pandemic changes way hospitals operate

Cleveland Clinic continues to expand its global reach

As Cleveland Clinic nears its centennial in 2021, the top-ranked, global hospital system is serving more patients than ever before.

Whether it's telemedicine, virtual visits or building new facilities, Cleveland Clinic's continued international expansion is furthering the organization's mission of medical education, research and clinical excellence.

"Cleveland Clinic's goal is to touch and positively influence as many lives as possible worldwide," says Curtis Rimmerman, MD, MBA, Chairman of Cleveland Clinic International Operations.

U.S. News & World Report has named Cleveland Clinic the No. 2 hospital in the U.S. and, for the 26th consecutive year, the No.1 hospital for heart care. With its proven track record domestically, the nonprofit multispecialty academic medical center has also turned a focus to improving the health of individuals globally, no matter where they live.

Cleveland Clinic first opened an outpatient center in Canada in 2006, then expanded further abroad to the U.A.E. in 2015. Here, in partnership with Mubadala Investment Company, it opened Cleveland Clinic Abu Dhabi, a 394-bed facility capable of addressing a range of complex and critical care requirements specific to the local population. Additionally, there are eight Cleveland Clinic representatives living around the world whose job it is to connect local patients and providers to Cleveland Clinic.

Looking to the future

Construction continues to progress at Cleveland Clinic London, the first European location in the organization's expanding global footprint. The 185-bed hospital will open in early 2022, preceded by its first outpatient facility in autumn 2021. In 2022, Cleveland Clinic Abu Dhabi will open a state-of-the-art oncology center, designed to meet the specific needs of cancer patients and bring an integrated and transformative approach to diagnosing and treating cancer to the U.A.E. And in 2024, the organization will reach China, when the first Cleveland Clinic Connected project, Shanghai Luye Lilan Hospital, is set to open to patients. Under the Cleveland Clinic Connected agreements, organizations are connected to Cleveland Clinic's best practices in clinical operations, patient experience and quality of care. It's one more way patients around the world can access Cleveland Clinic care and expertise.

Rob Stall, Executive Director of Cleveland Clinic International Operations, says: "As we grow and double the number of patients served by 2024, our focus is to remain true to the standards we have established in the U.S. All of our expansions bear the unmistakable stamp of Cleveland Clinic in terms of quality, experience and care priorities."

Collaborative care and innovation

Cleveland Clinic's value-based model of healthcare involves multidisciplinary teamwork, with the patient always at the center of care. As a fully integrated healthcare delivery system, it is capable of taking on the most complex cases and providing collaborative care supported by cutting-edge research and technology.

The model has also been a catalyst for innovation, and Cleveland Clinic is known for a number of firsts, such as pioneering coronary artery bypass surgery, the first full face transplant and the first to deliver a baby from a deceased-donor uterine transplant in the U.S. Similarly, Cleveland Clinic Abu Dhabi has had an enormous impact on its landscape, having the only multi-organ transplant program in the U.A.E., and performing the nation's first successful heart, liver and lung transplants from deceased donors.

Global Patient Services

Serving patients who come from outside their home country to receive care at a Cleveland Clinic facility is also a priority. Through its Global Patient Services, patients are assisted with travel and accommodation arrangements appropriate for their condition, interpretation services, and care coordination, all with a thorough understanding of the cultural background and needs of patients and their families.

Dr. Nizar Zein, Chairman of Global Patient Services for Cleveland Clinic, says: "While patients travel to our facilities looking for the best possible care available, they also need empathy – a team who understands their individual needs, medical or otherwise, and who involve them in their own treatment plans."

Since its founding in 1921, Cleveland Clinic has significantly changed the healthcare landscape in the U.S., and as it approaches its 100th anniversary, its impact in raising the standards of healthcare globally is increasingly evident.

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Groundbreaking analysis unveils key developments for brain metastases patients

As part of a multi-institutional effort spanning three countries, Miami Cancer Institute has contributed to groundbreaking analysis that reveals overall median survival for patients with brain metastases has improved over time.

Moreover, the analysis identifies that certain subsets of brain metastases have substantially better survival. This has lead to the creation of an algorithm to estimate patient survival, individualize treatment, and stratify clinical trials. Given the survival improvement and current availability of therapies that can effectively treat brain metastases, these patients should no longer be excluded from clinical trials.

Results of this analysis were recently reported in the *Journal of Clinical Oncology*, <*https://doi.org/10.1200/JCO.20.01255*> examining a database of 6,984 patients from 18 institutions in the United States, Canada and Japan. Among the key results is that the median survival for brain metastases patients has improved, but varies by subset: lung cancer, 7-47 months; breast cancer, 3-36 months; melanoma, 5-34 months; gastrointestinal cancer, 3-17 months; and renal cancer, 4-35 months. As such, the findings led to the evolution of an algorithm to assess a patient's survival.

"Our report evaluates the outcomes of patients with brain metastases in the modern era, identifying variables that can predict survival for a given patient," said Minesh Mehta, M.D., deputy director and chief of radiation oncology at Miami Cancer Institute, as well as senior author of the report. "We've found that there are subcategories of patients who have substantially better survival – we're talking survival in years compared to months. No longer is it appropriate to categorize all patients with brain metastases as having just one outcome."

Previously, the authors of the report developed and refined a Graded Prognostic Assessment (GPA), a diagnosis-specific index for patients with brain metastases. Those prognostic factors were weighted in proportion to their significance and scaled so that patients with the best or worst prognosis would have a GPA of 4.0 or 0.0, respectively. The new findings gather updated GPAs into a single report to define the eligibility quotient, which would identify patients best suited for clinical trials.

These updated GPAs are now available as a free tool for clinicians to accurately estimate a patient's survival, individualize treatment and stratify clinical trials and can be accessed at *www.brainmetgpa.com*.

"No longer does one need to speculate or guess to make a prediction on a brain metastases patient's survival. Our GPA tool is extremely accurate and helpful in guiding a patient's decision-making," said Dr. Mehta. "It allows for a robust and accurate discussion of options between the patient and the clinician in a matter of minutes."

In the United States alone, an estimated 300,000 patients are diagnosed each year with brain metastases. In the remote past, the average survival for brain metastases patients was poor at only about 3-6 months, and the majority of patients could not effectively be treated with most systemic therapies. It was not uncommon for these patients to be treated in a palliative manner and referred to hospice. With the advent of this new analysis, instead of excluding patients with brain metastases from clinical trials, it is recommended for enrollment to be encouraged and for the trials to be stratified to ensure appropriate comparisons are made.

Minesh Mehta, M.D., deputy director and chief of radiation oncology at Miami Cancer Institute.

"It becomes a self-fulfilling prophecy if we start assuming that brain metastases patients are going to have poor survival and therefore, we don't enrol them in trials with agents that could be effective for their treatment. Instead, if we recognize that these patients can have better survival and enrol them on these trials, we might in fact identify newer agents that are more effective," said Dr. Mehta. "What's important to recognize is that we have to stratify clinical trials because patients with brain metastases have different survival rates. We have to have different categories, which will ultimately balance the arms of clinical trials."

- For information about clinical trials currently underway at Miami Cancer Institute, please visit: *https://cancer.baptisthealth.net/miami-cancer-institute/clinical-trials*.

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How has deep brain stimulation benefitted patients with Parkinson's disease?

Dr. Sameer Sheth, neurosurgeon at Baylor St. Luke's Medical Center, uses deep brain stimulation (DBS) as an alternative to medication for treating disorders such as Parkinson's disease and essential tremor. DBS involves placing a device called a neurostimulator that sends electrical impulses through implanted electrodes to specific targets in the brain.

Dr. Sameer Sheth, neurosurgeon at Baylor St. Luke's Medical Center

Baylor St. Luke's Medical Center

Baylor Medicine

What is deep brain stimulation and how does it work?

"DBS is a therapy that we have for various neurological conditions," said Dr. Sheth. "It's a system that you can think of like a pacemaker. But rather than being a pacemaker for the heart, it's for the brain."

Dr. Sheth describes the brain as having many circuits that govern everything we do, including how we move.

"If the movement circuit is not working properly, we may have a movement disorder like Parkinson's," he said. "If we can identify the circuit within the brain that is not working properly, we can use this device to reset the rhythms in the brain and restore the balance so that our movements can be better controlled or without a tremor."

How effective is DBS therapy?

Though DBS is considered an alternative, it's a well-established, FDA-approved technique that has been used to treat Parkinson's and essential tremor for 30+ years.

"There's been a lot of studies over the years," said Dr. Sheth. "Randomized trials have been presented in the top medical journals that show that for the appropriately chosen patient, DBS is more effective than the best medical therapy. So, in that appropriately chosen patient, DBS can be very successful at improving tremor for essential tremor and tremor stiffness, rigidity, and those other motor symptoms of Parkinson's disease."

One patient who has found success with DBS is Rudy Hardy.

"It's made a profound difference in my life," said Hardy. A professional sports photographer and professor of criminal justice, Hardy's life was controlled by Parkinson's. He tried medication initially, and though it seemed to work for a while, his tremors eventually worsened. Since undergoing DBS, Hardy's symptoms are now almost completely undetectable.

How does DBS compare to other methods of treatment for Parkinson's disease?

As in Hardy's case, every patient's treatment begins with medication until it is determined that they can benefit from DBS. "Medications are always tried first. Unfortunately, we can only get so far with medications. Oftentimes, many patients try them, and they may work for a little while," said Dr. Sheth.

"But at some point, oftentimes the medications stop working as much because the disorder tends to progress over the years. It could get worse, and the medicines may not be able to keep up. Many of the medicines themselves have their own side effects. So, you get to a point where perhaps the medicines are helping to a degree, but they're causing their own side effects, and exactly when we get to that point is when we introduce the idea of a surgical therapy like DBS."

How common Is DBS?

Dr. Sheth describes DBS as a very standard treatment. "These are procedures that we do week in and week out," he said. "It's not investigational or experimental." Around the world, more than 150,000 patients have had DBS for Parkinson's or tremor with a success rate of 95%.

> Patients need to know that there are these alternatives. They need to know that they're not necessarily stuck with these symptoms, that there may be a different way to get better control.

"Patients need to know that there are these alternatives. They need to know that they're not necessarily stuck with these symptoms, that there may be a different way to get better control. That discussion is, of course, individual-specific, but the availability of these types of surgical treatments is important for patients to know about."

As Houston's leader in neurology and neurosurgery, the Neuroscience Institute at Baylor St. Luke's Medical Center is continually working to find better treatments for neurological conditions to help patients get back their lives.

- For more information: *StLukesHealth.org/BSLMCInternational*
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U.S. News releases 2020-21 Best Hospitals Rankings and spotlights 'Hospital Heroes' during historic year for health care

U.S. News & World Report, the leading US authority in hospital rankings, has published the 2020-21 Best Hospitals rankings in the United States. The 31st edition includes special recognition of the herculean efforts being mounted by the nation's health professionals who have stepped up during COVID-19, often at great personal risk.

U.S. News has also started an ongoing series titled Hospital Heroes <*https://health.usnews.com/hospital-heroes*> where they spotlight the extraordinary efforts by US health professionals on the front line of fighting the historic coronavirus pandemic.

"The pandemic has altered, perhaps permanently, how patients get care and from whom they get it. Amid the disruption, we are steadfastly committed to providing the public with authoritative data for comparing hospital quality," said Ben Harder, managing editor and chief of health analysis at *U.S. News*. "No hospital's clinical team came through this unprecedented health crisis unscathed. Our Hospital Heroes series is a tribute to recognizing individuals at urban and rural hospitals in communities across the country who have gone above and beyond during this unparalleled time in history."

The coronavirus crisis also has unmasked the deadly effects of health disparities by race, ethnicity and other social determinants. The Hospital Heroes series highlights a community health equity leader, a doctor in hard-hit Navajo Nation and a public health leader who have spoken out about structural forces that drive racial and ethnic health inequities. While health inequities have existed in the U.S. health care system since its inception, efforts to quantify these gaps in a comparable way across individual hospitals have been scarce. *U.S. News* recently announced it will use more than three decades of experience in hospital quality measurement to contribute to the much needed dialogue on disparities in hospital care. In a analysis published in July, *U.S. News* examined seven years of Medicare records that reveal broad and enduring racial disparities in surgical care access and quality of that care.

Alongside these firsthand accounts, the 2020-21 Best Hospitals editorial features commentaries from hospital leaders addressing ways hospitals and health systems are navigating the path forward along with reporting on topics from the rise in telemedicine to provider burnout and mental health strain stemming from the pandemic.

Spanning 26 adult specialties, procedures and conditions, the 2020-21 Best Hospitals rankings evaluated nearly every community hospital in America.

U.S. News updated rankings for 16 medical specialties, which cover Cancer, Cardiology & Heart Surgery, Diabetes & Endocrinology, Ear, Nose & Throat, Gastroenterology & GI Surgery, Geriatrics, Gynecology, Nephrology, Neurology & Neurosurgery, Ophthalmology, Orthopedics, Psychiatry, Pulmonology & Lung Surgery, Rehabilitation, Rheumatology and Urology. This year, 134 hospitals out of more than 4,500 were nationally ranked in one specialty, while 563 were ranked among the Best Regional Hospitals in a state or metro area.

For 2020-21, the Mayo Clinic in Rochester, Minnesota claimed the No. 1 spot on the Best Hospitals Honor Roll. Cleveland Clinic ranked No. 2, followed by Johns Hopkins Hospital at No. 3. The Honor Roll is a distinction awarded to hospitals ranked in the top 20 nationally for delivering exceptional treatment across multiple areas of care.

In the specialty rankings, University of Texas MD Anderson Cancer Center ranked No. 1 in Cancer, the Cleveland Clinic is No. 1 in Cardiology & Heart Surgery and Hospital for Special Surgery is No. 1 in Orthopedics.

The data used in the 2020-21 Best Hospitals rankings and ratings come from a period predating the COVID-19 pandemic and were not affected by the pandemic's impact on hospitals.

The U.S. News Best Hospitals methodologies are based largely on objective measures such as risk-adjusted survival and discharge-to-home rates, volume, and quality of nursing, among other care-related indicators.

Debuting this year, U.S. News released a new cardiac rating that measures the quality of hospitals' transcatheter aortic valve replacement (TAVR) programs. Developed in recent years, TAVR is rapidly being adopted as a minimally invasive alternative to aortic valve surgery.

- For the full rankings, visit: *https://health.usnews.com/best-hospitals*

2020-21 Best Hospitals Honor Roll

1. Mayo Clinic, Rochester, Minnesota
2. Cleveland Clinic
3. Johns Hopkins Hospital, Baltimore
4. New York-Presbyterian Hospital-Columbia and Cornell, New York, NY (tie)
5. UCLA Medical Center, Los Angeles (tie)
6. Massachusetts General Hospital, Boston
7. Cedars-Sinai Medical Center, Los Angeles
8. UCSF Medical Center, San Francisco
9. NYU Langone Hospitals, New York, NY
10. Northwestern Memorial Hospital, Chicago
11. University of Michigan Hospitals-Michigan Medicine, Ann Arbor
12. Brigham and Women's Hospital, Boston
13. Stanford Health Care-Stanford Hospital, Palo Alto, California
14. Mount Sinai Hospital, New York, NY
15. Hospitals of the University of Pennsylvania-Penn Presbyterian, Philadelphia
16. Mayo Clinic-Phoenix
17. Rush University Medical Center, Chicago
18. Barnes-Jewish Hospital, Saint Louis (tie)
18. Keck Medical Center of USC, Los Angeles (tie)
20. Houston Methodist Hospital

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Interview

Breaking down barriers to sourcing life-saving medications

Middle East Health speaks to **Sjaak Vink,** CEO and Founder of TheSocialMedwork about the organisation and how it is helping patients source medications unavailable in their country of residence.

Sjaak Vink, CEO and Founder of TheSocialMedwork

***Middle East Health*: What is TheSocialMedwork?**

■ **Sjaak Vink:** TheSocialMedwork is a social impact organisation that helps patients access new, innovative medicines that are not readily available in their country of residence. We are a registered, independent medicines intermediary which facilitates access to these treatments, making them available to sufferers of chronic, life-threatening and terminal illnesses, and are currently helping patients across the Middle East and around the world.

***MEH*: When was it set up?**

■ **SV:** TheSocialMedwork was founded in 2015 by myself, alongside James Heywood, Bernard Muller and Katrin Schepp. I already had experience in healthcare innovation, specifically when it came to linking patients to necessary treatments; my co-founders either had similar experiences, or related to the cause on a personal level.

***MEH*: Why was it set up?**

■ **SV:** TheSocialMedwork was set up following a series of devastating personal losses for each of us founders. Following extensive research, it quickly became apparent that many of our losses could potentially have been avoided, had access to newly approved medicines and treatments been globally available, rather than governed by local jurisdictions which open the door to widespread disparity.

For me, the journey of TheSocialMedwork began when one of my close friends passed away only a couple of months before a medication was made available in Europe, even though it had been available in the USA for several years. Because it wasn't readily available in Europe, neither he, nor his physician, were able to get their hands on the medication, so we'll never know if he would have benefited from it and if it could have saved his life.

Already an entrepreneur at the time, I was so frustrated by the situation that I had to act: it was devastating to think he could potentially still be alive, and that there was a medicine out there that may have saved his life, if it wasn't for a matter of bureaucratic red-tape. I knew that if we had gone through this, then it must have happened to countless people too, and that there would be plenty of others suffering the same injustice around the world.

The other founders have also faced similar issues, with lawyer Katrin springing into action because of her father fighting cancer; scientist Jamie lost his brother to a long fight with ALS, and entrepreneur Bernard himself was diagnosed with ALS in 2010.

It led us to uncover that most countries actually have existing legal processes in place which enable patients to import approved medicines from overseas for personal use. This discovery ultimately resulted in the launch of TheSocialMedwork, which now works tirelessly to aid in the treatment and improvement of quality of life for patients all around the world. It's our belief that if patients are already battling a severe and often debilitating illness, they shouldn't have to fight to get the best treatment too.

***MEH*: Where is it based and what countries does it operate in?**

■ **SV:** TheSocialMedwork is based in Amsterdam and registered with the Ministry of Health (registration number 6730 BEM) in The Hague, however the operation spans a global remit, with medicines and treatments being sourced from across the world and then delivered to patients globally in other locations. To-date, TheSocialMedwork has helped in matching tens of thousands of patients, in over 85 countries, with the treatments they require. Our mission is to break down the geographical barriers of access to medicines, so we look at our operations as borderless too.

***MEH*: How does it operate?**

■ **SV:** Any individual who has been diagnosed with a life-threatening illness can visit *www.TheSocialMedwork.com* to request the latest treatments available to help fight their disease. Each individual case is taken on its own merits and then assisted by our Patient Support team, who provide access to new medicines under the Named Patient regulation, which is

an early access import scheme, available in almost every country in the world. Unfortunately, it is not widely known, yet is the key to unlocking access for doctors and their patients to legally and safely import an elsewhere-approved treatment into their country of residence and give them a chance to fight their ailment.

***MEH*: From where are your medications sourced?**

■ **SV:** We source the medications and treatments which patients require directly from manufacturers, or from a high-end network of American and European-based sourcing partners.

***MEH*: Why should patients should sign up to TheSocialMedwork?**

■ **SV:** Unfortunately, there will be people reading this who are truly exasperated by the lack of options available to them as a patient, to someone they love, or available to their patients as a treating physician. Fortunately, for those people, they may be having an 'eureka' moment as they read these words, and they'll reach out to us and we can help find an answer to their needs. TheSocialMedwork can help people who have serious diseases and have been told that they are out of options or that limited options are available to them, particularly in their country of residence, or that they'll have to wait several years for a treatment to be available to them. With access to all of the listed, approved and latest medications across the USA and Europe, TheSocialMedwork team takes on the hard and complex aspects of sourcing these treatments so that patients and their doctors can focus on fighting the disease, and not waste valuable time and energy on overseas sourcing and logistics. As the only patient support team in the world who has the experience in safely and legally shipping medicines to patients in over 85 countries around the world, patients and treating physicians will know that they're in safe hands.

Particularly now in the COVID era of travelling restrictions and lockdowns, patients who might previously be used to travel for treatment and medications abroad are currently at even higher risk, making the unique service TheSocialMedwork provides even more valuable and crucial than ever.

***MEH*: Are there any restrictions on what medications you can ship?**

■ **SV:** Using the Named Patient regulation, once a medicine for a chronic, life-threatening or debilitating illness is approved – in any country around the world – we are able to legally and safely source and ship it to the patient in whichever country they reside. A patient uses their personal import allowance to receive the medicines they need. Our team personally guides them throughout the process.

Under the Named Patient regulation, we can legally support patients to import a medicine that is not approved in their country of residence.

Under this regulation, there are four conditions which need to be adhered to:

1. The medicine must have market approval in another country and is not yet approved or available in the patient's country of residence
2. There is no equal alternative on the market in the patient's country of residence
3. The medicine is for the patient's personal use only
4. The patient has a prescription from their treating doctor in their country of residence

When these conditions are met, we then consider every prescribed request and its individual dosages and parameters – with each medication and each destination having its own nuances – including that some medications require for example constant refrigeration. We only use trusted logistics partners who are experienced in safely transporting medications for the final leg of the process to get the medication in the hands of the person in need.

***MEH*: How do you ensure that the system is not abused by people with drug dependency problems?**

■ **SV:** We work in the niche area of aiding patients with debilitating illnesses, and only support patients who have a valid prescription from their treating doctor in their country of residence. As part of the process, we also work closely with the treating doctor to ensure the safety of each patient. Additionally, given the nature of the process required to source these medications, it's a difficult process to forge, so we don't experience instances of people trying to access medications using our services who aren't truly in need.

***MEH*: Are there any significant cost increases to the medications due to shipping, duty, administration, etc?**

■ **SV:** The base price of each medication is dictated by the manufacturer, and we do what we can to get the very best price from them in order to best serve patients.

TheSocialMedwork does all of the legwork in safely sourcing, importing and delivering medications to patients as quickly and easily as possible – so the patient can focus on looking after themselves and not have the added stress of niggly research, paperwork and logistics. In taking on this challenge, we ask for a Named Patient Support fee, which helps to cover the costs incurred and allows us to offer our services. Patients must also consider shipping costs, local taxes and duties which may be incurred and differ in each country, with TheSocialMedwork's experts helping to advise on this and navigate any issues for a streamlined process.

***MEH*: Can you give some examples of how TheSocialMedwork has benefited patients?**

■ **SV:** TheSocialMedwork has helped tens of thousands of patients across more than 85 countries to access life-improving medications. In many cases, this has allowed patients to enjoy a higher quality of life and allow them to spend more quality time with their loved ones. As an example, we have an ALS patient who resides in the UAE who requires medication which isn't yet available in the Middle East. Even when travelling to his home country, and during these times of COVID, we've been able to supply him with the medication he needs. In the last two years since TheSocialMedwork began sourcing his treatment, his doctor has reported a slowing in the progression of his illness, which is great news for his ongoing quality of life. He has told us how thankful he is that the power has been put back in his hands, both in his ability to fight the disease and to 'make the most' of his situation. MEH

Royal National Orthopaedic Hospital decommissions pagers, unifies clinical communication amidst pandemic

The largest specialist orthopaedic hospital in the United Kingdom responds to COVID-19 with a robust communication strategy – and nobody misses the pagers

In December 2018, the Royal National Orthopaedic Hospital (RNOH) NHS Trust opened its new, state-of-the-art Stanmore Building. Its older facility was no longer suitable for the high-quality care and excellent clinical outcomes RNOH strives to provide. The hospital layout went from having Nightingale wards – large rooms without subdivisions for multi-patient occupancy – to modern wards with single patient rooms offering more privacy. However, staff were accustomed to working and communicating with clear lines of visibility. Some were concerned they wouldn't be able to communicate with each other efficiently in the new hospital building, due to the reduced lines of sight and new layout.

In February 2019, two months after RNOH opened the new facility, Health Secretary Matt Hancock issued his order for all NHS hospitals to remove archaic technology including pagers, for non-emergency communications before the end of 2021. The hospital quickly began the process to decommission pagers and replaced them with a communication platform from Vocera that would unify staff.

RNOH leadership chose the Vocera platform, an intelligent ecosystem that connects all the people and information needed to deliver patient care, for their modern facility. Vocera stood out as the best vendor to meet RNOH's needs and was selected because the platform provides simplicity, rapid hands-free communication, and allows users to choose the device that works best for their role.

Before implementing Vocera technology in the 100-acre hospital, care team members would receive pager notifications initiated through a complex workflow. Clinicians that received notifications were tasked with finding a phone, calling the switchboard operator, writing down the message, repeating it back to the operator, and responding accordingly.

"We needed a faster, more reliable communication system," said Bela Haria, Information Management and Technology Senior Project Manager. "Pagers were falling to bits and had to be held together with tape. Additionally, some areas in the hospital didn't have pager coverage."

RNOH reported an 84% improvement in care team response times after replacing pagers with the Vocera smartphone app and hands-free communication badge. After deploying the Vocera solution, mobilising the cardiac arrest team at the 220-bed hospital went from an average of two minutes to 20 seconds.

When the UK began to see cases of COVID-19 earlier this year, RNOH had to rapidly shift priorities and prepare for the impending patient surge.

"If I were to give anyone advice when planning for a pandemic or impending patient surge, it would be to unify your communications now," explained Matt Phillips, Lead Clinical Practitioner, Acute Intervention.

During the peak of COVID-19, RNOH extended its pager replacement program, utilising the full potential of the Vocera communication platform. The hospital went from a controlled roll out to relying completely on Vocera solutions for all pagers, including all crash calls. The hospital also quickly shifted from focusing on and performing elective surgeries to preparing for and managing patient surges.

"In a 10-day period we turned our quiet, elective surgery hospital into the orthopaedic trauma centre for a large portion of north central London," said Matt Phillips, Lead Clinical Practitioner, Acute Intervention Team at RNOH. "We suddenly went from caring for pre-assessed elective patients, to having multiple trauma-related cases per week."

A global leader in orthopaedic and spinal surgery, RNOH turned its private patient unit into a respiratory therapy unit where most of the COVID-19 patients were treated. The hospital equipped runners with wearable Vocera badges to bring necessary supplies to clinicians treating patients in the make-shift isolation rooms. Runners could communicate with clinicians without having to enter the rooms, eliminating the need for the runner to don personal protective equipment (PPE).

"Vocera technology sped up communication and coordination during the peak of the COVID-19 crisis," said Pauline Robertson, Head of Nursing for Medicine and Therapies. "It helped us provide seamless patient care without risking infection, and we were able to conserve precious PPE."

Vocera technology also helped staff stay connected to team members outside the hospital during the pandemic. Clinicians working in pop-up testing tents that the British Army set up in the hospital's car park were equipped with Vocera badges.

"If it weren't for Vocera, we wouldn't have had a way to quickly and easily communicate with staff working in our testing tents," Phillips said. "Vocera technology was brilliant because we didn't have to worry about anything related to communication. We gave staff a badge, and we were instantly at peace knowing they had a secure means to communicate with each other and with the rest of hospital staff."

- For more resources and information on how Vocera can help you improve clinical communication and workflows, visit: *www.vocera.com/pagerreplacementsolutions*

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Health workers and their families account for 1 in 6 hospital COVID-19 cases

Healthcare workers and their families account for a sixth (17%) of hospital admissions for COVID-19 in the working age population (18-65 years), finds a study from Scotland published by *The BMJ* on 28 October 2020.

Although hospital admission with COVID-19 in this age group was very low overall, the risk for healthcare workers and their families was higher compared with other working age adults, especially for those in "front door" patient facing roles such as paramedics and A&E department staff, say the researchers.

As such, they say these findings have implications for the safety and wellbeing of healthcare workers, and their households.

Many healthcare staff work in high-risk settings for contracting COVID-19 and transmitting it to their household, workplace contacts, or both. Yet the extent of these risks are not well understood, as studies are lacking or have been beset by quality issues.

To address this evidence gap, a team of UK researchers set out to assess the risk of hospital admission for COVID-19 among patient facing and non-patient facing healthcare workers and their household members.

Their findings are based on Scottish workforce data for 158,445 healthcare workers (aged 18-65 years), 229,905 household members, and other members of the general population during the peak period for COVID-19 infection in Scotland (1 March to 6 June 2020).

The researchers found that admission to hospital with COVID-19 was uncommon, with an overall risk of less than 0.5%.

However, compared with other adults of working age, healthcare workers and their households accounted for 17% of all COVID-19 related hospital admissions, even though they represent only 11% of the working age population.

After adjusting for factors such as age, sex, ethnicity and underlying health conditions (comorbidities), the risk of

hospital admission for COVID-19 in non-patient facing healthcare workers and their household members was similar to the risk in the general population.

However, patient-facing healthcare workers were three times more likely to be admitted to hospital for COVID-19, while members of their households were nearly twice as likely to be admitted to hospital for COVID-19 than other working age adults.

Those working in "front door" roles, such as paramedics and A&E department staff, were at the highest risk of hospital admission for COVID-19.

Among healthcare workers who were admitted, 1 in 8 were admitted into critical care and six (2.5%) died. To put this into context, this corresponds to just 0.004% of deaths as a proportion of all healthcare workers. In admitted household members, 1 in 5 were admitted to critical care and 18 (13%) died.

This is an observational study, so can't establish cause, and the researchers acknowledge that some misclassification is likely to have occurred. What's more, the study included predominantly white healthcare workers, so results may not apply to ethnic minority groups.

Nevertheless, the researchers say these findings from the "first wave" in Scotland show that healthcare workers in patient facing roles – especially those in "front door" roles – are, along with their households, at particular risk.

And they call on governments, healthcare managers and occupational health specialists to consider how best to protect healthcare workers and their families in the event of a resurgent pandemic.

These findings should inform decisions about the organisation of health services, the use of personal protective equipment (PPE), and redeployment, they conclude.

In a linked editorial, researchers at Skane University Hospital in Sweden welcome these findings and say reasons for the observed increase in risk "need to be explored to help to guide safety improvements in healthcare settings".

They call for high quality studies evaluating new prevention and control practices "to guide improvements in our approach to protecting health care workers and their families, including those from ethnic minority communities who have the highest risks of infection and poor outcomes, widening workplace inequality".

They also call on the international community to support efforts by the World Health Organization to secure adequate supplies of PPE and COVID-19 tests for low and middle income countries, and say an effective vaccine, if and when available, "must be distributed fairly and healthcare workers must be prioritised globally."

In accordance with United Nations Sustainable Development Goals, "we must ensure the protection and security of all health workers in all settings," they conclude.

Reference:

Risk of hospital admission with coronavirus disease 2019 in healthcare workers and their households: nationwide linkage cohort study, The BMJ.
https://doi.org/10.1136/bmj.m3582

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The BMJ pays tribute to UK doctors who have died of COVID-19

The BMJ paid tribute to the doctors across the UK who have died while working during the COVID-19 pandemic with the publication of a memorial page.

The list, compiled and verified by the British Medical Association (BMA) is in memory of those who have lost their lives to COVID-19 while in the line of duty. It highlights especially the devastating toll on doctors from a Black and Minority Ethnic (BAME) background, including many migrant workers on whom the NHS depends.

Fiona Godlee, editor in chief at *The BMJ* said: "This page honours doctors who have lost their lives working for the good of others under the most difficult of circumstances in this COVID-19 pandemic. Each name represents an irreplaceable gap in a family and a workplace.

"No one should have to risk their lives or health because of their work, and we honour those who have paid this ultimate sacrifice," she adds. "In doing so we commit to all efforts that will bring this pandemic to an end and that will ensure the safety and well-being of everyone working on the front line of healthcare."

Dr Chaand Nagpaul, BMA council chair, said: "The death of a fellow doctor is always tragic, but to lose so many at the hands of the virus is devastating. We offer our profound sorrow and heartfelt condolences to the families, friends and colleagues of these committed clinicians who cared for patients in the most challenging of times, battling against this highly infectious and deadly virus.

"The vast majority who have sadly died are from a BAME background, with many coming from overseas to contribute their valuable skills and expertise to the NHS to save the lives of others, only to tragically lose their own."

He added: "During the pandemic the dedication, bravery and compassion of all healthcare workers has shone through in the fight against the coronavirus. We must never allow our BAME colleagues to be taken for granted or disadvantaged. The NHS has a duty of care to protect its workforce from harm.

"We owe them our gratitude, our respect, and a pledge that we will remember them."

- *The BMJ* memorial page: *https://www.bmj.com/covid-memorial*

BMA publishes results of doctor survey on physician-assisted dying

The British Medical Association (BMA) recently published results of the biggest survey to date of UK doctors' views on physician-assisted dying.

Almost 29,000 doctors and medical students answered questions about their views on whether there should be changes in law that would permit doctors to either prescribe or administer life-ending drugs to eligible patients. They were also asked what they believed the BMA's position on a change in the law to permit physician-assisted dying should be.

The survey followed a debate at last year's BMA Annual Representative Meeting (ARM), in which BMA members (doctors and medical students) voted to instruct the Association to carry out the poll.

The BMA says the results of the survey will not determine its policy, which remains opposed to assisted dying in all forms. Rather, they will feed into a subsequent debate at next year's ARM about the BMA's position. Unless and until a decision is made at the ARM to change its position, the BMA's current policy will remain.

Results

When asked about a change in the law to permit doctors to prescribe life-ending drugs to eligible patients, the survey found:

- 40% of surveyed members said that the BMA should actively support attempts to change the law, one in three (33%) favoured opposition and one in five (21%) felt the BMA should adopt a neutral position.
- Half (50%) of surveyed members personally believed that there should be a change in the law to permit doctors to prescribe life-ending drugs. 39% were opposed, with a further 11% undecided.
- 45% of surveyed members were not prepared to actively participate in the process of prescribing life-ending drugs, should it be legalised. 36% said they would be prepared to actively participate, and 19% were undecided.

On a change in the law to permit doctors to administer drugs to end an eligible patient's life, the survey found:

- 40% of surveyed members said that the BMA should actively oppose attempts to change the law, 30% favoured support, and 23% felt the BMA should adopt a neutral stance.
- 46% personally opposed a change in the law, with a further 37% supportive and 17% undecided.
- 54% said that they would not be willing to actively participate in the process of administering life-ending drugs, should it be legalised. A quarter (26%) said they would, and one in five (20%) were undecided.

Dr John Chisholm, BMA medical ethics committee chair, said: "Physician-assisted dying is an emotive and sensitive issue that understandably ignites a broad range of strong personal views across both the general public and the medical profession, and the results from this survey give us a valuable insight into the breadth of views held by the BMA's membership.

"As we have made clear from the outset, these results are not intended to form but to inform BMA policy, and it is not for me, or the BMA as an association to provide an interpretation of what they mean or what should happen next at this stage. Rather, these detailed findings will make for an in-depth, considered debate on the future of the BMA's policy when our members meet at the next Annual Representative Meeting."

- Full results of the survey can be viewed here: *https://www.bma.org.uk/advice-and-support/ethics/end-of-life/physician-assisted-dying-survey*

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