News from here and there

New regulations for MBBS admissions from 2021

On 28 October 2020, the National Medical Commission (NMC) put forth new regulations titled 'Minimum Requirements for Annual M.B.B.S. Admissions Regulations, 2020', which will come into force from the date of their publication in the Gazette.

These regulations will be applicable from the academic year 2021–22 onwards for upcoming medical institutions and existing medical colleges that wish to increase their annual intake of MBBS students. The NMC stated that there is a need to reorganize medical education and training such that future medical graduates will be able to discharge their roles efficiently in a changing world.

The key features in the regulations are: new medical institutions can have either 100 or 150 MBBS students. This can be subsequently increased to 150, 200 or 250 MBBS students annually. Existing medical colleges with an intake of less than 100 MBBS students will continue to be governed by the erstwhile Medical Council of India (MCI) rules.

The medical college, hostels and teaching hospital shall be within a single campus. However, in tier 1 and tier 2 cities, hilly areas, the northeastern states, and notified tribal areas, the campus can be on two plots of land. These plots of land should be within a distance of 10 km or less than 30 minutes' travel time, whichever is lesser.

The local government district hospital can be considered as the medical institution's teaching hospital provided that it has at least 300 beds (250 beds in hilly areas and the northeastern states).

The medical institution needs to have an air-conditioned, well-lit, central library measuring 1000–1500 m^2 with an adequate stock of books and journals; at least four gallery-type lecture theatres, preferably air-conditioned; if there are two campuses, an additional lecture theatre is required in the second campus; a minimum of eight laboratories and three museums. A skills laboratory should be in place where students can work in a simulated clinical environment. Two new teaching departments, emergency medicine and physical medicine and rehabilitation, must be in place to train students in proper response to emergencies.

A vigorous institutional policy should be in place for human biomedical waste management. It should conform to the Biomedical Waste Management (Amendments) Rules, 2019. The regulations expect that all students should be provided hostel accommodation. A refreshing concept is the establishment of a childcare centre with facilities for staff children.

P.M. NISCHAL, *Mangalore, Karnataka*
ORCID ID: 0000-0003-3491-5500

New pair of salivary glands detected during radiotherapy screening for prostate cancer

A new pair of previously undetected salivary glands, situated at the junction of the nasal passage and the throat, has been discovered. The Netherlands investigators Matthijs H. Valstar and colleagues proposed that this newly identified set of macroscopically visible salivary glands, located near the torus tubarius in the nasopharynx, be referred to as 'tubarial glands' (Valstar MH, *et al*. The tubarial salivary glands: A potential new organ at risk for radiotherapy. *Radiother Oncol https://doi.org/10.1016/j.radonc.2020.09.034.* 22 Sep 2020). Before this study, only three major salivary gland pairs were recognized along with thousands of microscopic unnamed minor salivary glands in the head-face-neck territory.

The study initially scanned 100 consecutive patients with prostate/para-urethral gland cancer as a retrospective cohort group by computed tomography and positron emission tomography to detect the presence of aggregations of radio-labelled ligands to the prostate-specific membrane antigen (PSMA) in various organs. This radioactive tracer could also detect salivary glands with high sensitivity and specificity. All 100 patients (99 male, 1 female; median age 69.5 years; range 53–84 years) had a demarcated bilateral PSMA-positive area (average length 4 cm) in the nasopharyngeal pathway. Dissection of the delineated area from bodies retrieved from a body donation programme (1 male, 1 female) showed a large aggregate of predominantly mucous gland tissue, with multiple macroscopically visible openings of a draining duct on histopathology. The gland in each case was located anatomically over the torus tubarius, at the entrance of the auditory tube.

This discovery has implications for treatment protocols in oncology, because high-dose external beam radiotherapy (RT) to salivary glands during treatment for head and neck cancer (HNC) or brain metastasis is known to cause long-lasting damage such as xerostomia and dysphagia. This article used multivariable logistic regression analysis to create association models with and without correction for confounding factors. This helped confirm that the tubarial salivary glands were organs-at-risk during radiation therapy protocols directed above the sternum. The authors suggested that tubarial glands be recognized as such and fresh predictive models be developed to limit exposure of radiotherapy fields to the tubarial glands.

MAHARRA HUSSAIN, *United Arab Emirates*

Nobel and Ig Nobel prizes, 2020 awarded

The Nobel Prize in Physiology or Medicine has been shared by Harvey J. Alter, Michael Houghton and Charles M. Rice for the discovery of hepatitis C virus (HCV) and their path-breaking work on its blood-borne complications such as hepatitis, which causes cirrhosis and liver cancer and is a major global health concern.

Harvey J. Alter, an American from New York, in his tenure at the US National Institutes of Health, Bethesda, MD, USA identified a new, distinct form of chronic viral hepatitis initially known as 'non-A, non-B' hepatitis. His paper 'Discovery of non-A, non-B hepatitis and identification of its etiology' published in *Am J Med* in December 1999 (*https://doi.org/*

10.1016/S0002-9343(99)00375-7) found that 75% of transfusion-associated hepatitis fell into the 'non-A, non-B' category. Michael Houghton and his co-workers at the pharmaceutical firm Chiron isolated the genetic sequence of the virus in patients' sera by identifying cloned viral DNA fragments encoding viral proteins. This new RNA virus was thought to belong to the *Flavivirus* family and was named hepatitis C virus. Born in the UK, Dr Houghton is currently 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. He is a recipient of the Robert Koch Prize (1993) and the Albert Lasker Clinical Medical Research Award (2000, shared with Alter) and a would-be awardee of the Canada Gairdner International Award (2013) (which he respectfully declined since it did not acknowledge his colleagues who helped identify HCV).

Charles M. Rice (USA) was a researcher at Washington University in St Louis, MO, USA when he identified a new region of the HCV genome which, when injected into the liver of chimpanzees, induced pathological changes resembling those seen in humans with chronic liver disease. This convincingly established the role of HCV as a causative agent in transfusion-mediated hepatitis. Since 2001, he has been Professor and Scientific and Executive Director at the Center for the Study of Hepatitis C at Rockefeller University, New York, USA.

The combined work of these three Nobel laureates, done across four decades, has led to the creation of highly sensitive blood tests for detection of HCV, thereby reducing the incidence of post-transfusion hepatitis globally, and has allowed the rapid development of antiviral drugs directed specifically against HCV.

The Nobel Prize in Chemistry 2020 was awarded jointly to Emmanuelle Charpentier and Jennifer A. Doudna 'for the development of a method for genome editing'. Charpentier, in 2011, discovered that tracrRNA in *Streptococcus pyogenes* was a part of bacteria's ancient immune system, CRISPR/Cas. This immune pathway could disarm viruses by cleaving their DNA. She collaborated with Doudna for research that successfully recreated the bacteria's genetic scissors in a test tube by isolating the components of the CRISPR–Cas9 system. They published their joint results on CRISPR being a novel DNA-editing tool in *Science* on 'A programmable dual-RNA-guided DNA endonuclease in adaptive bacterial immunity' (doi: 10.1126/science.1225829; in August 2012). Emmanuelle Charpentier (Founder, Scientific and Managing Director, Max Planck Unit for the Science of Pathogens, Berlin, Germany) is the recipient of the Breakthrough Prize in Life Sciences award, the Harvey Prize, and the Gruber Prize in Genetics. Jennifer A. Doudna (Professor at the University of California Berkeley and a faculty scientist at the Department of Energy's Lawrence Berkeley National Laboratory) was the first to propose that enzymes from bacteria that control microbial immunity (CRISPR-Cas9) could be used for programmable editing of genomes and has been awarded the Breakthrough Prize in Life Sciences, the Wolf Prize in Medicine, and the NAS Award in Chemical Sciences.

The 30th Ig Nobel Prize ceremony was held virtually on 17 September 2020 in an event that saw authentic Nobel Prize winners award laurels, online, to new Ig Nobel contenders from across six continents. Launched initially by the magazine *Improbable Research* in 1991, the awards ceremony is held annually with the aim of inspiring contemplation via a humorous outlook. The categories include, among others, the Ig Nobel Prize in Medicine, which was awarded this year to psychiatrists at the University of Amsterdam for identifying a medical condition called Misophonia, whose symptoms include distress and impulsive aggression induced in patients by the sound made by other people while they chew food. Lip-smacking, loud breathing, 'nasal sounds' and the sound of typing on a keyboard or repeatedly clicking a pen were also identified as potential triggers capable of eliciting violent and excessive reactions. Their paper 'Misophonia: Diagnostic criteria for a new psychiatric disorder,' by Arjan Schroder, Nienke Vulink and Damiaan Denys, was published in *PLoS One* (2013;**8:**e54706).

The Ig Nobel Prize in Medical Education was jointly awarded to multiple political leaders, for demonstrating in the Covid-19 viral pandemic that politicians, rather than doctors and scientists can have a more immediate effect on life and death. The Ig Nobel Prize in Psychology was shared by Miranda Giacomin and Nicholas Rule, for their paper 'Eyebrows cue grandiose narcissism' (*J Personality* 2019;**87:**373–85). It identified a method to identify narcissists by examination of their eyebrows.

Other honourable mentions in 2020 include the Ig Nobel Prize in Acoustics which was a multicountry, multicontinent shared affair between Austria, Sweden, Japan, USA and Switzerland. It was awarded to Stephan Reber, Takeshi Nishimura, Judith Janisch, Mark Robertson and Tecumseh Fitch, for assessing formant frequencies in a crocodilian species. The research involved trapping a female Chinese alligator in an airtight chamber filled with helium-enriched air, inducing her to bellow and then recording and measuring her relatively chaotic vocalizations. Ethical approval for the study was taken from the St Augustine Alligator Farm research committee and was published in *J Experimental Biol* (2015;**218:**2442–7) under the title 'A Chinese alligator in heliox: Formant frequencies in a crocodilian'.

MAHARRA HUSSAIN, *United Arab Emirates*

National level applied AI research centre launched in Hyderabad

Intel India in collaboration with the government of Telangana, International Institute of Information Technology, Hyderabad (IIIT-H) and Public Health Foundation of India (PHFI) has launched an applied artificial intelligence (AI) research centre INAI, in Hyderabad, Telangana at the inaugural of the all.ai 2020 virtual summit (12–16 October 2020).

The INAI, a national-level research centre, has been conceived as an initiative to apply AI to population scale problems in the Indian context. Through strong ecosystem collaboration, the focus of INAI is to identify and solve challenges in healthcare and smart mobility segments. Acting as a catalyst, INAI will facilitate acceleration of India's leadership in AI. This is to be achieved by driving innovation and entrepreneurship, creating national assets such as curated datasets, computing infrastructure, tools and frameworks. Eventually the aim is to attract global talent for high-impact research towards social sector development.

Adoption of technology-led innovations is considered to be key to solve the country's societal challenges in the critical areas of healthcare (e.g. enabling solutions to extend health coverage to every individual and advance research for better prediction of non-communicable diseases), smart mobility (e.g. using AI to reduce road accidents and fatalities in the country ensuring road safety) and the future of work. Therefore, there is a pressing need for industry, government, academia and the

public to work together to support technology development and apply it for societal development in an ethical and inclusive manner.

Combining the computing strengths and academic expertise of IIIT-H, the technology leadership and architecture strength of Intel, the public health expertise of PHFI, INAI is expected to facilitate technology innovation, entrepreneurship development, job creation and international collaboration.

ALLADI MOHAN, *Tirupati, Andhra Pradesh*
ORCID ID: 0000-0002-3214-9884

National Medical Commission replaces Medical Council of India

The National Medical Commission (NMC) became effective on 25 September 2020, as per the Ministry of Health and Family Welfare (MoHFW), Government of India. The NMC has been constituted by an Act of Parliament known as the National Medical Commission Act, 2019, which came into being by a gazette notification dated 24 September 2020. It succeeded the Board of Governors (BoG–MCI) which superseded the Medical Council of India (MCI) on 26 September 2018, to perform its functions. The BoG–MCI was earlier established under section 3A of the Indian Medical Council Act, 1956. It was chaired by Dr V.K. Paul, Member (Health), NITI Aayog. The BoG–MCI stands dissolved bringing an end to the MCI established 64 years ago by the Indian Medical Council Act. 'Indian Medical Council Act, 1956 is hereby repealed with effect from September 25. The BoG appointed under (102 of 1956) in supersession of the MCI constituted under sub-section (1) of section 3 of the said Act shall stand dissolved,' stated the gazette notification.

The NMC has been formed with the aim of development and regulation of medical education and profession. The MCI granted recognition of medical qualifications and medical colleges, registration to medical practitioners. It monitored the medical ethics and practice in India.

As per the orders of Supreme Court, from July 2017 the Central Government took the task of replacing the MCI. It appointed five specialized doctors to monitor the medical education system in India. The NITI Aayog too recommended the replacement of MCI with NMC. The President's assent was obtained on 8 August 2019 after the NMC bill was passed by Parliament.

Dr Suresh Chandra Sharma (former Head, Department of Otorhinolaryngology, All India Institute of Medical Sciences, New Delhi) was appointed as NMC's first Chairman for 3 years or until the age of 70 years. Rakesh Kumar Vats, who was Secretary General in the BoG–MCI, is now the secretary of the commission. Besides a Chairman, the NMC comprises 33 members,10 ex-officio members and 22 part-time members. The ex-officio members include presidents of the four autonomous boards; 60% of part-time members will be medical practitioners.

The change was aimed at bringing in long due reforms in medical education and thorough overhaul of the medical education regulation system of the country. The NMC will have four separate autonomous boards. These are the Under-Graduate Medical Education Board (UGMEB), Post-Graduate Medical Education Board (PGMEB), Medical Assessment and Rating Board and the Ethics and Medical Registration Board.

A section of the Indian Medical Association (IMA) opposes the NMC in its present format (*Natl Med J India* 2018;**31:** 365–6). However, at present, the NMC is set to function as the top medical education regulator.

JYOTI PRIYADARSHINI SHRIVASTAVA
Gwalior, Madhya Pradesh
ORCID No.0000-0002-0032-3681