MESSENGERS FROM

THE CHANCELLOR
PRAVARA INSTITUTE OF MEDICAL SCIENCES
I welcome this thought provoking cerebral and yet fun way to understanding the science and art of medicine by the students of RMC guided by eminent faculty. I have seen the first edition of this document and am impressed by the scope and breadth of its content. It demystifies the subject and is able to convey a sense of wonder as regards the working of nature. I look forward to seeing the fresh avenues explored by the students which should bring out the best of medical practice in RMC and also in medicine the world over. I wish the endeavour all success and a bright future.

THE VICE CHANCELLOR
PRAVARA INSTITUTE OF MEDICAL SCIENCES
It is my privilege to welcome this vibrant newsletter from the students of RMC. I wish the students and their guiding faculty all success in bringing out relevant future issues with salience and connecting with the intended audience with clarity of thought and newer perspectives in the existing world of medicine. I congratulate the entire editorial team whose hard-work and dedication has manifested in the publication of this newsletter.

THE DEAN
DR. BALASAHEB VIKHE PATIL RURAL MEDICAL COLLEGE, LONI
I applaud this project by students of RMC with able guidance from faculty. Even after several decades of practice, of this noble profession, I find myself filled with wonder everyday, in the manner in which new perspectives and knowledge keeps unfolding. Learning is a continuous process and the best of it is done when it is propelled by curiosity towards the ubiquitous yet mysterious nature which is all around us. I am particularly impressed by the name ‘Ubiquiscope’ which to me conveys a sense of curiosity and excitement in this process. I wish this inspired venture all success.

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EDITORIAL’S NOTE
We welcome you to the very first edition of Ubiquiscope, an initiative taken to provide you with the most interesting and latest advancements in our medical field along with an opportunity to know what’s happening inside our campus in an unconventionally fun way! We wish for you to have an intellectually stimulating as well as enjoyable time when you go through our newsletter, which has been created keeping in mind the best interests of our beloved readers. For those who wish to further immerse themselves into our articles, a source link is provided at the end of each article, where you can delve deeper and acquire the fine details of the topic you want. We would love to hear from you. Thanking you in advance.

The Editorial Team
INFLAMMATION: A CORE FEATURE OF DEPRESSION

New research suggests that depression and inflammation are biologically linked — a finding that may have important implications for patients whose condition fails to respond to treatment with antidepressants. In the largest-ever examination of genetic, environmental, lifestyle and medical drivers of inflammation in major depressive disorder (MDD), levels of the key inflammation marker C reactive protein (CRP) were higher in patients with depression rather than those with no mental disorder. In animal models, stress stimulates the entire immune system, bone marrow included, which leads to the hyperactive production of immune cells. Humans with depression also produce more white blood cells, particularly monocytes. The release of these important immune cells into the bloodstream prompts further response elsewhere in the body.

All this results in a negative feedback loop in which inflammation makes the body believe it is under threat, produces a more robust immune response, and perpetuates or exacerbates depressive symptoms.

High inflammation levels are associated with autoimmune disorders and cardiovascular illness or other ailments.

Study also shows that the genetic contribution to inflammation in depression comes mostly from eating and smoking habits. Changes to lifestyle and diet, such as adding high-dose fish oil supplements, and increased exercise could help as well.

It has also been indicated that patients who experience higher levels of inflammation during SARS-CoV-2 infection are more likely to suffer mental disorders 3 to 6 months after COVID-19.

We need to remember that around one third of the depressed patients don’t respond to any of the available medication. Although we are a long way from creating a silver bullet that can help depressed patients but we can come one step closer by helping patients suffering from MDD with the addition of an anti inflammatory in their treatment regime.


Clinical case

A 9 year old female presented to the OPD with complaints of seizures since 8 days and inability to pass stools. On admission and further history the patient was found to be unvaccinated and had Otitis Media a month ago. No history of trauma was noted. On auditory and visual stimulation the patient was having increased intensity as well as frequency of spasms. A blood culture was done which tested positive for Pseudomonas and Coagulase negative Staph aureus. The pus culture came positive for Staphylococcus aureus and gram negative drum stick shaped bacillus. The patient was clinically diagnosed with Tetanus and was given tetanus immunoglobulin and toxoid.

Tracheostomy was done to mechanically ventilate for 2 weeks. Sedatives and antispasmodics were given to relieve the patient of muscular symptoms. Antibiotics according to the antibiotic susceptibility pattern was administered. The patient has started to recover and is accepting oral feeds. This is a case of Otogenic Tetanus in which the source is an ear infection. Usually occur in children due to the insertion of beads, pencils etc into their ears. Worldwide the total number of tetanus cases has fallen drastically about 88% reduction due to proper immunization. In 2018 there were a total of only 16906 cases worldwide. India accounted for 7129 cases due to improper vaccinations.

Opisthotonus Arching of back due to muscle spasms

1. Site and Route of administration of Tetanus Toxoid is?
   a. Upper Arm: SC
   b. Anterolateral Aspect of Thigh: IM
   c. Upper Arm: Deep IM
   d. Anterolateral Aspect of Thigh: SC

2. Vaccines evaluated for freezing by ‘Shake Test’ are all except-
   a. TT
   b. IPV
   c. DPT
   d. Hep B
D-DIMER AND ITS ASSOCIATION WITH SEVERITY OF COVID 19

D-dimer is a fibrin degradation product that is used to measure and assess clot formation. The presence of D-dimer in blood plasma is often used as a clinical biomarker to identify thrombotic activity and therefore diagnose conditions like Pulmonary Embolism, DVT, DIC and VTE. Other conditions that can cause D-dimer levels to rise are advanced age, pregnancy and chronic inflammatory diseases. Augment activity of urokinase causes hyperfibrinolysis by increasing cleavage of plasminogen into active plasmin and finally leading to diffuse alveolar damage and acute lung injury in a mouse model of SARS-CoV disease. D-dimer elevation might be a manifestation of severe virus infection which may develop into sepsis and induce coagulation dysfunction. It might also be indirect manifestation of inflammatory reaction, as inflammatory cytokines could cause the imbalance of coagulation and fibrinolysis in the alveoli which may activate the fibrinolytic system and then increase the level of D-dimer. Currently four commercial assays are being used to measure D-dimer levels—whole blood analysis, ELISA, enzyme linked immunofluorescence assay (ELFA) and Latex-enhanced immunoturbidimetric assay. Several studies have looked to measure D-dimer levels in hospitalised COVID-19 patients to determine whether this biomarker could be useful in predicting patient outcomes. The level of D-dimer was found markedly increased in patients with severe COVID-19 and levels greater than 0.5 μg/ml indicate severe COVID-19. The coagulation function parameters including prothrombin time, fibrinogen (ogen) degradation products and D-dimer were found elevated in patients with severe COVID-19. Clinical attention to VTE risk should particularly be paid to those patients with severe COVID-19 who were often bedridden and presented with abnormal coagulation function. LMW Heparin treatment might be beneficial to COVID-19 patients with markedly elevated D-dimer levels. Thus, patients with higher D-dimer should attract more attention in early time.

Reference:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7384452/
https://www.news-medical.net/health/What-is-D-Dimer.aspx

LOW DOSE MAGNESIUM SULPHATE REGIME FOR ECLAMPSIA

Eclampsia continues to remain a common cause of maternal mortality in developing world. The first principle in management of eclampsia is to control convulsions. Dr J.A. Pritchard used magnesium sulphate to control convulsions in eclampsia cases. Magnesium sulphate acts on peripheral myoneural junction and blocks the impulse transmission. Different dose protocols have been used in treating, amongst which, Pritchard regime is widely used. Flower et al adjusted doses of magnesium sulphate according to body weight plasma level and urinary excretion of magnesium sulphate. Dr J.A. Pritchard adjusted the dose of magnesium sulphate by reducing it in women with low BMI. Sardesai Suman et al used low dose magnesium sulphate regime in eclampsia in Indian women and found to be very effective and safe. Low dose magnesium sulphate regime with a loading dose of four grams of magnesium sulphate (20% solution) was given intravenously over five minutes time. Subsequently, maintenance dose of two grams (50% solution) was given deep intramuscularly in alternate buttock every four hour till 24 hours after delivery or after last convolution, whichever was later. If there was convulsion after minutes of initial intravenous loading dose, additional 2 grams of 20% magnesium sulphate solution was given intravenously, which concluded that low dose regime was effective for the control of eclamptic convulsions. Dose required for control of convolution with low dose regime was less than half of standard Pritchard regime. There was no magnesium related toxicity with low dose magnesium sulphate regime. All cases were monitored for evidence of magnesium toxicity in the form of evidence of deep tendon reflexes, depression of respiration and measurement of serum magnesium levels. If any toxic effects were observed, next dose of magnesium sulphate was withheld and the toxicity was managed. There is need for additional multicentric case control trials to support the observations, before we recommend a change from standard Pritchard regime to low dose magnesium sulphate regime, which suits the Indian women, having relatively low body mass index as compared to their western counterparts.

Reference: Dr. Vidhyadhar Bangal’s low dose magnesium sulphate regime for eclampsia.
MICROFLUIDICS: A WORLD WITHIN WORLDS

The recent outbreak of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and its associated serious respiratory disease Coronavirus Disease 2019 (COVID-19) poses a major threat to global public health. Current standard diagnostics such as RT-PCR approaches rely heavily on expensive equipment, well-trained staff, and equipped laboratories. Moreover, sample examination using this method increases the total turn-around time with a higher risk of cross-contamination. Owing to these difficulties, researchers have developed point of care (POC) diagnostic testing devices, which allow increased screening and detecting capacities in a cost-effective manner and helps the medical facilities in achieving a fast diagnosis. The interesting aspect is that these POC diagnostic tests are based on the same process which is responsible for transport of water and nutrients in plants and the working of inkjet printers in our rooms. Let’s briefly enter into the fascinating world of Microfluidics!

Microfluidic systems are any device that processes minuscule amounts of liquids. The fluids travel through tiny channels, controlled by valves. One way to move fluids is with a mechanical pump; another way is to use the surface charges of certain materials; and yet another is to use the so-called capillary action or wicking. Wicking is the process by which the energy stored within the liquid propels the liquid through narrow spaces.

Their use is in the analysis of precious fluids – such as human blood benefits from the ability to use small samples. For example, glucose meters are microfluidic instruments that require a tiny amount of blood to quantify blood sugar levels. The microfluidic devices can also be designed to act as indicators of preclinical human drug responses, in clinical trials by the development of microengineered models of the functional units of human organs called organs-on-a-chip that could provide the basis for preclinical assays with greater predictability. Another upcoming use of microfluidics, still under research, is the development of tumor-on-chip platforms which can test the efficiency of anti-cancer drugs more efficiently and can help in figuring out which drug will work best for a particular tumor.

Reference:

UBIQUISCOPE

INSTAGRAM MENTIONS

Love for cooking, started at a very young age for me.
As my goal was to become a Doctor, I had little time to try new things.
From all the things I tried, my absolute favourite is always Petit gâteau / chocolate fondant / chocolate lava cake.
The excitement of making it is the part when you cut into the cake and the hot molten chocolate just starts oozing out of the cake. That’s what gives the chef the Ultimate satisfaction.

- Manuj Dayal
MBBS 19

By Shresth Sharma

CROSS-ANAT

Across
1. Puncture into the amnion to draw fluid
2. Lack of hydrochloric acid in the stomach
4. Incomplete expansion of the lung or part of a lung
9. Area of dead heart muscle (dead tissue)
10. Largest artery in the body

Down
1. Listening to sounds within the body through a stethoscope
3. Surgical removal of thymus
5. Valve between right atrium and ventricle
6. Mitral valve
7. One point of origin
8. Plug or clot in a vessel

By Shresth Sharma

THE_MIDDLE_BAKER.99
Holograms aren't just for Princess Leia anymore. Interactive technology hitting the market now can help doctors examine vital organs using 3D displays that hover over a desktop screen. Holograms in surgery are going to increase precision during the surgical removal of breast tumors. A Stanford research team developed a technique that brings holographic images into the OR. Surgeons refer to MRI images on computer displays to help guide their incisions, but there is still quite a bit of guesswork because tumors come in various three-dimensional shapes and sizes. As a result, either too much tissue gets removed which may lead to improper functioning of the breasts or too little which increases the chances of recurrence of the tumor.

The team developed a mixed-reality system using Microsoft’s HoloLens headsets to reflect a three-dimensional image of a patient’s tumor, based on MRI scans, directly on the diseased breast. The surgeon looks through the headset, which includes a holographic computer, and aligns a floating holographic image of the tumor onto the surgical site. The goal is to use the tools to increase the precision of the removal of the entire tumor, leaving as much of the healthy breast tissue as intact as possible.

“It gives me X-ray vision,” said Amanda Wheeler MD, clinical associate professor of surgery who is participating in a pilot clinical research study of 10 patients that uses this new system. Prior to surgery, Wheeler puts on the headset, then uses markers to sketch the reflection of the hologram onto the patient’s breast. Among the 300,000 women who are diagnosed yearly with breast cancer, about half are eligible for radiation and a lumpectomy that removes the tumor and leaves the remainder of the breast intact. The American Cancer Society reported. But deciding whether to have a lumpectomy rather than a mastectomy — total breast removal — is often difficult. It’s further hampered by the fact that 20 percent of women who have lumpectomies require a second surgery because the surgeon didn’t remove all the cancerous tissue the first time. Because this new method surgeons can now easily determine exactly where to cut out the cancerous breast tumor and it should reduce the number of second surgeries.

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6952247/

It is said that a mandala is a sacred space which reveals inner truth about you and the world around you, so here is my attempt to show who I am through paints and patterns.

- Bhaweka Varanjani
MBBS 19

The longer you look at an object, the more abstract it becomes, and ironically, the more real.

- Suraj Mohapatra
MBBS 20
Pravara Medical Trust has excelled in containing the Thus the campus is a safe zone for patients and spread of the pandemic not only in the PIMS (DU) employees alike. The management has been campus but also in the vicinity. Services provided by proactive in helping the underprivileged during these PMT during the pandemic have been noteworthy difficult times. Providing Tribal people in Akole and commendable.

On 25th March 2020 under the guidance of our keeping up with all COVID-19 safety precautions.

Chancellor Dr. Rajendra Vikhe Patil, PMT PIMS All preventive, promotive, curative and rehabilitative established a dedicated 100 bedded COVID-19 services are being provided in the time of pandemic.

Hospital/Isolation unit with 25 ICU beds equipped Pravara is one of the first private institutions in India with Ventilators, Minor OT, Laboratory, CSSD etc. to to have the diagnostic facilities for COVID including serve the COVID 19 positive patients. More than 2000 True-Nat Diagnostic Laboratory and AI X-ray Imaging COVID 19 patients have been treated in Pravara Rural Facilities Hospital. Loni till now.

Impact Evaluation Report of COVID in villages has

Pravara COVID Vaccination Centre (CVC) has enabled been prepared and submitted to the UNIVERSITY vaccination of around 17000 people. The staff GRANTS COMMISSION and was well appreciated.

members at Pravara are being provided with free Post- Vaccination serological studies are underway.

COVID related services and medicines at subsidised Effective co-ordination and guidance by Public rates.

The points of entry into the campus are restricted and the active role of the COVID task force lead by with only the Hospital main gate remaining open. Dr.Rahul Kunkulol Prof. HOD Pharmacology has making screening easier. General public and staff helped us avoid many fallibilities which could have members have been informed about COVID resulted in the exponential rise in cases. All the appropriate behaviour through IEC (Information , departments have contributed towards it.

Education and Communication) campaign. Teaching facilities are being continued in times of in pandemic through online mode. Exam planning and general goods store, food court, flour mill, milk supply, meat supply, parcel delivery system. conduction is also being carried out as per guidelines issued by authorities and concerned governing handymen including plumbers, electricians within campus itself. As the Pandemic is not over yet, we must strive together to overcome this challenge.

PEARLS OF RMC

- Dr. Shubham Gadekar, along with his colleagues Dr. Niharika Danturti and Dr. Gopal Chitlanga under the guidance of Dr. Mandar Baviskar have conducted a study on "Depression, Anxiety and Stress Among Individuals in Quarantine in Rural India and Effect of the Lived Experience On Their Attitudinal Perceptions About COVID-19". Their paper was well appreciated and also, published by the International Journal of Scientific Research, April 2021 issue.

- Dhruti Bhatt, 3rd year student at Rural Medical College, PIMS(DU) Loni participated in the National Elocution Competition conducted by the Switch India Foundation and Jaypee Brothers Publications. She fared well in all the stages of competition and won 3rd prize.

- Ayush Agarwal, a 2nd year student Rural Medical College, PIMS(DU) worked for an NGO named COVlHELP from 30th April to 20TH May, 2021. During this period, he helped in providing people with COVID resources.
Words that Matter

III/I Student - Aditya Dash talks about the spell to achieve success...

Life of a medical student is always filled with challenges and hardships, may it be disguised as a Book, an Exam or Submission. As far as Studies go, regular study pattern, consistent performance, no backlogs are my mantras for a successful study routine. Also, I understand the topic or concept to the best of my ability, so that later on I won’t face any disadvantage on my part. Importance of Time can only be learnt from a medical student and I think I still am in the process of managing my time, because you really don’t realise how fast time flies. I try to finish whatever work I have been assigned within the time I have been provided, this makes it easy to finish off your to-do list “Stress” a common enemy of us all, is also part and parcel of all our lives and to cope with it I practice Yoga, listening to my favorite music playlists to take my mind off things which I find too exhausting. I believe that by pursuing your hobbies, you feel good internally, and that helps you in relieving stress.

Medical college isn’t just a test of intellect but also of composure and grit. Try looking at your long term goals and don’t lose track of them. And one day you’ll be proud of your younger self that went through all of it and came out to be a successful doctor.

-Interviewed by Swatam Shetti

Med Poets Society...

Bipolar/Convex

I am both a people’s person and my own,
Some days I forget I have skin and
Other days I’m clawing to get out.
I am the one who engages in
profound conversations with
random passersby
and I’m still me when I sit in my
room all alone doing nothing as the
days float by.
I am a screaming cat when
someone engages my space,
I am a panting and wiggling dog
full of social grace.
It’s puzzling to conclude which one
is which and when,
So I’d rather you give up or think of
it as an open end.

-Midnight’s Promise

Tonight, my poem is not
a savior, nor it is a promise
of a better tomorrow.
Tonight, my poem is the one
sitting next to your silence,
feeling your racing heart,
listening to the sound of
your storming mind.
Pretend that it’s nothing,
or surrender, let it in.
Tell it what your eyes say
but nobody hears, or
embrace it to tell your emptiness,
you are not alone in this.

-Shresth Sharma
MBBS 20

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Dates to Remember

August
Cataract Awareness Month

September
Ovarian Cancer Awareness Month

September 21st
World Alzheimer’s Day

October 12th
World Arthritis Day

October 15th - 19th
National Health Education Week

November 12th
World Pneumonia Day