



# UBIQUISCOPE

A LOOK INTO SCIENCE



AUGUST 2021 • VOLUME 1

## MESSAGES 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 breath 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.

## WHAT'S INSIDE

Messages From The Chancellor The Vice Chancellor The Dean Editorial's Note	1
Inflammation: A Core Feature of Depression Clinical Case	2
D-Dimer and its association with severity of CoVID 19 Low dose Magnesium Sulphate regime for Eclampsia	3
MICROFLUIDICS: A World within Worlds Cross-Anat	4
Holograms and Stethoscope Now go hand in hand Artists of RMC	5
Campus Insights Pearls of RMC	6
Words that Matter Med Poets Society	7

## 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.

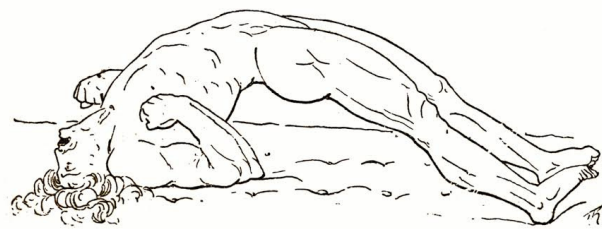
We need to remember that around one third of the depressed patients don't respond to any of the available medication. Although we are a long way from creating a silver bullet that can help depressed patients but we can come one step closer by helping patients suffering from MDD with the addition of an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

Reference:

<https://www.medscape.com/viewarticle/951135>

## 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: S.C
  - b. Anterolateral Aspect of Thigh: I.M
  - c. Upper Arm: Deep I.M
  - d. Anterolateral Aspect of Thigh: S.C
- 2.Vaccines evaluated for freezing by 'Shake Test' are all except:-
  - a.TT
  - b.IPV
  - c.DPT
  - d.Hep B

Ans  
1.c  
2.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.

Augmented 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, fibrin(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/PMC7384402/>

<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 convulsion, whichever was later.

Reference: [Dr.Vidhyadhar Bangal's low dose magnesium sulphate regime for eclampsia.](#)

If there was of 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 convulsion 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.

# 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. Lets 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 Reference:

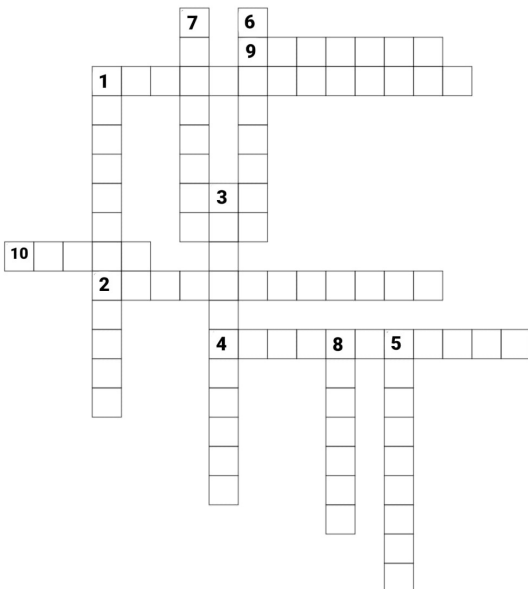
<https://theconversation.com/microfluidics-the-tiny-beautiful-tech-hidden-all-around-you-160436>

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.

## 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 thrombus
5. Valve between right atrium and ventricle
6. Mitral valve
7. One point of origin
8. Plug or clot in a vessel

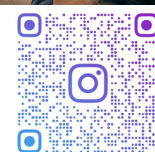
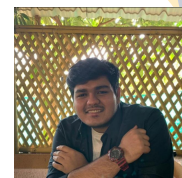
By Shresth Sharma



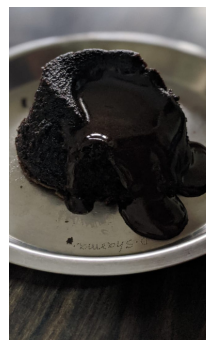
## INSTAGRAM MENTIONS

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 make 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., Thats is what gives the chef the Ultimate satisfaction. - Manuj Dayal MBBS 19



THE.MIDNIGHT.BAKER.89





## HOLOGRAMS AND STETHOSCOPE NOW GO HAND IN HAND

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 O.T. 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.

- Bhaweeka Varanjani  
MBBS 19



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

- Suraj Mohapatra  
MBBS 20





## CAMPUS INSIGHTS

### PRAVARA: A BEACON OF HOPE

Pravara Medical Trust has excelled in containing the spread of the pandemic not only in the PIMS (DU) employees alike. The management has been proactive in helping the underprivileged during these difficult times. Providing Tribal people in Akole (taluka) of Ahmednagar (District) with food kits and commendable.

On 25th March 2020 under the guidance of our Chancellor Dr.Rajendra Vikhe Patil, PMT PIMS All preventive, promotive, curative and rehabilitative established a dedicated 100 bedded COVID-19 Hospital/Isolation unit with 25 ICU beds equipped with Ventilators, Minor OT, Laboratory, CSSD etc. to serve the COVID 19 positive patients. More than 2000 COVID 19 patients have been treated in Pravara Rural Hospital, Loni till now.

Pravara COVID Vaccination Centre (CVC) has enabled vaccination of around 17000 people. The staff members at Pravara are being provided with free COVID related services and medicines at subsidised rates.

The points of entry into the campus are restricted with only the Hospital main gate remaining open, making screening easier. General public and staff members have been informed about COVID appropriate behaviour through IEC (Information Education and Communication) campaign.

Campus is "Athmanirbhar" having vegetable market, general goods store, food court, flour mill, milk supply, meat supply, parcel delivery system, handymen including plumbers, electricians within campus itself.

Thus the campus is a safe zone for patients and keeping up with all COVID 19 safety precautions.

Impact Evaluation Report of COVID in villages has been prepared and submitted to the UNIVERSITY GRANTS COMMISSION and was well appreciated. Post- Vaccination serological studies are underway.

Effective co-ordination and guidance by Public Service Experts like Dean Rtd. AVM Dr.Rajvir Bhalwar and the active role of the COVID task force lead by Dr.Rahul Kunkulol Prof. HOD Pharmacology has helped us avoid many fallibilities which could have resulted in the exponential rise in cases. All the departments have contributed towards it.

Teaching facilities are being continued in times of pandemic through online mode. Exam planning and conduction is also being carried out as per guidelines issued by authorities and concerned governing bodies.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 Chitlange 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.
- Dhruvi 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 faired well in all the stages of competition and won 3rd prize.
- Ayush Agarwal, a 2nd year student Rural Medical College,PIMS(DU),Loni worked for an NGO named COVIHELP from 30th April to 20TH May,2021.During this period, he helped in providing people with COVID resources.



**FOOD KITS DISTRIBUTION BY CHANCELLOR SIR**



**COVID TASK FORCE**



# 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

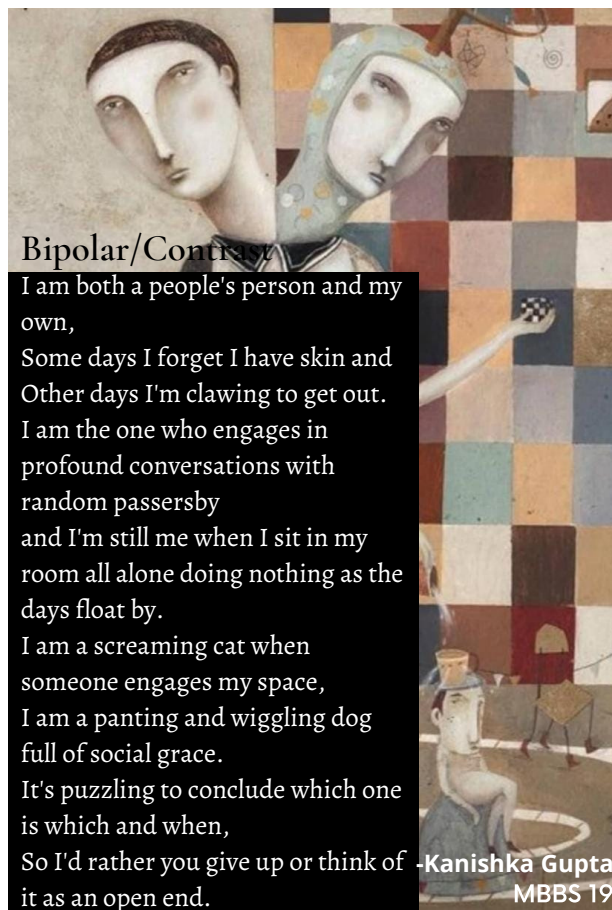
"Stress" a common enemy of us all, is also part and parcel of all our lives and to cope with it I practice Yoga, listening to my favorite music playlists to take my mind off things which I find too exhausting. I believe that by pursuing your hobbies, you feel good internally, and that helps you in relieving 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/Contradiction**

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.

-Kanishka Gupta  
MBBS 19

### 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

### 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



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