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MEDICAL EDUCATION REFORMS: HOPE OR HYPE?

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PHYSICIANS DAY - 2021

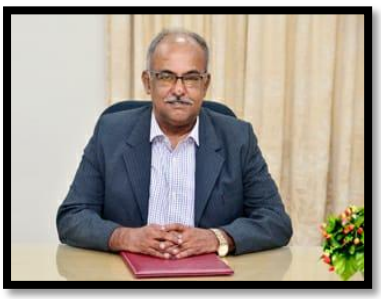
on Thursday 23rd December 2021
07-30 pm onwards in Hotel Goldfinch.

Chief Guest
Shree Nitte Vinaya Hegde
Chancellor, Nitte university

Presided by
Dr. Ganesh Khandige
President API-DK

Following distinguished members will be felicitated
Dr. R C Sahoo
Dr. J P Alva
Dr. P S Prakash

Dr R C Sahoo



Dr P S Prakash

Dr JP Alva

DISCLAIMER

ALL CONTENTS IN THE MAGAZINE ARE THE VIEWS OF THE AUTHORS AND NOT OF THE EDITORIAL BOARD OR THE ASSOCIATION.

PRESIDENTS MESSAGE

Warm greetings to you.

The sixth issue of 'Lahari' - the quarterly e-magazine of API DK chapter has the apt theme - "Medical Education Reforms - Hope or Hype?". Dr Smitha Bhat, our guest editor, has done excellent work for this product.

'Lahari' - is coming out better with each issue. Dr Chakrapani, Dr Sadananda Naik, Dr Kishan Delampady and the editorial team's efforts have been invaluable for this.

Contributing authors have been increasing the value of 'Lahari'. We take a special note of it with gratitude.

The tides of this "Lahari" will take us through to the new year 2022 happily.

With best wishes to everyone,

Dr Ganesh Khandige
President
API DK
4-12-2021

VOICE OF EDITORS

Dear Colleagues,

We are delighted to release the last issue of Lahari for the calendar year 2021. The theme for this issue is Medical Education Reforms: Hope or Hype? We are grateful to Dr Smitha Bhat for agreeing to be the guest editor for this section. She has compiled a collection of interesting and insightful articles on this.

We have been constantly innovating and improving the content of the magazine. From this issue onwards a new section is being added – "Spot Diagnosis". Interesting images, ECGs, x-rays and lab findings will be included in the section with a brief discussion. Members of API are requested to contribute to the section by sending in interesting observations from their rich clinical experience.

We sincerely hope that you are enjoying the contents of the magazine. Your feedback and suggestions are extremely valuable for us. We thank all the contributors and also the office bearers of API, DK chapter for the continued support in bringing out the issues on time. Wish you Merry Christmas and Happy New Year in advance.

DR CHAKRAPANI M – EDITOR IN CHIEF
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SECRETARY'S REPORT

Greetings from API D.K. Chapter.

In view of relaxation of COVID 19 restrictions we held our regular meeting physically.

Our monthly meeting was on October 22, 2021 at Hotel Sai Palace. Dr BV Manjunath, Consultant cardiologist, AJ Hospital, Mangalore gave an interesting talk on "Interesting Case Presentation and Role of high dose statins in clinical practice." Dr Subramanyam K, consultant cardiologist, KSHEMA, Mangalore and Dr Sripathi Rao, Consultant physician, Puttur moderated the session. The monthly meeting was attended by 50 delegates, concluded with question and answer sessions.

The monthly meeting on November 19, 2021 was conducted at Hotel Ocean Pearl. Dr Shrikrishna V Acharya, Consultant Endocrinologist, KSHEMA, Mangalore gave talk on "Alpha cells in diabetes mellitus". Dr Mohammed Ismail H, Prof, Dept. of medicine, KMC, Mangalore moderated the session. The monthly meeting was attended by 45 delegates and was followed by stimulating discussion.

Dr Kishan Delampady,

API DK Secretary, 2021-22

Consultant Endocrinologist, AJ Hospital, Mangalore.

Dr Kishan Delampady,

API DK Secretary, 2021-22

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GUEST EDITORIAL

Editorial
Dr Smitha Bhat. MD, FRCP (Edin.), FRCP (Lon.), FAIMER (PSG)
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The Competency Based Curriculum for Medical Education(CBME) was conceived with a great deal of hope and underlying this, a blunt acceptance of facts. The powers-that-be realised that,for the market for our medical graduates to remain global, drastic changes had to be made, and fast. We needed a workforce of doctors –skilled, professional, and adept at research, communication and leadership. We were given a mere four and a half years to produce graduates imbued with all these qualities. Does this seem like a tall order?Well, the designers of our curriculum did not think so. Recommendations from subject experts, renowned medicaleducationistsand pioneers incurriculum design were taken to devise the new curriculum. To implement it in the medical colleges of India, theworld's largest Curriculum Implementation Support Program (CISP) was undertaken. We seemed on course to deliver the new curriculum. Then came the bombshell that literally no one in the medical education community, or indeed in the world, could have predicted. The pandemic disrupted all good intentions, every meticulous plan. It was not just the practicalities of administering,during the lockdown,a curriculum that focused on skills and learning at the bedside. It was the perhaps unreasonable expectation that a profession dealing with the challenges of treating a new and dangerous disease , coming to terms with a workforce being rapidly depleted by illness and facing violence at the workplace was now expected to familiarize

themselves with and administer a new curriculum . We limped along,however, doing the best we could, and we now have the second batch who have started their undergraduate course as per the CBME curriculum. Will these reforms in medical education make a concrete difference? I believe they will – with one corollary. For the new innovations to take root and get ingrained , everything pivots on one important factor ; just one keystone - namely'Formative assessment'.As a medical educationist, if I could choose a mantra it would be this: 'Assessment drives learning'. As long as students are convinced that their final scores are determined by their daily behaviour in the wards, their clerkship work, their practice of skills , their documentation of these tasks in logbooks, they will put time and effort in to learning and practising these crucial skills . This mandates an atmosphere where medical teachers can mark as high or as low as the student deserves, an environment where negative feedback and low scoresare perceived as an impetus for growth, and not victimization.

As you browse this issue, you will get a bird's eye view of the intent and execution of the new curriculum from much respected and loved senior medical educator Dr. Avinash Supe and consultant endocrinologist, Dr Krishna Seshadri, both who were involved in tit's design. Dr. Purnima Barua plays the devil's advocate (a role she accepted with great reluctance) and explains why the new curriculum is,in some ways, a paper tiger. Dr Reshma leads us through the complex task of writing timetables for integrated teaching ; her illustration of the concept of integration using the mouth-watering analogy of various ice-cream delicacies must be read by anyone who doubts the utility of an integrated curriculum. Dr Nachiket and Dr.Vinutha Shankar give you an idea of how Medical Education Units and Medical Universities nation-wide have spent hours figuring out the logistics and practicalities of the new curriculum and how best to administer it . With a neat flow chart, Dr. Praveen Kulkarni shows us why indeed we are going through the laborious exercise of implementing a new way of teaching the undergraduate medical course - how the various reforms in CBME – alignment, integration, early clinical exposure, AETCOM , skill enhancement, community oriented teaching –will lead to graduating doctors with better knowledge and skills which in turn will have a positive impact on community health .

Dear physician colleagues, undoubtedly the pandemichas affected members of our specialty the most – for we were the ones who treated the largest chunk of COVID cases . We did have help from other specialties, yet , we bore the brunt. In this context, one is tempted to dismiss medical education as frivolous and CBME as an impediment to spending time on what truly matters viz. patient care. However, if one takes the long view, one realises that this is a curriculum focussing on clinical and

communication skills, rather thanjust facts learnt by rote. It emphasizes community health, professionalism and self-directed learning.

In fact CBME is one of the rungs on the ladder to better community health and isn't better health our raison d'etre?

CALL FOR ARTICLES

Readers are hereby requested to submit their articles for the next issue.

Submit to : editorapidk2020@gmail.com

Author instructions@page 102

Overview of the Indian Model of Competency Based Medical Education and the Challenges of its Implementation in the Covid Era

Dr. Avinash Supe
Emeritus Professor, G I Surgery and Medical Education , Seth GS Medical College KEM Hosp
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Introduction

In the year 1950, Tyler proposed that education should be outcome based. This may be considered the spark for Competency Based Medical Education (CBME). Later Prof. Carroll described an outcomes based approach without use of the word competence . In 1978, McGaghie et al. compared CBME with the then extant curricular methods. They also provided an operative description of the concept (vide below). Over time CBME has been adopted by many countries, representing a shift in the approach to

medical education. Various agencies across the world have attempted to correlate course content, teaching–learning, and outcomes. Examples include CANMEDS Competency Framework (2004)

,andAccreditation Council for Graduate Medical Education ACGME (1999) . These have been refined, modified, and adopted by medical schools all over the world

McGaghie et al.outlined three fundamental principles as central to CBME

1.“Curriculum is organised around functions or competencies required for the practice of medicine in a particular setting

2.It is grounded on the empirically validated principle that students of the intellectual quality found in the medical schools, when given appropriate instruction can master basic performance objectives.

3.It views CBME as an experiment where both processes of learning and technique of learning are considered as hypothesis subject to testing.”

The expected outcome would be a physician who can practice medicine at a predetermined level of proficiency.

Concept

In alignment with the above, the regulatory agency for medical education in India (The Medical Council of India [MCI] and its successor organisations) with the help of subject and process experts determined that the goal of undergraduate medical education would be to create a the “Indian Medical Graduate (IMG)”- a physician of first contact who would be “locally relevant while being globally competitive” .

Toward this goal - roles that a future doctor would play were determined. For each of these roles “global competencies” were derived. The belief was that the acquisition of these global competencies would help him or her fulfil the roles required.

These concepts were incorporated while framing the new graduate medical education regulations which were notified by the government of India in 2019 .

These regulations represent the evolution of thought and science since their last iteration in 1997. They also attempt to be facilitators of change within the framework and constraints of a large and diverse health care delivery and learning system that exists in the country. They represent progress, without sacrificing the strengths that are inherent to the existing system.

In many ways the adoption of CBME reflects a shift in the focus of medical education - from syllabi to curriculum, from teacher centred to learner centric, from assessment of knowledge to behaviour, from time based to outcome based learning.

Key features and interventions

The major challenge was to help the more than 525 medical colleges “fit” the concept into traditional subject based pedagogy. Three interventions were done to specifically achieve this : a) Derivation of

subject wise sub competencies b) Introduction of novel programs and methods of learning / instruction c) Curriculum Implementation Support Program (CISP) Global end-of-course competencies were broken

down further into subject based end-of-term (sub) competencies (often dubbed "objectancies" because of the way they have been structured); this would help traditional subjects to move to outcome based education while retaining the subject based instruction. Subject experts used a common template and provided a sample list of end of term sub competencies. In addition for each of these, domain (Knows, Knows How, Shows How or Performs), level of achievement required by the learner in that term (Modified Miller's pyramid), the desirable learning and assessment method were specified. The published document was shared with medical schools and universities as a guide to derive end-of-term sub competencies in their own organisations. Organisations were free to adopt, modify or derive entirely on their own - these end-of-term sub-competencies as long as they would lead to acquisition of the global competencies. These sub-competencies were meant to be a foundation for curricular planning from which session specific objectives, learning experiences and assessment strategies could be developed.

Novel programs and instruction methods were introduced with the purpose of bridging silos both horizontally and vertically and also provide opportunities for learners to acquire the necessary competencies that would not lend themselves to acquisition in a traditional knowledge and subject driven format. These included AETCOM - a longitudinal hybrid problem based program on Attitude, Ethics and Communication. In order to drive home the emphasis on communication skills - the competency document created by the MCI expert group added communication as a separate domain. Other programs such as a foundation course, early clinical exposure, skill acquisition and certification, electives, learner doctor program, learning in secondary urban and rural primary centers etc were introduced to allow the learner to acquire broad competencies and competencies not easily achievable in the existing course. An emphasis on continuous acquisition of skills and their assessment was made by conferring critical importance to the log book (and by extension to portfolios). A mandate to create skills and communication labs in all institution was made. In order to ensure transparency, timetables were required to be uploaded before the years teaching commenced. The GMER mandated a reduction in didactic teaching and integrated teaching to the extent of 20% of the teaching time. It also provided dedicated time for self-directed learning. Many institutions have adopted block based or topic based alignment and integration.

To help institutions achieve smooth curricular adoption and transition the world's largest Curriculum Implementation Support Program (CISP) was rolled out. Faculty skill up-gradation was done through basic and advanced courses. Structural support framework with internal resources in medical colleges - the medical education unit / department was mandated. A hub and spoke model of external support through creation of regional and nodal centres to downstream support for curriculum implementation were created. The expert committee created booklets, slides and teaching aids to help faculty adapt to the novel teaching programs. Though COVID 19 has affected medical education all over the globe, Curriculum Im

lementation program was successfully conducted across in more than 525 medical colleges. Successful faculty development programs done over for over a decade through a network of regional and nodal centres has helped create a strong base of faculty in sync with the reforms driven. The commitment and

enthusiasm of faculty , well-structured resources and guided faculty development programs provided by NMC should help in the successful implementation of the CBME in coming years.

The new curriculum was formally rolled out for the student community entering medical colleges in the year 2019. It is in its third year. In March 2020 the COVID 19 pandemic threw a major challenge to implementation of the curriculum. Despite difficulties institutions quickly adopted online methods and created innovations that allowed acquisition of competencies to be largely unhindered.

1 Tyler, R.W. (1950) Basic Principles of Curriculum and Instruction. University of Chicago, Chicago.

2 John B. Carol, (1963)" A Model of School Learning," Teachers College Record, 64(December) 723-73. Quoted from https://files.eric.ed.gov/fulltext/ED380808.pdf accessed on 9th November 2021

3 McGaghie, William C, Sajid, Abdul W, Miller, George Edward, Telder, Thomas V, Lipson, Laurette. et al. (?1978)?. Competency-based curriculum development in medical education : an introduction / William C. McGaghie ... [?et al.]? ; with the assistance of Laurette Lipson.World Health Organization. https://apps.who.int/iris/handle/10665/39703

4 https://www.royalcollege.ca/rcsite/canmeds/framework/canmeds-role-health-advocate-e accessed on 9th November 2021.

5 https://www.acgme.org/globalassets/milestonesguidebook.pdf accessed on 9th November 2021.

6 https://old.mciindia.org/tools/announcement/MCI_booklet.pdf (accessed on 9th November 2021).

7 Regulations on Graduate Medical Education,1997 - Addition as part - II for MBBS course starting from academic year 2019-20 onwards.

https://www.nmc.org.in/ActivitiWebClient/open/getDocument?path=/Documents/Public/Portal/Gazette/GME-06.11.2019.pdf accessed on 9th November 2021.

8 Supe A. Graduate Medical Education Regulations 2019: Competency-driven contextual curriculum. Natl Med J India 2019;32:257-261

9 Medical Council of India. AETCOM. Attitude,ethics and communication. Available at www.mciindia.org/CMS/wp-content/uploads/2019/01/AETCOM_book.pdf (accessed on 9th November 2021.).

10 Available at https://old.mciindia.org/InformationDesk/ForColleges/NationalFacultyDevelopment Programme.aspx (accessed on 9th November 2021).

11 Ananthakrishnan N. Competency based undergraduate curriculum for the Indian Medical Graduate, the new MCI curricular document: Positives and areas of concern. J Basic Clin Appl Health Sci 2018;2:182-90. https://www.nmc.org.in/wpcontent/uploads/2021/08/CISP_I_First_year_Report_2019_final_for_uploading11.09.2020-converted.pdf

13 https://www.nmc.org.in/wp-content/uploads/2021/06/CISP-II-paper-17-05-2021.pdf

The Role of Medical Education Units in The Implementation of The Competency Based Curriculum in India

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A brief historical perspective

It is indeed surprising that it took till 1958 for the first medical education unit (MEU) to be established at Case Western Reserve University in the United States.[1] This development occurred with the realization that educational strategies in medical collegeshad not kept pace with the technical advancements in medicine.The requirement to train more doctors with limited resources, concerns about patient safety and changing societal expectations were other factors thatcatalyzed this change.[1]In 1965 the World Health Organization (WHO) envisaged a three-tier system for training medical educationists. These included the medical education specialists, the leaders who could design and implement curricula using sound educational principles and grass-root practitioners who would teach and assess students.[2]International Teacher Training Centres were developed at the University of Illinois and University of Southern California in 1969.[2] Subsequently Regional and National Teacher Training Centres were created in other countries. In 1976, the first National Teacher Training Centre (NTTC)in India was set up atJawaharlal Institute of Post Graduate Medical Education and Research (JIPMER).[2] Three more such centres were subsequently created. These centres were initially funded by the WHO, and later by the

government. With the withdrawal of funding, three of these four centres ceased operations.[3]In the late 1980sand early 1990s, Centres for Medical Education and Technology (CMET) at the All India Institute of Medical Sciences and three other institutions were established as part of a Consortium of Medical Institutions for the Reform of Medical Education.[4] It was these pioneering efforts that laid the foundations for the development of Medical Education Units (MEU) in medical colleges across India.

Trained and motivated faculty members who had undergone training at the NTTCs and CMETs spearheaded the establishment of MEUs at their respective medical colleges. This process received a fillip when the Medical Council of India (MCI) recommended the setting up of MEUs in all medical colleges in 1994.[3] The MCI

Regulations on Graduate Medical Education 1997 made it mandatory for all medical colleges to have MEUs from 1999 onward.[5] In 2009,theMEUs in some selected medical colleges were designated as Regional Centres in Medical Education Technologies. These centres were responsible for conducting faculty development workshops for members of the MEUs of the medical colleges allotted to them. The members of the MEUswere then expected to cascade the training to faculty members in their respective colleges. Subsequently some of the Regional Centres were designated as Nodal Centres in Medical Education Technologies. In addition to conducting basic faculty development workshops, these Nodal Centres were responsible for conducting advanced faculty development workshops primarily for MEU members (Figure 1).[4]

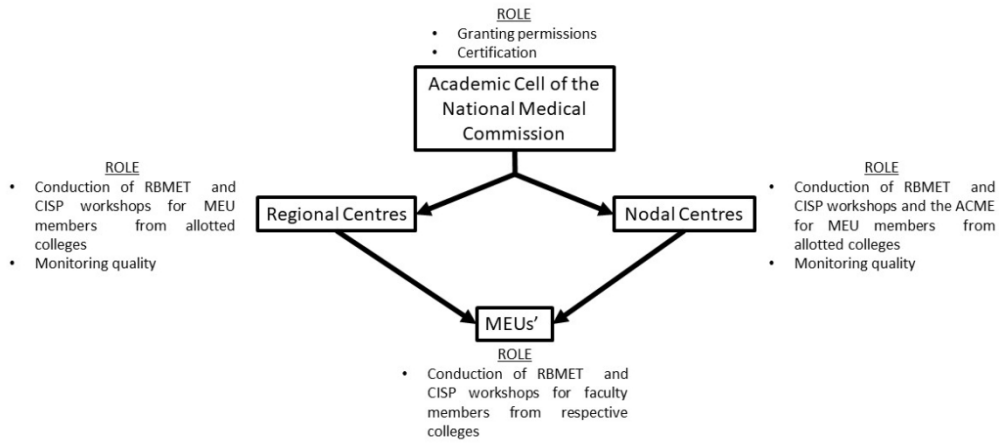

Figure 1 – Roles of the NMC, regional centres, nodal centres and MEUs in conducting the mandated faculty development programs At present there are 12 Regional Centres and 10 Nodal Centres spread across the country.[6]

Structure of the MEU

Clear guidelines have been created for the infrastructural requirements of the MEUs, Regional and Nodal Centres.[7]The officer-in-charge of the MEU is the Dean of the medical college. The other members include a coordinator and a minimum of eight core faculty members. Supporting staff may be appointed as required.

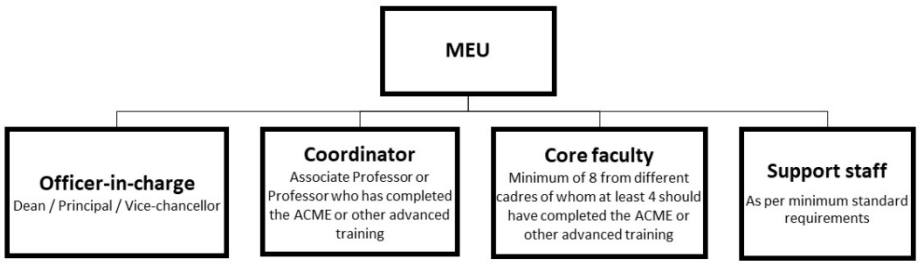

Figure 2 – Constitution of the MEUs

Figure 2 shows more relevant details. The guidelines also mention the space requirements, academic resources and audio-visual aids that are necessary.

An overview of the Competency Based Curriculum (CBC)

The seeds for the new CBC were sown in 2011 with the release of the Vision 2015 document which made a compelling argument for curricular changes in the MBBS course and laid out a roadmap for the changes that were eventually implemented in 2019.[8] Several novel features were introduced as part of the CBC. These included the release of a competency framework for each subject, the foundation course, early clinical exposure (ECE), integrated learning, the attitude, ethics and communication skills (AETCOM) module, a greater emphasis on formative assessment, enhancement of skills training using evidence-based methods including simulation, the introduction of electives and the student-doctor method of learning. Structural changes to the course were also made, the major one being the reduction in duration of the second year of the MBBS course from one and a half years to one year. Recognizing that faculty development was critical in the implementation of the CBC, the academic cell of the MCI rolled out a number of training programs for faculty through the MEUs all across India. These faculty development programs will be described in more detail as we look at the role of the MEUs in the implementation of the CBC.

Role of MEUs in the implementation of the CBME curriculum

The MEUs play a pivotal role in the implementation of the CBC. Adequate faculty training is an essential prerequisite for the delivery of the curriculum. In view of this, three faculty development workshops have been designed. These are the Revised Basic Medical Education Technologies (RBMET)workshop, the Curriculum Implementation and Support Program (CISP) and the Advanced Course in Medical Education (ACME). A more detailed description of each of these workshops follows.

It is now mandatory for all medical college faculty members to undergo the RBMET workshop. This is a three-day workshop which focuses on key educational principles as well as specific components of the CBC. When it was initially rolled out in 2009, the workshop was known as the Basic Medical Education Technologies (BMET) workshop. In anticipation of the introduction of the CBC, the structure of the workshop was suitable modified in 2014 and it was rechristened as the RBMET. The content of this workshop is summarized in Table 1. The Attitude, Ethics and Communication Skills (AETCOM) session was conducted as a standalone full day session initially but has now been incorporated into the RBMET as a single session. As of 2018, 1,424 (BMET and RBMET combined) workshops had been conducted all over India with more 37,580 faculty having undergone training.[9]

The Curriculum Implementation and Support Program (CISP) was introduced in 2019 to train selected faculty members with adequate representation from the pre, para and clinical departments in the implementation of specific components of the CBC. The CISP I was a three-day program, the details of which are mentioned in Table

Table 1 – A summary of the content of the faculty development programs conducted under the aegis of the NMC.

RBMET	CISP 1	CISP 2	ACME
Major components • Goals, roles, competencies, learning domains and specific learning objectives (SLOs') • Teaching and learning (T-L) methods - alignment with competencies and SLOs' - large group - small group - lesson plan - clinical and practical skills • Assessment - basic principles - alignment with competencies, SLOs', and T-L methods - essay, short answer and MCQs' - assessment of clinical and practical skills **Other components** • Group dynamics • AETCOM • Self-directed learning (SDL) • Quality assurance • Educational networking	• Introduction to CBME • Goals, roles, competencies, learning domains and specific learning objectives (SLOs') • Alignment of teaching and learning (T-L) methods with competencies and SLOs' • Changes proposed in GMER 2019 • Electives • Foundation course • AETCOM • Early clinical exposure (ECE) • Alignment and integration • Skills training • Principles of assessment in CBME • Alignment of assessment methods with competencies and SLOs' • Curricular governance • The road ahead	• Introduction to CBME • Goals, roles, competencies, learning domains and specific learning objectives (SLOs') • Alignment of teaching and learning (T-L) methods with competencies and SLOs' • Changes proposed in GMER 2019 • Electives • Foundation course and ECE (brief) • AETCOM • Alignment and integration • Skills training • Student-doctor clinical teaching • Principles of assessment in CBME • Alignment of assessment methods with competencies and SLOs' • Curricular governance	• Curriculum development • Teaching and learning methods • Alignment of teaching and learning (T-L) methods with competencies and SLOs' • Assessment -principles -blueprinting and question paper setting -formative assessment -integrated assessment -workplace based assessment -logbook and portfolio • Educational research • Educational scholarship • Leadership • Mentorship • Quality assurance • Education project poster presentation • RBMET observation • Online discussions on the following topics: - newer components of 2019 UG curriculum - program evaluation - SDL - e-learning - qualitative research - programmatic assessment - interactive teaching - giving and receiving feedback - professionalism and ethics - scientific writing

A total of 15,509 faculty across the country were trained in 557 programs.[10] The CISP II program was conducted in 2020. The duration of the program was reduced to two days, and it focused more on those aspects of the CBC that were relevant for the MBBS course from the second year onward like the student-doctor method of training (Table 1). Five hundred and sixty six CISP II programs were organized which was attended by 16,566 faculty.[11] The onset of the Covid pandemic made it even more challenging to conduct these programs and necessitated a shift to the online mode of instruction.

The Advance Course in Medical Education (ACME) was initiated in 2014 at the Nodal Centres. The purpose of this course is to provide specialized training for a select group of medical college faculty who areexpected to be take on leadership roles in medical education. The content of this course caters to competencies expected of an advanced medical educator.[12] The goal is for 30% of medical college faculty to undergo this course. The course is a year-long one with two contact programs, a longitudinal online learning component, an educational research project and an observation of a RBMET workshop (Table 1). So far around 1200 faculty have completed this course.[6]

The other important role of the MEUs is in curricular governance (Figure 3).

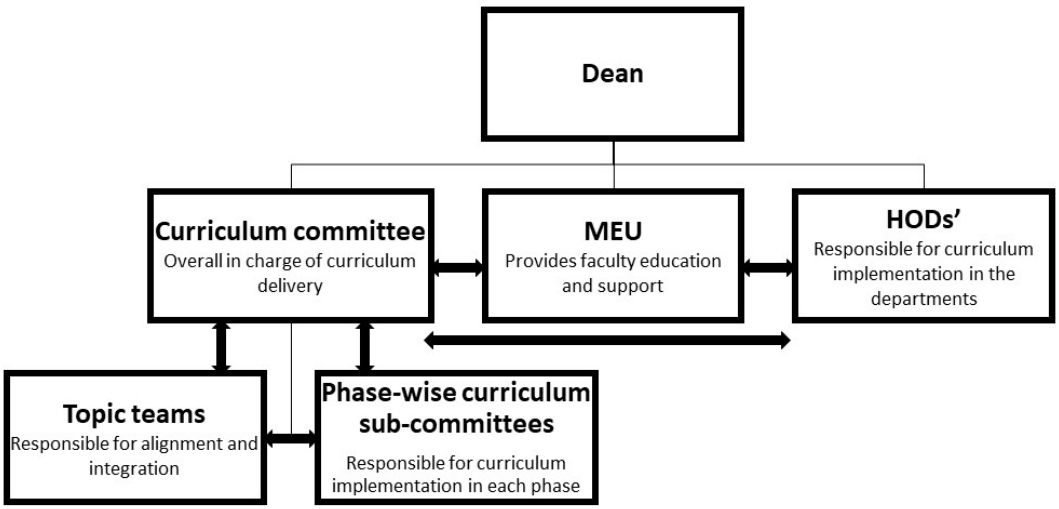

Figure 3 – Governance of the competency-based curriculum

The MEUsare expected to provide faculty education and support during implementation of the CBC in each medical college. The critical aspects of program evaluation and quality improvement would also need to be addressed by the MEUs. The MEUsare required to periodically liaise with the Regional and

Nodal Centres for conducting the various faculty development programs and submitting reports related to the implementation of the CBC.

There is a definite shift from the era of inspections which focused mainly on the adequacy of infrastructure to one of accreditation which take a more holistic approach to gauging the quality of medical education. While there are some medical colleges and medical universities which have been accredited by the National Assessment and Accreditation Council (NAAC), there are many others that are yet to do so. It is mandatory for colleges and universities to set up Internal Quality Assurance Cells (IQAC) as part of the accreditation process.[13] The MEUsare best equipped to temporarily fill this role in institutions where an internal quality assurance process has yetto be established.

An important role of the MEUs that has been hitherto neglected in India is the conduction and promotion of research in medical education.[1,14] Research methodology frameworks provide the rigour required to critically analyze contemporary educational problems and provide suitable solutions. Recognizing this, the apex body has included the conduction of an educational research project as a component of the ACME. The implementation of the new CBC will without doubt provide a fertile ground for research in medical education. It is up to the MEUs to take up this challenge and spearhead medical education research in India.

Challenges and road ahead

As of 2020, India had562 medical colleges with an annual intake of 84,649 students.[15]There are almost one lakh faculty members who work in these medical colleges.[6] This number is only going to increase as there are plans to open more medical colleges, including the conversion of district hospitals across the country into medical colleges.[15]While significant strides have been made in implementing faculty development programs through the MEUs, sustaining these programs in the long term is likely to prove challenging given the steady increase in the number of medical colleges. One solution would be to upgrade MEUs that are performing well to regional centres. Similarly, selected regional centres could be converted to nodal centres. This will ensure that implementation and monitoring of faculty development programs becomes more decentralized and manageable.

Faculty members who are part of the MEU often have to juggle these duties with multiple other responsibilities including those of their parent department. This makes it difficult for MEUs to function effectively. **It is time that medical education is given its due and protected time and adequate resources be made available to faculty members of the MEU to conduct faculty development programs and undertake medical education research**.

Faculty development is only one of the many pieces of the jigsaw that need to fit together to successfully implement the CBC. Any piecemeal initiatives are unlikely to produce long lasting results. The new curriculum requires the incorporation of active learning methods that are resource intensive. Faculty requirements have not been increased with the introduction of the CBC. The high student faculty ratio

makes it difficult to implement the CBC in its true spirit. It is therefore imperative that a medical college is looked at as a system. Possibly the move towards accreditation will facilitate this process.

The current approach to faculty development that is a rigid, top-down one. This ensures a degree of standardization and is perhaps requiredinitially in the Indian context. There are several reputed medical colleges in the country where MEUs have been conducting high quality faculty development programs for many years. These MEUs could be identified and provided the autonomy to conduct their own faculty development programs. This will encourage creativity and advances in the field of medical education. With the ease of networking enabled by digital technology, best practices in the field of medical education could be shared across the country and herald an exciting era where MEUsbecome the hubs of innovation in medical education.

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How Universities are adapting to administer the CBME curriculum

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Introduction:

Globally there has been a move to adopt competency-based medical education in health science Universities.Competency Based Medical Education (CBME) provides an effective outcome-based strategy where various domains of teaching including teaching learning methods and assessment form the framework of competencies. Keeping this objective as the core ingredient, the basic framework for the revised undergraduate medical curriculum has been laid by NMC,National Medical Council (the erstwhile Medical Council of India).

NMC has released the following documents for facilitating the CBME implementation in Medical colleges all over the country: UG Curriculum in 3 volumes , Roll Out Plan of UG Curriculum, Attitude, Ethics and Communication (AETCOM) , Foundation Course For Undergraduate Medical Education, Early Clinical Exposure For Undergraduate Medical Education, Competency Based Assessment Module for Undergraduate Medical

Education 2019, Alignment and Integration Module, , Skill Training Module, Logbook Guidelines, Electives Module, Pandemic Management Module for UG and Online Learning and Assessment.

Literature has shown that implementation of CBME has been initiated in very few Higher Institutes of Educationin India with curriculum mapping exercises and measurement of attainment of learning outcomes in what has been practiced as Outcome Based Education (OBE). Logistic support by Universities including infrastructure and technology training in addition to faculty development programs have been shown to be factors that help CBME implementation.

The current difference of OBE implementation as per National Education Policy formulated by the Government of India and CBME implementation by NMC have favored Universities to implement a hybrid model.

Role of Universities in implementation of CBME:

Universities have a major role to play in Implementation & Monitoring along with Curricular Governance in respective medical colleges. Assessments are the cornerstone of any program and Universities design the assessments in alignment with the curricular objectives. The changes in summative assessment (university examination) are to be adopted by universities and details to be provided to the affiliated colleges. NMC has suggested that Quality assurance techniques in University examinations (question paper moderation by subject experts, external monitoring or posting external observers/examiners) should be employed to improve assessments.

Objectives of Guidelines for Assessment in Competency Based UG Curriculum released by NMC is to Plan, develop and implement Competency Based Assessments in the colleges and universities.

The Universities have been assigned a significant role in ensuring that the MBBS programs of affiliated institutes comply with the above mandate. In line with the requirements of CBME, Universities have to address the assessment component which is centrally controlled. Summative assessments that are objective, valid, reliable and feasible that measure accomplishment of learning outcomes stated in the curriculum are conceptualized in the Universities and SOPs of the same are circulated to the Institutions.

The Universities must invite experts in the field of competency based assessment to plan the pattern of examination. The paper setters who can construct questions to test higher cognitive domain have to be chosen and performance based assessments have to be included to test skills including communication. A blueprint has to be designed with rubrics to ensure uniformity in evaluation. Blueprinting will add to the value and quality of these assessments.

Audits to monitor quality have to be conducted by Universities to check compliance. Deemed to be Universities that have only one or few institutions affiliated have the advanta0ge of trying innovative methods for continuous and formative assessments.

NMC documents have mentioned that Universities should guide the colleges regarding formulating policies for remedial measures for students who are either not able to score qualifying marks or have missed on some assessments due to any reason(s).

Universities as link between NMC & Medical Colleges

There has to be a perfect sync between NMC the regulator who has rolled out the CBME Curriculum and the health science universities to which the Institutions offering the MBBS program are affiliated. NMC has identified nodal centers in every state and trained faculty in nodal centre to impart training to other institutions identified by NMC. The Universities have not been involved in this transmission of knowledge chain and that has come as a challenge as assessment related policy matters are drafted and implemented by Universities which are executed by affiliated Institutions.

The Universities should be given the additional role of keeping a check on faculty training in rBMET(revised Basic Medical Education Technology Workshops) and CISP(Curriculum Implementation Support Program) workshops. Boards of Studies and other Academic Bodies must have experts trained in medical education to draft policies including constructivist, student centered teaching learning methods that promote active learning. Universities must become hubs of surveillance to oversee curricular governance and be a liaison unit along with nodal centres to facilitate effective implementation at institutional level.

Universities as technology partners:

The role of technology in CBME implementation cannot be ignored with Universities having to concentrate on larger proportion of budget allocation towards ICT (Information & Communication Technology). Universities can run centralized learning management

systems for e learning that provides a platform for sharing of resources between institutions. The automation processes have to include real time updates on continuous assessments, question paper generation and distribution and digital evaluation. Universities must have a portal for resources for faculty regarding TL methods and innovative assessments and must provide a medium for sharing of best practices.

Universities must take a step forward and conduct webinars and workshops in association with nodal and regional centres for faculty empowerment in educational technologies including competency based assessments in addition to mandatory training by nodal centres. Universities in alignment with UGC regulations must adopt faculty induction programs for new recruits (Guru Dakshtha program) and Refresher courses must be conducted for reinforcement.

Experience from other Universities

CBME reflects a shift in the educational paradigm and its implementation will vary widely depending on the transformation that occurs at all levels including the universities with engagement of stakeholders; not only within the program but also across the university and potentially nationally as well.

Universities abroad who have initiated CBME have observed that Implementation of a complex intervention such as CBME represents a marked paradigm shift involving multiple stakeholders. Educators who have been involved in practice of CBME have opined that although the transition to CBME is challenging, successful implementation can be facilitated by careful design and strategic planning. Universities must progress to include Key components common to

CBME that include Entrustable Professional Activities (EPAs), milestones and workplace based assessments and this will be a major challenge to be addressed in future. Universities must work on introduction of portfolios for continuous assessment and feedback which is the crux of competency based education.

Additional responsibilities of Universities:

It is a well-known fact it is pertinent to conduct program evaluation of any newly implemented curriculum and Universities must be bestowed with this responsibility. This provides the much needed feedback regarding the design and implementation of CBME curriculum.

Universities have to gear up to changing culture to facilitate CBME Program Implementation and this encompasses conducting “Change Management Workshops”, equipping administrators with academic leadership skills to ensure faculty buy in which is instrumental for successful implementation of CBME.

Universities as centres for sharing Resources:

Universities have to take up the challenge of linking medical colleges for sharing of resources. NMC has suggested thatsince most institutes face a resource crunch, it is advisable to share resources such as instructional videos and skills laboratories between institutes. Preparing instructional videos being time consuming with need for trained resource faculty, a library of such videos can be developed as collaborative project between the institutions or Universities for common use. Universities can provide a platform for affiliated Colleges to collaborate and create electronic question banks using the concept of consortia. Validation of question to assess if they are framed to test learning outcomes must be done by subject experts identified by Universities. Universities can have a common upgraded evaluation system using online tools for high-stakes examinations. Proctoring devices required to eliminate the possibility of student cheating and manipulation can be installed at the level of the Universities and institutions, to prevent malpractice.

Delivery of CBME by Collaboration

Universities must proactively take up a role in interacting with National Associations like Association of Physicians of India and other health professional bodies that provides them more ownership in implementing topics like Disability Curriculum etc.

For global relevance, linking the Universities via MoUs to implement WFME (World Federation of Medical Education) PG charter, collaborating with The International Competency-based Medical Education (ICBME) Collaborators who promote CBME by engaging in debate and discussions on CBME and interactions with FAIMER(Foundation of Advancement in Medical Education) by means of faculty training in courses & fellowships will be steps in the right direction for effective implementation of CBME.

Conclusion

The Universities can thus be a facility centre to help overcome challenges in the implementation of CBME in undergraduate education facilitating curriculum delivery, assessment methods, teacher preparation, and systemic institutional change all of which impact student learning.

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Changes in the timetable: Concept, Construct, Content, Creation, and Challenge.

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Timetable- a puzzle in the fourth dimension

Imagine you are a dissectologist. A dissectologist isa person accomplished in assembling a jigsaw puzzle.Now imagine you are a dissectologist in the fourth dimension of space-time, whereyouplace your pieces by moving back and forth in time. The pieces of your puzzle do not have mass but consist of experiences you have created to be perceived.So, in contrast to the regular puzzle where the viewer would look at the finished pictureat one point in time, the pieces of your puzzle are experiencedat different timeson different days.

When it comes to making a timetable, the medical college faculty function similar to the dissectologist. The piece consists of learning experiences that fulfil syllabi and are arranged in specific slots for the students to participate.

1.The Concept – timetable then and now

Before the advent of CBME,the subject faculty arranged the learning experiences in a way with which to teach their subjects best. The course coordinator provided the slots for placing these pieces.The final picture(schedule)created was from the teacher's perspective.

The CBME has moved the focus from teachers' perspectives to learners' experiences, stating that for effective learning to occur, it must focus on the learner's perception of the overall experience created by the teachers, not just on how each piece was presented.This raised questions such as, 'What happened when the student transitioned from one subject to another? Were they learning? Were they understanding concepts?'

Since each subject facultymade their timetable, isolated from others, it was evident they were inadvertentlyplacing pieces with similar themes far apart on the timescale. For example, elements of anatomy and physiology of the brain were so placed on the timetable, that they were being taught at two different times in a year.

Having perceived these topics piecemeal, theyremained artificially demarcated as two separate entities in the students' minds.One experience was not adding to the other.It was like

watching haphazardly-arranged scenes in an unedited film. They were not able to create a coherent narrative from it or,simply put, were not able to develop the concept of ice cream after being shown a picture of flavoured milk and the freezer

2.The Construct - systems thinking for timetable design

Systems thinking states that a system is composed of interconnected individual parts bounded by space and time, defined by its structure and purpose, and expressed through its functioning. A system can express synergy, an interaction, or cooperation between the parts to give rise to a wholegreater than thesum of its parts.

Similarly with the timetable, it was crucial to design it so that even though it contained its individual components, it would result in learning greater than the sum of the components. To put it another way, it was not sufficient to show them the flavoured milk and the freezer. We had to make them integrate the two and develop theconcept of icecream by showing them the milk in the freezer. This integration is to happen not on paper or within the classroom but in the minds of the students.

To achieve this integration, CBME required the timetable be designed with alignment, nesting, sharing, and correlation. These are rungs of the Hardens integration ladder. As one looked down at the timetable from higher up the ladder, the demarcation line between subjects would become fainter and fainter, leading to better and better integration.

3.The Content – competencies and their objectives

3.1 CompetenciesCBME provided the syllabus not in bullet points but in competencies. Each subject had its own set of competency statementsin different volumes, each with its own unique ID(competency number). These competencies were the pieces with which to create the new timetable

Every teaching-learning (TL) slot in the timetable had to be assigned a competency number and every competency number from every subject of that professional year had to appear on the timetable. Subjects taught across phases (e.g., community medicine, paediatrics) could distribute their competencies within timetables of different professional years, ensuring that none were missed.

3.2 Objectives

Competencies are an amalgamation of knowledge, skills and attitudes that are to be acquired by the students and applied in a workplace. Objectives are specific statements that say what the student will be able to do at the end of each TL session. One can view objectives as disassembled pieces of a competency. The teachers need to frame multiple objectives, sometimes in different domains, so that when all these objectives are achieved,the competencies are gained. It is very much similar to teaching someone to take small bites (objectives)of an apple from different angles (domains) until he consumes the apple(competency)rather than swallow the whole at once.

It is understood that to attain objectives of different domains,different types of TL sessions would be needed, and the same competency numbers would repeatedly appear in different slots. Before sitting down to design the timetable,objectives must be written down for every competency in the subject.

4.The Creation- The rails and the rungs

4.1 Rails- The basics

The CBME has recommended the minimum number of Teaching-Learning (TL) sessions for each subject in each professional year. The time table slots have to depict the competency number, the type of TL session- lectures, small group discussions, Demonstration, Observation, Assist, Perform (DOAP) sessions, time set aside for self-directed learning, formative assessments, internal assessments,AEtCOM sessions, Early Clinical Exposure sessions and sports. It must be kept in mind that didactic lectures have to account for 30% or less of the total number of teaching hours. Hence numbering TLsession serially is of great help in keeping track of the number of sessions already assigned. (e.g. lecture-3, DOAP-4)

4.2 The rungs- Alignment, Sharing, Nesting, and Correlation

4.2.1 Alignment- The carrot halwa and ice cream analogy

Alignment, also called temporal coordination, means coordinated in time. In alignment, thecompetencies from different subjects with a common themeare placed on the timetable such that the experience would be conveyed within the same time frame. Alignment is therecommended mode of integration among subjects of the same professional year but can easily and interestingly be applied across phases. For e.g., when designing the timetable of the third professional,Otorhinolaryngology and Paediatrics dissectologists could place their competencies of tonsillitis and pharyngitis on the same date or within the same week, but of course, in their own subject slots. (There are a set number of paediatric TL session in

the third professional).Thus, the sessions with theme of upper respiratory tract would be aligned. A student would experience the competencies on tonsillitis and pharyngitis in adults in Otorhinolaryngology, and the same in children on the same day/ week but in two sessions.

The whole idea behind alignment is that when the learnerexperienced similar themes withina given time frame,but from different perspectives,it would lead to better learning since the sessions arecomplimentary.

Ice-cream and carrot halwa ought to be placed next to each other on a buffet table and not at two ends so that the consumer would have the opportunity to develop the idea of putting them together. When they manage to put them together,the experience will be sublime. And the practiceof putting things together would probably be repeated down the rest of the table.

Alignment could happen disease-wise,e.g., pneumonia in general medicine and paediatrics, or organ system-wise - respiratory system/ gastrointestinal system.

One method of aligning is to first take one subject as the backbone and arrange their pieces. The other subject pieces with similar themes would be placed adjacent to the elements of the backbone- similar to adding leaves to an already existing branch of a tree.

Topics for alignment are partly contributed by the Alignment and Integration topic (AITo) teams but the primary responsibility of recognizing similar topics and arranging them lies with the subject teachers, especially those in the Curriculum Subcommittee (CSC). The NMC recommends aiming for 80% alignment among subjects of one professional year.

4.2.2Sharing- Thecone, the icecream, nuts, and sauce analogy.

Once the competencies are aligned, and similar competencies are brought nearer, it is time to compare objectives. The objectives of similar competencies tend to overlap. For e.g., competenciesin anaemia in paediatric and general medicine would have at least a few identical objectives (e.g., the pathogenesis of iron deficiency anaemia) and some dissimilar objectives (management in adults and children).

So instead of the two departments taking two separate classes on anaemia (pathogenesis+ management in adults) and (pathogenesis + management in children), a single class with (pathogenesis + management in children + adults) could be conducted with common objectives taught only once followed by the distinct objectives. This class would be depicted as a shared class in the timetable. This session though shared, can be undertaken by ONE subject teacher only. So, the general medicine faculty would need to cover the management of anaemia in children as well. This of course would require an additional level of cooperation between the subject faculty as one would need to help the other in providing and verifying the content being taught.

Sharing would do two things: remove redundancy to save time, and blur the artificial demarcation between the subjects.

Two friends- one has a waffle cone and chocolate sauce, the other has a waffle cone, a scoop of ice cream, and nuts. It makes sense to keep aside the redundant cone, place the scoop of icecream into one cone, pour the sauce and then sprinkle with nuts and share it for a complete experience.

. 4.2.3 Nesting- the Choco- chip ice-cream analogy

The concept of icecream was clarified when the flavoured milk was placed in the freezer. Similarly, many ideas are clarified when elements from other phases are taught during sessions of one subject- the so called nesting of sessions(aten-minute session on anatomy of radius nested within a session of Colles fracture in orthopaedics)or (picture of coronary angiogram nested within a session of atherosclerosis in pathology). Since the elements nested are from a different professional year, this is considered as one of the methods of vertical integration. The bulk of the session would belong to the subject of that year, with small elements brought in either to reinforce the basics- in case of a clinical subject or to bring in clinical relevance in pre/ para clinicals. The timetable has to depict nested sessions within the slots.

4.2.4 Correlation- the Gudbud analogy

A well-designedcorrelation session provides the highest level of integration. Elements from different subjects across phases are brought into a single session to link concepts. To reiterate, a correlation session does not require multiple teachers from different subjects to teach a session. A single teacher can do ample justice if the objectives are validated and content is contributed by the subject experts.

These can be conducted using linker cases. A linker case has elements from many subjects either in the same or different phases and links concepts already taught.Solving a linker case is like eating a gudbudicecream.

To the uninitiated, a gudbud ice-cream consists of a very tall glass within which are layered at leastthree distinctly-favoured scoops of ice-creams with intermittent layers of fruits, jelly, syrup, and dry fruits andis topped with a cherry. An abnormally long spoon accompanies it. The correct way of consuming it is to run the spoon through multiple layers and have a mouthful of explosion of flavours and textures all at the same time.

5.Challenges

For optimum delivery of the curriculum, objectives must be derived for every competency. Deriving objectives for hundreds of competencies for a dozen faculty in each department can consume a lot of time. Recognizing this, district/ state level associations of specialists have taken it upon themselves to divide the workload. Some have already released their logbooks and records. State-level universities have also contributed immensely.

Achieving alignment in each professional is by itself a gargantuan challenge. However, it is nothing compared to getting the dissectologist to agree to shift their pieces from where they have been residing for years to their new station.A microbiologist*may be reluctantto shift HIV to the beginning of the year so that it is adjacent to the immunopathology topic in pathology as he would not have covered virology by then. So how to teach HIV without having taught virology??

Resistance to change and a certain degree of scepticismareto be expected during the timetable design sessions. Timetable revision and submission to the nodal centres for approval have been made mandatory and will goa long way in overcoming this resistance.

The primary responsibility of timetable design lies with the subject-wise curriculum subcommittee (CSC) members who coordinate with the Alignment and Integration team (AITo). The first level of verification is done by the curriculum committee, and then it's submitted to the nodal center for final approval. The nodal center may ask for revisions more than once.

Henceforth there will be one timetable per year and not per subject. Teachers from all the subjects will work on a single puzzle. Since there is no reference picture to look at and a whole lot of flexibility permitted, the timetable of each professional year of every college will be unique in its final appearance. Collaboration and the willingness to focus on the greater good will be the keys to success.

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*Disclaimer: The examples from subjects are purely for illustrative purposes.

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How does Competency Based Medical Education Curriculum affect Community Health in India?

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India has embraced Competency Based Medical Education (CBME)with open arms in the year 2019 with the wider vision of producing globally competent Indian Medical Graduate (IMG).There had been enormous planning by the national regulatory authorities in planning, designing and implementing this curricular reform. The major goal of this entire exercise was to roll outa student centric,outcome based, patient centric, gender sensitive, environment appropriate , competency driven medical curriculum which brings out a job

ready Indian Medical Graduate (IMG) who can play a role of primary care physician catering to the health care needs of the community. According to the Vision document of the National Medical Council,

the Indian Medical Graduate (IMG) is expected to be competent in the diagnosis and management of common health problems, apply rational treatment principles using essential drugs, be able to understand socio-psychological, cultural, economic, and environmental factors affecting health and be familiar with various National Health Programmes and Policies.[1]

Concept of Primary Care Physicians in India

This concept of primary care physicians is not new in the Indian context. The health survey and development committee ,which is also popularly known as BhoreCommittee, in its report in the year 1946 emphasized the need to train medical students in community settings in order to make them understand the locally relevant ailments, actual health care needs and demands of the people in order to provide accessible comprehensive health care .[2]Subsequently, various other health committees and reports have emphasized the need to impart community oriented medical education in the country. Re-orientation of Medical Education (ROME) was a major strategy which made an attempt to bring out medical education from the four walls of medical colleges to the communities. [3]Over the years Community Medicine/ Preventive and Social Medicine departments in medical colleges across the country took up this task of shaping the career of medical students as primary care physicians.

Role of community in curriculum reforms

The starting point of any curriculum development process is to undertake a thorough need assessment exercise. One of the major stakeholders to be involved in this exercise are the people who reside in the community in which the medical student is expected to work as a full-fledged health care provider.[4]Communities provide the opportunity for the medical students to learn the art and science of medicine as living laboratories. In the end, these communities also play an important role in evaluating whether the curriculum has been effective in meeting their expectations. Thus , communities have a larger role to play in the entire process of designing, implementing and evaluating the medical education curriculum.

CBME Curricular reforms and effects on communities

The Current CBME curriculum has made a sincere effort in further strengthening the concept of community oriented medical education. The curriculum encompasses competencies which help the student acquire adequate professional knowledge, attitude and skills to become a job-ready primary care physician. Thus, the impact of the current curriculum on the health and wellness of people in the community is expected to be more than anytime heretofore.

Early clinical and community exposure

One of the highlights of CBME is early clinical and community exposure of the medical student through visits to public health care establishments like primary health centers as early as in their foundation course, at the very beginning of theprogramme. [5] Through this exercise, students can understand the health care delivery system of the country and orient themselves to the common ailments with which

people seek health care at rural and urban primary health care settings. Introduction of basic competencies of community health as a part of early clinical exposures in their first professional year has the potential to help students to compare how common health conditions are diagnosed and managed in resource limited primary care settingsversus in tertiary health centres like medical schools. This exercise is expected to orient the student about the ground realities of health care delivery in the early days of his career. [6]

Concentration on untouched dimensions and determinants of health

Health has multiple dimensions and determinants. Thus, health professional education should also shift its focus from training the students in the curative domain of health care in tertiary care settings to preventive and promotive domains of health care in community settings. The present curriculum explicitly spells out the series of competencies on physical, social, mental, nutritional, cultural, economic, environmental dimensions of health which will help medical schools to design specific learning objectives and impart educational activities aligning to them. Community orientation programmes or family health advisory surveys which were undertaken as optional activities by some of the medical colleges are now made necessary to meet the competencies related to community diagnosis and social determinants of health. These activities help students to spend their time with people in communities for a considerable amount of time during their community medicine postings and understand the socio-cultural, environmental, nutritional, behavioural, economic factors influencing the health conditions in general and diseases in specific. These activities would also help the students to learn basic communication skills, professional behaviour and more importantly to link the families with the present health care delivery system, social welfare services and national health programmes. Thus, the students learn the subject in the real world setting through hands-on activities in thecommunity, rather than studying the theoretical elements of the subjectin the classroom. Over a period of time society will possess a band of young Health care professionals who can understand their health care needs as well as demands and provide the essential health care services near their doorsteps.

Alignment and Integration

Alignment and integration are very ambitious and timely reforms introduced in the CBME curriculum. It is expected to break down the walls between different specialities and impart knowledge and skills to the student in more holistic manner concentrating on the ultimate outcome of the programme. Though it will be difficult to implement a completely integrated curriculum in the Indian setting, this attempt should be considered as a beginning for change.[7] This reform is expected to bring in more comprehensive understanding on the subject for the student and help in connecting the dots of various things he/she learns in different subjects. This will in-turn enhance the professional knowledge and skills of the physician, thus leading to better delivery of health care services in future.

AETCOM

Implementation of Attitudinal, Ethics and Communications skills (AETCOM) through structured modules horizontally across the undergraduate programme is considered as another important element of CBME. The skills, behaviours and attitudes which were once learnt through imitation and observation of

teachers as a hidden curriculum are now formally brought into the actual programme. [8]The ultimate outcome of these modules are that the communities, over the years, would have a primary care physician who can act as a good communicator, ethical practitioner, empathic care giver, altruistic health professional and compassionate health care team leader. This will bridge the communication and attitudinal gaps between the doctors, patients and communities and help in improving the health seeking behaviour of people and enhance the level of satisfaction with health care services among people.

Skill enhancement

Introduction of certifiable skills for different subjects in the curriculum is another important step in ensuring the acquisition of basic minimum skills by the student to provide essential services at the community settings. Simple but important skills like measuring blood pressure, interpreting basic laboratory investigations, administering intramuscular injections, providing a certificate of illness, writing a legible prescription, undertaking physical and systemic examinations for various organ systems, performing general examination of a pregnant women, assessing the nutritional status of a child, providing basic life support to a patient etc. are to be mandatorily certified by the experts in the specific subject areas before the student completes a particular year of the under graduation. Establishment of skill and simulation labs across all the medical colleges are expected to achieve this skill-based teaching. [9]This approach will help students to develop the confidence of performing assigned clinical tasks under supervision and empower themselves to exhibit these skills independently at the primary care setting as Entrustable Professional Activities. Hence , the communities would have doctors who are confident and skilful enough to perform their duties with minimum chance of errors.

Electives

Bringing in the concept of electives in undergraduate medical education is another important milestone in curricular reform.[10] Though it may not have any direct impact on the community health at a short term, it is expected to enhance the clinical competence, professional skills and satisfaction among students to shape their career as competent primary care physicians in future.

Flexibility to tailor curriculum to the local health needs

CBME allows some amount of flexibility to the medical schools in bringing locally relevant health issues in the curriculum by keeping overarching competencies. To illustrate this, one competency listed in Community Medicine, *CM 8.1 Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for communicable diseases,[11]*is a very broad one which allows medical colleges to include the diseases of relevance to local context and skim through not so locally important health issues.By using context specific health issues to determine competencies, the CBME program has the potential to improve the health of the community. [12].The pedagogical methods adopted in CBME have sound adult learning principles as the theoretical underpinning. The strategy is all stake holder approach keeping the societal benefit at the center. Small group teaching has been given a major emphasis in the curriculum. This is expected to encourage innovations in teaching-learning activities. Doctor-patient method of teaching/shadowing, community-based teaching, group discussions, patient centric teaching, case-based learning, problem based learning,

team based learning, self-directed learning sessions will enhance self-reliance and clinical competence among the students.The focus is on observation, feedback and reflective activities that promote critical thinking among students. Hence the student will develop deeper understanding of distribution, determinants and management of locally prevalent health issues, which in-turn help communities by having a doctor who can confidently manage health issues of local concern.

Pandemic Management Modules

Considering the need for preparedness of primary care physicians towards any national or international emergencies of public health concern, a comprehensive, multidisciplinary pandemic management module has been introduced. This module calls in to play all five roles envisaged for the IMG namely, clinician, communicator, life-long learner and committed to excellence, leader and member of health care team, professional, is ethical, responsive and accountable to patients. This longitudinal module extending from foundation course to the final year undergraduate program is expected to ensure the creation of IMG who will serve the communities a as a humane doctor, healer in bleak times like pandemic and a compassionate leader. [13]

Impact on community health

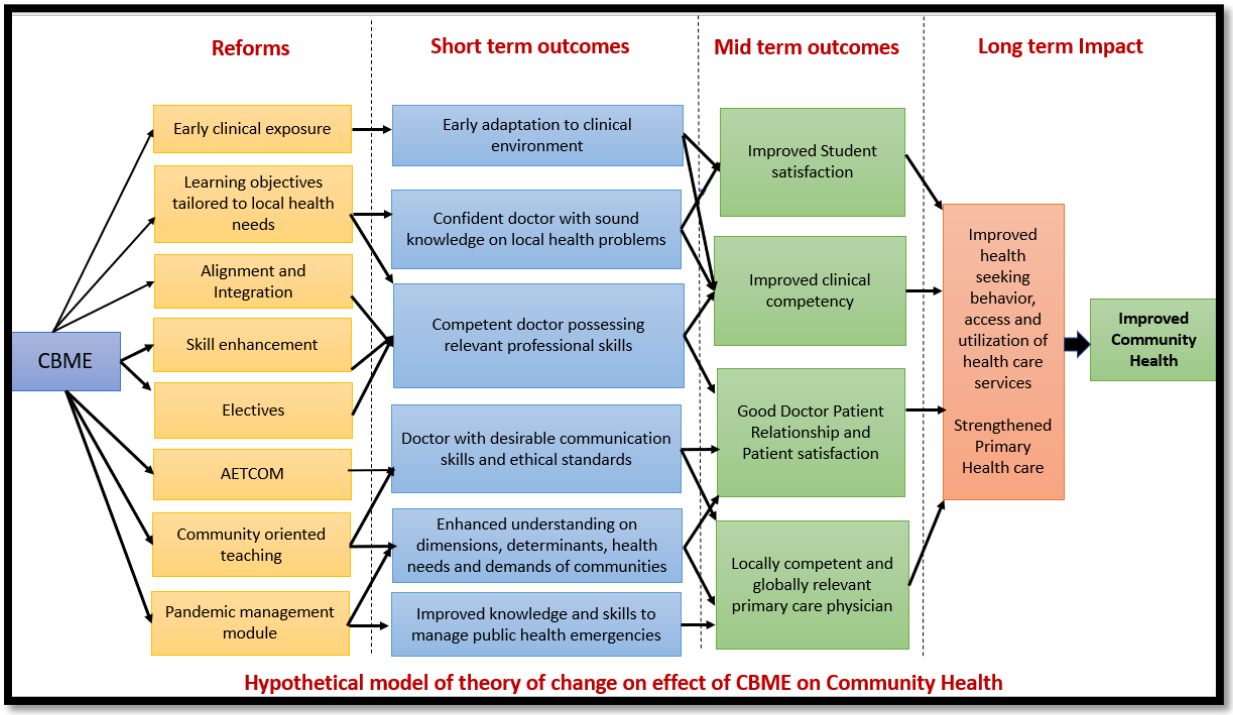
All the reforms in the curriculum are expected to improve the doctor-patient relationships, improved health care seeking behaviour among people and enhanced patient satisfaction with the services provided by the professionally sound and competent Indian Medical Graduate serving as a primary care physician. This will ensure increased access and acceptability leading to be optimum quality and efficiency in the health sector. Hence,peoplewill utilize services at health centres either in public or private domain as they are aware that the health care providers possess adequate, knowledge, attitude and skills pertaining to the common ailments in the communities. Over the years, it is expected to abring positive change in the health of people at community level.

It is worthwhile to note that the competency based undergraduate medical education curriculum is a long awaited, much needed, highly ambitious and contextually relevant curricular reform in India. With lots of initial challenges, ifs and buts , the curriculum is finally implemented in all the medical colleges across the country with the hand holding and mentoring of nodal and regional centres of National Medical Council. It requires considerable amount of time for the communities to appreciate the effects of this new curriculum. With ample of socio-cultural diversities, changing health care needs and demands, public health emergencies, varying health priorities of stakeholders, geopolitical dynamics in health care, economic reforms, laws and legislations are expected to impact the community level outcomes of these curricular reforms.

Conclusion

Competency based medical education has broken the stagnant, teacher centric, process driven, less flexible curriculum into more dynamic, student centric, outcome oriented, skill based curriculum which can yield locally competent and globally relevant Indian Medical Graduate who can act as a primary care physician in the community. Any reform in the

health or health professional education sector needs to be envisioned and evaluated with the long term changes they can bring in the health seeking behaviour and utilization of health services ultimately leading to the improvement in overall health of people in communities. We need to also keep in mind that to achieve the goal of CBME we require to redesign the health care macro systems also. Let us hope that CBME is going to achieve this goal and help in ensuring much desired health for all.



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Playing the devil's advocate - is the CBME just old wine in new bottle?

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The Medical Council of India's (MCI) new competency-based curriculum for medical graduates is a major landmark for medical education in India[1].Competency Based Medical Education (CBME) has emerged as a crucial approach to produce the next generation of doctors who also belong to the 'generation Z' cohort. The advantages of the competency-based curriculum over the conventional one cannot be underestimated. As followed globally, India also envisaged creating the Indian Medical Graduate who would acquire pre-defined goals, roles and competencies and fill up the void that exists presently in the patient-doctor interface.

The CBME curriculum was rolled out in India with great zeal and fervor in 2019. We all have been a witness and a part to this paradigm shift in the Under Graduate Medical Education curriculum. While CBME promises a focus on outcomes, a learner-centric approach, emphasizes self-directed learning, embraces formative assessment with feedback for enhanced learning, entrusts shared responsibility in learning, and supports a time-independent framework for acquisition of knowledge, skill and attitude, there are numerous concerns which shroud all the potentialities that CBME projects.

A new, robust and meticulously designed curriculum has been packaged and delivered to us for implementation. All the necessary steps required for its successful implementation have been taken by the regulatory body to the maximum capacity. Never has anyone witnessed such a level of faculty development running concurrently in all medical colleges across the country at the same point in time. However, the reaction to this new curriculum is mixed. Although all of us, as medical teachers, have

scrutinized the different aspects of the newly introduced curriculum with great optimism, we have some hidden concerns too. One of the major concerns that was reflected in the valedictory during the conduct of faculty development programs (FDP) was "the uncertainty regarding whether the curriculum would be implemented in true letter and spirit. Would it just remain on paper? Would it be easy to move out of the conventional way of teaching and accept the new role of a facilitator? Some comments would be pointing it to be just "old wine in new bottle!!". Truly, this is what it should NOT be, I would hope.

Despite the widespread enthusiasm and the noted advantages of CBME, there are doubts harbored in the deepest corner of our minds: what if it does not work the way it should? One of the major arguments against the implementation of CBME has been the conviction that the conventional model has worked so well. Skeptics offer endless reasons to combat the counter arguments.

The first and foremost reason to believe that the CBME is merely a paper tiger is that the medical education regulations do not go in favour of 'fixed standards with a flexible time schedule' as is required for CBME. The structure, therefore, remains the same as before. The number of years within which the student has to graduate has been defined thereby removing any possibility of flexibility of time for students to achieve their learning. It is suspected that departments, under pressure to ensure that students acquire competencies within the time limit lest they be directed to discontinue the course, may be disinclined to adapt to CBME methods .

We are yet to develop models that can address "individual learning needs through flexible learning plans". The provision for asynchronous learning (where the student studies as per her own schedule)is yet to be developed. Even if this falls in to place, how would institutes accommodate variable times of graduating? The policies that have been in place over years now are fixed in faculty and student minds. A complete conversion would require amendments of rules and regulations at various levels which could take years still.

This is where the major problem lies: **educational reforms must be in tandem with administrative reforms.**

The resources that will be required for the proper implementation of the curriculum have not been considered or taken care of by Medical Colleges uniformly across the country. Detailed assessment methods with the components of providing timely feedback and direct observation call for an increase in the number of faculty in each discipline. Documentation and certification of the learning experiences of students may turn out to be cumbersome and exhausting in the long run, which may in turn lead to compromising the essence of CBME. The administrative challenges to increase the number of faculty for the exhaustive work that CBME involves, improvising the existing infrastructure in terms of space for small group discussion, A-V aids, increased faculty development program, starting the skills lab need to be addressed concurrently across the country. Although the minimum requirements have been notified, a few states are still in a state of flux. The rush to implement the CBME curriculum without taking care of logistical needs first may fulfil the prophecy that CBME will end up merely as a warped version of the conventional curriculum.

Varied assessment methods have been suggested to measure student learning in the CBME. There is uncertainty, by and large, whether colleges under the same Health University will adopt the same methods or whether they will be allowed flexibility depending on local context. Then there are different departments within the same college, who may adopt different assessment methods so that students are subjected to all the varieties possible. The resulting complexity may make it difficult to align assessment methods with university examinations, and this is a concern when it comes to uniformity across colleges within one university. Consistency is further compromised as some competencies lack good assessment methods as of now. Further, low case volumes in some colleges for rare but essential health conditions may result in disparities between institutions in assessing certain competencies. In this respect, the quality of assessment, of feedback, and of direct observation - pillars on which the success of CBME rests - requires more attention. Faculty development will be necessary to ensure competent assessors are available. Non uniformity will lead to difficulty in assessment during university exams since external examiners will be involved. These challenges confronting competency-based assessment might create a situation where the assessment process may unwittingly gravitate towards the conventional methods which will again mar the spirit of CBME.

Another thing to consider is how cultural influences in different parts of the country may make it difficult to implement multisource feedback in the Indian context. It will take some time before all the elements essential for true implementation are learned and applied. Until then, it is anybody's guess how CBME will fulfil the promise it offers.

Jacob KS, 2019, in a guest editorial has critically analysed the competencies and the outcomes as applicable to the discipline of Psychiatry. He states that the new curriculum does not mandate a single competency related to Psychiatry during the course; the curriculum argues that these will be achieved during the internship, essentially suggesting old wine in a new bottle. It does not acknowledge the difference between specialist psychiatric and general medical settings, nor does it take into account the significant disparities between psychiatric and physician perspectives. The new curriculum essentially imposes tertiary care standards and specialist perspectives for Indian medical graduates who are to work in primary care and secondary care facilities in the country.[2] Critical appraisal of subject-wise competencies by experts can throw light on what is truly revolutionary about it versus that which already exists but is presented in a new way while essentially remaining the same.

There is a lack of validation of the ways in which the five roles of an IMG (Clinician, Leader & Member of health care team, Communicator, Life-long learner and Professional) intersect in a competency. The relative contributions of these in achieving a successful outcome are not known. For example, in surgical disciplines, that is no data on whether surgical success depends most on clinical/technical skills, or on cognitive ability, on communication skills, on leadership and team-work, on professionalism, or on a commitment to patient safety. Without this information, one cannot usefully evaluate a surgical competency or design a program that trains for it. The confusion is compounded by the overlapping nature of some aspects of the five roles. Unless the five roles of the IMG and the desired competencies are logically knit together, we cannot expect anything better than a motheaten structure that makes the conventional curriculum look good.

The doubts on the utilitarian nature of CBME is raised for the fear of failure in the methods of assessment. If we go by the dictum that assessment drives learning, then the assessment practices must be changed. An integrated assessment of the disciplines despite subject-based teaching must be evident to the students for actual learning as required in CBME to happen. Overall, rigor and quality of assessment must be strengthened and the ambiguity of language must be minimized.

In conclusion, undoubtedly competency based medical educationcan improve the effectiveness of education and increase accountability to health care outcomes in response societal expectations and needs. However, the big question is whether we, as faculty, can grasp the meaning of it and implement the way it should be without compromising on the essential elements of CBME.

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Approach to Acute chest pain -- AHA 2021 guidelines (Oct 21)

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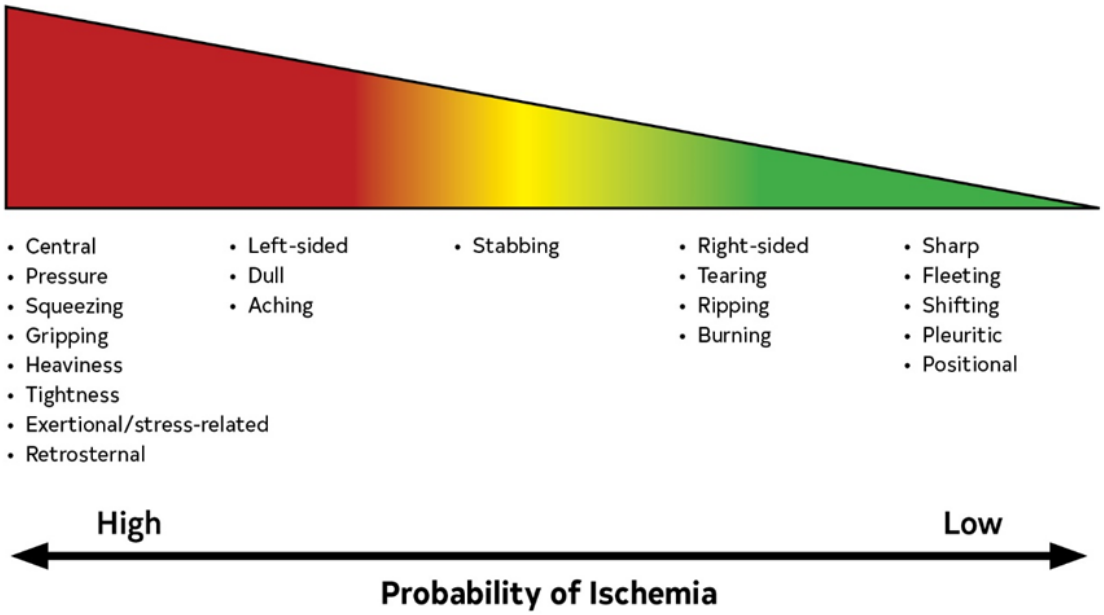
Chest pain remains a diagnostic challenge in the emergency departments(ED) and outpatient settings, and requires thorough clinical evaluation. Although the cause of chest pain is often noncardiac, coronary artery disease (CAD) affects >18.2 million adults in the United States and remains the leading cause of death for men and women, accounting for >365 000 deaths annually.

Chest pain should be considered acute when it is new in onset or involving a change in pattern, intensity or duration, and is in a patient with recurrent symptoms. Moreover, chest pain should be considered stable when symptoms are chronic and associated with physical exertion or emotional stress. Other sensations including chest pressure or tightness, in addition to discomfort in the chest, shoulders, arms, neck, back, upper abdomen or jaw, and shortness of breath and fatigue should be considered anginal equivalents.

Chest pain is the most frequent symptom of acute coronary syndrome for both men and women, and women may be more likely to present with concomitant symptoms including nausea and shortness of breath. Evidence-based diagnostic protocols should be used to assess risk for CAD and adverse events in patients with acute or stable chest pain.

Chest pain should not be described as atypical, because it is not helpful in determining the cause and can be misinterpreted as benign in nature. Instead, chest pain should be described as cardiac, possibly cardiac, or noncardiac because these terms are more specific to the potential underlying diagnosis.



Physical Exam in Patients with Chest Pain

In patients presenting with chest pain, a focused cardiovascular examination should be performed initially to aid in the diagnosis of ACS or other potentially serious causes of chest pain (e.g., aortic dissection, PE, or esophageal rupture) and to identify complications.

FOCUSED HISTORY OF CHEST PAIN

Characteristics of chest pain:

- Nature, Onset Duration, Location/Radiation
- Precipitating factors , Relieving factors, Associated symptoms

WOMEN

Women who present with chest pain are at risk for underdiagnosis, and potential cardiac causes should always be considered.It is recommended to obtain a history that emphasizes accompanying symptoms that are more common in women with ACS

ELDERLY

In patients with chest pain who are >75 years of age, ACS should be considered when accompanying symptoms such as shortness of breath, syncope, or acute delirium are present, or when an unexplained fall has occurred.

Other Clinical Syndromes	Physical Exam Findings
Non-coronary cardiac: • aortic stenosis • aortic regurgitation • hypertrophic cardiomyopathy	• **AS:** Characteristic systolic murmur, tardus or parvus carotid pulse • **AR:** Diastolic murmur at right of sternum, rapid carotid upstroke • **HCM:** Increased or displaced left ventricular impulse, prominent *a* wave in jugular venous pressure, systolic murmur that increases with Valsalva
Pericarditis/ Myocarditis	• **Pericarditis:** Fever, pleuritic chest pain, increased in supine position, friction rub • **Myocarditis:** Fever, chest pain, heart failure, S3
Esophagitis, peptic ulcer disease, gall bladder disease	• Epigastric tenderness • Right upper quadrant tenderness, Murphy's sign
Pneumonia	Fever, localized chest pain, may be pleuritic, friction rub may be present, regional dullness to percussion, egophony
Pneumothorax	Dyspnea and pain on inspiration, unilateral absence of breath sounds
Costochondritis, Tietze syndrome	Tenderness of costochondral joints
Herpes zoster	Pain in dermatomal distribution, triggered by touch; characteristic rash (unilateral and dermatomal distribution)

What to do when patients present with chest pain

AT CLINIC

Patients with clinical evidence of ACS or other life-threatening causes of acute chest pain seen in the office setting should be transported urgently to the ED, ideally by EMS

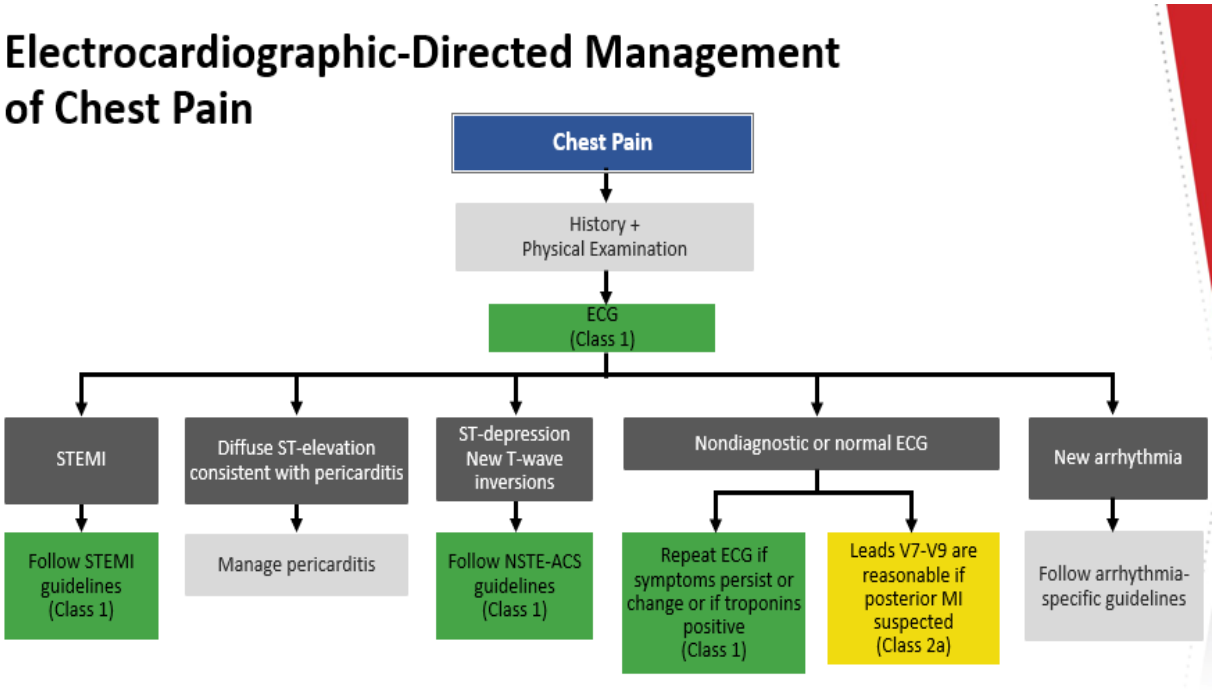
Unless a noncardiac cause is evident, an ECG should be performed for patients seen in the office setting with stable chest pain; if an ECG is unavailable the patient should be referred to the ED so one can be obtained.

For patients with acute chest pain and suspected ACS initially evaluated in the office setting, delayed transfer to the ED for cTn or other diagnostic testing should be avoided

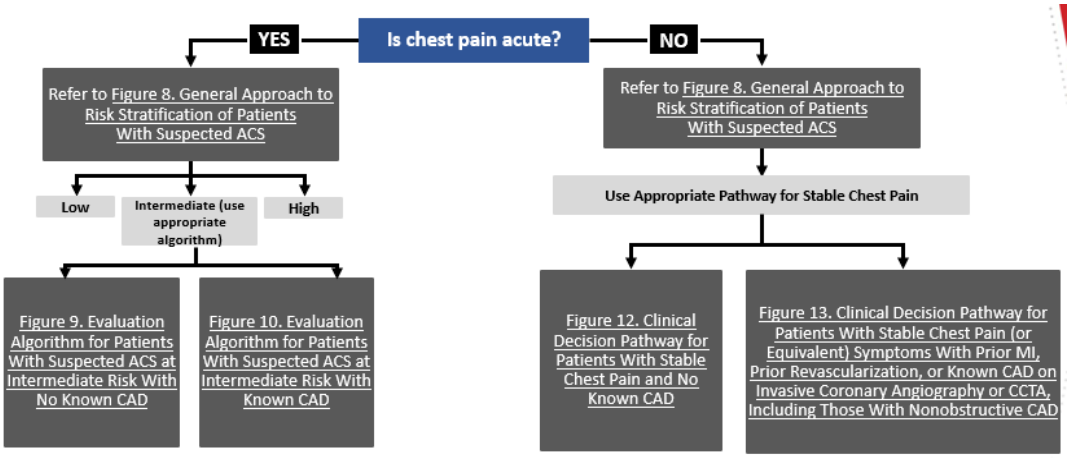
AT MEDICAL FACILITY

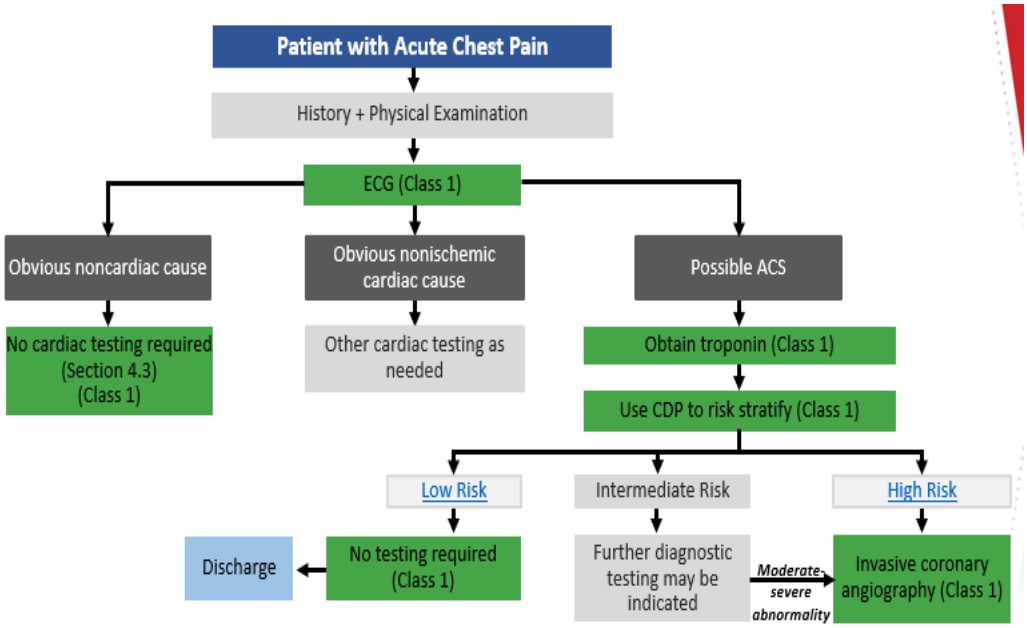
- In all patients who present with acute chest pain regardless of the setting, an ECG should be acquired and reviewed for STEMI within 10 minutes of arrival
-

- In all patients presenting to the ED with acute chest pain and suspected ACS, cTn should be measured as soon as possible after presentation



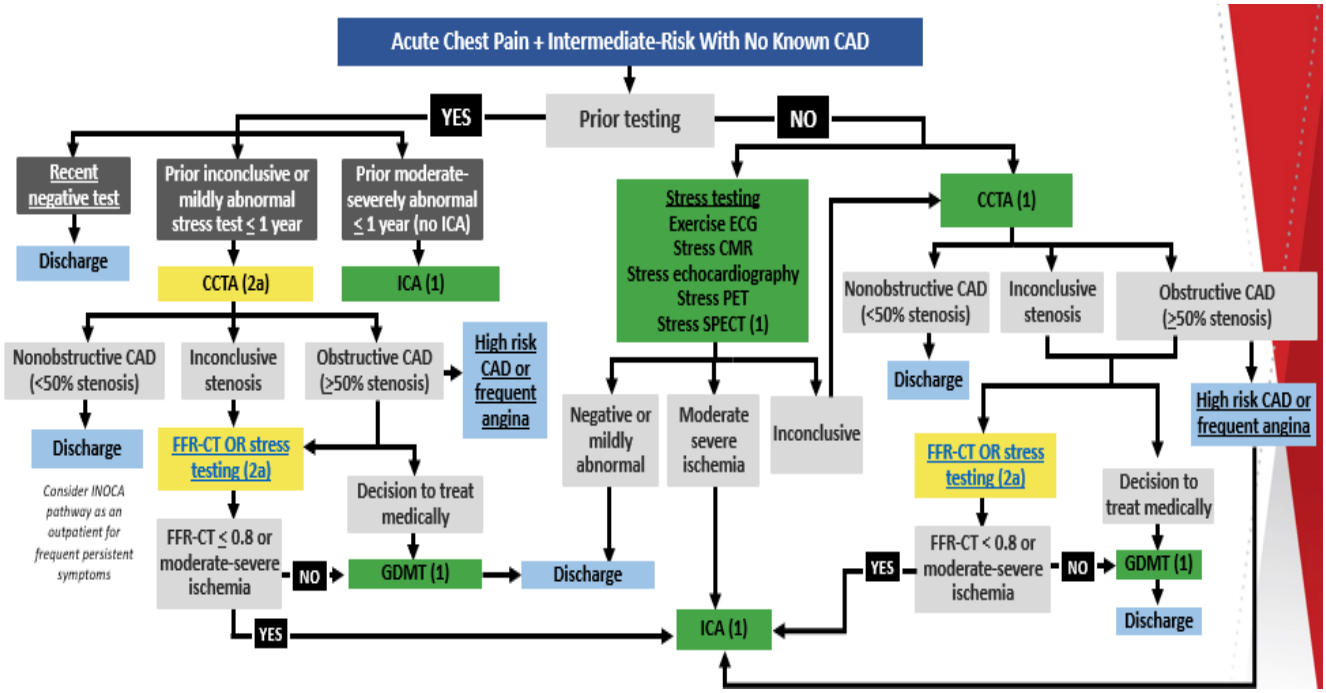
- In patients presenting with acute chest pain, a chest radiograph is useful to evaluate for other potential cardiac, pulmonary, and thoracic causes of symptoms
- In patients presenting with acute chest pain, serial cTn I or T levels are useful to identify abnormal values and a rising or falling pattern indicative of acute myocardial injury
- In patients presenting with acute chest pain, high-sensitivity cTn is the preferred biomarker because it enables more rapid detection or exclusion of myocardial injury and increases diagnostic accuracy
- With availability of cTn, creatine kinase myocardial (CK-MB) isoenzyme and myoglobin are not useful for diagnosis of acute myocardial injury
-

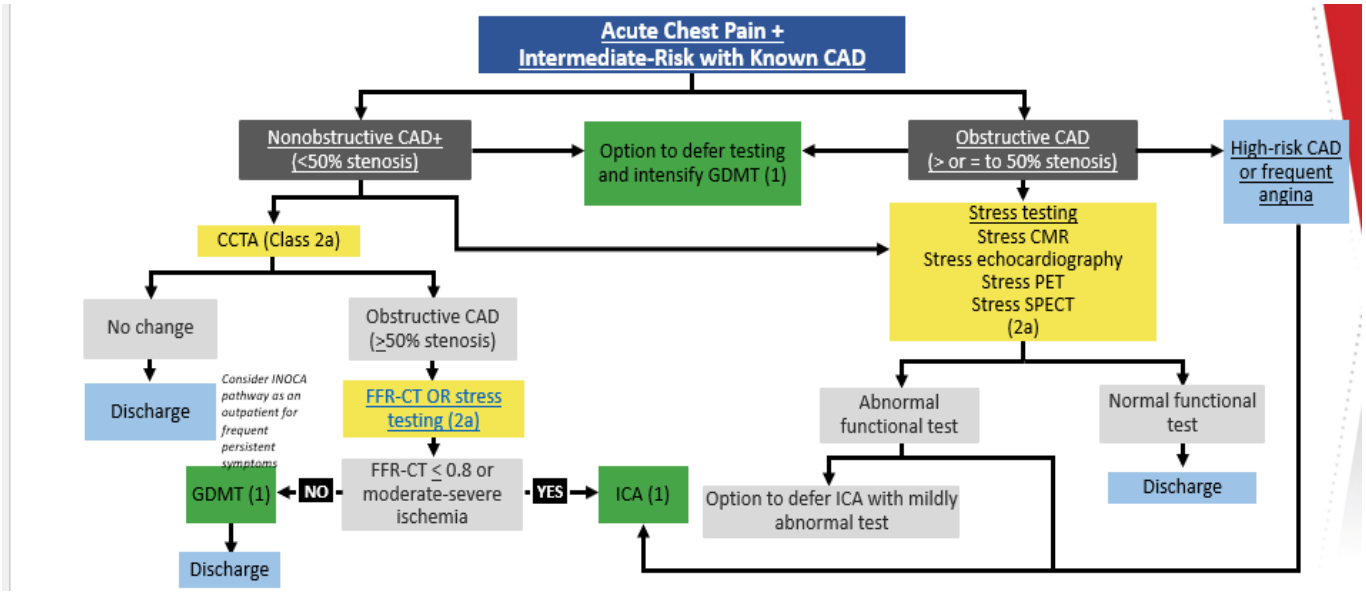




Recommendations for High-Risk Patients having Chest Pain (Prior CABG without ACS,Dialysis,Cocaine/Methamphetamine)

- Stress testing or CCTA
- In patients who experience acute unremitting chest pain while undergoing dialysis, transfer by EMS to an acute care setting is recommended


Acute Chest Pain + Intermediate-Risk With No Known CAD
Prior testing
YES
NO
Recent negative test
Discharge
Prior inconclusive or mildly abnormal stress test ≤ 1 year
CCTA (2a)
Prior moderate-severely abnormal ≤ 1 year (no ICA)
ICA (1)
Nonobstructive CAD (<50% stenosis)
Discharge
Consider INOCA pathway as an outpatient for frequent persistent symptoms
Inconclusive stenosis
FFR-CT OR stress testing (2a)
FFR-CT ≤ 0.8 or moderate-severe ischemia
NO
YES
Obstructive CAD (≥50% stenosis)
High risk CAD or frequent angina
Decision to treat medically
GDMT (1)
Discharge
Stress testing
Exercise ECG
Stress CMR
Stress echocardiography
Stress PET
Stress SPECT (1)
Negative or mildly abnormal
Moderate severe ischemia
Inconclusive
ICA (1)
CCTA (1)
Nonobstructive CAD (<50% stenosis)
Discharge
Inconclusive stenosis
FFR-CT OR stress testing (2a)
FFR-CT < 0.8 or moderate-severe ischemia
YES
NO
Obstructive CAD (≥50% stenosis)
High risk CAD or frequent angina
Decision to treat medically
GDMT (1)
Discharge


Acute Chest Pain + Intermediate-Risk with Known CAD
Nonobstructive CAD+ (<50% stenosis)
Option to defer testing and intensify GDMT (1)
Obstructive CAD (> or = to 50% stenosis)
High-risk CAD or frequent angina
CCTA (Class 2a)
No change
Discharge
Consider INOCA pathway as an outpatient for frequent persistent symptoms
Obstructive CAD (≥50% stenosis)
FFR-CT OR stress testing (2a)
FFR-CT ≤ 0.8 or moderate-severe ischemia
YES
NO
GDMT (1)
Discharge
ICA (1)
Stress testing
Stress CMR
Stress echocardiography
Stress PET
Stress SPECT
(2a)
Abnormal functional test
Option to defer ICA with mildly abnormal test
Normal functional test
Discharge

Diagnostic Testing: Exercise Electrocardiogram- Indications

- Candidates include those without disabling comorbidities (frailty, marked obesity (BMI>40kg/m2), PAD, COPD, or orthopedic limitations
- Capable of performing activities of daily living or able to achieve METS ≥ 5

Diagnostic Testing:
Coronary Computed Tomography Angiography - Indications

- To visualize and help to diagnose the extent and severity of nonobstructive and obstructive CAD.
- Allows for evaluation of atherosclerotic plaque composition and high-risk features (e.g., positive remodeling, low attenuation plaque

Stress Nuclear Myocardial Perfusion Imaging- Indications

- Detection of perfusion abnormalities
- Measurement of LV function
- Detection of
  high-risk findings (transient ischemic dilation)
- PET allows calculation of myocardial blood flow reserve

Cardiovascular Magnetic Resonance Imaging- Indications

- Accurately assess global and regional LV/ RV function
- Detect and localize myocardial ischemia and infarction
- Determine myocardial viability
- Detect myocardial edema and microvascular obstruction
- Other causes of chest pain- myocarditis

Pretext likehood of CAD

Low – No testing – Option for CAC for ASCVD risk stratification

Intermediate high – Younger patient (<65y of age) OR Less obstructive CAD suspected – CCTA favoured

Intermediate high – Older patient (>65 y of age) OR More obstructive CAD suspected – Stress testing favoured

High risk – stress testing OR CCTA

Patients with acute chest pain should be evaluated for noncardiac causes if they have persistent or recurring symptoms despite a negative stress test or anatomic cardiac evaluation, or a low-risk designation by a CDP.

Interpretation of ANA

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Antinuclear antibodies (ANA)are an integral part of rheumatological investigations – they are useful in screening, classification , diagnosis , prognosis and staging . (1)

ANAs are considered the immunological hallmark of SLE. The term ANA is a slight misnomer, as the location of some of the antigens against which these are directed is cytoplasmic. ANAsare directed against either nucleicacids or proteins, or complexes of nucleic acids and proteins.They mediate pathogenesis in a variety of conditions either as

free antibodies, or more likely, by forming immune complexes. For accurate interpretation of ANA the clinician must be aware of

a. The technical basis of ANAtesting

b. The significance of titres

c. The significance of patterns of fluorescence

d. Limitations of ANAtesting

e. How to proceed when ANAis unexpectedly negative

f. How to proceed when ANAunexpectedly positive

Testing for ANA

The following methods are used :

a. Immunofluorescence

b. ELISA

c. Immunoblot

d. Line immune assay

Indirect immunofluorescence : the Hep -2 cell line is used for the indirect immunofluorescence assay. Hep-2 cells contain almost all the important autoantigens, thus making it the ideal medium for detection of the corresponding autoantibodies. (2)Additionally, the Hep 2 cell is large, thus making the immunofluorescence patterns easily visible.

These cells are fixed to glass slides, which are then washed with the patient serum. Following this, the slides are incubated with an antibody directed against human immunoglobulin (this antibody is fluorescein conjugated).If the patient's serum contains antibodies directed against the antigens in the Hep 2 cell, then the fluorescein conjugatedanti-human Ig antibody will fix to the antigen via the patients antibodies. This will result in a fluorescence which can be detected by an ultraviolet microscope.

If fluorescence is detected , the serum is further diluted and retested at increasing dilutions. At one point, less than 50% of the cells on the slide show fluorescence. The dilution just prior to this point is reported as the ANA titre.

ELISA – here, a solid phase platform is used for testing. The antigen is adhered to the wells of a micro titreplate . Serum in various dilutions is added, and the bound antibody is detected by an enzyme conjugated anti Ig reagent. This binding is followed by a reaction which results in a product whose colour is measured by spectrophotometry.

Multiplex assays – these assays involve the simultaneous detection of different ANAs. Line immunoassay, ALBIA (Addressable Laser Bead Immuno Assay) and microarray assay are multiplex assays. In a line immunoassay, antibodies bind to parallel lines of antigens on a strip, and they are measured.

It is important to note that variability in reporting can occur between these solid phase assays and IFA because of differencebetween the antigens.

Significance of titres : Higher ANA titres do not necessarily indicate more severe or more active disease. However they are more likely to be clinically significant ; conversely; ANA positivity in healthy individuals is likely to be of lower titres. Additionally, some clinical manifestations like Raynaud's phenomenon and sclerodactyly are more evident with high titres of anti-centromere antibodies , and MCTD is more likely with high titres of U1RNP.

Fluorescence patterns : Reporting of ANA includes not just the titre but the fluorescent patterns as well. The following staining patterns may be observed. Specific patterns may be associated with various autoimmune diseases.(3)

Homogenous pattern – The entire nucleus is stained . Antibodies are directed against histone, DNA and DNA histone complexes. Homogenous and rim patterns are characteristic of SLE.Speckled staining pattern - fine or coarse speckles are seen throughout the nucleus. The speckled pattern is produced by antibodies directed U1 RNP (Mixed connective tissue disease), Sm, and La antigens.Patients with Sjogren's syndrome tend to have a speckled staining pattern on immunofluorescence.

Centromere pattern-This is seen in limited systemic sclerosis. In resting cells, there are 30 to 60 speckles distributed in the nucleus. In mitotic cells, the speckles are seen in chromosomes at the metaphase plate.

Nucleolar pattern - there is either homogeneous or speckled staining of the nucleolus. This is produced by antibodies directed against fibrillarin, RNA polymerase, Th, PM-Scl, & RNA helicase, and may be seen in diffuse systemic sclerosis.

The fluorescence patterns, though suggestive, are not specific for individual autoimmune disorders. Therefore, if specific disease associated autoantibodies need to be detected, additional testing by solid phase assays is required.

While immunofluorescence patterns are routinely reported, for various reasons, they are not completely reliable. Firstly, the pattern depends on the way the cells present the nuclear antigens. There is a certain degree of variability in technical processes like the reagent properties and the conditions in which fixation is done. Inherent subjectivity due to inter observer variability further influences the patterns, as well as the dilution itself . Additionally there are specific antibody tests available which help in diagnosis, and therefore , the role of the fluorescence patterns is diminishing Sensitivity and specificity ANA is sensitive for SLE – 95 to 100 percent of patients with SLE test positive for ANA.(4)

ANA is not specific for SLE. 20% normal individuals have ANAin a titre of 1:40 or more, and 5% test positive at a tire of 1:160 or more. Since the prevalence of SLE in the normal population is 40-50 per

100000 persons, this would imply that most persons incidentally found to be ANA positive do not have SLE. Better specificity could be attained by reporting ANA positive only at higher tires, but this would diminish diagnostic sensitivity.

Sensitivity of ANA in diagnosis of SLE – the sensitivity of ANA as a test for SLE depends on the serum dilution – increasing the dilution increases the specificity , at the expense of sensitivity. Similarly, decreasing the dilution at which ANA is considered p[positive does increase the sensitivity , but increases the false positivity as well.

Clinical implications of various antibodies

It is interesting to note that that though antigens recognized by autoantibodies are present in all cells of the bodies, certain antibodies are indicative of specific organ involvement. The following antibodies predictspecific symptoms or organinvolvement.

Antibodies in the ANA profile may also have certain prognostic and predictive implications.

The main issue with testing ANA is the high prevalence of ANA positivity in individuals who do not have SLE. Since very few tests yield results that are pathognomonic of particular diseases, test results for autoantibodies are useful only if interpreted in the Clinical context. Apart from the elderly , relatives of patients with connective tissue disorder, pregnant women and those with gel implants, positive ANA is also seen in organ specific autoimmune disease like Hashimoto's thyroiditis, Grave's disease, autoimmune hepatitis and primary biliary cirrhosis. Viral infections like EBV, HIV, HCV and parvovirus 19 may also result in ANA positivity.

In spite of the numerous conditions causing ANA positivity at 1:80 dilution is the entry level criterion for diagnosis of SLE

Classification Criteria for SLE(5)

Algorithm for testing:

When should you order an ANA test

1. If SLE is suspected based on history and clinical examination findings.

2. If scleroderma is clinically suspected , a positive ANA test would support the diagnosis of scleroderma . On the other hand, a negative test would encourage the clinician to evaluate for a scleroderma mimic such as scleredema and eosinophilic fasciitis.

3. In patients with a definite suspicion of Sjogren’s syndrome – for example unrelentingsicca symptoms or for the mother of a child born with congenital heart block.

4. To diagnoseautoimmune hepatitis and Mixed Connective Tissue Disease (MCTD).

5. To prognosticate for juvenile chronic oligoarthritis - here, a positive ANA predicts uveitis.

6. Raynaud's phenomenon - patients with positive ANA are more likely to develop systemic rheumatic disease.

7. If anti phospholipid antibody (APLA) is positive and antiphospholipid syndrome is diagnosed, positive ANA makes it likely that the APLA is due to SLE.

8. Anti scl can prognosticate scleroderma , especially predicting pulmonary fibrosis.

When not to order ANA

1. To sequentially monitor disease activity in autoantibodyassociated rheumatic disease.

2. Don't order anti histones for drug induced SLE.

What to do if ANA unexpectedly positive

■ Do not repeat ANA; there is no utility to serial values of ANA in monitoring disease activity.

■ If the ANA is positive, and the case is ambiguous, anti dsDNA, anti- Sm may be checked for confirmation. (presence of anti-ds DNA supports the diagnosis of SLE; it's absence does not rule out SLE)

■ If ANA is incidentally detected to be positive at a high titre, and there is no evidence of connective tissue disorder, revaluate after 6 months

Additional testing after ANA positive

1. In women with SLE considering pregnancy anti ro SSAs may be tested

2. SSA and SSB may also be tested to support the diagnosis of Sjogren's syndrome and to prognosticate as well. Cases of Sjogren's with these antibodies are more likely to have extraglandular and hematologic disease.

3. Anti-ds DNA can be testedin 1- 3 months to assess disease activityin patients with active disease

What to do if ANA is unexpectedly negative

■ Do NOT repeat test immediately!

■ Do repeat test if the clinical course changes.

■ Do not test other antibodies unless there is a strong suspicion of connective tissue disorder.

■ If there is a strong clinical suspicion of SLE , and ANA is negative, it might be worthwhile to test SS-A, SS-B, complement studies.

■ Anti-Jo-1may be considered if polymyositis/dermatomyositis is strongly suspected.

■ Negative ANA doesnot rule out polymyositis/ dermatomyositis ; further testing may be required.

In conclusion, it is important to keep the following caveats in mind while testing ANA:

■ Enquire titer

■ Be mindful of interlab variability

3. Be frugal about ordering panels without ANA positive or strong evidence of in autoantibody associated rheumatic disease.

■ Do not test without clear clinical indication i.e. strong suspicion of AARD. remember that in a patient with low pretest probability of SLE , a positive ANA test does little to increase the probability that the patient has SLE. Conversely, in patients with the clinical features of SLE – photosensitive rash, inflammatory arthritis and immune cytopenias - the pretest probability is higher and a positive test in these individuals can be used to support the diagnosis.

■ Testing ANA in those with non-specific musculoskeletal signs and symptoms, especially the elderly, may be counterproductive and may obfuscate the diagnosis further.

■ ANA is very useful for the diagnosis of SLE and systemic sclerosis, somewhat useful for the diagnosis of Sjogren's and polymyositis/ dermatomyositis and is essential in the diagnosis of drug associated lupus, MCTD and autoimmune hepatitis.

■ It is very useful for prognostication and monitoring in juvenile chronic arthritis and Raynaud'sphenomenon

■ ANA is not useful either in the diagnosis or prognosis of rheumatoid arthritis, multiple sclerosis, or fibromyalgia.

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ABC of Practice series

Insurance for Medical Practitioners.

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Insurance is an integral part of professional life and service of any doctor.I am sure, most doctors have their "Insurance" for the purpose of "Tax saving" or "Mediclaim", but there is much more than that! Why insurance is needed for a doctor?

Medical practitioners are subjected to additional risks than the general public, both in professional and personal life like…

1. Litigation and legal cases such as consumer case under CPA, ethical case at state medical council or even the criminal case under certain circumstances.

2. Assault, abuse or harassment by the patient or party.

3. Fire outbreak or fire accident at hospital or premises of practice.

4. Loss or damage to the property, equipment, valuables by natural calamities like flood, lightning etc or even by the mob!

5. Damage or injury to other patients or public in the premises of hospital or at doctors clinic.

Every medical practitioner, as a care giver, as a professional, as an owner of the premises, is liable to suffer in many ways andhave to struggle fighting their case or end-up giving compensation !. Hence it is almost mandatory for every doctor to have several insurance policies in continuum to coverup the huge sum of expenseswhich may arise at any day !!

What are the types of insurance that are available and needed for doctors?

1. Professional indemnity insurance
2. Personal accident insurance
3. Fire, accident, burglary insurance for the premises
4. Public & third part liability insurance
5. Insurance for the medical equipment
6. Health insurance
7. Term insurance
8. Life insurance

How these insurance will help or ease the life of doctor?

1.Professional indemnity insurance: Ages / decades ago, medical profession was considered Nobel profession and patient's goodwill and trust was the wealth of the doctor. Currently the medical profession is declared commercial and service enterprise by the law, causing medical practice more complex. It is the duty of the doctor to provide "reasonable" health care to the patient under the "contract".Now a days, patients are demanding care at low cost with very high accountability and doctors have to worry not just about patients' health, but also about several otherfactors and risks associated with patient care.No doubt, every doctor practices the medical profession with great care and ethics, but there are many instances, where the results of the treatment may not be favourable and the patient or relatives are not happy or may find fault with the treatment, procedure or outcome,and may file alitigation up to two years of the index incident. The number of medical negligence cases against doctors, hospitals and nursing homes in the consumer forum are increasing day by dayand the compensation demands are in crores of rupees. Many of the cases in consumer forums are declared in favour of the litigator!, which an ethical medical practitioner will definitely not be able to bear!!.Once a litigation comes up,irrespective of winning or losing the case, doctor has to hire the specialised advocates with huge "professional" fees to defend in these suits. The legal course can be time consuming and expensive. Hence it is wise to procure professional indemnity insurance from day 1 of the career.

A professional indemnity insurance protects doctors from patients claim related to omissions, negligence or errors. Such an insurance covers defence costs during the investigation, and expenses related to representation and compensation, if any, awarded by the court. A good insurer will also have a panel of experienced lawyers who can defend the doctor. Purchase options are to go with provider from professional bodies like IMA, AMC or directly through the individual insurance companies or one of the several aggregator agencies. The cost of such an insurance " subscription" via IMA- only for life members of IMA- is currently Rs 3000=00 annually, for coverage of RsONE crore, for all specialities, including the facilities of specialised lawyers.But if the compensations are to be disbursed on litigation of any members of the scheme, it will be disbursed by equal contributions by all members of the scheme, hence there may be yearly additional contribution depending on the total amount to be disbursed.

The premium cost of such an insurance are higher, up to Rs 10,000 – 20,000=00 for the cover of Rs one crore, if purchased directlyfrom the one of many insurance company. The premiums vary by the risk inherent to the professional speciality.One good alternative is to procure from group aggregators, it may cost about Rs 2500=00 annually, for cover of Rs one crore, with no extra cost of contribution as in the policy by IMA.

2.Personal accident insurance helps to compensate for any kind of accidental loss like permanent disabilities or even life. Of late, incidents of doctors being physically assaulted have also become frequent. A survey done by the Indian Medical Association indicates that 75 per cent of the doctors have been at the receiving end of verbal abuse, of which 12 per cent have been physically abused. Of course, such situations have to be prevented but accidents occur frequently!. Hence doctors must insure themselves against accidental injuries and disabilities. The personal accident insurance cover of Rs One crore would cost around Rs 14,000=00 per year if purchased individually from one of the insurance company, but group personal accident insurance from the aggregators are much cheaper, say less than Rs 3000=00 for the accidental cover of one crore per year. This may help giving some financial compensation for the family in the unfortunate event of disabilities or loss of life.

3.Fire, accident, burglary insurance for the premises+ Public & third part liability insurance (Property insurance): Fire hazard may happen with any establishment, but clinics and hospitals suffer more. We see more and more fire accidents in large hospitals causing many loss of life, loss of infrastructure, equipment etc. In case of an fire accident, the hospital has to deal with several litigation cases. To cover such risks, doctors need to buy a fire insurance policy to cover damages to the assets owned by them, and a public liability insurance to cover injuries and property damage to others, while at their premises. Fire insurance of Rs 25 lakh costs Rs 2500=00 and public liability insurance of Rs 50 lakh costs Rs 6000=00.

4.Insurance for the medical equipment: All electronic, electrical and medical equipment in the clinic or hospital are very expensive. They may get damaged by any factors like lightning, fire accident, flood,forceful damage by mob etc. which may not be covered or supported by the manufacturer either by warranty of by maintenance contract (AMC/CMC). Repairing or replacing such equipment may cost a fortune. Hence it is wise to avail insurance for costly medical equipment. This insurance of medical equipment will suffer a depreciation value like a vehicular insurance. Cost of an equipment worth replacement value of Rs 10,00,000 will be about 20,000=00 per year.

The essential insurance policies – professional indemnity, personal accident, property, fire and public liability, medical equipment – put together would cost a doctor about Rs 25,000-35,000=00 annually.

It is high time for the professional bodies, to customaries the several insurance policies necessary for the respective speciality.

Other three insurance- Health/ Mediclaim, Life insurance and Term insurance are also must for every person in right proportion to cover the “risk” or for “investment”, “tax saving” and family security.

Doctors try to make it up by working long hours. This leads to a pressure cooker-like situation for the practitioner. Doctors end up being at the receiving end of the patientswrath rather than receiving good

wishes. Doctors must proactively address these risks to develop a sustainable practice. Insurance is just one part of this.

Remember to renew every insurance policy at least one month prior to the date of expiry!

CALL FOR ARTICLES

Readers are hereby requested to submit their articles for the next issue.

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Author instructions@page 102

Reflections of a Resident

Dr Ram Mohan Bhandary

As a great man once put it- "There is nothing permanent except change". My short stint as a medicine junior resident in a prestigious institution and my daily encounters with the people around me are a testament to the truth in this saying. Change has become me. The everyday experiences have helped shape the individual that I've become and in turn let me play a part in other people's lives.

There are a few standout memories that come to mind .They guide my behavior, influence my decisions and bring forth second thoughts before I act upon them. Here are some of my learnings from them –

1.Counselling caretakers is like walking on a tightrope.

Counselling sessions are a world in themselves. Most would agree that treating patients is far more direct and linear than handling the anxious and ever -hopeful caretakers. Being blunt and forthright with prognosis can quickly escalate the counselling session into a confrontation. On the other hand, minimizing the issues at hand to placate the parties may catch them unawares or outrage them in the case of any eventualities. While going overboard with a grim prognosis at the outset may altogether snuff out any hope left among the bystanders. What we must do is this- convey the current condition but in a restrained manner and what outcome we hope to see, always hinting at the uncertainties involved. Nonetheless this has been difficult to practice than to preach.

2.Knowledge isn't just power

Medicine is a vast field with limitless information. It is only understandable that no person can be all-knowing. We must however strive to be proficient enough to be an authority in the particular field that we choose to practice .But with knowledge comes pride. It puts us in a bubble of self-satisfaction. This limits our growth and prevents acceptance of others viewpoints. It also belittles the contributions of our coworkers. So it does good to remember that we must stay humble, shun pride and realize that there is always something left to learn .That there is always someone better.

3.Every medical work is of responsible character

Be it managing a ward call on phone, or hurriedly settling a seemingly straightforward case. Be it providing a medical opinion or seeking another's counsel. Every decision bears weight and must be

thought out. We mustn't allow snap decisions from guiding our judgements. No matter how small a role we play, there is someone who looks up to us. So for them and ourselves, we must try to do the right thing.Last word- Right decisions are made on the path to honor not glory. So lets stay true.

4.The Man upstairs

No patient can be written off and no diagnosis is final. Most patients survive and do well, while few others succumb to their illnesses.Not everything is in the hands of the physician. There is probably someone up there who takes the final call. Being spiritual or religious eases suffering . It helps us to go through the motions of life .So I have learnt this-If we do our duties, then we may just fall in His good books. And for those (like me) who fall short on His grace or gumption. Don't fret-It isn't too late. Every day is a chance to turn it all around!

Dr Ram Mohan Bhandary
Junior Resident
General Medicie

JOURNAL SCAN

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Summaries of important published articles

Azithromycin not useful in mild to moderate COVID-19 patients

In three randomized trials involving the patients with mild-to-moderate COVID-19 managed without hospital admission, adding azithromycin to standard care treatment did not reduce the risk of subsequent hospital admission or death. Thus, the findings do not support the use of azithromycin in patients with mild-to-moderate COVID-19.

Hinks TSC, Cureton L, Knight R, Wang A, Cane JL, Barber VS, Black J, Dutton SJ, Melhorn J, Jabeen M, Moss P, Garlapati R, Baron T, Johnson G, Cantle F, Clarke D, Elkhodair S, Underwood J, Lasserson D, Pavord ID, Morgan S, Richards D. Azithromycin versus standard care in patients with mild-to-moderate COVID-19 (ATOMIC2): an open-label, randomised trial. Lancet Respir Med. 2021 Oct;9(10):1130-1140. doi: 10.1016/S2213-2600(21)00263-0. Epub 2021 Jul 9.

Blood pressure control: Optimize dose of the existing drug or add a new one?

In a Retrospective Observational Study which showed that adding a new molecule yielded better blood pressure control than optimizing the dose of the existing one.

Aubert, Carole E., et al. "Adding a New Medication Versus Maximizing Dose to Intensify Hypertension Treatment in Older Adults: A Retrospective Observational Study." Annals of internal medicine (2021). https://doi.org/10.7326/M21-1456

Cardiorespiratory fitness in midlife reduces the risk of CV risks

Lee J, Song RJ, Musa Yola I, et al. Association of Estimated Cardiorespiratory Fitness in Midlife With Cardiometabolic Outcomes and Mortality. JAMA Netw Open. 2021;4(10):e2131284. doi:10.1001/jamanetworkopen.2021.31284

Estimated cardiorespiratory fitness [eCRF]

Cardiorespiratory fitness (CRF) was estimated from sex-specific algorithms based on age, waist circumference, resting heart rate, and physical activity index. These algorithms were developed and validated in a Norwegian population-based cohort with a wide age range (20-90 years), and CRF estimated from this model has been shown to predict cardiovascular and all-cause mortality.

Findings of the cohort study involving 2962 Framingham Offspring Study participants was that higher midlife eCRF is associated with lower burdens of subclinical atherosclerosis and vascular stiffness, and with a lower risk of hypertension, diabetes, chronic kidney disease, cardiovascular disease, and mortality over a mean follow-up of 15 years. Thus, proving the benefits of better eCRF in wide range of cardiometabolic diseases.

SALT SUBSTITUTE AND CARDIOVASCULAR HEALTH

Dr Manjunath J

Neal B, Wu Y, Feng X, Zhang R et al Effect of Salt Substitution on Cardiovascular Events and Death. N Engl J Med. 2021 Sep 16;385(12):1067-1077. doi: 10.1056/NEJMoa2105675.

When one reads current literature on salt, one is amazed by the emotional energies released by this issue. Why is this so? Undoubtedly much of the controversy is simply due to the fact that there is much poor science in this field.

-E. Ritz (1)

These two recent publications on salt and salt substitute may, to a certain extent, liberate us from the allegation of poor science in this field.

Can I take salt substitutes? This is one of the questions asked by our hypertensive patients. Reduction in sodium intake using salt substitutes reduces BP in hypertensive patients (2,3). However, there was no data was available from Indian hypertensives. SSiIS was a double blind, randomised control trial

conducted in India will strengthen the evidence of beneficial effect of salt substitutes on blood pressure (4).

About 500 hypertensive participants were randomised to receive salt substitute (70% sodium chloride and 30% potassium chloride) or regular salt (100% sodium chloride). The participants were advised to

replace all the home salt with the salt provided by the investigators. The primary outcome was a change in BP at three months follow-up. There was average SBP reduction of 4.6 mm of Hg in the salt substitute group. There was significant increase in potassium excretion in the salt substitute group. Surprisingly, the salt substitute group did not have reduction in sodium excretion in urine. The reason for this finding is not clear.

This is the first trial done in India to demonstrate the efficacy of salt substitute in management of hypertension. There was no problem of acceptability and usage of salt substitutes. The drawback of this study is it included participants from rural area and a short duration of follow up.

What does this study mean? This study could have policy implications for public health in India. Hypertension is a leading cause for cardiovascular disease and death in India. Approximately, 25% of the adults are suffering from hypertension and only 10% of them have adequate control. Hence, there is a need for additional interventions for hypertension management. In India average salt intake per person is approximately 10 g per day which is more than two times what WHO recommends. Reducing sodium intake by replacing regular salt with substitutes can be adopted in management of hypertension.

Now another important question. Will BP reduction due to salt substitutes make difference in hard clinical outcomes? Do salt substitutes prevent death and reduce cardiovascular events? This crucial question was answered by a meticulously designed open-label, cluster-randomized trial in rural China-SSaSS(5).
SSaSS investigators enrolled 20,995 high risk individuals (72% had history of stroke, mean age was 65 years, 88% had hypertension). This study clarified the effect of salt substitute on patient important outcomes like stroke, cardiovascular events and death. Villages were randomised to receive either regular salt (100% sodium chloride) or salt substitute (75% sodium chloride and 25% potassium chloride). Salt substitute group had a lower rate of stroke than the regular salt group (29.14 events vs. 33.65 events per 1000 person-years; rate ratio, 0.86; 95% confidence interval, 0.77 to 0.96; P=0.006). There was also significant reduction in major cardiovascular events and all-cause mortality. Incidence of hyperkalaemia was not different in the two groups.
The results of the study are impressive. The only drawback was that the study does not provide data on graded (lower or higher content of potassium) in the substitute. Except this minor drawback, we feel this study supports use of salt substitute for this high-risk group.

Can the results be extrapolated to other hypertensive population? Will widespread use of salt substitute be applied for primary prevention at community level? We feel that results of these two studies make a strong case for use salt substitutes not only in high-risk individuals but also a low-cost intervention of public health importance.

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GLP 1 receptor analogs and SGLT 2 inhibitors for treatment of type 2 diabetes mellitus: new frontiers for reduction of cardiovascular mortality and morbidity

Lam CSP, Ramasundarahettige C, Branch KRH, Sattar N, Rosenstock J, Pratley R, Del Prato S, Lopes RD, Niemoeller E, Khurmi NS, Baek S, Gerstein HC. Efpeglenatide and Clinical Outcomes with and without Concomitant Sodium-Glucose Co-Transporter-2 Inhibition Use in Type 2 Diabetes: Exploratory Analysis of the AMPLITUDE-O Trial. Circulation. 2021 Nov 14. doi: 10.1161/CIRCULATIONAHA.121.057934.

DR SHRIKRISHNA V. ACHARYA

People with type 2 diabetes (T2D) have a risk of cardiovascular disease (CVD) (myocardial infarction, stroke, peripheral vascular disease) that is two or more times higher than non-diabetic subjects and cardiovascular disease (CV) is leading cause of death in patients with T2D. Several trials like ACCORD, ADVANCE, UK Prospective Diabetes Study (UKPDS) Group have shown that the lowering of HbA1c in patients with T2D has only a modest effect or no effect on the reduction of cardiovascular risk. In contrast, the correction of traditional CVD risk factors, such as blood pressure and cholesterol levels, reduces the risk of CVD and mortality in patients with T2D. Furthermore, in primary prevention studies, such as the UKPDS and the Veterans Affairs Diabetes Trial (VADT) a CV benefit associated with improved glycaemic control was observed after more than 10 years, the so called “legacy effect”. Since 2008 The US Food and Drug Administration (FDA) requires that all new glucose lowering agents must undergo post-marketing endpoint trials with the aim of verifying cardiovascular safety and mortality, following the negative experience observed in the study of rosiglitazone. All new drugs must here fore be studied in populations at high cardiovascular risk, to demonstrate the safety of the drug. In the last years, several clinical trials with new classes of anti- hyperglycaemic drugs have been published, i.e. SGLT 2

inhibitor and GLP 1 analogs showing a positive and significant effect on cardiovascular mortality and morbidity in type 2 diabetes.

SGLT 2 inhibitors:
Cardiovascular Outcome Trials of SGLT 2 inhibitors

Major trials exploring the CV benefits of SGLT2 inhibitors, with an emphasis on HF outcome, have been conducted in recent years.
Table 1 principal results of cardivascular trials of SGLT 2 inhibitors

Trial	Drug	Patients no	MACE hazard ratio(HR)	CV death (HR)hazard ratio	All-cause mortality(HR)
EMPARED	Empaglifozin	7020	0.86⬇	0.62 ⬇	0.68 ⬇
CANVAS	Canaglifozin	10141	0.86⬇	0.87 ⬇	0.87 ⬇
CREDENCE	Canaglifozin	4401	0.80 ⬇	0.78 ⬇	0.83 ⬇
DECLARE TIMI 58	Dapaglifozin	17160	0.93➡	0.83 ⬇	0.93 ➡
DAPA-HF	Dapaglifozin	1744	0.74 ⬇	0.82 ⬇	0.83 ⬇

Horizontal arrows indicate neutral and downward arrow indicates positive effect

The beneficial outcome for cardiovascular risk observed in the EMPA-REG OUTCOME trial was confirmed in the Canagliflozin Cardiovascular Assessment Study (CANVAS) Program. Canaglifozin did not demonstrate
a significant reduction in cardiovascular and all-cause mortality, in contrast to empagliflozin in the EMPA-REG OUTCOME trial. Both in EMPAREG and in CANVAS trials, the effect on nephroprotection was also significant, assessed as a reduced progression of albuminuria or maintenance of eGFR. The renal outcome with Canagliflozin in patients with impaired kidney function was confirmed in the recently reported Canagliflozin and Renal Endpoints in Diabetes with Established Nephropathy Clinical Evaluation (CREDENCE) trial.

In DECLARE TIMI trial, dapagliflozin did not show a significant risk reduction of MACE or cardiovasculardeath. However, consistent with the results of the previous two trials with empagliflozin and canagliflozin mentioned above, hospitalization for heart failure was significantly reduced (HR 0.73, 95% CI 0.61–0.88), and improvement of renal outcomes was also observed in the DECLARE-TIMI trial. The neutral effects on MACE observed in the DECLARE trial may reflect the high proportion of patients without established CVD at baseline,indicating that the impact of an SGLT2 inhibitor on primary prevention might be marginal. Very recently, the DAPA-HF (Dapagliflozin and Prevention of Adverse Outcomes in Heart Failure) trial showed that dapagliflozin was

superior to placebo in preventing cardiovascular death and heart failure even in subjects without diabetes. The results of these randomized clinical trials have also been confirmed by “real world” data that

demonstrated the positive effects of SGLT2 on CV risk reduction in diabetes. Treatment with SGLT2 inhibitors (Dapaglifozin,Empaglifozin and Canaglifozin) was associated with significant risk reduction in

hospitalization for heart failure and all-cause death with a directionally similar trend regardless of the existence of prior CVD. The EASEL study, another "real world" study that compared SGLT2 inhibitors with standard therapies in patients with T2D, showed 43% reduction in heart failure and mortality. In this study all three SGLT2 inhibitors (Dapagliflozin, Empagliflozin and Canagliflozin) have been used, suggesting that the observed effects are likely to be class specific, and not exclusive to the individual SGLT2 inhibitor.
All these studies consistently demonstrated that SGLT2 inhibitors modify the cardiovascular risk in patients with T2D, and possibly also in non-diabetic subjects. The open question therefore concerns the mechanisms involved in cardiovascular protection, given that the reduction of glycaemia does not seem to be the principalmechanism of SGLT2i to obtain CV risk reduction.

Cardiovascular Protection -Mechanisms of SGLT2 Inhibitors
There are several hypothesized mechanisms that can lead to the reduction of cardiovascular risk insubjects treated with SGLT2 inhibitors. The supposed mechanisms may be metabolic and/orcardio-hemodynamic (Table 2).

Table 2 Mechanism of cardiovascular protection of SGLT 2 inhibitors

Metabolic effects	**Cardiac effects**
Adipose tissue: increase of free fatty acid mobilization and reduction of adipocyte inflammation	Improvement in preload secondary to natriuresis and osmotic diuresis and post load through blood pressure reduction
Weight loss of 3-5 kg	Improvement in cardiac metabolism
Pancreas: increase in glucagon secretion leading to lipolysis and FFA uptake by liver	Inhibition of sodium hydrogen exchange in the myocardium
Liver: increase in glycogenolysis, gluconeogenesis , FFA uptake and ketogenesis	Reduction in cardiac fibrosis and necrosis
Heart: substrate exchange with increased FFA and ketone use and reduction of glucose use. Epicardial fat decrease	

GLP 1 receptor analogs:
Cardiovascular Outcome Trials of GLP 1 receptor analogs
The currently available formulations are administered by subcutaneous injection and are classified in short-acting (lixisenatide, exenatide short-acting), intermediate-acting (liraglutide) and with a long duration of action (exenatide long-acting, dulaglutide, semaglutide and albiglutide) agonists. Very recently, an oral formulationof semaglutide has entered commercialization.

The only trial that involved a short-acting GLP1-RA, the Evaluation of Lixisenatide in Acute Coronary Syndrome (ELIXA) trial, demonstrated full safety of lixisenatide but failed to obtain a significantreduction in a 4-point MACE composite outcome, any component of MACE, or hospitalization for heart failure over a median follow-up period of 2.1 years. The LEADER trial, in which 9340 patients, including 72.4% with established atherosclerotic CVD demonstrated a 13% reduction in the 3-point MACE composite outcome (HR 0.87) during a median follow-up period of 3.8 years. Patients

with liraglutide showed a significant reduction in all-cause mortality (HR 0.85), predominantly driven by a reduction in cardiovascular death. In the Semaglutide
Unabated Sustainability in Treatment of Type 2 Diabetes 6 (SUSTAIN-6) trial, which enrolled 3297 patients with T2D and previous cardiovascular disease, significant 26% reduction in 3-point MACE (HR 0.74), a significant reduction in nonfatal stroke (HR 0.61), and a directionally concordant result in nonfatal MI (HR 0.74). The Exenatide Study of Cardiovascular Event Lowering (EXSCEL) trial, involving 14,752 subjects showed that in patients treated with once-weekly exenatide the 3-point MACE was lower compared with placebo and also associated with 14% reduction of risk of all-cause mortality. The Albiglutide and cardiovascular outcomes in patients with T2D and cardiovascular disease (HARMONY OUTCOMES) demonstrated a significant 22% risk reduction in major adverse cardiovascular events. Finally, Peptide Innovation for Early Diabetes Treatment (PIONEER 6) trial, which employed an oral formulation of semaglutide showed that major adverse cardiovascular events occurred in 3.8% in the oral semaglutide group and 4.8% in the placebo group (HR 0.79). It has also been observed, in all these trials, that treatment with a GLP-1 RA induces a significant weight loss and a significant reduction in blood pressure.

An 18-month "real-life" study also showed that treatment with liraglutide in addition to metformin causes an improvement in several cardio metabolic risk factors and also showed significant reduction in carotid medial-intimal thickness in patients with metabolic syndrome. Overall, these data indicate that GLP-1RA drugs have protective cardiovascular effects and positive effects on other cardiovascular risk factors, such as body weight and blood pressure.

Table 3 Principal results of cardiovascular trials of GLP 1 receptor analogs

Trial	Drug	No of patients	MACE hazard ratio(HR)	CV death HR	All-cause mortality HR
ELIXA	Lixisenatide	6068	1.02➡	0.98➡	0.94➡
LEADER	Liraglutide	9340	0.87⬇	0.78⬇	0.85⬇
SUSTAIN	Semaglutide	3297	0.74⬇	0.98➡	1.05➡
EXSCEL	Exenatude	14752	0.91➡	0.88➡	0.86⬇
HARMONY	Albigutide	9463	0.78➡	0.93➡	0.95➡
REWIND	Dulaglutide	9901	0.88⬇	0.91➡	0.90➡
PIONEER	Semaglutide (oral)	3183	0.79⬇	0.49⬇	0.51⬇

Horizontal arrows indicate neutral and downward arrow indicates positive effect

Cardiovascular Protection Mechanisms of GLP1-RA
GLP-1RA exert potentially favourable effects on cardiovascular outcomes not only through glycaemic control,
body weight reduction, and improvement of blood pressure and lipid profiles, but also on cardiovascular parameters as cardiac function and cardiac ischemia and on inflammatory markers, resulting in the prevention or delay of the atherosclerotic process and renal dysfunction. But exact mechanism is not known. The mechanisms by which GLP-1RA reduce blood pressure are not completely clear. It has been hypothesized to be due to natriuretic effect. Intravenous infusions of GLP-1 enhance sodium excretion, reduce H+ secretion, and reduce glomerular hyper filtration in healthy subject. These findings suggest an action at the proximal renal tubule and a potential renoprotective effect. Previous studies suggested that

GLP-1 directly induces natriuresis by inhibiting sodium hydrogen exchanger isoform-3 (NHE3) in the proximal tubule, which may contribute to reducing albuminuria through amelioration of the tubuloglomerular feedback.
Another potential mediator of GLP-1 effects on arterial vasodilation has been identified as the Atrial Natriuretic Peptide (ANP). The authors demonstrated that cardiac GLP-1 receptors are situated in the cardiac atria, andthat GLP-1 receptors activation promotes the secretion of ANP, followed by a reduction of blood pressure.
Based on this theory, a new multi-organ axis regulating blood pressure levels was suggested: the starting point is the intestine that produces GLP-1, which acts on the heart causing the release of ANP, which in turn actson the arterial vessels inducing vasodilation, and in the kidney determining an increase in the urinaryelimination of sodium. The identification of a GLP-1R–ANP gut-heart axis detects a new mechanism of actions of GLP-1 in the heart and cardiovascular system. GLP-1 administration has also cardioprotective effects: it increases glucose utilization, functional recovery and cardiomyocyte viability after ischemia-reperfusion injury, and promotes vasodilation and consequently coronary flow. In humans, several evidences suggest that GLP-1 is able to exert positive effects on endothelial function in vivo: intravenous GLP-1 infusion improves flow- mediated vasodilation of about 50% in T2D patients with coronary heart disease. Also an improvement in left ventricular ejection fraction in STEMI patients treated with primary percutaneous coronary interventionand treated with liraglutide for 7 days was reported.

Table 4 Potential mechanism of cardiovascular benefits of GLP 1 receptor analogs

Metabolic	Renal	Cardiac
Glucose ⬇	Albuminuria ⬇	Cardiac function⬆
Visceral adipose tissue⬇		Cardiac ischaemia⬇
Weight ⬇		Blood pressure ⬇
LDL⬇		Atherosclerosis ⬇
Triglycerides ⬇		

Upward arrows indicate increase and downward arrow indicates reduction

Finally, the accumulation of epicardial adipose tissue is closely associated with the presence, severity, and progression of coronary artery disease, atrial arrhythmias, and heart failure with preserved ejection fraction. GLP1 receptors have been shown in epicardial fat and a 35% significant reduction was shown after 6 months' treatment with liraglutide.
In conclusion, both experimental data from cellular and animal models, and data from studies conducted in humans, show that administration of GLP-1 or its analogues determines several positive endothelial and cardiac effects. The direct actions of GLP-1 on blood vessels, inflammation, natriuresis, blood pressure and on the regulation of plasma lipids may impact the development and/or progression of atherosclerotic plaques.

Conclusions

A new era in T2D treatment has begun after the demonstration that the anti-hyperglycaemic agents GLP1-RA and SGLT2i consistently reduce the risk of cardiovascular events in patients with T2D. Both classes of drugs shown to improve renal outcomes, including a protection against albuminuria, are rarely associated with hypoglycemia, have similar reductions of HbA1c, and therefore appear to exert their

beneficial cardiovascular effects independently from glucose control through their individual and specific pleiotropic properties. In the trials reported to date, GLP-1RA and SGLT2i reduce atherosclerotic MACE to a similar degree in patients with established atherosclerotic cardiovascular disease, whereas SGLT2i have a more marked effect on preventing hospitalization for heart failure and progression of kidney disease. Their distinct clinical profiles should be considered in the decision-making process when treating patients with T2D. Recent clinical trials lead to paradigm shift from "the lower the glucose, the better" to "how to optimize glycaemic control without causing hypoglycaemia and weight gain, and protection from cardiovascular mortality and morbidity. With regards to treatment, a consensus report by the ADA/EASD advised that patients with chronic kidney disease or clinical heart failure, an SGLT2 inhibitor with proven benefit is recommended. In patients with atherosclerotic cardiovascular disease

(ASCVD), particularly if overweight or obese, GLP-1 receptor agonists are generally recommended.

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Abstracts:

1 Vishak Acharya K, Dr. Krishna Moorthy H, Laxman Prabhu G, Venugopal P. The Protective Shield of BCG during COVID-19 Pandemic - A Myth or Reality? American Research Journal of Urology, Volume 5, Issue No. 1, 2021, pp. 1-5.

Abstract: The Protective Shield of BCG during COVID-19 Pandemic - A Myth or Reality ?

As the COVID-19 pandemic unleashed its unimaginable blow to health and economy world over, the guardians of health found themselves woefully short of solutions to counter the cataclysm that was unfolding. The pace at which the pandemic spread giving no time to develop novel interventions, compelled the health care providers to fall back on repurposing used medicines and interventions, one of which being the Bacillus Camille Guerin vaccine (BCG). This drug has been of particular interest to the Uro-oncologists owing to its proved immunogenic efficacy in Non Muscle Invasive Bladder Cancer (NMIBC). In this paper, we review the literature to explore the utility of BCG as a protective shield for COVID-19 infection.

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Abstract: Although direct causal association of sudden cardiac deaths (SCD) and COVID-19 remain unproven as of today, a large body of data suggests a plausible association with an increased incidence of SCD in both community and hospital settings.1,2 Though asymptomatic carriers of COVID-19 among close contacts of confirmed cases are a well-recognised entity, the epidemiological significance, the clinical relevance and the prevalence of thromboembolic disease among this specifi c populace remain

obscure. Administration of enhanced anticoagulation for patients with high risk is recommended for those with severe COVID-19,3 as is prophylactic anticoagulation for all hospitalised COVID-19 patients.4 Patients with mild disease when screened meticulously with CT pulmonary angiography (CTPA) plus CT venography (CTV) showed thrombosis as high as 82.6%.5 However, no specifi c monitoring, risk stratifi cation or interventional protocols with prophylactic anticoagulants is advocated for close contacts of confirmed COVID-19 cases or the asymptomatic. Collating clinical observations and factual contexts with a larger body of evidence to probe this possible complication (thromboembolic) through remote association (asymptomatic primary COVID contacts) with deadly implications (sudden unexplained deaths) is a dire need of the hour.

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Abstract: Primary lung abscess as a complication of necrotising community-acquired pneumonia due to multidrugresistant (MDR) Klebsiella pneumoniae is rare. A 63-yearold man with a medical history of type 2 diabetes mellitus and chronic kidney disease was diagnosed with lung abscess due to MDR Klebsiella pneumoniae, a rare organism as a causative agent for community-acquired pneumonia. This unusual case revealed therapeutic challenges faced owing to factors such as drug-resistant pathogen, longer duration of antibiotics required for lung abscess and the chronic kidney status of the patient limiting the dosage of antibiotics. The clinical nuggets discussed in this case might pave the way in the future for management guidelines to be formulated in optimising the selection and duration of therapy for lung abscesses with MDR aetiology and in early recognition of this rare but dreaded entity.

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Abstract: Pulmonary involvement of diffuse large B-cell lymphoma (DLBCL) is rare and even rarer is its presentation as bilateral multiple bulky mass lesions with cavitations.1–8 In such situations it is difficult to differentiate it from granulomatous diseases, vasculitides or even a primary/ metastatic lung tumor.9,10 Cytological evaluation of these lesions, coupled with biopsy helps solving the dilemma, but only when the material obtained is representative and optimal for examination.11–13 These cases thus pose great diagnostic challenges. We herein report a case in which an elderly patient with DLBCL presented with cavitary pulmonary disease which led to delay in diagnosis for 9 months.

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Abstract: Inflammatory markers such as C-Reactive Protein (CRP) and D-dimer have played a key role in prognostication, triaging of COVID-19 patients. The Ministry of Health and Family Welfare (MoHFW) India has proposed national guidance on the serial monitoring of inflammatory markers as a part of management for hospitalized COVID patient. n: Baseline audit highlighted two components were deemed essential: (1) Baseline record of the markers which is up to 4 days of admission; (2) Final record of the markers which is within a period of 4 days prior to discharge. The frequency of these components saw significant improvement by completion of the final PDSA cycle.

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https://doi.org/10.1016/j.ijantimicag.2021.106421.66. **Q1 indexed. Impact factor 5.283.**
Abstract: Hydatid disease is a global public health issue that is more prevalent in the southern and western states of India. Common presentation includes low appetite and abdominal pain with liver cysts. This case highlights an extremely deviant presentation of hydatid lung disease presenting endo-luminally on bronchoscopy and a rare occurrence of bilateral lung involvement, raising a possibility of trans-bronchial spread of previous contralateral ruptured cyst. Direct bronchoscopic visualization with biopsy in our case provided a timely diagnosis and prompt intervention. Rounded cystic opacities in lungs should prompt an investigation for Echinococcus. High degree of clinical suspicion with appropriate ancillary imaging and laboratory tests are indispensable, as hydatid disease has varied atypical clinical presentations. Contralateral lesions do not exclude hydatid

cysts and bronchoscopy has its utility for diagnosis. This is of utmost importance as early treatment avoids duration related complications of this parasitic infestation.

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Abstract: We report a series of three cases diagnosed with tracheobronchopathiaosteochondroplastica on bronchoscopy and computed tomography (CT) chest. Most patients were diagnosed incidentally on evaluation for chronic cough. The association of this entity with chronic bacterial infections and tuberculosis is an intriguing entity that was observed in our patients. Nodular, ulcerative, and calcific lesions in the trachea are bronchoscopic findings seen in quite a few other conditions posing diagnostic challenges. However, the classical bronchoscopic appearance with CT imaging in an appropriate clinical context can lead to an accurate diagnosis of this condition. We describe this array of cases with varying clinical presentations, their associations, and deliberate the literature reviews on this rare.

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The Corona Lessons!

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According to the myriad narratives of those who had to host the Corona virus during this pandemic, most of them seemed to have found in their formidable invisible enemy, the 'Zen', or any life altering 'Eureka' moment, that made them stronger , as the waves continued unabated. Well, without making myself an idiot by generalizing everything, I still retain the right to speak for myself though! For me , this pandemic has been like an ill-tempered teacher, who has many lessons in its syllabus to teach, but chooses to teach it in the most hardest way possible. And just when you think you have got it all figured out at last, it throws in surprise tests with vague questions and vaguer answers!This teacher, is truly a sadist , in a class of its own too! Pandemic saw to it that the pain inflicted becomes un-endurable at times, by throwing quite a few ' unknowns ' into the whole equation , just like that for fun! Yes. even though he has become the 'Guru' of our times for now, I cannot like it at all, let alone respect it!

At the expense of sounding conceited, I think of myself as a good student and like all good students, I did learn a few lessonsin spite of all the bad teaching! I learnt that all things online were less than half the fun , and double the work , as the same things offline. I learnt with a bit of shameful insight , that for me , meetings without any eating, didn't really produce any dopamine in my brain. I learnt that doing all the household work oneself is not gratifying at all , neither for the body nor for the soul. I learnt that the internet has now made itto the list of basic human needs along with the classical trio of Roti, Kapda and Makhaan!. I learnt that ' Health is wealth' irrespective of the amount of wealth one has. I learnt,by my scary eyebrows, that salons were way more important than ice-cream shops or cinema theaters. I learnt that offline schools were more needed to the harassed moms than to their children anytime . I learnt , with a dash of pride of course, that the medical profession is still one of the most relevant and needed one , even in the face of a pandemic! And the icing on the cake? There will be no exams due to the pandemic , and hence no judging from anyone about my learning being right or wrong!

LISTEN TO THE LEGEND – AN INTERVIEW WITH DR PRABHAKAR RAO

(as told to Dr Archana Bhat)

1.Good morning sir , could you please tell us about your childhood days

Dr.Purushottama heard the cry of a newborn at midnight on the 15th may 1942 at Ladygoshen Hospital, Mangalore. That was the birth of none other thanDr. A. Prabakhar Rao. I was the fourth child of late A. Shama Rao and late Mrs. Indira Shama Rao. Although, I was born in Mangalore, my primary and higher primary education was at Innanje as my father was posted at SVH High School, Innanje as headmaster.I had double promotion at SVS Elementary school from 1st- 3rd standard as I was told that the class teacher of 2nd standard, Mrs. Cauvery was strict and used to beat the students. Because of double promotion, I was underaged when I appeared for SSLC Examination and had to take special permission from DEO. From 1st standard to SSLC, I used to stand 1st in all the subjects and used to get prizes during the school day.Duringmy school days, I was a tournament player in cricket and badminton. Every year I used to take part in school drama as Sita, Rohithashva and so on... As my father was transferred to Viveka High School Kota,I had to complete my SSLC at SVS School Katapady.

I joined MGM College Udupi for my PUC in 1957 and later for BSC in 1958 with Chemitry, Zoology and Botany as my major subjects. I cant forget my teacher like Prof. B.V Achar, Prof. U.L Achar, Prof. Ramdas, Prof. K.G Shenoy,Prof. Anant Ram Bhat, Prof.R.S Madhav Rao, Prof. V Balakrishnan and Prof. K.K Ishwaram. All had special liking for me and they treated me as their own son.

2.Kindly tell us about your journey and hardships faced those days to enter the medical profession

After my PUC, I applied both for medicine as well as engineering as I had PCMB in my PUC. Although I had very good marks in PUC, I could not get a seat for both, medicine and engineering, as I belonged to a Brahmin Community.My own classmates who had less marks than me, were selected as they were backward class. Dr Adi Keshavalu who was the dean of Mysore Medical College, told during the interview, that since I am a brahmin, I'm not selected forMedical. Even though in the entrance exam of the Christian Medical College Vellur, I have done very well.]]]]]]] I have not been selected where as my own classmate was a christian and he could get a seat even though he has done very badly in theentrance exam.

Even after BSC, although I had good marks, I couldn't get a seat for MBBS, which was my life's ambition. Karnataka University has made a rule at that time that if you had only biology and chemistry, without physics in BSC, that person is not eligible for 1st MBBS, and they have to study pre medical course with physics, biology and chemistry. Hence I joined pre medical course at KMC Manipal not as a student, but as demonstrator in biology, in 1961. I used to teach pre medical students dissection of Frog, Cockroach, and so on... But in 1962, Karnataka University has changed the rule that one has passed BSC, with biology and chemistry, he is eligible for 1st MBBS. Because of the effort of Dr. Ramdas PaiandMr. N.S Prabhu, HOD of pre medical section, I could get a seat for 1st MBBS at KMC Manipal just for Rs. 3000 as capitation fees. The total amount spent for my MBBS course was just Rs.10500, which you may not believe. Since my seat was the central government candidate, it was confirmed on me only after December 1962 although the batch has started in June 1962. Until then I was attending 1st MBBS during the day, and a demonstrator for pre medical course after 5 p.m.All the students in the 1st MBBS were my own students, whom I had tought in Pre medical course. Hence I used to feel delicate when all my classmates were calling me as' sir' because I tought them for a year. I can't forget the love and affection shown by Pre medical teachers like Dr. R.P Kopikar, Dr.Krishnaswami, Dr. Godbole, Dr. Gopal Rao, Dr. A. Gopal Rao, Dr.Dabolkar and Dr.Kireeti.

3..What was your driving force and inspiration to choose MD Medicine subject during postgraduation ?

My clinical posting was at KMC Mangalore, I used to go to the college by bicycle. All my non clinical and clinical teachers were kind to me, particularly I can't forget Dr. K.P Ganeshan, Dr. A.V Shetty, Dr. B.M Hegde, Dr. K.R Shetty, Dr. M.K Pai and Dr. M.P Pai. Infact it is Dr. K.P Ganeshan and Dr. A.V Shetty inspired me to take up medicine for my post graduation. I was their house surgeon and after completing the internship, both of them called me near ward number 1 of Dr. M.V Shetty and told me that they were very much pleased with my work as intern, which was much better than PG, and they inspired me to take up medicine for my MD Course. I was selected for my MD in 1968, January and it was purely on merit and there was no capitation fee. In my final MBBS examination, to get good marks in medicine, whole night I was reading medicine and next day in the afternoon, during the theory exam, I was feeling sleepy and could not answer even simple things. Same day the whole night I slept and that's why I did very well in my 2nd paper which has compensated my failure in the 1st paper.

I got married in May 11, 1968. During post-graduation since I was not paid any stipend, I was forced to practice in the afternoon, at B.C Road. I used to go in the afternoon by Vespa Scooter and return late at night. I had very good practice and that has helped to build up my practice at Mangalore as consultant. Since I was practicing, I never used to go to library, and my success in MD is mainly because of my teaching regularly exam going undergraduates, which has improved my expression capacity. A successful teacher is one who can make others understand what he is talking.

4.Sir tell us aboutyour intial days in KMC

After my MD, I joined KMC as Registrar in Medicine, in year 1971, for just Rs. 200 per month, and when I retired in 2002, as HOD and Director of PG Studies in Medicine, my salary was Rs. ewbbbbbwvw15000 per month!

Dr. K.P Ganeshan had a great liking for me, and he had sent me for dialysis training in CMC Hospital Vellurunder Dr. J.C.M Shastri and Dr.Kirubakaran for a period of 2 months. I started doing peritoneal dialysis for the 1st time in Mangalore in 1975. I have even give topics on peritoneal dialysis for my PG for his thesis.

I was promoted as Associate Professor in 1977 and as Prof. of Medicine in 1987 and HOD and Director of PG studies in Medicine in 1992. After my retirement from KMC in 2002, I was called by AJIMS as they were in need of a senior Professor during the MCI inspection. During the inspection, management of AJIMS asked me whether I am prepared to join service in their institution. Hence I joined service in AJMIS in 2004. During the next inspection, I was promoted as dean for a few days. Although I retired in 2012, management asked me to continue as Emeritus Professor as there was a good opinion regarding my teaching by the students. Even at 80 years I continue to take 3 classes for the UG and PG which I really enjoy. Teaching is my hobby.

5. Heard about your dedicated social service through Lions Club and other organisations

Dr. C.R Ballal inducted me to Lions Club Mangalore in 1972. Although I was silent, knowing my capacity, Dr. C.R Ballal nominated me for the post of President of Lions Club Mangalore in 1992. I was declared as best president, best zone chairman, best region chairman, best district chairman and best district treasurer. Even though I have completed 49 years in Lionism, I did not ascend up the Lionistic Ladder to become the Governor because of my health problems as the Governor post demands heavy work and travel. In 1994, I started free Lions Dialysis centre at district Wenlock Hospital for the first time in the district Dakshina Kannada. In fact, we had heavy demand for Haemodialysis and 2 of my PG's did thesis on Haemodialysis.

In 1976, Dr. M.P Pai asked me to do medical check-up and treatment of retired Government patients. Since then I used to conduct free medical checkup and free distribution of medicine to the pensioners at a cost of 1500 rupees per week and monthly Rs. 6000, and yearly Rs. 72000, which I have done for the last 43 years. Thus I saved a revenue of Rs. 31 Lakhs for government of Karnataka. Presently it was stopped because of lockdown following Covid 19 infection. In 1997 I started Lions Burns Centre at disctrict Wenlock Hospital.

From 1981-1987 every year, I visited Shabarimala and in 1986, I constructed an Ayappa Temple at Kudupu and has done mass feeding every year for 25 years.

6. Please pen down some incidents about your fascination for drama

I used to take part every year inGanesha Festival Staff Drama. This programme used to be highly appreciated by the people of Mangalore and they used influence to get a pass to attend the function.

6. Sir kindly tell us about the various roles and tenure in different organisations

During 1994-95, I was the president of Association of Physicians of India DK Division, and during 1995-96, I was president of Indian Medical Association. During this period, I was declared as the best president of IMA, Karnataka State. I also won the National Award for the membership growth. Apart from Lionistic and IMA Awards, I was declared as best teacher of KMC in 1988. I also had Rajyotsava Award at the district level in 2007, Dr. Day Award in 2012, Lifetime Achievement Award in 2012, and Capricorn Achievement Award, in 2012. I was also declared as the best district chairman in multiple districts.

7.Some moments in life which you can never forget

Although, I had IHD, and Diabetes since 1992, I kept it under control with medical management till 2011. Last week of May 2011, when I was about to go to AJIMS, to take class, I had severe left ventricular failure and it was Dr. B.V Manjunath who saved me. I had 7 blocks in my coronary, and it was operated by Dr.VivekJowli on 1st June 2011. I had Urolithiasis on many occasions and it was operated by Dr. Ashok Pandit when I went into pyelonephritis with ARF in 2018. I had acute Cholecystis with ARF, and Dr. B.V Tantry came to my rescue and later I had Lapcholy by Dr.Shivashankhar Bhat. In 2019, I had hernia, which was again operated by Dr.Shivashankhar Bhat. In 2020, I had Atrial Fibrillation, and again Dr. B.V Manjunath prevented me from developing stroke due to cerebral embolization.

8. Some lines about your personal life

I was married to A. Vishalakshi. P Rao from Vijayawada in 1968. It was an arranged marriage: Love after marriage! I had 3 children, 1st daughter is an Ophtholmogist at Vijayawada married to a

businessman. 1st son is Dr. A. Harish Rao, a physician married to Dr. Jyothi Rao, a gynaecologist. 2nd son is A. Ravish Rao, a software engineer at United States and his wife, Dr.Arathi is Maxio Facial, Consultant surgeon at United States.

9.Your message for the younger generation

Friends, what you are today is because of your parent's love and affection, look after them at their old age, and don't hurt their feelings. This will definitely help your future career.

CALL FOR ARTICLES

Readers are hereby requested to submit their articles for the next issue.

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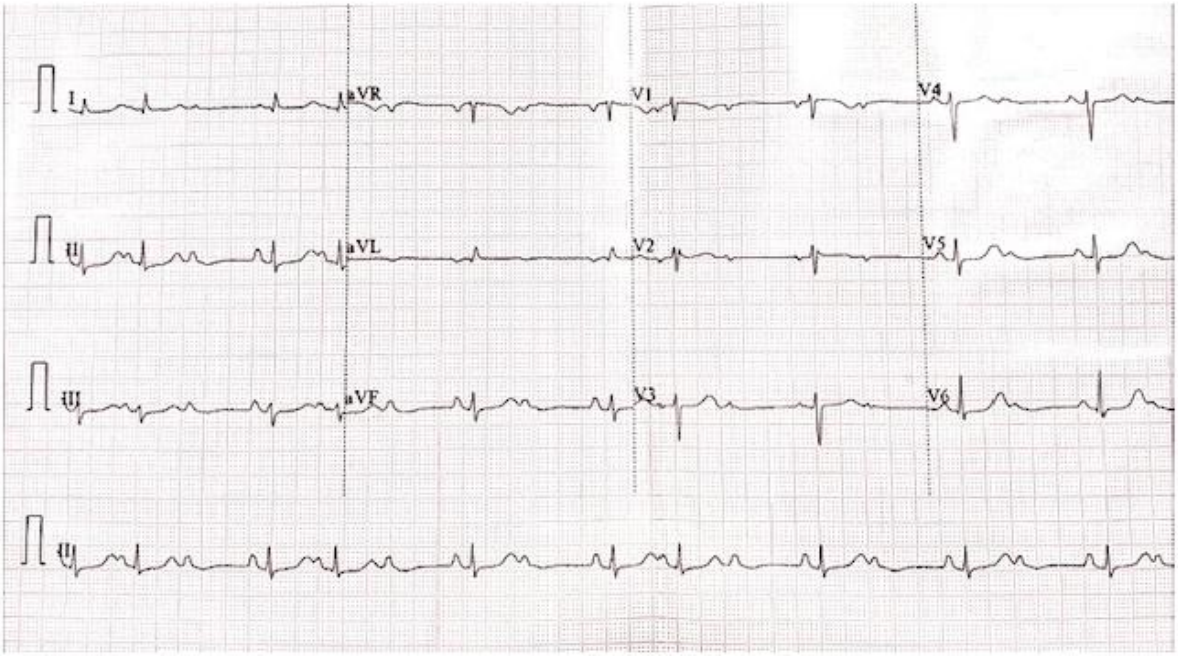
Author instructions@page 102

“Spot the diagnosis”

56 year old lady with no co-morbidities and 2 episodes of syncope. Pick the incorrect statements.



A) The rhythm represents Second degree AV block.
B) The conduction system disease is at the level of the AV node (Supra-Hisian)
C) Exercise will likely improve the AV conduction.
D) Permanent pacemaker is required.

Three grades of AV conduction disease have been described. In First degree AV block, every sinus P wave reaches the ventricle albeit with a delay (PR prolongation). In Third degree or complete heart block, none of the P waves conduct to the ventricles with the ventricles beating independent of the P waves (AV dissociation). Second degree AV block is characterised by intermittent AV conduction (as in this ECG). The entire exercise of trying to differentiate a Mobeitz Type 1 from a Mobeitz Type 2 second degree AV block is essential as it helps in localisation of the AV conduction disease which in turn determines the prognosis. Mobeitz Type 1 typically occurs at the AV node and is safer while a Mobeitz Type 2 occurs at or below the level of the His and is more dangerous. However, rarely Wenckebaching can also occur in the infra-His system which needs to be recognised. Typically, a progressive increase in PR interval in the conducted beats (Wenckebach) suggests aMobeitz Type 1 block while a fixed PR interval in the conducted beats suggests a Mobeitz Type 2 block. Similarly, a bundle branch pattern in the conducted

QRS complexes would suggest a infra-hisian disease while a normal QRS complex would point towards a AV nodal disease.

In the above ECG, the PR interval in the conducted beats seem fixed suggesting a Type 2 second degree AV block and a possible intra/infra-Hisian disease. But then, what does the narrow QRS signify?

Let us see how the PR interval in the conducted beats helps in localising the level of the block in patients with intermittent AV conduction.

The normal PR interval comprises of 4 smaller intervals and includes conduction from high right atrium to low right atrium (PA interval), conduction from low right atrium across the AV node (AH interval), conduction across the bundle of HIS (HH interval) and conduction from lower HIS bundle to the ventricle (HV interval). The representative times of the 4 intervals are- PA interval (20-45 ms), AH interval (55-125 ms), HH interval (10 ms) and HV interval (35-55 ms) (**Figure**). From the conduction times it is quite obvious that the AV node contributes to the major portion of PR interval with the infra-Hisian system contributing to a very small part of the same (only about 30-55 ms of the total PR interval 120-200 ms). Hence, conduction delays across the AV node will definitely prolong the PR interval while even significant delays in the intra and infrahisian system may exist with a normal PR interval. PR prolongation is thus a sine qua non of AV node disease[11].

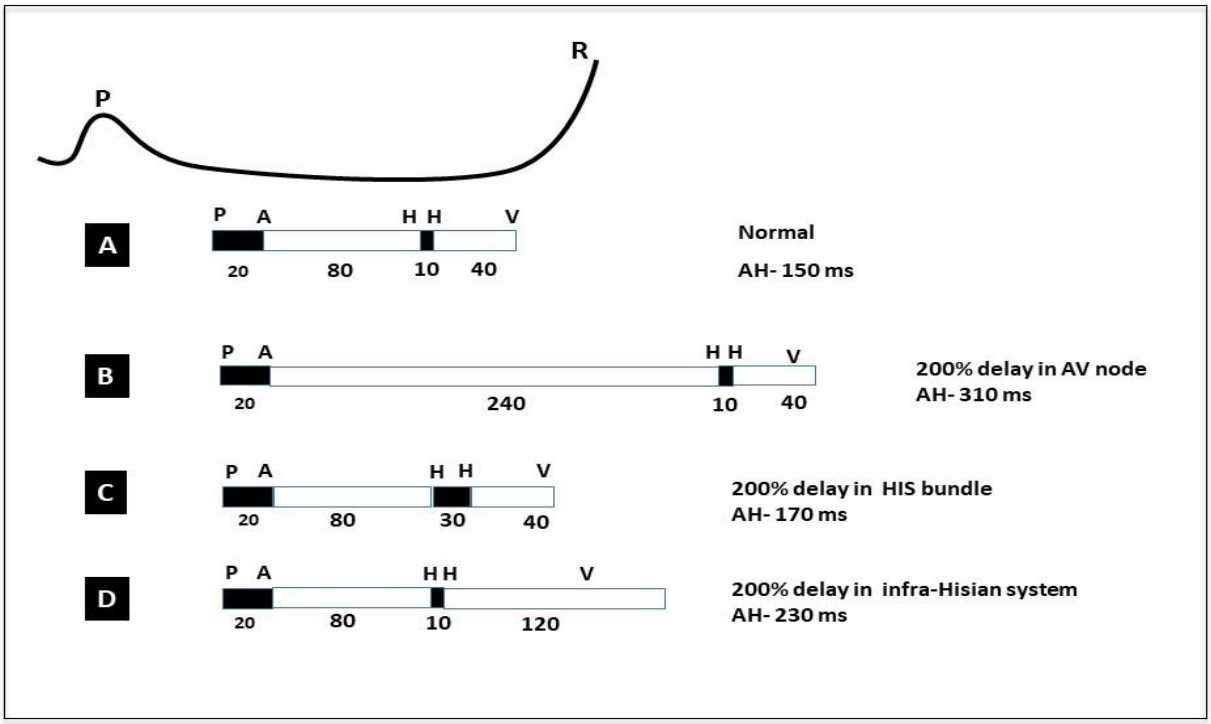


Figure :illustrates the effects on the PR interval of a 200% delay in the AV node (**B**), intrahisian conduction system (**C**) and infra-hisian system (**D**). Arbitrary normal values have been assigned to the different components of the normal PR interval in **A**. So in the above ECG with Type 2 Second degree AV block, the normal PR interval of 160 ms in the conducted beats along with the narrow QRS point to a possible intra-Hisian conduction disease.

It is easy to understand that any manoeuvre/ drug that improves AV node conduction (ex: Atropine or exercise) is likely to improve a supra Hisian AV block while paradoxically worsening Intra/Infra-Hisian AV block (as the diseased infra-Hisian system is now bombarded with more impulses from the sinus node). In practice, a Threadmill Test will worsen a infra-Hisian AV block. Incorrect statement : B, C

“Spot the diagnosis”

Dr. Madhav H Hande
Senior Resident ,Department of Nephrology
Manipal Hospital ,Bengaluru, Karnataka, India

A 51-year-old man who had a kidney transplant 13 years ago and was on maintenance immunosuppression with cyclosporine, mycophenolate mofetil, and prednisolone with prior stable renal functions presented to our hospital's Emergency Department with complaints of imbalance while walking for the previous 10 days. He also stated that he was experiencing shooting pains around his trunk and down his lower limbs. He denied having had a fever, headache, vision problems, limb weakness, or bladder/bowel dysfunction.

The absence of vibration and joint position sense, a positive Romberg's test, absent knee and ankle reflexes, and an ataxic gait were identified during the neurological examination. As a result, a dorsal column lesion was suspected.

MRI scans of the brain and spine revealed no abnormalities. Nerve conduction investigations were also performed and found to be normal. A CSF investigation found an increase in CSF protein and a decrease in CSF glucose.

In addition, the patient described the appearance of fresh pink to light red papules and oval plaques in the preceding week, which started on the shoulders and chest and progressed to the entire torso, arms, legs, and face. Similar lesions on the palms and soles were also seen. There was no rash, erosion, or ulceration on the genitalia.

Secondary syphilis was suspected, and VDRL and TPHA tests were done, both of which were positive. However, the CSF VDRL level was negative.

The patient was in a monogamous relationship with his wife, had no recent travel history, had no blood transfusions, and denied having a penile ulcer or receiving penicillin injections in the past. He had no recollection of the status of the VDRL test before to the transplant. His wife later tested negative for VDRL.

He was given ceftriaxone for 14 days and showed improvement in skin lesions as well as complete neurological recovery.

This case highlights the neurological and cutaneous manifestations of Syphilis

Mountaineering, a sport and passion…

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Mountaineering began as a sport and passion way-back in 1786. Many hardly know that the first mounatineer was a doctor as well, Dr Michel Gabriel Paccard from Sardinia. He had a dream to carry a barometer to the summit of Mount Blanc in France, and take a reading there. So when a competition was organized with a reward to anyone who could climb the highest mountain of Europe, the doctor agreed. He and his friend tried continuously for 4 years in a route which all guides believed to be impossible. To climb the mountain without fixed ropes, without ice-axe , heavily burdened with scientific equipment and to return alive was a miracle in itself . Mountaineering lacks formal rules. In practise, necessary use of technical skill like roped climbing and snow crossing abilities are always required. This is different form a walk-up/ trek/hike up a hill where no technical equipment's are used.

My early days in mountain began with the treks with scouts and guides in school days. These were followed by the day trips to western ghats in college days. Followed by camping in the middle of Forrest or multi-day treks in MBBS days. During MD and DM days would organize these hikes for colleague. Anywayits not all that easy, when we start planning at least 10-15 doctors agree to come, and on the day of trek only 2-5 colleagues turn up.

Joining the big league of snow and rock climbing needed a lot of effort. The usual way to prepare includes fitness and technical training. Physical fitness includes daily running 10kms for 3 months prior the trek, or swiminingatleast a kilometer a day, or cycling 40kms for 3 months prior the expedition. Some stair climbing of 200 to 1000steps at least twice a week is also required. For technical training in India,

there are both basic and advanced courses offered by reputed mountaineering institutes like NIMS- Uttarkashi, ABVIMAS- Manali, HMI- Darjeeling, JIM-Pahalgam, SGMI- Gangtok, IHCAE- Chemche, IISM- Gulmarg and NIMAS- Dirang. The normal duration of these courses is 28 days, and to undergo AMC an A grade in BMC is necessary. I have undergone my training in IHCAE. Have also undergone my basic and advanced rock climbing course under Shekar babu sir in rock climbing school, Bhongir. These courses help us with some life saving skills like crossing crevasses and glaciers, and layering of clothes, and how to use ropes, Jumar and descenders in mountains.

As a doctor there are some additional responsibilities in the group. pre-expedition we check the travel requirements like vaccination (specific countries have their own requirement, not just covid). we also check for a good travel insurance and the altitude covered. We always ask everyone to undergo a dental check up, as this is very troublesome to climb with a bad carries. The other thing which the travel group assumes, that there is a doctor around. But we rarely know what to carry, the essentials include a good analgesic, antibiotic tablet and ointment, a PPI, drug for diarrhea, antifungal cream and powder, eye drops, drugs for high altitude(tablet acetazolamide and dexona injection and tablets), pulse oximeter, digital thermometer, syringes and needles, gloves, eye pad and patch, bandaid, wound care kit with gauze and swabs, are some of the common things needed. Some common things to look out are where the camp is pitched, which is usually near a water source and in area free from rock fall and avalanches. The dug up latrine should be away from sleeping and cooking area, common problems in altitude where our help medically is needed include sun burn, snow blindness, altitude sickness, dehydration and frostbite. Have seen medical emergencies like high altitude pulmonary edema, high altitude cerebral sickness, this has nothing to do with age or fitness. Here the rapidity of ascent and attitude to know once body and return if things go wrong is important.

Having started my mountaineering journey with exploring the western ghats, I moved on to non-technical peaks like stok Kangri (6153 meters=20,500 feet) and nag tibba (with my mom in her 6th decade, this was great) and finally technical peaks inyumthang valley, Sikkim. Have climbed two of the seven summits(highest mountain in each continent). At Mount Elbrus, which is the highest mountain of Europe (5642 meters=18,510 feet) was able to unfurl the largest Indian flag along with team members. Kilimanjaro (5895 meters= 19,341 feet) is the highest mountain of Africa. Had company of more than a dozen doctors from Gujarat in this expedition. The sight of standing above in the clouds and looking at the sun rise below us, is something to remember for a life time.

The part of mountaineering which everyone remembers is the bonding with fellow team members. Be it snow fall, bad weathers, cooking food or boiling water, sharing food, tents and carrying luggage, this sport is always a team work. With a wonderful team the journey to summit is always enjoyable.

In our life the first 3 decades are spent in training for our professional life. Then when we actually have time to do what we want, money and family life take the driver seat. Personal life, doing what we like always lags behind. Having a healthy balance between professional, family and personal life gives a meaning to life.

Life is all about living

“One day your life will flash before your eyes. Make sure it’s worth watching”- Gerard Way.

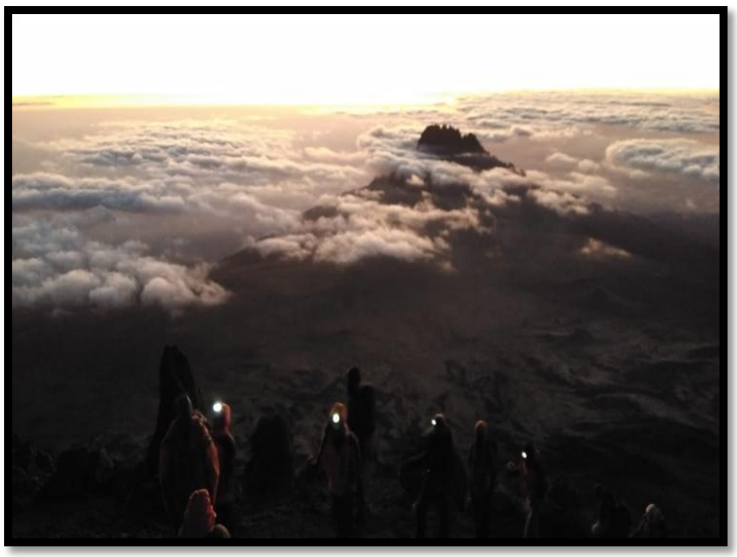

Image 1: near summit of kilimanjaro, with sunrise below us

Image 2: roped up for elbrus summit

Image 3: learning rock climbing at bhongiri

Image 4: base camp of stok kangri, with tents and toilet behind

Image 5: summit

Image 6: glacier crossing

PREMAM POOJYAM…….Love as prose is a beautiful concept but love as poetry is what works best.

A film by Raghavendra, , Premam Poojyam is a refreshingly sentimental love story elevated only by the superb performances of its actors, great technicality of camerawork and scintillating melodies that will live on in you even after you've left the theater

Having grown up through the 90s, the golden era of love stories: Every romance was its own magnum opus. You either end up loving something so dearly, that everything in the world will transpire to make it happen (like Dilwale Dulhania Le Jaayenge) or you let the love so strong rage in you, until you succumb to it and eventually to the vices of the world like Devdas or the more recent Kabir Singh; love by definition had no in between. In contrast, this film, by showing a pure and naive love in the first half transitions quickly into a bitter-sweet canvas of memories in the second – inadvertently internalizing in itself the life cycle of a new-age love story.

Even literature is no stranger to these tales. The haunting ellipses of an unrequited love have been written and rewritten for time immemorial.

The story takes its helm from a successful hero Sri Hari in 2020 and moves back years as we get to the see his humble beginning, his ambition for a higher education, his college and hostel life. We get to see the simple, young village boy transform into a respectable professional. And then the angel enters and in a split-second, the hero is head over heels in the purest form of love that can only be described as a prayer. Its depiction is believable and unique, unlike the typical rom-com trope. The yearning, the care, the smiles, the comfort in silence, all of which are visualized in a way to make you wonder that if true love exists, this is what it should look like. The mid-point of the film begins when the story takes its turn towards the unfamiliar.

The director masterfully weaves this story – making it both exquisite and tasteful. How convenient it would have been to veer into melodrama if the lead character would have asked the lead female to step out of her decision? How tempting it could have been to stage the usual physical romance to give the viewers what they want? The director resists it with a simple, yet effective no-touch policy. The chemistry between the two leads tread into a space that is far beyond mere melodrama; emotions

presented in a taciturn fashion. The director doesn't want to verbalize but instead wants you to feel. He doesn't want you to cry, but your tears will find their way out. A welcome dash of humour comes with the friends around the couple who keep tossing off crisp one-liners that lighten the mood.

It's pragmatic to believe that a first-time director doesn't have the experience to craft a story this intense, but in the second half, he takes it up a notch. The plot goes into a completely different terrain, the music becomes the feelings themselves, the hero carries the task of living life to his best and moving forward with great conviction, all while setting the stage for the bittersweet reunion scene. The pay-off is indeed heart-warming, a scene laced with happiness, anxiety, concern and above all: Love.

Where exactly is the giant declaration of love in this movie? There is no dry-cut proposal scene or a larger-than-life romantic gesture. There's no saving the heroine from a bad guy or a meet-cute moment where all other people fade away. It's all in the subtleties. A playback melody promising a happy ever after. Intangible and ambiguous – a mere moment in which something clicks. Perhaps it's much more than the character's feeling, maybe our own perception of their feelings too. The same remains for all their interactions till the end. The whole experience carries with you even after you've left the cinema theatre.

It's a huge responsibility to take the road less travelled or blazing a new trail.

Dr. Raghavendra B S has lived a dream and with Kedambadi creations has made many doctors fulfil their dreams . The true life of doctors , where they forget their personal life, families and health and prioritise only patient care and social responsibilities has been beautifully narrated in Premam Poojyam

Premam Poojyam is an homage, a monologue, and a reminder of the individualism of love – The need to protect it from the claws of this new culture. There's no reason for a film to exist, but only to correct or at least make an impression on the society and its viewers. Moments are what makes any artform work. Premam Poojyam is a barrage of so many such wonderful moments culminating in a moving and emotional climax. It goes to show that all a film really needs to work well is It's a plot and people behind the plot that take their craft seriously. The movie combines sincere acting, pristine visuals and lingering music to give a simple yet effective message

Written by
Dr. Archith Boloor

AUTHOR INSTRUCTIONS

GUIDANCE FOR AUTHORS AND CONTRIBUTORS

API DK LAHARI is a quarterly published e magazine of API D. K. CHAPTER , released in the www.apidk.org website with archival options of all the issues released stored in pdf format (each issue) also with download option .The magazine will include academic and non academic articles .The languages included will be English and kannada.We are hopeful that this will give a unique opportunity to all API members to share their vision and views on various aspects of our profession and beyond.

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Instructions on preparation of the manuscript to be submitted

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2. Font size -12 (Times New Roman) , double spacing , 1.5 inches margins all around the page.
3. All the write ups should include a Title page with author information
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1. Scientific articles
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Word count- 1500, Maximum of 03 tables & or figs, 07 Refs

2. Review article

Word count- 3500, Maximum of 5 tables or figs

3. Academic challenge

An interesting case presentation with detailed academic discussion

Abstract, word count -3500, Maximum of 5 tables or figs

4. Diagnostic test and interpretation

Word count- 1500

5. Images in Medicine

Photos with good resolution and quality, Word count -500

Abstract is required for case report, Review article, Academic Challenge, and Diagnostic test and interpretation. Word count is inclusive of abstract.

References should be in Vancouver style.

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Brief information by self or others on the accomplishments of our API members in profession, public life, academics and other walks of life

Word count- 1000

Obituaries

Condolence message and short write up on the deceased member, One message -500 words

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Write up on medical happenings with a personal opinion expressed

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