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Teaching clinical medicine poses a number of challenges, specially when there are a number of tasks competing for the limited time available to the teacher. Without specific training in educational methods, medical teachers, specially at junior level may be less efficient and less effective in their teaching.<sup>4</sup> Clinical teaching is often considered unsatisfactory by teachers and learners alike. The reasons are -Lack of clear objectives and expectation, Focus on factual recall rather than on problem solving, Teaching at a wrong level (usually too high, sometimes too low), Little opportunity for reflection and discussion, Teaching by 'humiliation'. Cognitive theorists argue that new knowledge is built on what the learner already knows because the interplay between what is known and what is new is important. Unless the prior knowledge is activated, new learning may not take place. In fact, more the activation of prior knowledge more is the likelihood of new knowledge being used in future. Also cognitive psychology has demonstrated that facts and concepts are best recalled and put into service when they are taught, practiced and assessed in the context in which they will be used.<sup>1</sup>

**One-Minute Preceptor** - Certain techniques have been

developed to assist the clinical teacher- One-Minute Preceptor initially introduced as the "Five-Step 'Microskills' Model of Clinical Teaching" is such an example. OMP model was first described by Neher et al from the University of Washington in the year 1992 and since then has been extensively used for clinical teaching in many Universities across the World.<sup>5,6</sup> This method is useful to impart clinical reasoning skills to both, undergraduate as well as postgraduate students. It is named so as this model focuses on the last one minute of discussion, which is crucial from the learning point of view. Some people also believe that the term one minute is used more as a figure of speech rather than having any reference to actual time spent (e.g. one minute manager). The One minute preceptor (OMP) model is a popular and widely used method for improving clinical teaching. During the process of traditional case presentation, the focus is mainly on the diagnosis of the patient. In the OMP model, the teacher first focuses on diagnosis of the patient, then on *diagnosing the learning needs of the students* and finally provides *targeted instruction* in the context of this diagnosis. It facilitates efficient clinical teaching with the use of 5 microskills to help the mentor guide the teaching interaction.<sup>4</sup>

These micro skills include:-

- Get a commitment- i.e. ask the learner to articulate his/her own diagnosis or plan
- Probe for underlying reasoning - evaluate the learner's knowledge or reasoning
- Teach general rules- teach the learner common "take home points" that can be used in future cases, aimed preferably at an area of weakness for the learner
- Re-enforce what was right- provide positive feedback
- Correct mistakes- provide constructive feedback with recommendations for improvements

Out of these 5 micro skills, the first two diagnose learner's knowledge and reasoning. It allows the teacher to identify gaps in the learner's knowledge base and focus the teaching appropriate to learner needs. The last three offer tailored instruction. In learning the skills, it helps to focus on one skill at a time in a given clinical teaching session.

**Skill-1, Get a Commitment-** After presenting the history and examination, the learner often waits for guidance to proceed further. Generally, he does not offer any interpretation of the facts that he has presented. To get a commitment, one can simply ask the learner "What do you think is going on?" or "What

do you want to do?” The aim is to make the learner to process the information he or she has just collected. Few clarifying questions can be asked about the patient information like “Does the child have any fever?” before asking for a commitment. But one should avoid the temptation to ask too many questions as it takes the control of presentation away from the learner, who may passively listen or nod his head. This shuts the thinking process in learner’s mind. Initially the learner may hesitate to make a commitment or conversely a bright learner may do it too easily. A few moments of silence is quite usual and should be anticipated. The teacher should challenge the learner to make an intellectual commitment beyond his level of comfort. Asking learner how he interprets the data is the first step towards diagnosing his learning needs. Without this information, the teaching might be either misdirected or be unhelpful. One could waste time teaching what the learner already knows or may miss out teaching areas which the learner really needs. However, one should avoid offering an opinion, or simply keep on asking ‘what else’. This process, in the long run, may increase motivation for reading by students, as they are expected to generate their own complete plan and know that they will be critiqued based on the plan. This model, therefore, may be useful in promoting self directed learning.

**Skill -2, Probe for Supporting Evidence-**In this microskill the learner is asked what underlies

his/her commitment. Learners often proceed to make a diagnosis based on what they know and in this micro skill, aim is to find out, what they know or they do not know. In fact, this step is an exploration of whether he connected the knowledge of basic subjects with his clinical reasoning? To explore the learner’s knowledge and ability to connect different pieces of information on his or her mind, one can ask questions such as, “What factors did you consider in making that decision?” or “what other alternatives are possible and which facts in the history and examination support or refute those alternatives?”. Without this information, it is presumed that a learner knows something, which in fact he may not, and instruction given will not be targeted.<sup>3,7</sup> For example, a learner may make a diagnosis of hepatitis in a child presenting with jaundice and list blood culture as one on the investigations, without actually knowing that enteric fever can also cause hepatitis. Sometimes giving an alternative situation can help the thought process to be stimulated (e.g if this patient also had a palpable gallbladder, what would you have thought?). Listening carefully allows to understand the learner’s clinical reasoning and to find deficits in his or her knowledge base. However, certain points should be avoided. One should not be judgmental at this stage, like saying ‘you are right’ or ‘you are wrong’. It is best to avoid asking general questions like ‘what are the causes of jaundice in a three years old child?’ Most of the clinical teachers generally follow

these two steps with some variation in form or language used to elicit the information. However, OMP model goes beyond this and that is where it makes a difference.

**Skill-3, Teach General Rules-**

Every case is unique and has a teaching value. Our goal is to target our teaching appropriately and impart knowledge which can be generalized to other similar cases. The learner’s need in a particular case should have been identified so far. Learner can be taught general rules; concepts and principles, targeted to his/her level of understanding. If learner is taught in the context of the case, there is risk of making new knowledge too specialized, that may not be applicable to other situations which are at variance from given case. For example, one may suggest avoiding antibiotics in a child with diarrhea but in a situation where stools contain blood, using an antibiotic may be appropriate. Talking only in the context of that case may make the learner believe that antibiotics should be avoided in all cases of diarrhea. Any instruction is likely to be more transferable if taught as a general rule. In this microskill one should avoid certain points like teaching everything on a single case or giving unsupported personal opinions (e.g. I find prebiotics to be very useful in all cases of diarrhea). One should also avoid giving answer to a problem (this patient may have a clear CSF because he received antibiotics- rather say, in general, antibiotics tend to make CSF clear making diagnosis of meningitis difficult).

**Skill-4, Tell Him, What He did Right-**In order to improve learning a learner must be made aware of what he did right. One should make it a point to reinforce what was done right. Without reinforcement, behaviors do not become permanent. However, any praise has to be specific to be effective. Simply saying that you presented the case well does not help but saying “Your presentation was well organized. You had taken a detailed history.” With a few sentences you have reinforced positive behaviors and skills and increased likelihood that it will be incorporated into further clinical practice as well.<sup>2</sup> It is also important to realize that sometimes, the learner will make a diagnosis without actually applying a thought process. Reinforcing the learner in this situation will ensure that he develops a new connection with prior knowledge. For example, a student may have kept a differential of enteric fever in a child with jaundice. Telling him that yes in certain cases, especially those presenting with high fever, it may be appropriate to keep this possibility will make this learning last longer.

**Skill -5, Correct Mistakes-**Not everything will go well during a case presentation. This opportunity should be used to correct the mistakes that the learner may have made during history taking, examination or discussion. It is a good idea to let the learner critique his performance himself first. Mistakes not corrected tend to be repeated subsequently. Asking the learner to think, what

mistakes he made and how he can do differently next time is more likely to help him get rid of those mistakes. We all learn best from mistakes that we identify ourselves. In fact, at this time, the learners are in a mindset, where they are more likely to accept corrective action. However, to be effective, feedback should be case specific, focused and descriptive (not evaluative). A learner may have diagnosed upper respiratory infection, without looking at the ears of the child. Emphasizing that it is difficult to rule out otitis media without looking at the ears is more likely to be remembered for a longer period of time. It is not required to follow the model in a linear way. Depending on the situation, one can always pick and choose the step which is required in a particular situation. For example, it is perfectly appropriate to tell a resident, ‘by the way during the case presentation yesterday, your history about patient’s occupation added significantly to the diagnosis’. A video depiction of OMP model can be downloaded from <http://www.youtube.com/watch?v=ndLbo7sDnKo>

The One-Minute Preceptor is a useful combination of proven teaching skills combined to produce a method that is very functional in the clinical setting. It is quite brief, easy to learn, and has been shown to improve key teaching behaviors.<sup>4,8</sup> OMP helps to overcome one of the most pervasive and difficult problem in clinical education i.e the lack

of feedback. It provides the teacher with a system to provide efficient and effective teaching to the learner around the single patient encounter. It is not intended that this technique should replace existing teaching skills and techniques that already work well for the teacher. The main use of this model is to enhance the clinical reasoning process of the learner. Final year students and postgraduates are most likely to benefit from the use of this model. This model is not useful for very junior students, because learner should have an adequate knowledge base before he can commit something. Similarly, it is not useful for teaching clinical skills. Recently, there has been an interest in using this model for teaching basic sciences as well, especially at the postgraduate level.

The One-minute Preceptor model continues to provide a reliable framework on which good teaching conversations can be built. The model is most helpful when it is not viewed as static and rigid but as a pliable set of guidelines that can be shuffled and altered as the ever-changing teaching situation warrants. Teachers can acquire these micro skills with practice and reflection on own teaching encounters. Including OMP in the faculty development programs has also been shown to improve the implementation of the model.<sup>8</sup>

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## A Synopsis of Conquering Pain with Anaesthetics

Pain is Nature's alarm, her method of calling attention to something that is wrong with our bodies. It is her procedure for assuring that the damaged or diseased parts get the treatment necessary for her healing forces to take over. In the beginning, pain is the signal people need so they'll be aware of a disease or injury. Later, pain becomes an obstacle to recovery because it interferes with the treatment that rest could provide.

- A doctor's first duty is often to find relief for a patient's pain and this is usually done with a sedative drug.
- Early records indicate that two of the first pain-relieving remedies to be used were mandragora (now known as mandrake) and Indian hemp (hashish).
- The Egyptians believed that mandragora was the special gift to medicine from the god Ra, their Sun-God.
- The Roman herbalist and physician Dioscorides gave instructions for its use, "Boil the roots in wine to a third part, and preserve the juice thus procured and give one cyathus of it to cause the insensibility of those who are to be cut or cauterized."
- The mandragora or mandrake plant has a long tap-root split into two parts so that it roughly resembles a human figure.

- Mandrake was the most popular anesthetic during the Middle Ages and in the Elizabethan Age it was still being used as a narcotic, as indicated by the following lines from Shakespeare: "Give me to drink mandragora. . . . That I might sleep out this great gap of time My Antony is away." -from *Antony and Cleopatra*
- Mandrake (*Mandragora officinarum*) is a plant related to the potato family.
- Hashish is also from the distant past as shown when Herodotus wrote that it was not only eaten but that it was sometimes inhaled, and if this statement is correct, hashish inhalation must be looked upon as being the first of all the inhalation anesthetics.
- Opium is also a very ancient narcotic drug and it was introduced into medicine by the Chinese.
- Dioscorides referred to the taking of an alcoholic extract of mandragora before an operation and this suggests that it was normal for Greek surgeons of ancient Rome to decrease the pain of an operation by giving their patients sedative drugs.
- Apuleius, in about A.D. 200, wrote, "If anyone is to have a member mutilated, burned or sawed let him drink half an ounce with wine, and let him sleep till the member is cut away without any pain or sensation." (K. Walker, *The Story of Medicine*)

# In-Service Training of Eye Surgeons Under National Programme for Control of Blindness (NPCB)

## Commentary

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India has vast infrastructure for health care delivery managed by a complete gamut of functionaries ranging from grass root level workers at community level and at sub centre, primary care physicians at Primary/Secondary Health Centres and ophthalmologists with varying levels of specialization at District hospitals, Medical colleges and institutes of national importance and educational objectives for training emerge from a clear identification of the tasks to be performed by each category of workers. Their classification into cognitive, psychomotor and attitudinal objectives ensures a balanced and well-rounded educational programme. The exponential rate of technological progress in recent past, as a consequence, caused an immeasurable increase in complexity of diagnostic and therapeutic intervention of health care personnel. However, the continuing influx of these newer technologies for curative, preventive, promotive and rehabilitative purposes have resulted in constantly changing the definition of what constitutes 'competence'. In general, competence implies the development and possession of sufficient cognitive [knowledge], psychomotor and affective [attitudes] skill and experience for a successful performance of

one's professional life role to a prescribed standard. The level of cognitive domain from lowest to highest level includes factual knowledge, understanding, application, analysis, synthesis and judgement. The different abilities associated with each level of cognitive domain are depicted in Table 1.<sup>1</sup> This brief provides an overview of in-service training of eye surgeons working in public sector in the country under National Programme for Control of Blindness [NPCB].

**Types of in-service training for ophthalmologist**-It is envisaged that ophthalmologist stationed in tertiary and secondary care institutions would play a major role in National Programme for Control of Blindness [NPCB] activities. They can play an effective role if they themselves have been exposed to the felt needs of the community and are keeping pace with changing technology. The in-service training programme for eye surgeon working in public sector [sub/ district hospital, medical college, Regional institute of Ophthalmology] lays emphasis on all the domains of theoretical, investigative procedures as well as hands on training in various sub or super specialty of ophthalmology. The in-service training programme under NPCB has been broadly divided into four category based on area and/or duration of training period [Table 2].

### Organization of training-

Currently, 30 reputed institutes in public & NGO sector have been identified for imparting training under the programme in consultation with State authorities considering adequate case load, technical faculty, teaching & training infrastructure [including library, ophthalmology journals, & internet] and hostel accommodation. In a system of teaching and training that is based on the principle of adult learning, the onus of learning lies on the shoulder of trainee. However, each trainee is attached to one faculty [supervisor] in the training institute who further guides and coordinate related activities for the period of training. State authorities send nomination of participants to Government of India [GOI] for further recommendation to the training institute depending upon area of training and distance from work place. It is expected that services of such trained eye surgeon on-return are utilized properly in health facilities which is equipped to provide level appropriate eye care services and minimum of three years are remaining for superannuation from government service. An eye-surgeon is re-entitled for training after three years of service. The training centres ensure that atleast 25 surgeries are performed by trainee & log book maintained. After successful completion of training, eye

surgeon are required to submit to their respective office along with a copy to GOI; factual knowledge and skills gained, how they propose to utilize the knowledge gained; critical incident of the training along with any suggestions/deficiency noticed. Training institute also submit a report of each trainee on completion to NPCB, GOI. **Financial assistance**-In the approved Eleventh plan, financial assistance is provided to all the training institutes by Government of India [GOI] upto a maximum of Rs. 55,000/- [fifty five thousand], 65,000/- [sixty five thousand], 70,000/- [seventy thousand] and Rs. 11,500/- [eleven thousand and

five hundred] respectively per trainee towards travel/DA/accommodation for participant and administrative charges/expert time/consumables for training institutes as per above training programme.<sup>2</sup> An initial lump-sum is provided to these institutes to proceed with the training based on the instructions from GOI and recouped on submission of utilization/audited statement. However, no funds are released to training institute, if they do not comply with technical and/or administrative guidelines of GOI.

**In-service training of other cadre of staff**-The training of other cadre of staff [Medical

officers, Para-medical ophthalmic assistant (PMOA), and general health care staff] providing eye care services is planned, organized, coordinated and implemented by State/UT government with financial assistance provided by NPCB, GOI as per the standard curriculum. PMOA is a critical workforce which provides eye care services to the community but it is observed that some of the states are unable to uptake training of PMOA due to various constraints at their end. However, NPCB, GOI is constantly providing hand holding and coordinating with NGO to initiate training for such workforce through public-private partnership.

**Table-1, Level of cognitive domain**

Factual knowledge of	Terminology/facts;Classification/trends/criteria; Methodology; Principles/theories/generalizations
Understanding of	Translation;Interpretation;Extrapolation
Analysis of	Elements;Relationship;Organizational principles
Synthesis of	Production of unique comments;Production of a plan;Proposed set of operations;Derivation of a set of abstract relations
Judgment	In term of internal evidences;In term of external evidence

**Table-2, In-service training programme for eye surgeons under NPCB**

Types of short term training	Area
Training in cataract surgery [Two months]	ECCE/IOL Implantation; SICS [Small Incision Cataract Surgery]Phaco-emulsification
Subspecialty [Two months]	Glaucoma managementEye banking & corneal transplantOculoplasty Strabismus managementIndirect ophthalmology & laser technique
Super specialty [Three months]	Pediatric ophthalmology including Retinopathy of Prematurity [ROP]Medical retina & vitreo retinal surgery
Visual rehabilitation[Seven days]	Low vision services

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## Bedside Teaching

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## Review Article

The word 'doctor' is derived from the latin docere, which means 'to teach'.<sup>1</sup>

Clinical teachers have a dual role in medicine, to provide patient care and to teach.<sup>2,3</sup> Though all doctors are usually well prepared for their clinical roles, few are trained for their teaching roles.<sup>4</sup> Clinical teachers take their role as teachers of future generations of doctors seriously and with enthusiasm. Yet, most lack knowledge of educational principles and teaching strategies thus may be inadequately prepared for this additional professional role.<sup>5</sup> It has simply been assumed that professionals who have graduated from medical schools/colleges and undergone postgraduate training can automatically start teaching the day after they graduate. Due to advances in education such as new methods of teaching and learning, a more student-centred teaching, competency based assessment and emphasis on professionalism; educators today are required to have an expanded toolkit of teaching skills and clinical expertise.<sup>6,7</sup>

**What makes a clinical teacher excellent?**-Many investigators have examined the qualities that learners value in their clinical teachers. Irby & Papadakis (2001) summarized these and listed the skills that make a clinical teacher stand out. Excellent clinical teachers:<sup>8</sup>

- Share a passion for teaching

- Are clear, organized, accessible, supportive and compassionate
- Are able to establish rapport; provide direction & feedback; exhibit integrity and respect for others
- Demonstrate clinical competence
- Utilize planning & orienting strategies
- Possess a broad repertoire of teaching methods and scripts
- Engage in self-evaluation and reflection
- Draw upon multiple forms of knowledge; they target their teaching to the learners' level of knowledge.

Bedside teaching has long been considered the most effective method to teach clinical skills and communication skills. It provides an opportunity to gather additional information from the patient; directly observe students' skills; and role model skills and attitudes. It is also an active learning process in which adults learn best. Besides these educational advantages, there is evidence that patients favour bedside teaching and report better understanding of their illness after participating in bedside teaching.<sup>9,10</sup> Despite this belief, the frequency of bedside rounds is decreasing and it is believed that this is a major factor causing a sharp decline in trainees' clinical skills.<sup>11,12</sup> In the United States, less than 25% of clinical teaching occurs at the bedside and less than 5% of time

is spent on observing learners' clinical skills and correcting faulty exam techniques.<sup>13</sup> Fear of patient discomfort; lack of privacy, confidentiality; patient related challenges (short hospital stay, patients too sick or unwilling to participate in teaching encounter); work demands and time constraints act as barriers preventing teachers from venturing to teach at the bedside.<sup>14</sup>

**A 'Model of Best Bedside Teaching Practices'**-As a result of careful review of relevant literature,<sup>15-17</sup> Janicik RW & Fletcher KE 2003 developed the following Model of Best Bedside Teaching Practices. The model includes three domains: Attending to patient comfort, Focused teaching, and Group dynamics, each of which has specific goals and skills. The goal of domain 1 is to remain patient centered and respectful, which will maximize outcomes for both the learner and patient. Domain 1 begins with a suggestion to *ask the patient ahead of time*. This serves three purposes: it is ethical (patients must have a real opportunity to refuse), it allows the patient to have more control over his/her hospital course, and the patient can be told what to expect (duration, participants and purpose). Second, an *introduction of all* the visitors serves two purposes: some patients prefer it<sup>9</sup> and learners may be more invested in the process if they are identified by

name rather than as ‘the student or resident’. Third, hearing a *brief overview* of the patient’s history can be accomplished by either the person primarily responsible for him/her or by the patient himself/herself. Fourth, *avoiding technical language* while at the bedside is a request of patients,<sup>10</sup> and explaining findings directly to the patient was also embraced by Osler.<sup>18</sup> Fifth, in order to minimize the risk of confusing the patient with an unlikely differential diagnosis, *teaching should be based on data about the patient*. This means that ‘what if’ conversations are best left to the conference room before and after the patient is seen by the group. Finally, as the session closes the use of *genuine, encouraging closure* can help with the potentially awkward endings of bedside teaching interactions. It seems natural to want to reassure the patient as we leave the room that he/she is improving or doing well but sometimes that is not the case. In those instances a sincere ‘thank you for helping to teach future physicians’ is often enough to make the patients realize that they have contributed importantly to the learners’ training. Afterwards, it is also wise to assign a team member to check whether the patient has further questions about what occurred during the teaching session. The goals of domain 2 are to conduct an effective teaching session in a focused manner that is relevant to an individual patient’s and learner’s needs. The specific skills are based on a previously described model, ‘The Microskills of Teaching’<sup>19</sup> also known as the one-minute Preceptor which has already been discussed in an

earlier chapter but adapted for teaching at the bedside. The microskills are used to effectively and efficiently assess, instruct and give feedback and involve three steps: diagnosing the patient, diagnosing the learner and targeted teaching. *Diagnosing the patient* can be done by having the student present the patient’s history and physical examination at the bedside or at another location, or by personally obtaining his information from the patient. One can *diagnose the learner* by directly observing a student’s communication and physical exam skills or by asking effective questions. This information gathered about the learners is then used to *target the teaching* to their specific needs. Several methods can be used. These include role modeling, assisting the student with a procedure or physical exam skill, teaching general concepts (remember to include the patient) or actively involving the patient as a teacher. Specifically, patients can provide helpful feedback on communication and other skills and insight into their own experiences.

It is also important to give the learner both positive and corrective feedback as this is an essential component of effective learning. The feedback should be given as soon as possible after the observation to take advantage of immediacy. If the feedback is negative one must decide if it should be given privately but most times feedback should become part of the group experience.

The goal of domain 3 is to keep the entire group active during the session. This is crucial to the success of a bedside teaching encounter. Skills used include *setting goals* (both as a group and individually) before going to the bedside and *setting a time limit*. All participants should have some role in the encounter. Once at the patient’s bedside, the teacher needs to *pay attention to the entire group* (learners, patients, others in the room). It is important to actively involve quieter members and control dominant members. Patients are also active participants in the group and should be encouraged to teach and ask questions. The final step is to review the session with the group and to answer any questions.

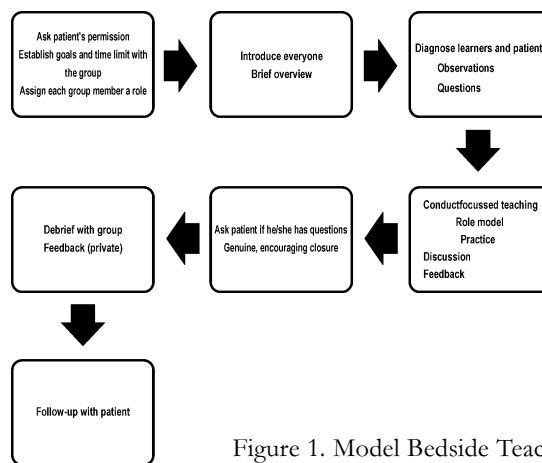


Figure 1. Model Bedside Teaching Session

Since most clinicians agree that teaching at the bedside is necessary, despite the abundance of obstacles, a few teaching tips may help faculty gain confidence to start moving their teaching from the corridors and conference rooms to the patient's bedside.<sup>20</sup>

- **Preparation:** It is a key element to conducting effective rounds. Teachers need to familiarize themselves with the clinical curriculum, attempt to diagnose different learner levels and improve their own clinical skills. It increases teacher's comfort at the bedside. An ideal adjunct to this stage of preparation would be faculty training on clinical skills and teaching methods.
- **Planning:** Draw a road map of what they plan to achieve at the bedside for each encounter or else there would be fear of a certain sense of "lack of control". For example: decide what particular system is to be taught at the bedside. This would enable the teacher to walk into the encounter with some confidence.
- **Orientation:** Orient the learners to their plans (road map of the intended teaching exercise, if any) for the session and negotiate goals and objectives for the session. Tell the learners what is to be taught. Team ground rules need to be established and any sensitive discussions need to be postponed.
- **Introduction:** Introduce

themselves and the team to the patient; emphasize the teaching nature of the encounter. Patients need to be told that certain theoretical discussions may not be applicable to their illness.<sup>20</sup>

- **Interaction:** Serve as role-models during their physician-patient interactions. Teach professionalism and humanistic bedside manner without lecturing them on those subjects.
- **Observation:** Stepping out of the limelight and keen observation is a necessary part of learner-centered bedside teaching. Observing the trainees' interaction (history taking, examination skills, communication) with the patient at the bedside can be very illuminating and these observations can be used to plan future teaching rounds.
- **Instruction:** Challenge the learners' minds without humiliating, augmented by gentle correction when necessary. Do the teaching and keep all learners engaged to avoid boredom. Teachers can admit their own lack of knowledge and willingness to learn from trainees as well as the patient. This might allow trainees to admit their limitations and ask questions. Avoid asking questions of junior learners when a senior learner has missed the question.
- **Summarize:** Before leaving the bedside, teachers need to summarize with the learners

what they have been taught. Patients also need a summary of the discussion, explaining what applies and what does not apply to their illness and management. Patient education and counseling can be done at this stage, albeit concisely.<sup>20</sup>

- **Debriefing:** This phase takes place outside the room, out of the patient's earshot. Its time for questions, clarifications, assigning further readings etc. Sensitive aspects of patient's history, differential diagnosis etc. can be discussed now.
- **Feedback:** Find out what went well and what did not. This session should remain brief and focus on the strengths and deficiencies of the just completed teaching encounter. It serves to improve the quality of future teaching rounds.
- **Reflection:** Think about the bedside encounter; It is an opportunity to reflect on one's own strengths and weaknesses at the bedside and formulate goals and objectives for the rest of the rotation of self-education as well as trainee education.<sup>11</sup>
- **Start preparation** for the next encounter with insights from your reflection phase. This completes the circle of bedside teaching.

**Conclusion-**Bedside teaching is an essential method of clinical teaching. There are many skills that cannot be taught in a classroom and require the presence of a patient, real or

simulated. Although many clinical teachers find this an intimidating mode of teaching that bares their own deficiencies, they need to realize that all of them possess a wide range of clinical skills that they can teach their junior and far less experienced trainees. Some common sense strategies combined with faculty development programs at individual institutions can overcome some of this insecurity and promote bedside teaching rounds that can be educational and fun for teachers and learners alike. It is appropriate to conclude with William Osler's words: "To study the phenomenon of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all".<sup>21</sup>

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## Group Communication Methods for Propagation of Messages among the Audience under National Rural Health Mission

### Review Article

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Communication is more than a mere exchange of information. It is a process, on-going, ever changing, continuous and dynamic. It does not have a definite beginning or end. Communication facilitates learning. The ultimate goal of all communication activities is to bring about a desirable change in the behaviour of the audience. This may be at the cognitive level in terms of increase in knowledge; it may be affective in terms of changing the existing patterns of the behaviour and attitudes; and it may be psychomotor in terms of acquiring new skills<sup>1</sup>. Realising the application and potentials of the communication, the Programme Implementation Plan (PIP) of NRHM lays emphasis on different methods of communication viz: inter-personal, group, mass and folk media of communication to propagate messages among people under National Rural Health Mission. The National Rural Health Mission launched by the honourable Prime Minister of India, Dr. Manmohan Singh, on April 12, 2005 envisages necessary architectural correction in the basic health care system to improve the availability of and access to quality health care by the people, especially those residing in rural areas, the poor, women and children. Various

strategies; including communication, have been framed to achieve the goals of National Rural Health Mission viz: (i) Reduction in Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR); (ii) Universal access to public health services such as women's health, child health, water, sanitation and hygiene, immunization and nutrition; (iii) Prevention and control of communicable and non-communicable diseases; including locally endemic diseases; (iv) Access to integrated comprehensive primary health-care; (v) Population stabilization, gender and demographic balance; (vi) Re-vitalise local health traditions and mainstream AYUSH; and (vii) Promotion of healthy life styles<sup>2</sup>. The communication is important because there is so much to know, so much people need to know and so many who want to know so much and so quickly. Without communication, nothing moves on in any sphere of human endeavour. Communication is the tool that assists the health workers to step up the reach of health services to the mass in general and the needy in particular through various methods of communication. The health workers should be knowledgeable about (i) various methods of communication (ii) the selection of a particular method for a given situation; and

(iii) the efficient use of different methods for making the communication more effective. Because, our society consists of group of many kinds and each group has its own need for a particular message which should be given in an understandable form with the help of a suitable method of communication in the light of audience profile. Keeping this in view, an attempt is made in this paper to describe different group communication methods and their use for propagation of messages among the people under National Rural Health Mission.

**Lecture**-The noun "lecture" dates from 14th century, meaning "action of reading, that which is read," from the Latin *lectus*, pp. of *legere* "to read." Its subsequent meaning as "a discourse on a given subject before an audience for purposes of instruction" is from the 16th century. All methods of instruction can be classified as telling, lecturing, discussing, showing or demonstrating or any combination of these instruction methods. A lecture may be defined as a carefully prepared oral presentation of facts, organized thoughts and ideas by a qualified person. The lecture method is very effective for small group education. Further, the lecture becomes more effective when it enjoys the support of audio-visuals like films, flip charts,

flannel graph, exhibits, posters, etc. This method facilitates, (i) 'teaching-learning situation congenial' as the instructor and the learner have got direct face to face contact; (ii) checking the comprehension of the subject by the trainee from his/her facial reactions; and (iii) clearing mental block that prevents the trainee from concentrating on the subject matter being presented. However, this method suffers from limitations viz: (i) involvement of trainees in the activity is minimum or learning is passive; (ii) does not stimulate thinking or problem solving capacity on the part of the trainees; and (iii) the comprehension of the lecture by the trainees vary from one another. The lecture method becomes more effective when it is followed by a group discussion or role play which adds more clarity to the subject presented. The messages on exclusive breast feeding, use of contraceptives, immunization, etc. can be propagated among the rural women through this method, though there are limitations.

**Demonstration**-It is a method of teaching by example rather than simple explanation. The demonstration operates on the principles of 'learning by doing' and 'seeing is believing'. According to park (2009) a demonstration is a carefully prepared presentation to show how to perform a skill or procedure. Here a procedure (e.g. lumbar puncture, disinfection of a well) is carried out step by step before an audience or the target group which understands as how to

perform it. The demonstrator involves the audience in discussion. This method is more effective in bringing about desirable changes in the behaviour of the audience pertaining to the use of new idea. Demonstration can be used to educate the people about environmental sanitation ( e.g. installation of a hand pump, construction of a sanitary latrine) mother and child health (e.g. demonstration of oral rehydration technique and control of disease (e.g. scabbies). The clinical teaching in hospital is always based on demonstration<sup>3</sup>. According to O.P. Dahama and O.P. Bhatnagar (1980) demonstration can be of three kinds viz: (i) method demonstration; (ii) result demonstration and (iii) simple and composite demonstrations. In method demonstration, an improved practice is demonstrated in a short span of time, how a thing is done-greatest acceptance of the best practice in the shortest period of time. In result demonstration, the result of the demonstrated practices are shown in comparison to the existing practices. In this process, the health workers may take the help of audio-visual aids like film, slides etc. In simple demonstration, only one improved practice is demonstrated while in composite demonstration more than one improved practices are demonstrated<sup>4</sup>.

**Group Discussion**-It operates on the principle of 'together everyone achieves more' or 'team works' as quoted by Centre for Communication Programmes,

Johns Hopkins School of Public Health<sup>5</sup>. A group is an aggregation of people interacting in a face to face situation. This contrast sharply to the group of students in a class room situation. Group discussion is considered a very effective method of health communication. It permits the individuals to learn by freely exchanging their knowledge, ideas and opinions. Group discussion provides a wider interaction among members than is possible with other methods. Where, long term compliance is involved (e.g. cessation of smoking, obesity reduction) group discussion is considered valuable. For effective group discussion, the group should comprise not less than 6 and not more than 12 members. There should be a group leader to (i) initiate the subject, (ii) help the discussion to go in the right direction, (iii) encourage everyone to participate in the discussion; and (iv) summarize the discussion at the end. If the discussion goes well, the group may arrive at decisions which no individual member would have been able to make alone. A well conducted group discussion with adequate resources is very effective in reaching decisions, based on the ideas of all people. The decision taken by the group tends to be adopted more readily than in situations where the decision is a solitary one. Thus, the group acceptance has a binding effect on the individual member to translate their acceptance into action. A well-conducted group discussion is effective for changing attitudes and the health behavior of the

people, though it has some limitations<sup>3</sup>.

**Panel Discussion**-Panel discussion can be extremely effective method of education, provided, it is properly planned and guided. For example, if an issue is too complex for an individual to handle, a panel may be convened with six to eight persons to speak on the subject and the audience may be introduced or exposed to the views of various experts on the subject at the same session. Panel discussions, however, differ from team presentations. In a team presentation, the group presents agreed-upon views while different views on the same subject are presented in a panel discussion<sup>6</sup>. The manner in which the panel discussion conducted is very important for making it more productive. The panel may comprise, a chairman or moderator and subject matter specialists. Usually, the chairman opens the meeting, welcomes the group and introduces the panel speakers. He also introduces the topic briefly and invites the panel speakers. The chairman or moderator of a panel discussion facilitates in such a way that each and every aspect of the subject is very critically analysed by the panelists. Often, views of panel members on a particular issue do differ which are also discussed to have proper understanding of the issue. The chairman or moderator of a panel discussion should be very knowledgeable about the subject and should have prepared prior check-list to moderate what to discuss and what not. After the main aspects of the subject are explored by the panel speakers, the audience is

invited to take part in it. In case, the members of the panel are unacquainted with this method, they may have a preliminary meeting to prepare the material on the subject and decide upon the method and plan of presentation. 'Annual budget' of the country' and 'election results' are some of the best examples of panel discussions tele-cast by doordarshan regularly. The health workers or the medical officers in-charge of a PHC can adopt this method to popularise messages on basic hygiene and sanitation, iodized salt, immunization or age at marriage among rural audience.

**Symposium**-A kind of meeting for discussion of a topic especially one in which the participants make presentations. Usually symposium is held for a specific occasion. In academic field, it is characterized by discursive format, rather than a lecture and question-answer format. In his book on preventive medicine, Park (2009) describes symposium is a series of speeches on a selected subject. Each person or expert presents an aspect of the subject briefly. Further, he says that there is no discussion among the symposium members as in panel discussion. At the end, the audience may raise questions. The chairman makes a comprehensive summary at the end of the session. This method can be more effective to educate the rural women about the use of different contraceptive methods<sup>3</sup>.

**Workshop**-Workshop means, as per dictionary, a room, place or building in which things are made

or repaired or a period of discussion and practical work on a particular subject in which a group of people share their knowledge and experience. It focuses on working out solutions to a problem or developing a strategy or plan of action to sort out the problem. The workshop includes a series of meetings, usually four or more with emphasis on individual work within the group with the help of experts. All the participants of the workshop are divided into sub-groups and each group will work separately on a particular issue. Each sub-group may have a chairman, to lead the group and a recorder, to record the proceedings of the group. The number of participants in a workshop is less as compared to conference. The workshop method helps the instructor create an environment in which the learner is more likely to be involved and motivated. This method focuses on participatory, hands-on learning; small-group activity and problem solving; pair and small-group discussions; etc. As a result, because of the "active" rather than "passive" nature of the experience, larger number of learners are motivated to participate and learn. It also enables the instructors to function as "the guide on the side". Those who apply this method do not focus on passing on information to students but they essentially create learning experiences that guide, direct and facilitate the acquisition of new knowledge by the learner. Learning takes place in a friendly, happy and democratic environment under expert guidance.

However, this method suffers from (i) regular teachers do not take much interest in this kind of activities; (ii) fit for only a small group of audiences; and (iii) demands special facilities or materials. This method can be used for propagating messages on 'adolescent health' among the boys and girls of adolescent age. It is ideal if the workshop on adolescent health is organized separately for boys as well as for girls in different schools.

**Seminar-**The word seminar is derived from the Latin word *seminarium*, meaning "seed plot". Seminar is, generally, a form of academic instruction. The idea behind the seminar system is to familiarize the students more extensively with their chosen subject. It is essentially a place where assigned readings are discussed, questions can be raised and debates can be conducted. It is relatively informal as compared to the lecture system of academic instruction. It has the function of bringing together small groups for recurring meetings, focusing each time on some particular subject, in which everyone present is requested to actively participate. This is often accomplished through an ongoing Socratic dialogue with a seminar leader or instructor. It is ideal if the participants have some knowledge about the subject being discussed<sup>7</sup>. The seminar can be used by the block level officials to educate the PRI members, Mahila Mandals, Educated youths etc. of a block about the commonly prevailing diseases in their respective villages.

**Conference-**The conference provides a platform for continuing education. It is an important channel for exchange of information from one to another. The conferences are usually held on a regional, state or national level basis. They range from once half-day to one week in length and may cover a single topic in depth or be broadly comprehensive<sup>3</sup>. The conference might be single track or multiple track. The conference has only one session at a time but there can be several parallel sessions at the same time by other speakers in separate rooms. The types of conferences include academic conference, business conference, news conference, settlement conference, professional conference, tele-conference, video conference etc. This method can also be used by the health workers to propagate messages on basic issues of health among the people in rural areas, though it has got its own limitations.

**Role Play-**Role-playing refers to the changing of one's behavior to assume a role, either unconsciously to fill a social role or consciously to act out an adopted role. While the Oxford English Dictionary defines role playing as "the changing of one's behavior to fulfill a social role". The term is used more loosely in three senses viz: (i) to refer to the playing of roles generally such as in a theater or educational setting; (ii) to refer to a wide range of games; including computer role-playing games, play-by-mail games and more; and (iii) to refer specifically to role-playing games<sup>8</sup>. It is also called socio-

drama based on the assumption that many values in a situation can not be expressed in terms of words and the communication can be more effective to the situation if it is dramatized by a qualified group. The group members who take part in the socio-drama enacts their roles as they have observed or experienced them. About twenty five will be the ideal group size for a role play. Role playing is a useful technique in discussion of problems of human relationship. It is also a useful educational device for school children. It is better if role play is followed-up by a discussion about the problem. The author in one of his studies in Mandla district of Madhya Pradesh applied the role play technique to remove the misconceptions of the tribal groups about tuberculosis. The role play was performed by local professional folk-artists (both male and female) explaining what is tuberculosis? How it is caused? What are the facilities available for its treatment; including DOTS, etc. The role play was performed in a few selected villages under the study in Mandla district of Madhya Pradesh for about an hour in each village. After the role play, the villagers expressed to have understood the disease (tuberculosis) and even they said that they would prefer to go to DOTS for treatment rather than quacks whom they trusted most<sup>9</sup>. It is suggested that the health workers may organize role play in villages with the help of local artists to propagate messages on communicable as well as on non-communicable diseases.



**Meeting**-It is an important part of management work and provides a forum to share instructions and circulars received from different agencies and state authorities. Meeting serves as feedback or ways to get information from the bottom to the top and vice-versa. Also meetings provide an opportunity for policy review and analysis. During meetings, technical information is presented to update the knowledge of health functionaries. District health officers usually hold regular meetings of the medical officers of PHCs and BEEs and district programme officers. There are committee meetings to make decisions about family planning or other health campaigns. There are meetings with community leaders to identify their health problems and special meetings with village groups for the purpose of health education. The purpose of the meeting, subject matter, membership, place and time, the convenor and the manner of conducting the meeting should be clearly worked out. One should be very clear about the purpose of the meeting. The purpose of a meeting may include one or more viz: (i) information giving; (ii) review making; (iii) problem solving; (iv) decision making; (v) acquainting or orienting the staff/the people to the new development; and (vi) emergency meeting to discuss a critical issue<sup>10</sup>. How a meeting is conducted depends upon its size, purpose and whether formal or informal. However, the chairman should be someone who can promote good. First,

always review the past minutes and review actions taken. It should be ensured that there is an environment of listening to each other. Address all information to the chair. Verbalize decision of importance for the convenience of participants. Summarize the opinions expressed. Get every one's point of view. In similar line, Medical Officer, in-charge of a particular PHC, may hold meeting whenever a demand arises from the community members of a particular village of his jurisdiction regarding health issues.

**Conclusion**-National Rural Health Mission aims at reduction in IMR, MMR, TFR and mortality due to malaria, filaria, kala azar, dengue, etc. While carrying out necessary architectural correction in the basic health care delivery system, the mission attaches due importance to the communication through various forms to reach the rural population with health care messages in general. Because, communication is the tool that assists the health workers to step-up the reach of health services to the mass. Communication has got different methods of which the group communication methods are equally effective and can be used to reach the rural audience as they have limited access to mass media. The group communication methods such as lecture, demonstrations, group discussions, panel discussions, symposium, workshop, seminar, conference, role play and meeting can be carefully planned and used for propagation of messages on

health and family welfare among rural audiences. Finally, communication should work not only how can we reach the rural audiences with our health care messages but it should also work in such a way that the rural audiences are also approaching us for health care services<sup>11</sup>. So, the health workers, must know first 'what methods are available to them' secondly, they should know 'when to use a given method' and thirdly 'they should become efficient in using each method'. However, the success of the National Rural Health Mission depends upon to what extent the rural audiences are taking part in the implementation of the programme irrespective of their level of education and economic status and other socio-demographic factors.

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## Ancient surgery

For millennia, humanity practiced primitive preventive medicine – for this was all it could do – by appeasing the gods through ritual and sacrifice. However, a body of knowledge gradually built up, based on chance observation and trial and error.

**A hole in the head**-To people who believed that disease was caused by evil spirits, it was – if the exorcisms of shamans and witch doctors failed to work – logical to drill the skull of a person suffering from a blinding headache, to release these spirits. Trepanation is one of the very few prehistoric medical practices for which we have archaeological evidence, and the only surgical one. It involved cutting a small hole in the skull, often with an instrument resembling a carpenter's bit with a handle. The procedure was used to treat headaches, skull fractures, epilepsy and some forms of mental illness.

**Amulets**-It was employed around the world – in Neolithic Gaul (now France), Bohemia (Czech Republic), north Africa, Asia, Tahiti, New Zealand and South America. It was particularly popular in ancient Peru, where sharp knives of obsidian, stone and bronze were used. Skulls have been found with as many as five trepanned

holes. People who survived the operation (and some did, as healed skulls attest) had their wounds covered with a piece of gourd, stone, shell or even silver and gold. In Europe, the excised rounds of skull bone were worn as amulets.

## Retraction

The article entitled "Objective Structured Clinical Examination Revisited", and published in Vol IV, No.6, pages 1-10, Nov-Dec 2009 issue of the Journal of Postgraduate Medical Education, Training and Research is hereby retracted from the publication and indexing process.

Editor-in-Chief

## Mini-clinical examination (Mini-CEX)

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## Review Article

The purpose of clinical education is to transmit the knowledge, impart the skills, and inculcate the values of the profession in an appropriately balanced and integrated manner.<sup>1</sup> It is undisputed that assessment drives learning. If we care whether medical students and residents become skilful practitioners and sensitive and compassionate healers, our approach to the evaluation of learners must reach beyond knowledge to rigorously assess procedural skills, judgment, and commitment to patients.<sup>2</sup> Evaluating residents' competence requires directly observing trainees with patients, an appropriate evaluation format, sufficiently trained raters, and the experience to judge competence and provide feedback to the residents on areas for improvement.<sup>3,4</sup> Bringing the assessment to the workplace brings authenticity to assessment process. In addition, each clinical situation is inherently a learning situation. We let many such situations go without making full use of them.

**Mini-clinical examination (Mini-CEX)** -The mini-Clinical Evaluation Exercise (mini-CEX) is one of a number of workplace-based assessments (WBAs) used in the clinical setting to help the teaching and assessment of a clinical skill and competence. It is called mini because it takes

comparatively less time as compared to conventional case presentation. However, the bigger advantage with mini-CEX is the structured feedback that it provides to the students as well as the tutor, thus helping them to make better decisions. In common with the other WBA's, its primary purpose is to provide structured teaching and feedback in a particular area of clinical practice. Mini-CEX was originally designed and promulgated by the American Board of Internal Medicine. It is a consultation conducted by a trainee, which is observed and critiqued by the clinical supervisor / assessor. Mini-CEX is a 10 to 15 minute snapshot of doctor / patient interaction in real life setting, designed to assess the clinical skills, attitudes and behaviors of students essential for providing high quality care. Mini-CEXs can be used throughout training. The setting can be in-patients, outpatients, emergency setting or interviews with patients and/or relatives. It serves the twin purpose of an assessment as well as a learning tool. For each mini-CEX, a single faculty member observes and evaluates a resident while that resident conducts a focused history and physical examination in an inpatient, outpatient, or emergency department setting. After asking the resident for a diagnosis and treatment plan, the faculty member completes a

short evaluation form and gives the resident feedback. Information is gathered from the resident on level of training and satisfaction with the mini-CEX; the latter is rated on a 9-point scale anchored with the words "lowest" and "highest." Ratings are collected from the evaluator for the resident's overall clinical competence and for four components of competence: history-taking skill, physical examination skill, clinical judgment and synthesis, and humanistic qualities. The ratings are made on a 9-point scale, on which 1, 2, and 3 are unsatisfactory; 4 is marginal; 5 and 6 are satisfactory; and 7, 8, and 9 are superior. A box is also provided so that the evaluator could select "insufficient contact to judge." As can be seen from the structure of the form, either all or some of the competencies can be assessed at each encounter. For example during early residency years, the focus can be on data collection while in later years, the focus can be on counseling skills also.

In addition to providing data on the resident, the evaluator records information on the site of the evaluation (inpatient service, clinic, or emergency department) and the patient's major medical problems and diagnoses. Unlike the traditional CEX, which focuses on an exhaustive assessment, the mini-CEX concentrates on the

resident's ability to solve patient problems regardless of the nature of the encounter. Therefore, new and return visits with a particular resident are included and identified. Finally, the evaluator is asked to rate his or her level of satisfaction with the mini-CEX format.<sup>5, 6</sup> A sample clip of a mini CEX session can be downloaded from <http://www.mmc.nhs.uk/pages/assessment/minicex>. Students are asked to undertake four to six observed encounters during the year with a different observer for each encounter. Each of these encounters represent a different clinical problem and trainees should sample from each of the core problem groups identified as important (for example, history taking, physical examination, diagnosis, communication, counseling etc.). However, not all elements need to be assessed at each encounter.

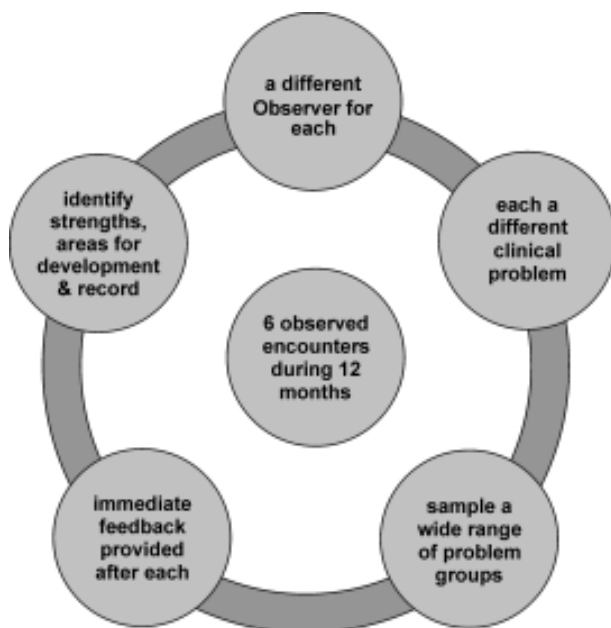
Each encounter takes about 20 minutes, with first 15 minutes for the encounter and last 5 minutes for feedback. Immediate feedback is provided after each encounter by the person assessing the performance. Strengths, areas for development and agreed action points are identified following each mini-CEX encounter. A record of the rating forms serves as part of a progress report (or portfolio) for each resident.

Mini-CEX uses a different rater for each encounter and thus over course of the year, each resident is assessed by 6-8 clinicians. This is considered as the biggest strengths of this assessment as each clinician brings a distinct way of thinking and approaching a patient. Although many of the items on the rating forms may look 'subjective', reliability of a mini-CEX has been reported to be much higher than an OSCE

of similar duration. Patient safety and well-being remains paramount throughout. The supervising assessor, usually a consultant, should ensure that the patient is informed, has provided consent for the exercise and suffers no increased risk or discomfort. The supervisor retains responsibility for patient care throughout and will intervene as the situation requires.<sup>7</sup>

Different Universities and Institutions have different types of recording forms for use with mini CEX-most of them however; have a component of essential skills from the curriculum built into them. Here is a generic form which is most commonly used. The form will provide some structure to the exercise from the point of view of feedback and debriefing, as well as a record for the training portfolio. This form can be downloaded from the website of American Board of Internal Medicine (<http://www.abim.org/pdf/paper-tools/minicex.pdf>). The form lists the identification data, level of complexity of the case and competencies being assessed. In addition, the form also provides guidelines on what is to be observed for each competency. **Completing the mini-CEX form-** These notes may be helpful when using the mini-CEX form-

- Trainee details-The trainee or assessor should complete the trainee's details
- Clinical setting-The assessor should state the setting in which the case is based, for example 'Out-patients'.



- **Clinical problem**-The assessor should state the type of problem covered by the case, for example 'Bronchopneumonia'.
  - **New or Follow Up**-The assessor should indicate if the case is a new patient or a follow-up
  - **Focus of clinical encounter**-Tick the categories that have been assessed. Not all elements need to be assessed on each occasion. Evaluation should include an assessment of the trainees' examination skills and their abilities to reach an initial diagnosis using sound clinical reasoning.
  - **Complexity of case**-The assessor should score the difficulty of the procedure according to the stage of the trainee.
  - **Using the scale**-Assessors should use the full range of the rating scale. It is expected that some ratings of below 'Meets expectations' will be a reflection of a deficit in experience.
  - **Item 7 Overall Clinical Care**-The overall encounter 'Overall Clinical Care' should be completed only if the assessor has observed it all.
  - **Feedback**-The assessor should summarize the feedback given together with agreed actions.
  - **Satisfaction with mini-CEX**-Both the trainee and assessor should indicate their satisfaction with the mini-CEX method and process (this is not about satisfaction with how the trainee has performed on this occasion).
  - **The standards to be applied to the mini-CEX assessments** - The assessment should be judged against the standard expected at completion of the stage of training (e.g. Year 1, 2 or 3).
- Advantages over traditional long case** - Clinical case presentation is liable to be influenced by a number of factors including language, poise, confidence and previous impression (if any) of the student. The traditional clinical evaluation exercise (CEX) has certain limitations:
- The resident is observed by only one evaluator, and studies have shown that even experienced physicians differ from one another when observing exactly the same events.<sup>8</sup> Mini CEX has increased reliability due to more evaluations per resident (with far more content validity since the resident may be evaluated using multiple clinical problems).
  - In traditional case presentation, the resident is observed with only one patient. As patient problems vary considerably, the resident's performance in one case does not predict performance in others. On the other hand, mini-CEX has an enhanced flexibility for a variety of clinical settings.<sup>9</sup>
  - Mini-CEX takes place in a natural patient care setting and requires no special preparation like OSCE. It looks at the entirety of the task rather than breaking it into sub-skills. The assessor gives a global feedback rather than a check-list based one. For these reasons, mini-CEX has better validity and reliability compared to other forms of clinical examination.
  - Since most physician-patient encounters are short and focused, the traditional case presentation, with its emphasis on completeness, is a somewhat less relevant measure of clinical skill. The unreliability of the observer, the variation of resident performance from patient to patient, and the artificiality of the task mean that the traditional single-interaction case presentation is not a dependable measure of a resident's clinical competence.<sup>5, 8, 10, 11</sup> Mini CEX is a focused evaluation that more closely models actual clinical practice, which assesses selectivity and prioritization of data gathering (content validity).<sup>3</sup>
  - Less time is required to perform the evaluation in mini CEX compared to traditional clinical examination. Also, often more time happens to be given to the students at the beginning of the examination as compared to the latter part of it in traditional clinical examination.<sup>3</sup>
- Mini-CEX is a relatively new entrant in Indian medical education scenario. Although used routinely in almost all of the

Western Universities, reports of its use in India have started to trickle in. <sup>12</sup>Initial experience with its use suggests that it is a feasible, acceptable and useful mode of assessment of clinical skills in our set-up. Especially in situations where paucity of time or faculty do not allow regular case presentations, an increasing use of mini-CEX is likely to fill that void and in a better way.

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### Appendix-1

#### Mini-Clinical Evaluation Exercise (CEX)

Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Resident: \_\_\_\_\_ O R-1 O R-2 O R-3

Patient Problem/Dx: \_\_\_\_\_

Setting:  Ambulatory  In-patient  ED  Other \_\_\_\_\_

Patient: Age: \_\_\_\_\_ Sex: \_\_\_\_\_  New  Follow-up

Complexity:  Low  Moderate  High

Focus:  Data Gathering  Diagnosis  Therapy  Counseling

1. <b>Medical Interviewing Skills</b> (O Not Observed)	1	2	3	4	5	6	7	8	9
	UNSATISFACTORY			SATISFACTORY			SUPERIOR		
2. <b>Physical Examination Skills</b> (O Not Observed)	1	2	3	4	5	6	7	8	9
	UNSATISFACTORY			SATISFACTORY			SUPERIOR		
3. <b>Humanistic Qualities/Professionalism</b>	1	2	3	4	5	6	7	8	9
	UNSATISFACTORY			SATISFACTORY			SUPERIOR		
4. <b>Clinical Judgment</b> (O Not Observed)	1	2	3	4	5	6	7	8	9
	UNSATISFACTORY			SATISFACTORY			SUPERIOR		
5. <b>Counseling Skills</b> (O Not observed)	1	2	3	4	5	6	7	8	9
	UNSATISFACTORY			SATISFACTORY			SUPERIOR		
6. <b>Organization/Efficiency</b> (O Not observed)	1	2	3	4	5	6	7	8	9
	UNSATISFACTORY			SATISFACTORY			SUPERIOR		
7. <b>Overall Clinical Competence</b> (O Not observed)	1	2	3	4	5	6	7	8	9
	UNSATISFACTORY			SATISFACTORY			SUPERIOR		

Mini- CEX Times: Observing: \_\_\_\_\_ Mins Providing Feedback: \_\_\_\_\_ Mins

Evaluator Satisfaction with Mini-CEX

Low 1 2 3 4 5 6 7 8 9 HIGH

Resident Satisfaction with Mini-CEX

Low 1 2 3 4 5 6 7 8 9 HIGH

Comments:

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Resident Signature

Evaluator Signature

**DESCRIPTORS OF COMPETENCIES DEMONSTRATED DURING THE MINI-CEX**

**Medical Interviewing Skills:** Facilitates patient's telling of story; effectively uses questions / directions to obtain accurate, adequate information needed; responds appropriately to affected, non-verbal cues.

**Physical Examination Skills:** Follows efficient, logical sequence; balances screening / diagnostic steps for problem; informs patient; sensitive to patient's comfort, modesty.

**Humanistic Qualities/Professionalism:** Shows respect, compassion, empathy, establishes trust; attends to patient's needs of comfort, modesty, confidentiality, information.

**Clinical Judgment:** Selectively orders/ performs appropriate diagnostic studies, considers risks, benefits.

**Counseling Skills:** Explains rationale for test / treatment, obtains patient's consent, educates / counsels regarding management.

**Organization/Efficiency:** Prioritizes; is timely; succinct.

**Overall Clinical Competence:** Demonstrates judgement, synthesis, caring, effectiveness, efficiency.

From: Norcini J1 Blank LL, Arnold GK, Kimball HR. The mini-CEX (Clinical Evaluation Exercise): A preliminary investigation. Ann Intern Med 1995; 123:795-799.

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**I**ntroduction Leprosy is a chronic infectious disease, known since 600 BC. It is caused by Mycobacterium Leprae. The leprosy prevalence was estimated first time in India through British Imperial Census in 1871-72. The leprosy prevalence was about 5 cases of leprosy per ten thousand population prior to the year 1950, which includes the possibility of underestimation to total cases due to non-diagnosis, under-reporting, errors in population coverage in all the areas and the social stigma attached with the diseases. Based on the prevailing concepts and knowledge, Lepers act 1898 was enacted, which was modified in view of current knowledge and treatment by the Indian parliament in 1983. According to the WHO, 121 countries and territories account for new cases detected during 2008 was 2,49,007 and infected cases were 2,13,036 cases at the beginning of year 2009. The total reduction was seen to be 4% (i.e. fallen by 9126) during 2008 as compared with 2007. The global burden of the diseases had been dramatically reduced from 5.2 million in 1985 to 805 000 in 1995 to 753 000 in 1999 to 213 036 at the end of 2008. In India the Prevalence of the diseases reduced to 0.74 per ten thousand population in 2008 (NLEP

indicators; 31.06.08) from 0.80 per ten thousand population in 2007 (NLEP indicators; 31.06.07). In 2007 the cases on record were 91,744 which decreased to 87,228 in year 2008. Leprosy has been eliminated from 119 countries out of 122 countries where it was considered as the public health problem in 1985 through the access to information, diagnosis and treatment with Multidrug therapy for Leprosy. However even in the countries where Leprosy has been eliminated as a public health problem, few have pockets of high endemicity which include India also.

In India Leprosy has been eliminated i.e. less than one case per ten thousand population at the national level in December 2005. But even after elimination in India, total Leprosy cases on 1<sup>st</sup> April'06 were 0.95 lakhs & prevalence rate of 0.84/10,000 populations. This indicated the need of special and sustained measure/s to combat leprosy in endemic areas where problem was persisting due to negligence and unawareness; hence Block Level Awareness Campaign (BLAC) was started. 'BLAC' is the special measure taken up in identified priority areas in a campaign mode during the months of September to

November each year. The campaign is for fifteen days, and has to be decided by the states where leprosy prevalence is high. At District level, one Supervisory official is identified for carrying out situational analysis. He workout the logistic details, draw specific plan for supervision & Budget allocation for the campaign. The PHC or Subcentre-wise population/groups that contributed highest number of cases, detected in last 2 years are identified. Need based intensified IEC & IPC activities are planned for these blocks. Workers and supervisors responsible to carry out each of planned activity & ensuring patients to take MDT regularly are identified. Logistic details are worked out.

These special measures made huge impact on hidden case detection, better case management, improvement in spreading awareness and generally bringing down the prevalence rate in high endemic areas.

**Materials and Methods-A** Desk review of status reports of Block Level Awareness Campaign for three consecutive years i.e. 2004-06 was done in order to find out its impact (reduction in prevalence rate of leprosy) in the endemic blocks of



the states/UTs. Among all the states/UTs only those were selected purposely where block wise data was available for the three consecutive years i.e. 2004-06.

**Results & Discussion-**In the year 2004, the high endemic districts & blocks with leprosy prevalence rate more than 5 cases/10,000 population (as on 31<sup>st</sup> March'04) were mainly located in 68 districts and 497 blocks of 9 states/ UTs. Out of these 104 were the blocks where leprosy prevalence rate was more than 10. The high leprosy prevalent blocks were mainly located in states like Bihar (21), Jharkhand (18), Chhattisgarh (17), Maharashtra (19) and West Bengal (19). In the year 2005, the cut-off for leprosy prevalence rate was further reduced to 3 cases/10,000 population. Hence the number of states increased to 12 with 161 districts and 552 blocks, out of which 150 blocks were having leprosy prevalence rate of more than 5/10,000. The high prevalent blocks were mainly located in states like West Bengal (57), Orissa (27), Chhattisgarh (22) and Jharkhand (15). The states like Bihar, Maharashtra, Uttar Pradesh showed a marked improvement, which indicates the effective campaigning for Leprosy. In 2006, the cut-off for leprosy prevalence rate was further lowered to 2 cases/10,000 population, leading to the inclusion of 14 states/UT with 156 districts and 433 blocks. Out of all, 30 blocks had prevalence

rate of more than 5/10,000, and were located in states like West Bengal (11), Arunanchal Pradesh (8), and Chhattisgarh (6) & Orissa (3). The states like Bihar, Chhattisgarh, Orissa, and West Bengal showed continued improvement. The Arunanchal Pradesh was the new inclusion in the high prevalence list, indicating probably the strengthening of the campaign activity in the northeast areas even. The table-1 shows the year wise comparative status and prevalence rate of leprosy of affected districts and blocks of selective states/ UTs. It shows marked decline in the leprosy prevalence rate in districts and blocks in almost all the affected states/ UTs over the years 2004 to 2006. The intensified approach in the high prevalent blocks had focused mainly on the spread of information and ensuring the regular MDT for those who were found positive for the disease. But still in 2006 certain blocks were having high prevalence of leprosy cases where the Prevalence Rate was above 5 cases per 10,000 populations. These blocks are mainly located in the states like Chattisgarh, Orissa, West Bengal and Arunanchal Pradesh. Among all the high prevalent states, Arunanchal Pradesh data is unavailable for the year 2004 and 2005. This also indicates that either the awareness campaign has been so effective that it leads to more seeking of health facilities in case of suspicion of leprosy or the reporting of the detected cases have been

improved. The BLAC has led to more case detection among females, children, and SC & ST population.

The decline of leprosy prevalence at the block levels has resulted in decline of prevalence rate of Leprosy at State/ UTs level too. The comparative figures for 2004, 2005 & 2006 have been shown in following table-2. The above table-2; depicts the decline in prevalence rate of leprosy in high endemic areas. The decline is seen through reduction in number of blocks even with lowering the cut-off value of prevalence rate i.e. from more than 10 cases per ten thousand populations to 2-5 cases per ten thousand populations from the year 2004 to 2006. This indicates intensification of the Leprosy programme (BLAC) in affected/ suspected areas.

**Conclusion-**The intensified approach for leprosy has led to the detection of new cases in very short time. The information, education & communication along with the interpersonal communication by the local health activists have made marked improvement in the early diagnosis, treatment and deformity reduction among cases (especially females, SC & ST population) indicates effective campaigning. The BLAC has also led to cost reduction in hidden case detection & management. The effectiveness of BLAC can also be assessed through looking at the decline of prevalence rate, which was 2.4/10,000 in 2004 to

0.72/10,000 in 2007 at national level. But for achieving the complete reduction of prevalence rate of leprosy the focus is required for high endemic areas to attain the status of leprosy elimination so that the disease is no longer a public health problem.

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## Arabian medical science

Arabian medical science forms an important chapter in the history of the development of medicine, not because it was especially productive but because it preserved Greek medical science with that of its most important representative Galen. It was, however, strongly influenced by oriental elements of later times. The adherents of the heretic Nestorius, who in 431 settled in Edessa, were the teachers of the Arabs. After the expulsion these Nestorians settled in Dschondisapor in 489, and there founded a medical school. After the conquest of Persia by the Arabs in 650, Greek culture was held in great esteem, and learned Nestorian, Jewish, and even Indian physicians worked diligently as translators of the Greek writings. In Arabian Spain conditions similarly developed from the seventh century. Among important physicians in the first period of Greek-Arabic medicine — the period of dependence and of translations — come first the Nestorian family Bachtischua of Syria, which flourished until the eleventh century; Abu Zakerijja

Jahja ben Maseweih (d. 875), known as Joannes Damascenus, Mesue the Elder, a Christian who was a director of the hospital at Bagdad, did independent work, and supervised the translation of Greek authors, Abu Jusuf Jacub ben Ishak ben el-Subbah el-Kindi (Alkindus, 813-73), who wrote a work about compound drugs, and the Nestorian Abu Zeid Honein ben Ishak ben Soliman ben Ejjub el 'Ibadi (Joannitius, 809-about 873), a teacher in Baghdad who translated Hippocrates and Dioscurides, and whose work "Isagoge in artem parvam Galeni", early translated into Latin, was much read in the Middle Ages. Wide activity and independent observation — based, however, wholly upon the doctrine of Galen — were shown by Abu Bekr Muhammed ben Zakarijja er-Razi (Rhazes, about 850-923), whose chief work, however, "El-Hawi fi'l Tib" (Continens) is a rather unsystematic compilation. In the Middle Ages his "Ketaab altib Almansuri" (Liber medicinalis Almansoris) was well known and had many commentators. The most valuable of the thirty-six productions of Rhazes which have come down to us is "De variolis et morbillis", a book based upon personal experience.

Table-1, Year wise comparative status showing decline in the prevalence rate of leprosy

State/ UTs	District	Block	Leprosy status (PR/10,000)			
			2004	2005	2006	
Bihar	Lakhisarai	Halasi	10.30	3.60	2.73	
		Munger	Sangrampur	16.24	6.60	4.14
		Tarapur	13.22	4.40	2.89	
	Jamui	Sikandara	7.38	5.10	3.28	
		Begusarai	Khodabandpur	11.99	4.50	2.08
		Cheriabariyarpur	10.13	-	-	
	Sitamarhi	Sursand	12.95	-	-	
		Sonbarsa	8.89	5.60	-	
	Gopalganj	Sadar	12.41	6.20	4.00	
Chattisgarh	Durg	Nawagarh	10.50	4.30	-	
		Khandsara	10.60	3.60	2.86	
		Janjgir- Champa	Palmgarh	12.10	4.50	-
	Kabirdham	Jajaiapur	11.90	5.00	-	
		Dabhara	14.40	7.10	-	
		Kawardha	6.28	5.00	2.35	
		S.Lohara	7.08	5.39	-	
		Pandaria	6.23	4.32	-	
		Rajgarh	Rajgarh	12.30	4.56	-
	Raipur	Sarangarh	10.60	8.09	5.80	
		Baramkela	18.80	14.47	6.15	
		Pussure	19.40	9.59	6.44	
		Tamnar	15.50	6.62	4.44	
		Gharghoda	15.30	8.15	4.47	
		Bhatpura	10.83	9.55	3.81	
		Bilaigarh	12.42	10.85	5.27	
		Simga	11.78	11.84	5.09	
		Jharkhand	Bokaro	Petar	11.90	3.60
Sarath	9.95			5.28	3.51	
Nimidh	8.19			7.70	-	
Ichagarh	12.11			11.80	-	
Ghamriya	14.95			9.10	2.97	
Rajnagar	23.91			9.20	4.69	
Pakur	Saraikela		5.18	8.50	3.00	
	Hiranpur		-	6.71	2.72	
	W.Singhum		12.50	5.90	2.29	
Jamshedpur	Tantnagar		12.13	4.60	3.53	
	Chakpur		12.80	9.20	3.61	
	Potka		20.08	4.40	4.93	
West Bengal	Bankura		Mosabani	15.80	3.10	2.53
			Dunaria	17.53	4.10	2.57
			Khatra-I	10.48	8.59	5.84
	Burdwan	Indpur	9.48	9.90	5.41	
		Saltora	6.77	11.69	5.99	
		Ranibandh	18.10	21.35	6.98	
		Jamuria-I	12.30	5.34	2.24	
		Salanpur	8.60	5.09	2.18	
		loudoha	5.10	6.98	6.32	
Dinajpur-N	Karandighi	11.18	10.18	2.53		
	Chakulia	14.41	6.58	3.48		
	Kaliyaganj	8.49	8.28	2.70		
Midnapore-W	Salboni	11.98	8.22	4.78		
	Sankrail	11.30	12.96	5.25		

State/ UTs	District	Block	Leprosy status (PR/10,000)		
			2004	2005	2006
	Purulia	Nayagram	17.90	8.39	5.55
		Jambani	18.38	10.83	4.29
		Binpur-II	12.81	10.27	4.52
		Bari	12.40	7.20	4.73
		Pancha	10.70	8.40	2.82
Orissa	Bargarh	Ambabhona	6.44	8.15	6.07
		Gaisilet	10.01	8.94	3.41
		Bheden	13.42	6.70	4.30
	Bolangir	Paikmal	14.73	5.45	3.33
		Bolangir	10.37	6.45	2.63
		Puintala	13.28	9.04	5.33
	Sambalpur Moradabad	Dhankauda	12.94	5.64	-
		Thakurdwara	7.13	4.93	2.21
		Pawanso	6.98	6.16	3.23
	JB Phule Ngr	Bilari	9.48	3.41	2.22
		Gajrola	11.12	3.50	-
Maharashtra	Thane	Amaranth	18.40	4.63	-
		Shahpur	13.90	7.25	2.48
		Murbad	12.60	6.26	2.18
	Gadchiroli	Gadchiroli	16.42	7.00	2.72
		Wadsa	17.07	4.80	-
		Chamorshi	10.84	4.30	2.40
Arunanchal Pradesh	Tirap Changlang Debang valley Siang W	Panchow	-	-	6.09
		Kharsang	-	-	5.51
		Hunli	-	-	7.96
		Liromoha-	-	-	6.04
		Kaying	-	-	6.66
		Gensi	-	-	5.78
	Upper Siang	Geku	-	-	7.76
		Jengging	-	-	6.12

Table-2, Decline in Prevalence rate of leprosy in endemic blocks

State	2004 (PR/ 10,000)			2005 (PR/ 10,000)			2006 (PR/10,000)		
	Districts With high PR	Blocks		Districts With high PR	Blocks		Districts With high PR	Blocks	
		5-10	>10		3-5	>5		2-5	>5
Bihar	21	146	21	23	47	06	23	36	0
Chattisgarh	09	43	17	12	40	22	09	36	06
Jharkhand	07	29	18	15	42	15	17	37	01
Maharashtra	05	23	19	14	39	12	02	08	00
Orissa	06	29	07	20	40	27	16	36	03
Uttar Pradesh	12	98	03	42	128	08	36	87	01
West Bengal	05	38	19	10	57	35	09	70	11
Arunanchal Pradesh	-	-	-	-	-	-	10	12	08

## Glutaric Aciduria Type-I (Glutaric Co-A dehydrogenase deficiency)

Glutaric aciduria type I is a rare autosomal recessive disorder caused by deficiency of co-enzyme responsible for breakdown of lysine to tryptophan resulting into varied neurological manifestations. Herewith we present this rare case in a 6 year old female child.

**Case history** -6 years old female child having delayed milestones with fever, excessive crying and convulsions since 5 days. MRI brain study revealed prominent subarachnoid spaces resembling arachnoid cysts at temporal regions, prominent sylvian fissures giving batwing appearance and hyperintensities in bilateral basal ganglia and frontal deep white matter showing restricted diffusion (Fig.1,2 &3), suggesting glutaric aciduria type I (confirmed by urine analysis by gas chromatography mass spectroscopy).

**Discussion**-Glutaric aciduria type I is a rare autosomal recessive disorder caused by deficiency of glutaryl Co-A dehydrogenase, mitochondrial enzyme involved in metabolism of L-lysine, L-hydroxylysine, L-tryptophan<sup>1</sup>. Responsible gene is located at 19 p 13.2. Clinical features include acute enceph-

alopathy, macrocephaly, neurological deterioration, hypotonia, progressive dystonia and choreoathetosis<sup>2</sup>. Urine analysis by gas chromatography mass spectroscopy reveals marked excretion of glutaric acid. Treatment consist of low protein diet, high doses of Vit. B2 (200-300 mg / day), L-carnitine (60-100 mg/kg/day) and anticonvulsants.

**Imaging** -MRI demonstrates, fronto-temporal atrophy and batwing dilatation of sylvian fissures, large fronto-temporal and sylvian fissures resembling arachnoid cysts<sup>3,4</sup> (Fig.2), T2 hyperintensities in basal ganglia, putamen, caudate nucleus, globus pallidus and periventricular white matter (Fig.4&5). Chronic subdural haematomas can be seen after minor trauma with retinal haemorrhages. Wide spread areas of white matter restricted diffusion is seen. MR Spectroscopy shows, decrease in NAA/Cr ratio. FDG PET reveals, decreased glucose uptake in basal ganglia, thalami, insula and temporal opercular cortex.

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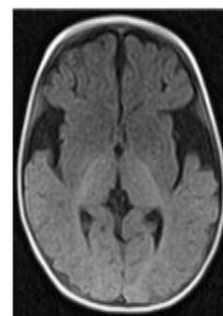


Fig. 1, MRI T1 axial; prominent sylvian fissures giving "Batwing appearance"

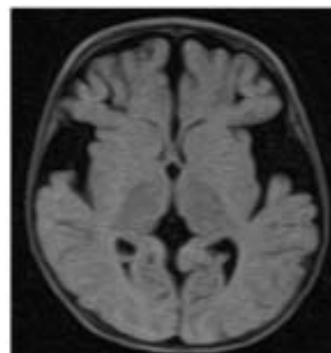


Fig. 2, MRI FLAIR axial; prominent sylvian fissures giving "Batwing appearance"

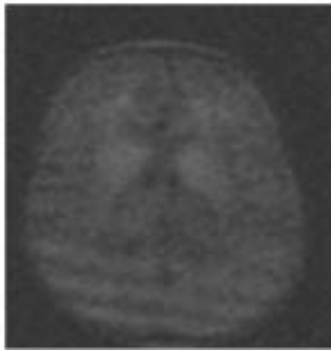


Fig. 3, MRI DWI B600; restricted diffusion in bilateral basal ganglia

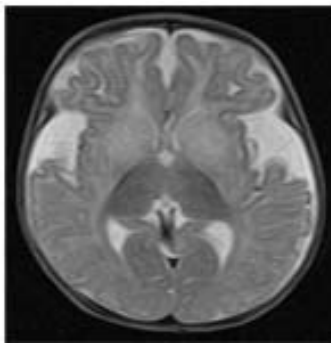


Fig. 4, MRI T2 axial; hyper intensities in bilateral basal ganglia & frontal deep white matter

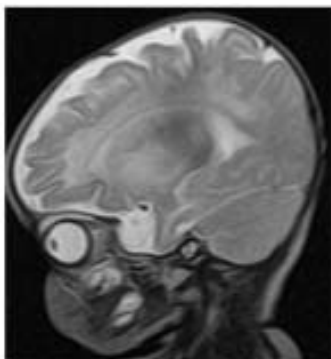


Fig. 5, MRI T2 sag; hyper intensities in frontal deep white matter

## Anaesthetic Implications in a Post-Renal Transplant Patient Undergoing Laser Transurethral Resection of Prostate: a Case Report

**T**ransurethral resection of the prostate (TURP) is a very common procedure in urosurgical operation theatres. Conventionally it is being done with unipolar electrocautery and glycine solutions, which often lead to absorption of large volumes of fluid leading to the transurethral resection of prostate syndrome (TURP syndrome). This technique at times is risky in patients with comorbid conditions. But recent introduction of laser technology and bipolar cautery for endoscopic resection of prostate tissue has nearly eliminated the risk of TURP syndrome. Use of laser for the resection of prostatic tissue has been extensively reviewed in recent urologic literatures<sup>1</sup>. The high-power green light potassium-titanyl-phosphate (KTP) laser, is the most significant recent advancement in laser technology for treatment of benign prostatic hyperplasia<sup>2</sup>. It is generally accepted that the anaesthesia of choice for classical TURP is a subarachnoid block (SAB). This technique is favoured because it is effective and efficient, besides it permits early detection of neurological symptoms associated with the “TURP syndrome”. Use of normal saline as an irrigation solution with laser beams for resection of the

prostatic tissue has made general anaesthesia also a relatively safer option nowadays, specially in the cases where subarchnoid block is contraindicated for various reasons. But as this surgery is performed usually in the geriatric age group, association of plenty of other significant comorbidities are frequently observed. We performed this surgery in a post renal transplant hyponatremic geriatric patient, who also had bronchiectasis, hypertension with atrial fibrillation and compression fracture of the dorso-lumbar spine. The scenario of a post-renal transplant patient undergoing either an elective or emergency non-transplant surgery is increasingly being encountered nowadays, as the 1-yr survival rate for most transplant recipients is approaching 80%–90% and continues to improve annually<sup>3-5</sup>. The general considerations related to any transplant recipient are the physiological and pharmacological problems of allograft denervation, the side effects of immunosuppression, the risk of infection, and the potential for rejection. All these made the anaesthetic management far more challenging. The anaesthetic technique and implications are hereby described.

**Case report-**A 71 yr old (52 kg) patient, a follow-up case of Renal Transplant, presented with features of benign prostatic hyperplasia (BPH) and was posted for KTP laser TURP. The patient had a renal transplantation done 12 years ago, which was uneventful. Following the

procedure, the graft function was good with modest urine output and his renal functions improved. He was on tab azathioprine 100 mg and cyclosporine 75 mg, both once daily. He was also a known hypertensive since 12 years and his blood pressure was controlled with amlodipine 2.5 mg once daily. The patient was a diagnosed case of bronchiectasis and had a productive cough with dyspnea on moderate to heavy exertion. The patient was put on parenteral amoxicillin and clavulanic acid, ciprofloxacin and oral clarithromycin along with bronchial hygiene therapy. On the day of admission in the hospital (15 days before scheduled procedure), the patient fell in his room during ambulation and developed compression fracture of his dorsolumbar vertebra (D11-L1). At the same time, he presented with atrial fibrillation. Orthopaedic surgeon advocated complete bed rest with immobilization of the spine. However no active intervention was required from orthopaedic point of view. For atrial fibrillation, cardiologist had advised to start metoprolol 25 mg once daily as the patient was haemodynamically stable, apart from a fast ventricular rate. The patient was posted for surgery two weeks after his admission. Investigations revealed a haemoglobin of 8.9 g%, blood urea 68 mg% and serum creatinine 1.7 mg%. Protein electrophoresis revealed hypalbuminaemia and polygammopathy with no M spike. Rest of the biochemical investigations including his coagulation profile were within normal limits. Chest X-ray showed cardiomegaly with

left lower lobe bronchiectatic changes. Electrocardiography (ECG) showed atrial fibrillation with ventricular rate of 66 beats per minute. Echocardiography showed mild left ventricular systolic dysfunction with an ejection fraction of 48%. Pulmonary function test revealed combined restrictive and obstructive defect with forced vital capacity (FVC) 61% of predicted, forced expiratory volume 1 second (FEV1) 58% of predicted, FEV1/FVC 98% of predicted and peak expiratory flow rate (PEFR) 57% of predicted. Room air arterial blood gas analysis showed a pH of 7.44, pO<sub>2</sub> of 94.1, pCO<sub>2</sub> of 33.3 and HCO<sub>3</sub><sup>-</sup> of 18.9. Ultrasonography of the whole abdomen revealed increased renal echogenicity with moderate hydronephrosis of the graft kidney and moderate prostatic enlargement (Prostatic volume 40 cc). Viral serology for CMV, Hepatitis B Virus, Hepatitis C Virus, and HIV showed negative results. Nephrologist's opinion was taken before surgery regarding deranged renal profile and USG findings, who suggested avoidance of all nephrotoxic drugs, maintenance of adequate hydration and strict input-output charting. He also prescribed Inj. Furosemide 10 mg once daily. Possibility of chronic graft rejection was also suspected but there was no obvious contraindication to anaesthesia. However, maintenance of normal serum electrolyte levels had to be ensured in the perioperative period. On the day before surgery, the patient had a low serum sodium level (120

meq/L). On examination, the patient was lethargic but haemodynamically stable. Hydration appeared to be adequate and there were no other positive physical examination findings. Urgent investigations revealed: random blood sugar 92 mg%, blood urea 66 mg% and serum creatinine 1.6 mg%. He was started with 0.9% normal saline infusion at 100 ml/hr and his serum electrolytes were measured serially. On the morning of surgery, his serum sodium level was found to be 131 meq/L. The patient was advised to continue all the medications till morning of surgery, which included azathioprine 100 mg, cyclosporine 75 mg, amlodipine 5 mg and metoprolol 25 mg Inj. Furosemide was withheld on the morning of surgery. He was also prescribed premedication with Cap Pantoprazole 40 mg and Tab Metoclopramide 10 mg orally, in the morning of surgery. Before shifting to operating room, intravenous antibiotic (amoxicillin and clavulanic acid) was administered and he was nebulized with salbutamol. Following arrival in the operating room, all the standard monitors were applied namely electrocardiogram (ECG), non-invasive blood pressure (NIBP) and pulse oximetry (SpO<sub>2</sub>). ECG showed atrial fibrillation, but with a controlled ventricular rate of 62/min. His blood pressure was 116/78 mm Hg and room-air oxygen saturation was 94%. The anaesthesia was induced with fentanyl 80 µg and propofol 70 mg. Following administration of 20 mg of atracurium, a size 4 proseal LMA was inserted.

Anaesthesia was maintained with oxygen-air (50-50), isoflurane (MAC 0.8 – 1.0) and fentanyl boluses of 20 µg intravenously, whenever needed. Monitoring included ECG, NIBP, SpO<sub>2</sub>, end-tidal CO<sub>2</sub> (EtCO<sub>2</sub>), airway pressures, inspired and end-tidal gaseous concentrations, neuromuscular blockade and temperature. Patient was put on Pressure controlled ventilation with an inspiratory pressure ranging between 11 – 14 cm H<sub>2</sub>O and a respiratory rate of 10 – 12 breaths per minute, which ensured an EtCO<sub>2</sub> between 35 – 40 mm Hg. The patient was placed in the lithotomy position, but it was ensured that there is least movement of the spine. This was done with a rigid waist belt as advised by the orthopaedic surgeon. The total irrigation time was 40 minutes and the total amount of irrigation solution used was 6000 ml. The total duration of the procedure, starting from induction to removal of the proseal LMA was 75 minutes. The net absorbed amount of normal saline, blood loss and urine output could not be assessed properly, as the solution that returns through the sides of the endoscope is very difficult to collect. During the entire procedure, the patient was haemodynamically stable and serum electrolyte levels measured at the end of the procedure showed: S. Na<sup>+</sup> 139 meq/L and S. K<sup>+</sup> 4.1 meq/L. The patient's residual neuromuscular blockade was reversed with neostigmine and glycopyrrolate and the proseal LMA was removed following return of his spontaneous respiration. The

patient was closely followed up for the next 72 hours with serum electrolyte estimation done twice daily and renal function tests on alternate days. There was no further deterioration of his renal function and he was discharged on fifth postoperative day with advice to continue all the preoperative medications as prescribed earlier. A follow-up with the nephrologist, orthopaedic surgeon and the cardiologist was also advised.

**Discussion-**The anesthetic considerations in the patient undergoing TURP under general anaesthesia are risks of TURP syndrome, aspiration, infection (iii) toxicology of immunosuppressant and relevant drug interactions, and avoidance and curtailment of nephrotoxic insult. There are different methods of performing TURP and all these techniques are characterized by various rates of TURP syndrome. In patients undergoing classical TURP, it occurs between 2% and 15% of cases<sup>6</sup>. In an effort to reduce the incidence of this syndrome, the urologic community has explored a number of alternatives to conventional electrocautery TURP, including transurethral contact vaporization, interstitial laser coagulation, laser resection, and laser enucleation of the prostate. Transurethral contact vaporization<sup>7</sup> and interstitial laser coagulation<sup>8</sup> have not matched the efficacy of the “gold standard” electrocautery approach, and their use seems to be in decline<sup>9</sup>. Advancing technology has abandoned the Neodymium (Nd) lasers in favor

of the more precise Holmium:yttrium-aluminum-garnet (YAG) lasers and “photosensitive” high-powered KTP lasers. TURP syndrome during this technique is rare because the KTP laser effectively coagulates venous sinuses and prevents intravascular absorption of irrigant<sup>10</sup>. Moreover, since irrigation pressures are lower than with other TURP techniques, fluid absorption is minimized. However, there are instances where TURP syndrome has been reported in patients undergoing green light photosensitive vaporization of the prostate<sup>11</sup>.

The KTP laser is the most recent advancement in laser technology for the treatment of BPH. KTP laser resection involves passing a high-powered (60–80 W) Nd:YAG, solid-state laser through a KTP crystal to vaporize prostate tissue. The passage of the Nd:YAG laser through the KTP crystal halves the wavelength to 532 nm and doubles the frequency, producing a visibly green laser. This wavelength is highly absorbed by oxyhemoglobin and blood-rich tissue. The direct heating of blood yields an almost bloodless procedure. The green KTP laser is poorly absorbed by water, allowing for a noncontact application that creates an immediately evident cavity with minimal dissipation of energy to the surrounding tissue. Sparing the surrounding tissue significantly reduces scarring and postoperative contracture, which have led to a narrowing of the urethra 6–12 months after earlier ablation techniques<sup>12</sup>. KTP laser



is often described as “photoselective laser vaporization of the prostate”<sup>13</sup> and it can remove prostatic tissue at a rate of 0.3–0.5 g/min<sup>14</sup>. Two-year follow-up in a series of patients treated with the 60-W laser suggests that its efficacy is equal to a classic TURP procedure<sup>15</sup>. The 80-W KTP laser provides the power to treat even larger prostates<sup>13</sup>. Exposure to anaesthesia and surgery alters many facets of immunocompetence<sup>16</sup>. Depression of immune system by anaesthesia could increase the likelihood of the development of postoperative infections or of augmentation of a co-existing infection. Exposure to anaesthesia and surgery depress both T cell and B cell responsiveness, as well as nonspecific host resistance mechanisms, including phagocytosis<sup>17</sup>. Various anaesthetic drugs depress immune system. There is evidence that local and inhaled anaesthetics (nitrous oxide) produce dose dependent inhibition of mobilization and migration of polymorphonuclear leukocytes necessary for phagocytosis<sup>16,18</sup>. But the effects produced by these drugs are probably clinically insignificant considering the usual duration of anaesthesia and doses of drugs administered. The effects are transient and may be modified by various other factors during the perioperative period. Immunosuppressive drugs may modify the pharmacological behavior of many drugs used in anaesthesia. Conversely, many anaesthetic agents alter the pharmacokinetics of immuno-

suppressants. Steady-state blood levels of cyclosporine and cyclosporine clearance in rabbits are not altered by isoflurane/nitrous oxide anaesthesia<sup>19</sup>. Propofol infusion does not modify the cyclosporine blood levels in humans<sup>20</sup>. Cyclosporine tends to enhance pentobarbital anaesthesia and fentanyl analgesia in mice, although the mechanism is unclear<sup>21</sup>. Cyclosporine enhances the effects of muscle relaxants. Patients receiving cyclosporine demonstrates prolonged neuromuscular block after administration of vecuronium and pancuronium<sup>22</sup>. Cyclosporine also enhances the neuromuscular block induced by atracurium<sup>26,27</sup>. Therefore, a smaller dose of non-depolarizing muscle relaxant should be administered in patients receiving cyclosporine as immunosuppressive therapy, since recovery time may be prolonged<sup>28,29</sup>. Clinically relevant doses of azathioprine do not antagonize neuromuscular blocking drugs in humans<sup>30,31</sup>. However, azathioprine may cause thrombocytopenia, which increases the risks associated with central neuraxial blockade<sup>32</sup>. The preoperative assessment of transplant recipients undergoing nontransplant surgery should focus on graft function, rejection, presence of infection, and function of other organs, particularly those that may be compromised due to either immunosuppressive therapy or dysfunction of the transplanted organ. Renal transplant recipients may present with compromised renal function because of immunosuppression therapy and

should be assessed in all transplant recipients. In therapeutic doses, cyclosporine, may cause a dose-related decrease in renal blood flow and glomerular filtration rate, due to renal vasoconstriction. It increases thromboxane A<sub>2</sub>, and perhaps endothelin production, and is thus responsible for many of the renal hemodynamic effects<sup>33</sup>. Progressive deterioration in renal function tests indicates rejection of the transplant and there is some evidence that patients who undergo surgery during a period of rejection have higher morbidity<sup>34</sup>. The presence of an infection should also always be ruled out preoperatively, because it is a significant cause of morbidity and mortality after transplantation<sup>35</sup>. Nonsteroidal anti-inflammatory drugs were avoided in this patient in the perioperative period, because of the risk of adverse interactions (e.g., gastrointestinal hemorrhage, nephrotoxicity, hepatic dysfunction). They augment nephrotoxicity of cyclosporine, as both drugs affect the renal microcirculation, although the exact mechanism is unclear<sup>36</sup>. Immunosuppressive therapy should be continued during the perioperative period, and daily monitoring of steady state cyclosporine blood level is recommended. To maintain therapeutic blood levels, it is important to administer oral cyclosporine 4–7 h before surgery<sup>37</sup>. Supplemental “stress-coverage” steroids are probably not necessary, except in transplant recipients recently withdrawn from them<sup>38</sup>.

Any of the available anaesthetic techniques can be selected in transplant recipients undergoing non-transplant surgery. However, anaesthetic agents tend to decrease glomerular filtration rate (GFR) and renal blood flow (RBF), although these effects usually resolve rapidly with emergence. General anaesthesia was administered in place of subarachnoid block as the patient had compression fracture of his dorso-lumbar spine. This anaesthesia was induced with fentanyl and propofol in low doses and proseal LMA was inserted with atracurium, which is the muscle relaxant of choice in patients with compromised renal functions<sup>39</sup>. Proseal LMA was used in this patient since it is associated with lesser airway complications compared to endotracheal intubation and has been shown to be safe in these patients<sup>40</sup>. Other minor indications for the use of proseal LMA were ability to decompress the stomach and short duration of the surgery. Fentanyl and isoflurane are among the safer agents used for the procedure as, among the commonly available narcotic analgesics the clearance of fentanyl changes little in renal failure<sup>41</sup> and isoflurane produces a peak fluoride level of 4µM/L even after prolonged exposure which is far less than toxic fluoride ion level (50 µM/L)<sup>42</sup>. The occurrence of hyponatremia in our patient may probably be related to furosemide, which was prescribed by the nephrologist. However, it was withheld on the morning of surgery and hyponatremia was adequately

corrected with normal saline infusion over a period of time. Patients with renal failure usually have delayed gastric emptying and that is why this patient was premedicated with metoclopramide and pantoprazole. In conclusion, transplant recipients have considerable medical, physiological, and pharmacological problems; therefore, a clear understanding of the physiology of the transplanted organ, the pharmacology of the immunosuppressive drugs, and the underlying surgical conditions is essential for these patients to safely undergo anaesthesia and surgery. Local, regional, or general anaesthesia can be safely delivered to transplant recipients, and a successful anaesthetic and perioperative management can be provided.

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## A rare case report of “Wilson’s Disease

**W**ilson’s disease or hepatolenticular degeneration is an uncommon genetic disorder resulting in abnormal deposition of copper in various tissues with resultant toxicity to these organs. Herewith we present a case with multisystem involvement.

**Case history-** 22 years old male patient presented with history of imbalance while walking, incoordination since 6 months. The patient was subjected for MRI brain study which revealed altered signal intensity lesions in bilateral thalami & pons appearing hypointense on T1WI & hyperintense of T2WI & FLAIR (Fig.1,2 &3). Lesions appeared as low density areas on CT scan study. Findings suggestive of Wilson’s disease (Hepatolenticular degeneration). Eye examination revealed – corneal rings (Kayser Fleisher ring) USG abdomen suggestive of cirrhosis (Fig.4&5). Diagnosis was confirmed by low levels of Sr. Ceruloplasmin.

**Discussion-** Wilson’s disease or hepatolenticular degeneration is rare autosomal recessive disorder characterized by deficiency of ceruloplasmin, the transport protein for copper resulting into abnormally deposited copper in various tissues commonly in liver & brain leading to toxicity of these organs. Disease can present at any age from 5 to 50 years but peak age of presentation 8-16 years. Clinical features include tremor, rigidity, dystonia, gait difficulty, inco-ordination,

difficulty with fine motor tasks & dysarthria. The Kayser – Fleischer ring seen due to granular deposit of copper in Descemet’s membrane (diagnostic of WD).

Definitive diagnosis is done biochemically as low levels of Sr. Ceruloplasmin, increased urinary copper excretion & elevated hepatic copper level.

**Imaging features-** On MR studies grey matter involvement is more common & usually bilaterally symmetrical in putamen, caudate, thalamus, globus pallidus, dentate nucleus pons & mesencephalon<sup>1</sup>. In contrast white matter lesions are usually asymmetric located in subcortical regions or centrum semiovale. Lesions in above described regions appear hypointense on T1WI and hyperintense on T2WI.

These lesions appear hypodense on CT<sup>2</sup>. Mesencephalic involvement on MR study reveals, characteristic face of giant panda sign (Fig.6). This consists of hyperintensity throughout mesencephalon except for red nucleus, lateral portion of pons, reticulate of substantia nigra and portion of superior colliculus. Proton MR spectroscopy shows reduced choline and creatine peaks<sup>3&4</sup>.

**Associated features-** Liver cirrhosis, kidney affection, osteomalacia, arthritis and KF corneal ring.

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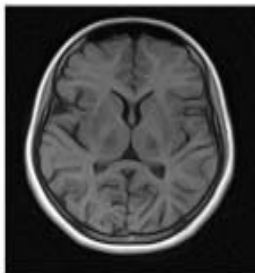


Fig-1, MRI T1 axial- bilateral symmetrical thalamic hypointensities

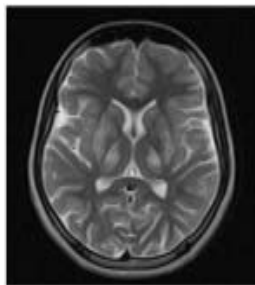


Fig-2, MRI T2 axial- bilateral symmetrical thalamic hyperintensities

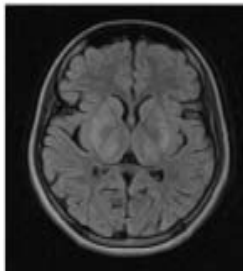


Fig-3, MRI FLAIR axial- hyperintense signal in bilateral thalamic region



Fig-4, USG- macronodular liver cirrhosis



Fig-5, USG- macronodular liver cirrhosis

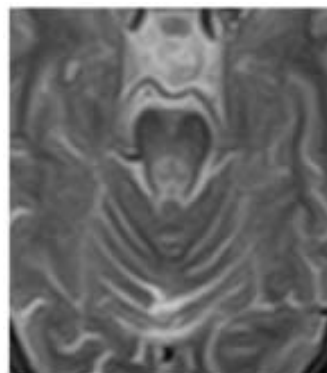


Fig-6, "Giant panda sign"

## "Dysplastic Gangliocytoma Of Cerebellum" (Lhermitte – Duclos Syndrome)

**D**ysplastic gangliocytoma also termed as Lhermitte Duclos disease is an uncommon cerebellar dysplasia. It may exist in isolation, or may be associated with Cowden syndrome. Herewith we present this rare case.

**Case history** -3 years old male child presented with history of imbalance while walking of 6 months duration. There was no history of any neurovascular deficit. The patient was subjected for MRI brain study which revealed diffuse infiltrating lesion in left cerebellar hemisphere showing low signal intensity on T1WI with characteristic lamellated prominent cerebellar foliae on T2WI and no enhancement on post-contrast study with mass effect on 4<sup>th</sup> ventricle and brainstem, suggestive of Dysplastic gangliocytoma of cerebellum (Lhermitte – Duclos syndrome).

**Discussion**-Lhermitte – Duclos syndrome is a rare pathological entity with progrediating diffuse hypertrophy chiefly of the striatum granulosum of the cerebellum<sup>1</sup> and axonal hypermyelination in the molecular layer<sup>2</sup>. The cerebellar foliae show gross thickening with or without mass effect. It can be focal or diffuse. The main clinical signs are headache, movement disorder and tremors, visual disturbances,

enlarged head suggesting hydrocephalous<sup>2</sup> and abnormal EEG. Lhermitte – Duclos disease in rare and complex hamartomatous condition of the cerebellum and not a true neoplasm<sup>3</sup>. Autosomal dominant inheritance has been demonstrated in some families<sup>1</sup>. Although the lesion may present in childhood, it slowly enlarges over time to be discovered in adults.

**Imaging-**On CT scan Lhermitte – Duclos disease mimics as a posterior fossa neoplasm; seen as a poorly delineated hypodense or isodense lesion without any enhancement following contrast administration<sup>5</sup>. Fig.1 & 2.MRI demonstrates hypointense intra-axial non-enhancing mass on T1WI and show characteristic laminated folial pattern hyperintense signal on T2WI<sup>6</sup>. Fig. 3,4,5,6. Proton MRI spectroscopy shows finding of elevated lactate and slightly reduced NAA; myoinositol and choline. Increased uptake of tracer is shown in FDGPET and T1-201 SPECT. Occasionally infiltrative astrocytoma of cerebellar hemisphere forms a differential diagnosis for this disease; however homogeneous hyperintensity on T2WI throughout the lesion as seen in astrocytoma serves for differentiation.

**Associated abnormalities** -In a number of cases Lhermitte – Duclos is associated with Cowden disease which is a autosomal dominant disorder caused by mutation of a tumour suppressor gene called PTEN at chromosome 10q 23<sup>37</sup>. Other association include megalencephaly, heterotopia, microgyria,

polydactyly, partial gigantism, macroglossia and multiple visceral haematomas and neoplasms<sup>4</sup>.

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Fig. 1 : NECT; poorly delineated hypodense left cerebellar lesion



Fig. 2 : CECT; no enhancement of the left cerebellar lesion.

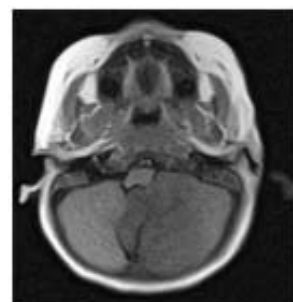


Fig. 3 : MRI T1 axial; hypointense lesion in left cerebellar hemisphere.

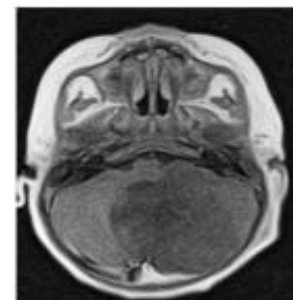


Fig. 4 : MRI T1 axial post contrast; no enhancement of the lesion

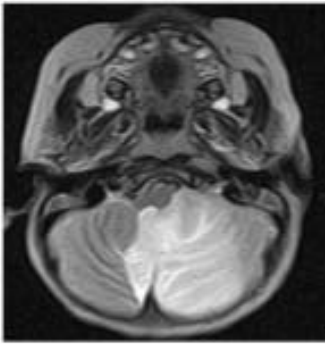


Fig. 5 : MRI T2 axial; lamellated prominent cerebellar foliae

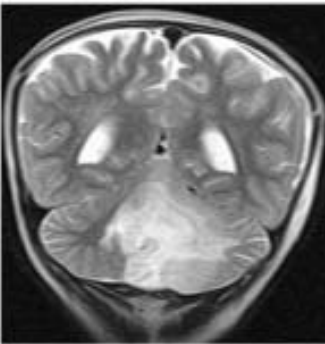


Fig. 6 : MRI T2 coronal; lamellated prominent cerebellar foliae

## Agensis Of Corpus Callosum (ACC)

Agensis of corpus callosum is the most common anomaly seen with other CNS malformations. One or all segments may be absent (in partial absence, body usually present). Herewith we present a case of complete agensis of corpus callosum.

**Case history** - A 19 years old male patient presented with convulsions since 2 years and mental retardation. The patient was subjected for MRI brain study which revealed complete absence of corpus callosum, cingulate sulcus and cingulate

gyrus and parallel lying lateral ventricles with small and pointed frontal horns and disproportionately large both occipital horns suggesting colpocephaly (Fig.1,2). High riding third ventricle seen communicating with interhemispheric fissure (Fig.3,4). The gyri seen spoke like radiating outwards from high riding third ventricle (Fig.5). MRI also revealed an abnormal, focal irregular shaped area of gray matter seen in the right basifrontal region, suggestive of heterotopia. MRI findings suggestive of complete agensis of corpus callosum.

**Discussion**-The numerous disorders of formation of the corpus callosum include partial or complete callosal agensis, lipomas of interhemispheric fissure and callosal atrophy or hypoplasia. Evidence suggests that partial or complete callosal agensis is caused by insults that arrest formation of callosal embryologic precursors (lamina reuniens, sulcus medianus telencephali medii, massa commissuralis) between 8 & 13 wks of gestation<sup>1</sup>. Lipomas and sphenoidal encephaloceles probably occur as a result of faulty dysjunction of neuroectoderm and cutaneous ectoderm at the anterior neuropore<sup>1</sup>. A complete but atrophic corpus callosum results from an insult to the cortex or white matter after formation of the corpus callosum is complete (at 18 to 20 weeks of gestation). Most cases of callosal agensis are sporadic; males and females are affected with equal frequency. Clinically most patients with complete agensis are asymptomatic. Careful examination may reveal that learning and memory are not

shared between the hemispheres (cerebral disconnection syndrome)<sup>2</sup>. When symptoms (seizures, developmental delay) are present, they are often related to concurrent migrational disorders, not to the callosal anomaly itself.

**Imaging**-On axial CT & MR scans, lateral ventricles appear widely separated, non-converging lying parallel to each other showing small pointed frontal horns with disproportionately enlarged occipital horns (colpocephaly). On coronal CT & MR scans, it shows high riding third ventricle which opens superiorly to interhemispheric fissure with or without dorsal cyst. On Sagittal MR studies, ACC is seen as complete absence of corpus callosum, cingulate gyrus and sulcus with gyri radiating outward from high riding third ventricle.

**Associated abnormalities**- Because the corpus callosum develops during a time, between about 8 and 20 gestational weeks<sup>3,4</sup> in which the entire brain is undergoing considerable growth, it follows that malformation of the corpus callosum is very frequently associated with other congenital brain anomalies<sup>5,6</sup>. Some of the more commonly associated anomalies are the Chiari II malformation, the Dandy-Walker malformation, interhemispheric cysts, anomalies of cortical development, cephalocele and midline facial anomalies<sup>3,4</sup>. In general these anomalies are the cause of clinical symptoms. Isolated agensis of corpus callosum is usually asymptomatic. Three principal steps in the development of corpus callosum are commissuration, establish-

ment of the callosal fibre tracts and maturation<sup>7</sup>.

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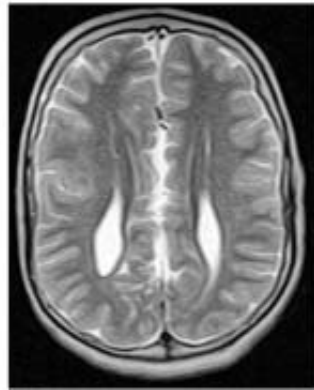


Fig- 1, T2 axial; parallel non converging lateral ventricles.

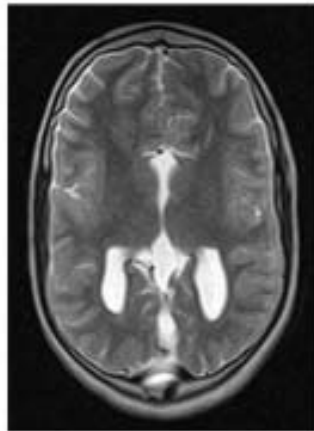


Fig- 2, T2 axial; colpocephaly.

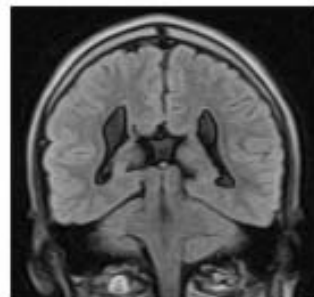


Fig-3, T2 FLAIR Coronal; high riding 3<sup>rd</sup> ventricle communicating with Interhemispheric fissure.

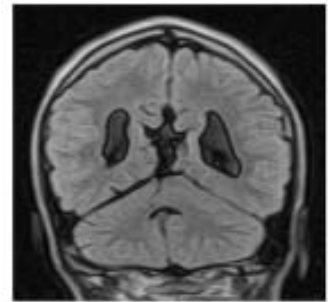


Fig- 4, T2 FLAIR Coronal; high riding 3<sup>rd</sup> ventricle communicating with Interhemispheric fissure

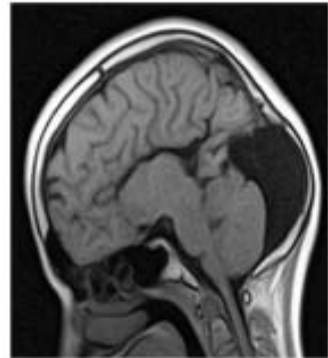


Fig- 5, T2 FLAIR Sag; absent corpus callosum with radial orientation of gyri with posterior fossa arachnoid cyst

### A survey report for PMTCT in a tertiary care hospital in North Bangalore

First case of HIV in India was detected in 1986 and since then there has been a steady increase in cases including those in the pediatric age group. In year 2008, there were an estimated 2.3 million HIV positive cases in



India. Out of these 39% were estimated to be females and 3.5% were children. Average HIV prevalence among women attending antenatal clinics in India is 0.48%. Prevalence rate is highest in Andhra Pradesh, Maharashtra, Tamil Nadu, Karnataka, Manipur and Nagaland. Worldwide, there were 430,000 newly HIV infected children in 2008 and majority of them were infected through MTCT. Risk of MTCT ranges from 20-45% among those who do not receive any intervention. However, MTCT can be reduced to less than 2% in non-breastfeeding group with intervention and to less than 5% in the breastfeeding group. PMTCT of HIV has been on the forefront of global HIV prevention activities since 1998. PMTCT includes services to improve health of mother as well that of child. In order to be successful, it should be fully integrated into maternal and child health services. PMTCT services are complex and include four components, i.e. primary prevention in child bearing age, preventing unattended pregnancies, preventing transmission from mother to child and providing appropriate care to HIV positive mothers, children and their families. Global

coverage of PMTCT was around 33% in 2007. However, two-thirds of the women are still not benefitting from the services. In 2001, United Nations General Assembly (UNGA) had set a target of accessibility of essential prevention, treatment and care by 2010 to 80% of pregnant women to reduce proportion of infants infected by HIV by 50%. Bangalore Baptist Hospital is a tertiary care hospital which provides PMTCT services to all antenatal women. Current study aims at reviewing the PMTCT programme in the hospital.

**Methods and Materials-**This is a retrospective study in Bangalore Baptist Hospital in North Bangalore. PMTCT services were initiated in our hospital in the year 2003. A specially trained nurse provides the pretest and posttest counseling for HIV testing to all antenatal mothers. Those tested positive are started on antiretroviral therapy (Tab Zidovudine) and receive Nevirapine during labor. Mother is given a choice of a normal delivery or a caesarean section and breast feeding or artificial feeds. Those who chose for a normal delivery, LSCS may have been done for obstetric reasons. Postpartum Tab. Duovir is given to the mother for seven days. The

newborn is followed by a pediatrician.

**Results-**A total of 15437 antenatal mothers along with 1000 of their respective spouses were counseled between years 2003-2009. Among those counseled, 100 antenatal women tested positive and spouses of 71 of these women were positive. All antenatal women received anti-retroviral therapy. Out of these 100 women, 18 women had vaginal delivery – 3 of these were intrauterine deaths (IUDs), 2 were stillbirths, 2 were abortion and 1 had intrauterine growth restriction (IUGR). 75 women underwent lower segment caesarean section (LSCS). Among 85 of those who were born alive, 75 babies were tested for HIV. Three babies were detected positive. Mother of one of the babies did not take any treatment, and mother of the second one took irregular treatment. The third HIV positive baby was, however, born to a mother who took treatment regularly, underwent caesarean section and did not breastfeed. The above mentioned statistics are summarized in Table -1.

**Table-1, PMTCT statistics from the year 2003 to 2009 at Bangalore Baptist Hospital, Bangalore**

Total number of antenatal mothers counseled	15437
Spouses counseled	1000
Antenatal mothers detected HIV positive	100 (0.65%)
• Spouses of positive mothers detected HIV positive	71 (71%)
• Spouses of positive mothers detected HIV negative	22 (22%)
• Spouses of positive mothers not tested for HIV	5 (5%)
• Unmarried mothers	2
HIV positive mothers those delivered outside our hospital	7 (7%)
HIV positive mothers those delivered within our hospital	93
• Normal vaginal delivery	18 (19.35%)
o IUDs	3
o Still birth	2
o Abortions	2
o IUGR	1
o Vaginal delivery	10
• LSCS	75 (80.64%)
Live births	86
• No. of babies tested	75
o Babies detected positive	3 (4%)
• No. of babies not tested (refused by parents)	11 (12.79%)

**Discussion**-Prevalence of HIV positive mothers among those counseled at our hospital is 0.65% against a known prevalence of 0.5% among those attending antenatal clinic in Karnataka. PMTCT services form an integral part globally to reduce the prevalence of maternal and pediatric HIV. It includes primary prevention as well as appropriate care to mother, children and their families. HIV positive mothers who continue their pregnancy are provided antiretroviral therapy from 28 weeks of gestation during labor and after delivery. The newborn also receives antiretroviral therapy and artificial feeds. It is said that single dose of Nevirapine given to the mother at the onset of labor and to the baby after delivery halved the rate of transmission.

**Conclusion**-In WHO's South-east Asia region, India has highest burden of new pediatric

HIV infections. WHO aims to integrate PMTCT services with reproductive and child health services for its effective implementation. In our hospital pretest and posttest counseling for HIV is done and in case of positive results full support is extended to the mother, newborn and their families. The prevalence of HIV positive antenatal mothers in our hospital is 0.65% which is high as compared to the Karnataka state prevalence of 0.5%. Average prevalence among women attending antenatal clinics in India is 0.48%. Positive babies comprised only 4% of all newborns tested. Breastfeeding is not advocated and family is supported financially for providing artificial feeds as well. Appropriate counseling during antenatal period plays an important role in overcoming the inhibition and stigma associated with the disease. New guidelines advocate lifelong antiretroviral

therapy for all pregnant women with CD4 counts less than 350 cells/mm<sup>3</sup>. Those not eligible for antiretroviral therapy should receive combination prophylaxis beginning in the second trimester and a post partum prophylaxis. In cases where breastfeeding is preferred infant feeding option, it is essential to provide long term prophylaxis to either mother or to the infant.

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## A case report of

### Osteosarcoma

**O**steosarcoma is the most common type of bone cancer in younger individuals. In children and adolescents tumours appear most often in the bones around the knee. Herewith we present a case of knee osteosarcoma in a 13 years female patient.

**Case history-**13 years female patient presenting with right knee pain, swelling & joint weakness increasing since 4 months. The patient has an unexplained limp with no history of trauma to the affected knee.(FIG.1). Plain radiograph right knee AP, lateral views reveals - (FIG.2&3). Irregularly defined mixed sclerotic, lytic lesion (permeative destructive lesion) seen involving the metaphyseal region of right proximal tibia with extension into diaphysis & epiphysis. Cortical breaks noted at anterior & lateral aspects with circumferential soft tissue mass. Periosteal reaction seen in the form of Codman's triangle & sunburst appearance. Findings suggestive of central osteosarcoma.

**MRI right knee with tibia (P+C) reveals (Fig-4 to 13)-**irregular shaped altered signal intensity lesion involving metaphyseal region of upper end of right tibia extending to upper diaphysis. There is epiphyseal extension of this lesion also noted. The lesion is iso to hypointense on T1, heterogeneously hyperintense on T2 & STIR images. There is irregularity, thinning & destruction of surrounding cortex with extra-compartmental circumferential spread of the lesion, more at antero-medial aspect. There is evidence of bone marrow edema involving epiphysis & upto mid-diaphysis of right tibia, hypointense on T1 & hyperintense on T2 & STIR images. Post-contrast Gd study reveals, heterogeneous strong enhancement. Lesion measures approximately 9.2 X 6.3 X 7.1 cm. No intra-articular extension. Neurovascular bundles are displaced laterally with normal flow voids. Findings suggestive of malignant neoplastic etiology / osteogenic sarcoma.

**Discussion-** Malignant neoplasm of proliferating cells which produces osteoid.<sup>2<sup>nd</sup></sup> most common after multiple myeloma. M : F – 2 : 1 Age – 10 to 25 Yrs.<sup>2<sup>nd</sup></sup> peak in older age group – Paget's disease, Fibrous dysplasia, osteochondroma & irradiated bone.

**Classification -**Location - Central / Intramedullary, Intra-cortical, Periosteal, Parosteal / Juxtacortical, Extraosseous  
**Histological –** Osteoblastic, Chondroblastic, Fibroblastic, Fibrohistiocytic, Telangiectatic, Small cell, Clear cell.

Role of MRI -Marrow extension, Relation with adjacent neurovascular bundle, Transphyseal spread, Soft tissue component, Skip metastasis. Osteoblastic variety appear hypointense on all sequences. Non-mineralized – hypointense on T1 & hyperintense on T2. Intramedullary extension is best seen with T1WI where of hyperintense signal of normal bone marrow can be seen. Also extension into epiphyseal plate & epiphysis for better resectability. Sharp margin on T1WI to differentiate from inflammation. Soft tissue extension is better seen on T2WI as on T1WI tumour appears isointense to muscle. Peritumoral edema – Isointense on T1 & STIR with normal architecture. Telangiectatic variety shows large cystic blood filled spaces with fluid fluid levels.

**Etiology -** The cause of osteosarcoma is still widely unknown. However, several propagating factors leading to its development have been suggested. Included in this list are agents such as beryllium, viruses, radiation exposure, Paget's disease, electrical burns and trauma<sup>2</sup>.

**Metastasis -**Metastasis to lungs by haematogenous route are common and can lead to development of hypertrophic osteoarthropathy. Multiple lesions are the usual presentation and these actually represent sarcomatous bone growths within the lungs<sup>3</sup> (Cannonball metastasis). Spontaneous pneumothorax is relatively common because subpleural nodules that have undergone excavation lead to rupture into

the pleural space. Lung resection has often proved beneficial in these patients. Skeletal metastasis (skip lesions) are also found but do not occur with the same frequency as with Ewing's sarcoma and are poor prognostic signs<sup>4</sup>.

Imaging -General features – Metaphyses of long tubular bones<sup>5</sup> (75%), most common sites = Distal end of femur, proximal ends of tibia and humerus. The epiphyseal plate functions as a barrier to tumour migration in some cases<sup>6</sup>.

Plain film findings-

#### I – Primary osseous osteosarcoma

- Central osteosarcoma- Poorly defined intramedullary mass, extends through cortex. Mottled, permeative lesion or sclerotic lesion filling the medullary space. Aggressive periosteal reaction = Codman's triangle, sunburst pattern. Indistinct borders with wide zone of transition.
- Multicentric osteosarcoma : synchronous osteoblastic osteosarcoma at multiple sites (usually symmetric)<sup>7</sup>. Exclusively in children (5 to 10 Yrs). Extremely poor prognosis.
- Telangiectatic osteosarcoma : Very malignant, worst prognosis. Purely lytic lesion. Cystic cavities filled with blood / necrosis. Fluid levels (may mimic ABC)

II - **Juxtacortical osteosarcoma** - Synonyms – Parosteal / Surface osteosarcoma. Tumour situated on the surface of a bone. Low grade osteosarcoma in older age

group (30 to 50 Yrs). Popliteal surface of the distal femur. A radiolucent cleft separates the majority of the ossified mass from the underlying cortex (cleavage plane or string sign).

#### III -Secondary osteosarcoma

-Arises in association with pre-existing lesion of bone such as Paget's disease, prior radiation or bone infarct.

#### IV – Extra-osseous osteosarcoma-

Most common site is soft tissues of the thigh. Can also be found in the pleura, heart valves, dura of the brain, retroperitoneum, buttock, axilla, breast and renal capsule<sup>8,9,10</sup>.

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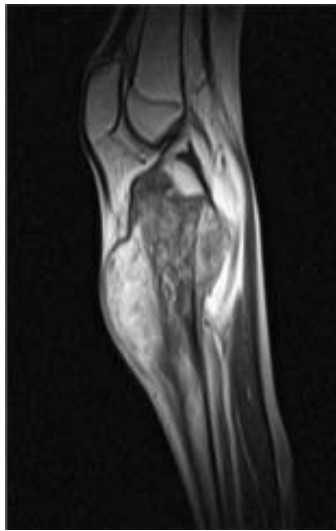
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Fig-1, Swelling below right knee



**Fig- 2, Right knee AP view; permeative destruction at proximal tibial metaphysis with sunburst periosteal reaction & codman's triangle**



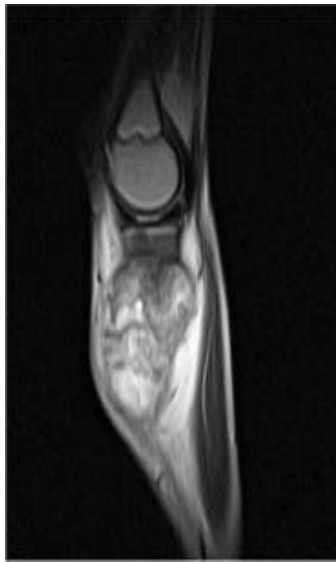
**Fig-4, T2 Sag; hyperintense lesion at proximal tibial metaphysis extending to upper diaphysis**



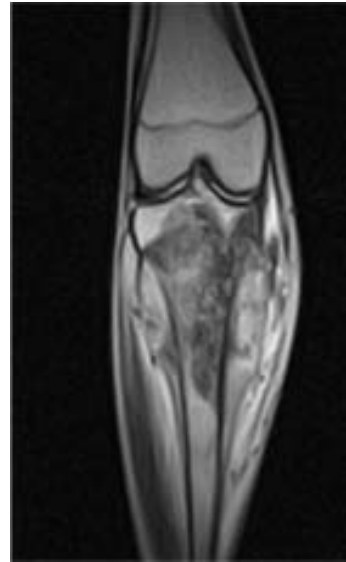
**Fig- 6, T2 Coronal; epiphyseal extension of the lesion with irregularity, destruction of the surrounding cortex.**



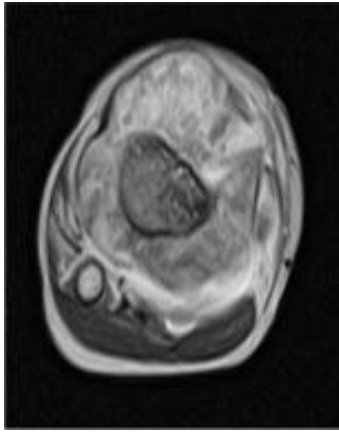
**Fig- 3, Right knee LAT view; permeative destruction at proximal tibial metaphysis with sunburst periosteal reaction**



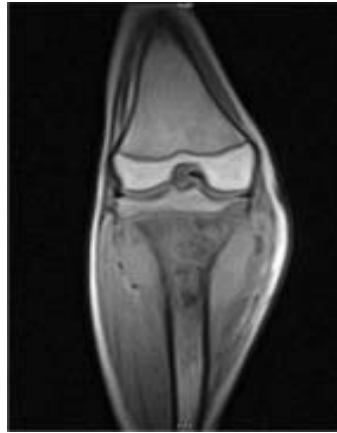
**Fig- 5, T2 Sag; heterogeneously hyperintense lesion**



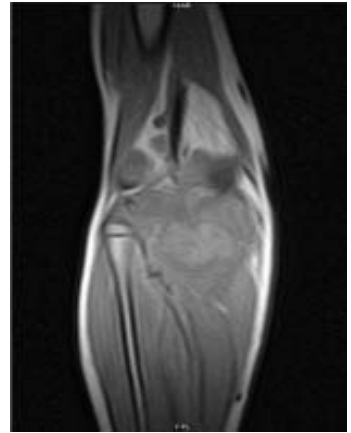
**Fig. 7 T2 Coronal; heterogeneously hyperintense lesion**



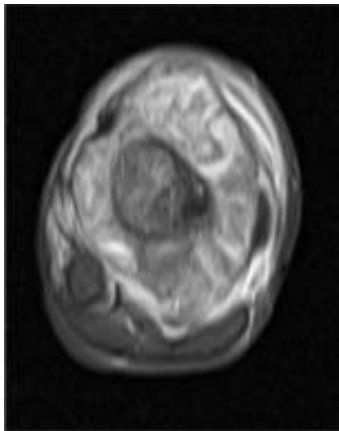
**Fig. 8 T2 Axial; extra compartmental circumferential spread of the lesion, more at antero-medial aspect**



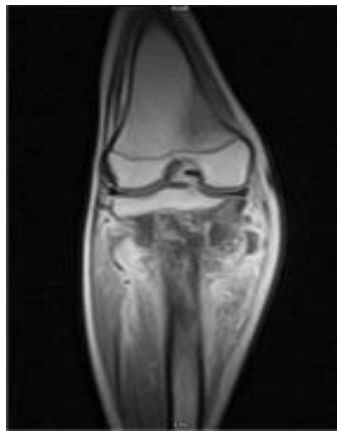
**Fig. 10 T1 Coronal; hypointense lesion at proximal tibial metaphysis with cortical breaks at places.**



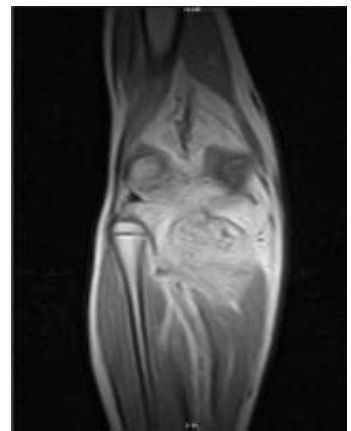
**Fig. 12 T1 Coronal post contrast study; heterogeneous strong enhancement of the lesion**



**Fig. 9 STIR Axial; extra compartmental circumferential spread of the lesion, more at anteromedial aspect.**



**Fig. 11 T1 Coronal post contrast study; heterogeneous strong enhancement of the lesion.**



**Fig. 13 T1 Coronal post contrast study; heterogeneous strong enhancement of the lesion.**

## Pituitary adenoma with acromegaly – a case report and review of literature

**P**ituitary adenomas are the most common cause of pituitary hormone hypersecretion and hyposecretion syndrome in adults. They account for 15% of all intracranial neoplasm<sup>1</sup>. Pituitary adenoma usually present with headache visual field defects and endocrine abnormalities. Prolactinomas are the most common to caves of pituitary adenoma and accounts for 60-70% of cases. 10-15% of pituitary adenoma secrete growth hormone<sup>2</sup>, and a smaller number secrete ACTH Tumors that secrete gonadotropin and TSH are quite rare. Here we discuss a case of pituitary adenoma presented with headache and feature of acromegaly. Relevant literature is briefly reviewed.

**Case report** -A 50 year old man was admitted with a 1 year history of dull generalized headache occasional dizziness and coarse facial feature. There was also history of perspiration and obstructive sleep apnea. there was no history of visual impairment. On examination patient was well built and

nourished, on general physical examination patient had large hand and foot size, enlarged mandible size, coarse facial feature, macroglossia, thickened heel pad, rough and thick skin, Examination of CVS, Respiratory system, CNS GIT was essentially normal. Routine blood and urine investigation were normal, T3, T4 TSH was normal. ECG showed left ventricular enlargement. Chest X-ray was normal. MRI sella was done which showed a large lobulated area of altered signal in sella tursica extending in to suprasellar, parasellar and infrasellar region. It measured 53x42x41mm. it was extending superiorly up to the floor of third ventricle (R>L). it was elevating the optic chiasm and was displacing it superiorly. Interiorly it was extending into sphenoid sinus, posterior ethmoid cells. All these feature were suggestive of pituitary macro adenoma. On further investigation IGF-1 and GH levels were elevated, prolactin level and thyroid profile was normal. Patient was advised surgical resection.

**Discussion** -Pituitary adenoma are benign neoplasm that arise from one of the five anterior pituitary cell type. The clinical and biochemical phenotype of pituitary adenoma depends on

the cell type, from which they derived. At present classification of pituitary tumors is based on plasma hormone levels or immunohistochemical staining. Pituitary tumours are age linked: they become increasingly numerous with each decade; by the 80<sup>th</sup> years. small adenoma are found in more than 20% of pituitary glands. Pituitary tumors are classified into micro adenoma (< 10mm.) and macro adenoma (>10), according to size micro adenoma are at first confined to the sella. As the tumors grows it first compress the pituitary gland then as it extends upward and out of sella it compresses the optic chiasm. Later with continued growth it may extend in to the cavernous sinus, third ventricle temporal lobe or posterior fossa recognition of as adenoma when it is still confined to the sella is of considerable practical importance since total removal of tumor by trans sphenoidal excision or some form of stereotactic radio surgery is possible of this stage. At Present, classification of pituitary tumors is based on plasma hormone levels or immunohistochemical staining<sup>3</sup>

Type of adenoma	Secretion	Staining	Pathology
Corticotrophic adenomas	Secrete adrenocorticotrophic hormone (ACTH) and pro-opiomelanocotin (POMC)	Basophilic	Cushings disease
Saomatotrophic adenomas	Secrete growth hormone (GH)	Acidophilic	Acromegaly (gigantism)
Thyrotrophic adenomas (rare)	Secrete thyroid-stimulating hormone (TSH)	Basophilic	Occasionally hyperthyroidism[3] Usually doesn't cause symptoms
Gonadotrophic adenomas	Secrete luteinizing hormone (LH) follicle-stimulating hormone (FSH) and their subunits	Basophilic	Usually doesn't cause symptoms
Lactotrophic adenomas or prolactinomas (most common)	Secrete prolactin	Acidophilic	Galactorrhea, hypogonadism, Amenorrhoea, infertility, and impotence
Null cell adenomas	Do not secrete hormones	May stain positive for synaptophysin	

**Clinical Features**—Patients with pituitary adenoma may be symptomatic or may present with complaints due to hormonal imbalance or mass effects. Pituitary hormone effects, depend on the hormone involved panhypopituitarism may present with a deficiency of all the pituitary hormone. Pituitary adenoma Can present with distinct clinical syndrome like hyperprolactinoma, Acromegaly, cushing disease, secondary hyperthyroid, Gonadotropinomas most often are asymptomatic. They often are macro adenomas and usually result in hypopituitarism. Mass effects of the macro adenoma may present with visual defects, headache, elevated intracranial pressure or intracranial haemorrhage. Pituitary apoplexy results from infarction or sudden haemorrhage with in.

**Differential diagnosis**<sup>4</sup>-Tuberculoma, Lymphocytic hypophysitis, Pituitary hyperplasia, Metastatic tumor, Germinomas,

Granulomatous disease, Vascular aneurysms, Craniopharyngiomas, Histocytosis – x, Tumor of the clivus.

**Laboratory studies**-Laboratory tests includes basal hormone level and dynamic hormone measurements depending on the tumour studied. All tumors should have screening basal hormone measurement, which may include prolactin, thyrotropin, thyroxin, adrenocorticotrophin, cortisol, LH, FSH, estradiol, testosterone, growth hormone, Insulin like growth factor-1 (IGF-1) and alpha subunit glycoprotein. Pituitary imaging is important in confirming the diagnosis of pituitary macro adenoma and also for determining the differential diagnoses of other sellar lesions. Plain skull radiographs are poor at delineating soft tissues and so have been replaced by CT scanning and MRI. CT scanning is better at depicting bony structures and calcifications with in soft tissue than either plain

radiography or MRI. MRI is more expensive than CT scan but is the preferred imaging study for the pituitary because it provides better visualization of soft tissues and vascular structures.

**Other Tests**-Visual field testing should be performed especially tumour involving the optic chiasma

**Treatment**- Most pituitary tumors are benign and slow growing, clinical features result from local mass effects and hormonal hypo or hyper secretion syndrome caused directly by the adenoma or as a consequence of treatment. The treatment options include- Dopaminergic agents: they are used for treatment of prolactinoma they include Bromocriptine, cabergoline, pergolide; Growth hormone receptor agonists used for treatment of acromegaly; Somatostatin analogues used for treatment of acromegaly and TSH secreting tumors eg octreotide; Transsphenoidal surgery<sup>5</sup>; Stereotactic



radiotherapy<sup>6</sup> (Gamma knife radiotherapy)

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## Medical Trivia

- In 2003, 2,500,000,000 Paracetamol tablets were sold over the counter in the UK.
- The left testicle hangs lower than the right in 85% of men.
- There have been more babies born in the 10 years after the world population conference in 1992, as there were people alive on the planet 2000 years ago.
- Hepatitis C is 4000 times more infectious than HIV
- Around the world, about 1600 people are infected with HIV-AIDS every day.
- Around the world, 50 people a day are blown up by land mines.
- In the UK there was 100 times more research money spent on AIDS than on Prostate cancer last year, but 100 times more men died from Prostate cancer than from AIDS.
- The mosquito is the most dangerous animal in the world. 3000 people die each day from Malaria. World wide, 515 million people are infected.
- 15% of the UK NHS budget is spent on treating sufferers from Diabetes and its related complications.
- Properly performed, CPR delivers less than 30% of the hearts normal flow of oxygenated blood to the brain.
- Last year in the UK, 2500 people died in traffic accidents, 3000 died from hypothermia and cold related problems, mostly in their own home.
- The average red blood cell lives for 120 days.
- A red blood cell can circumnavigate your whole body in 20 seconds.
- There are 2.5 trillion red blood cells in your body, which means about two and a half million new ones need to be produced every second by your bone marrow. That's the same as reproducing the population of the city of Toronto every second. That's 100 billion every day.
- If you look at all the cells and tissues in your body, about 25 million are reproduced every second, which is like reproducing almost the entire population of Canada every second!
- Nerve impulses travel at over 400 km/h. When we touch something, we send a message to our brain at 124 mph.
- In one square inch of our hand we have nine feet of blood vessels, 600 pain sensors, 9000 nerve endings, 625 sweat glands, 36 heat sensors and 75 pressure sensors.
- A sneeze explodes out of the body at 166 km/h.
- A cough travels at 100 km/h.
- The average heart beats at 100,000 times a day.
- Your blood is on a 600,000 mile journey.

