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A COMPLETE HEALTH JOURNAL

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RECONNECTING WITH THE WORLD

Ability to hear sounds is closely linked to mental development. Cochlear Implant has emerged as a ray of hope for people suffering from hearing loss

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From Editorial's Desk

Empowering People to Participate in Life

Dear readers,

Many thanks for your continuous support to our efforts to bring out Double Helical every month, with a wide variety of informative, research-based reports and stories touching your lives.

We have selected a very crucial topic for the May issue's cover story 'Cochlear Implant' – with contributions from an expert team of doctors. As you know Cochlear Implant requires sound medical expertise and thorough knowledge of the anatomy of the middle and the inner ear to avoid post-surgical complications. The cochlear implant surgical procedure is done in the hospital setting under general anaesthesia. The surgeon performing Cochlear Implant surgery must be experienced in ear surgery and ideally in some aspects of neurotologic surgery. Ability to hear sounds is closely linked to mental development. Cochlear Implant has emerged as a ray of hope for people suffering from hearing loss.

Hearing helps us to communicate with each other. Lack of hearing makes the person incapable of facing life's challenges. Hearing loss can be present at birth which is called as congenital hearing loss or it can develop after birth when it is called acquired hearing loss. The hearing loss occurring after the speech and language development is termed as post-lingual hearing loss. Having hearing loss since birth and not developing speech and language is termed as pre-lingual deafness. There are many causes of congenital deafness. These are hereditary causes which may sometimes be associated with syndromes like Down's syndrome, Waardenburg Syndrome, Usher, Alport etc.

The story 'Primary but Vital' highlights that there is an acute need for skilled primary ear care workers for delivering essential ear and hearing care services, considering skewed doctor population ratio in the country. In India, the estimated significant auditory impairment reaches up to 6.3% prevalence (moderate to severe hearing loss) out of the total population of 1.25 billion.

It is important to note that nearly half of causes of hearing loss are preventable. Lack of awareness regarding importance of ear care is a major challenge in the country. People also have poor knowledge about the resources available for ear care. Myths and misconceptions worsen the situation. Also, there is inadequate manpower in the country for addressing ear and hearing care issues. In India, the doctor population ratio is skewed with only 0.7 doctor /1000 population as against WHO's recommended ratio of one doctor per 1000 population. When it comes to ENT specialists, the situation worsens with there being only 6 ENT doctors per one million population.

The story 'Shocking Revelation' points to a serious concern of our lives. Recently, a research report finds that common varieties of bread may contain cancer-causing chemicals. A latest report released by the Centre for Science and Environment (CSE) reveals that bread could contain cancer-causing chemicals, including Potassium Bromate and Potassium Iodate. These are banned in many countries, but not in India due to slack food regulations. The CSE tested some of the breads sold in Delhi and found residues of Potassium Bromate and Iodate in commonly consumed varieties.The use of Potassium Bromate – classified as a category 2B carcinogen (possibly carcinogenic to humans) – is banned in most countries. Also, Potassium Iodate, which contributes to thyroid-related diseases, was found.The institution has now recommended an immediate ban on these two chemicals.

The study, conducted by CSE's Pollution Monitoring Laboratory (PML), says Indian bread manufacturers use Potassium Bromate and Potassium Iodate for treating flour while making bread. The PML tested 38 commonly available branded varieties of pre-packaged breads of popular fast food outlets from Delhi.

The investigation team found 84 per cent samples positive with Potassium Bromate/Iodate. They re-confirmed the presence of Potassium Bromate/Iodate in a few samples through an external third-party laboratory. The team checked labels and talked to industry and scientists.

In addition, there are number of exclusive stories based on intensive research, field reports and analysis. We do hope you will enjoy reading these insightful stories. Thank you again for your support.

Amresh K Tiwary,

Editor-in-Chief

Shocking Revelation

A research report finds that common varieties of bread may contain cancer-causing chemicals

BY TEAM DOUBLE HELICAL

If you and your family happen to be habitual of daily consumption of breads like pao, pao roti, fen etc, you should better be on your guard. A latest report released by the Centre for Science and Environment (CSE) reveals that bread could contain cancer-causing chemicals, including Potassium Bromate and Potassium Iodate. These are banned in many countries, but not in India due to slack food regulations.

The CSE tested some of the breads sold in Delhi and found residues of Potassium Bromate and Iodate in commonly consumed varieties. The use of Potassium Bromate – classified as a category 2B carcinogen (possibly carcinogenic to humans) – is banned in most countries. Also, Potassium Iodate, which contributes to thyroid-related diseases, was found. The institution has now recommended an immediate ban on these two chemicals.

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"We found 84 per cent samples positive with potassium Bromate/Iodate. We re-confirmed the presence of Potassium Bromate/Iodate in a few samples through an external third-party laboratory. We checked labels and talked to industry and scientists. Our study confirms the widespread use of Potassium Bromate/Iodate as well as presence of Bromate/Iodate residues in the final product," says Chandra Bhushan, deputy director general, CSE and head of the CSE lab.

Eighty-four per cent (32/38) samples were found with Potassium Bromate/Iodate in the range of 1.15-22.54 parts per million (ppm). Seventy-nine per cent (19/24) samples of packaged bread, all samples of white bread, pav, bun and ready-to-eat pizza bread and 75 per cent (3/4) samples of ready-to-eat burgers bread tested positive.

High levels of Potassium Bromate/Iodate were found in sandwich bread, pav, bun and white bread. Products of Perfect Bread, Harvest Gold and Britannia were those with higher levels.

No residues were found in all four tested products of Defence Bakery (Whole Wheat Bread, Jumbo Slices Brown, Brown Bread, Multigrain), one out of four samples of English Oven (Sandwich Bread) and one out of two samples of Nirula's (burger bread of Chatpata Aloo Burger).

Only one brand – Perfect Bread – labels use of Potassium Bromate. No maker among those tested labels Potassium Iodate. Only Britannia denied use of Potassium Bromate or Iodate.

Products of all five popular multinational fast food outlets selling pizza and burger were found positive with Potassium Bromate/Iodate. These include KFC, Pizza Hut, Domino's, Subway and McDonald's. Except Domino's, others have denied use.

Samples of two other fast food outlets — Nirula's and Slice of Italy — also tested positive for Potassium Bromate/Iodate. Slice of Italy have denied use of the chemicals. Union Health Minister J P Nadda said, "We are seized of the matter. I have told my officials to report to me on an urgent basis. There is no need to panic. Very soon we will come out with the (probe) report."

Mrs Meeta Rai,
Principal DPS Indirapuram

"Don't confine your child within four walls of home during summer"

During the summer vacation, children like to spend their days browsing the Web, playing online/ video games, chatting, sharing something interesting with their friends, watching television or just sleeping. But is it right on their part to refrain from venturing outdoor simply to escape from the heat?
Similarly, Parents face a tough time in ensuring that children stay healthy while coping with the summer heat. According to experts, the school going children become more vulnerable to food poisoning in summer and the incidence goes up by 20 to 30 per cent in the cities at this time of the year. The reasons are cockroaches and rodents that seem to have a free run of the house. **Team Double Helical** spoke to renowned educationist **Mrs Meeta Rai, Principal, Delhi Public School (DPS) Indirapuram** to know her views on these vital concerns pertaining to children. Excerpts from the interview:

What safety measures would you suggest children to tackle the excessive heat in the summer season, especially when they are into various outdoor activities?
There are several measures that I would suggest; of course this depends on the concern and awareness of the parents. A few points that I think would help combat the heat are:
a) Parents should ensure that children wear light cotton clothes preferably light colours yet covering their body parts to avoid direct exposure to heat and sun.
b) The Parents must ensure that children carry water or fresh 'Nimbu Pani' with them whenever they step out of the house.
c) They should not expose themselves to the direct sun for a long time – and not do strenuous activity for too long outdoors.

Most parents today don't allow their children to perform outdoor activities during summers. Is this a correct approach?
Children should be allowed to enjoy their life, winter or summer season. Early morning hours are the best time for outdoor activity in the summer season. A child needs to be out in the

At all branches of Delhi Public School we are keeping watch over the food served in the canteen. We are also checking children's lunch boxes and helping parents with suggestions about the kind of food they should prepare for their wards

open for some time in the day to ensure the intake of adequate vitamin D and oxygen. So, preferably a park with greenery would be a healthy option. If an active child is made to stay indoors and not play his usual games, he/she may become restless and destructive at home and it would hamper the mental as well as physical growth of that person.

Don't you think that the exposure to intense heat can be harmful at times and can cause heat strokes, cramps, dehydration, skin allergies, etc?

While it is important that parents do not over pamper their children by getting them used to only air–conditioned environment, children's outdoor activity during the intense heat period should be carefully monitored. Parents should ensure that their children take enough precautions while going out in the sun.

Swimming keeps us cool during this weather. What preparations should be taken when conducting this activity during the day time?

Swimming is an excellent way to cool down – most pools are covered but if they are not, then swimming can be avoided during peak afternoon period. In our school, some exercises are performed before the swimming begins and after the swimming, cooling down with a shower is also ensured. It all depends on the situation and the weather.

How can we inculcate health eating habits during the summer season?

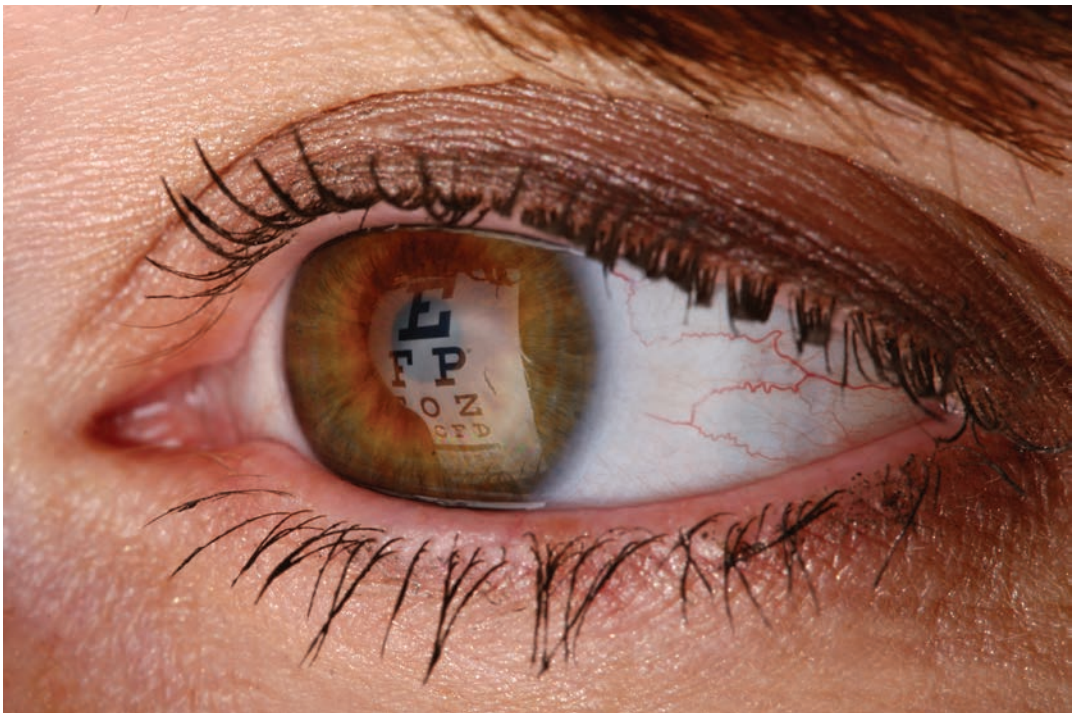
First, you can start cooking with your children. They will like to eat what they make, and will try new and healthy foods when you make meals together. While they help you cook, teach them about healthy eating. You can cook with kids of just about any age. Younger students can watch what you are doing and help with small tasks. Three-year-olds can wash fruits and vegetables, and four-year-olds can put things in the trash. Older kids can measure ingredients or crack eggs.

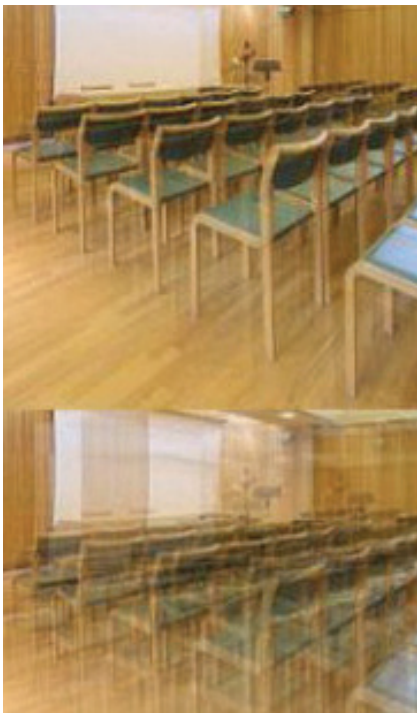
Decayed food leads to increased cases of diarrhoea and gastro-intestinal trouble among students around this time. The first tell-tale signs are stomach ache and vomiting. Parents should not ignore these symptoms and immediately start giving ORS to kids to prevent fluid loss. Healthy children, too, should drink lots of water to keep indigestion at bay.

Cockroaches are one of the main causes of food contamination and poisoning, especially among children, in summer. Leaving unwashed dishes in the sink after dinner or not cleaning the dining table properly after a meal are invitations to cockroaches and other insects for a late-night party.

The next morning at breakfast, a child could pick up something from the table. In some cases, where they are fed by help, strict hygiene may not be maintained. All these can lead to food poisoning even if the child is eating apparently healthy meals. Cockroaches and its faeces are the main cause of allergies and asthma among kids in summer. City schools, too, are taking steps to ensure hygiene and health. At all branches of Delhi Public School we are keeping watch over the food served in the canteen.

We are also checking children's lunch boxes and helping parents with suggestions about the kind of food they should prepare for their wards. Food poisoning is a major reason why kids miss out on school around this time. Students are counselled by the school doctors on proper eating and hygiene habits. They are also educated about safe tiffin options by us.





Cloudy Cornea

Treatment options for keratoconus include gas permeable contact lenses; piggyback contact lenses, and intacs (corneal inserts). With the availability of these options, the need of corneal transplants can be delayed or reduced to a great extent

BY DR. MAHIPAL S SACHDEV

Keratoconus is a progressive eye condition in which the normally round cornea thins out and begins to bulge into a cone-like shape. It rarely appears in an individual until puberty. This cone shape causes distorted vision. It usually affects both eyes, although one eye is affected before the other.

Often early diagnosis of keratoconus is missed because it develops slowly. However, in some cases, it may proceed rapidly. As the cornea becomes more irregular in shape, it induces progressive myopia and irregular astigmatism, causing more distorted and blurred vision. Keratoconic patients often have

Dr. Mahipal S Sachdev

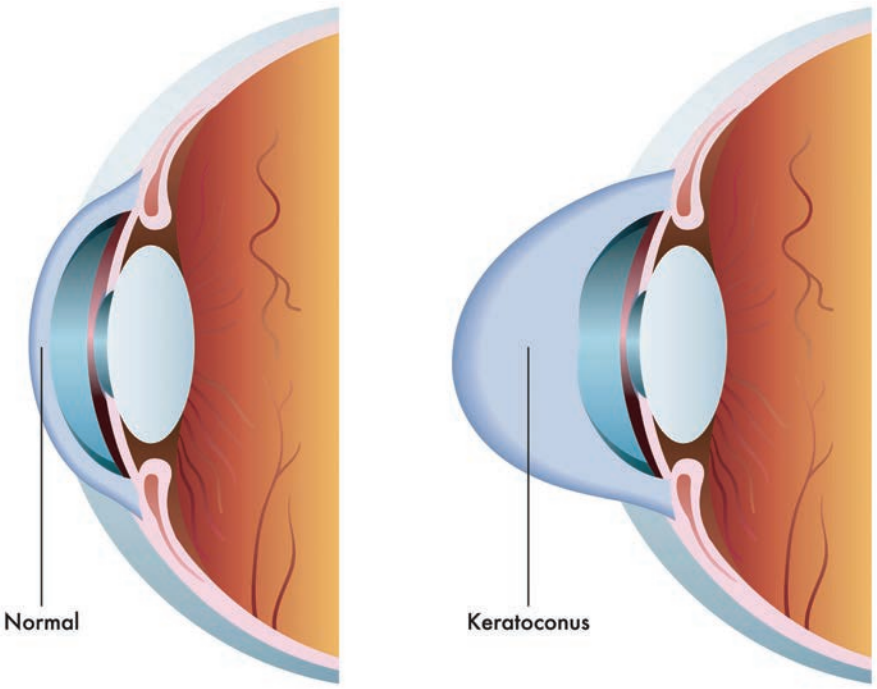
frequent changes in their glasses power. Although no one can be sure how far keratoconus will progress in an individual, the condition does not cause blindness.

Keratoconus Treatment

In the early stage of keratoconus, glasses or soft contact lenses may help. But as the disease progresses, glasses or soft contacts no longer provide clear and sharp vision.

In moderate and advanced keratoconus patients the treatment options available today include:

Gas permeable contact lenses: If keratoconus progresses, then RGP contact lenses is usually the preferred treatment. Their rigid lens material enables RGP lenses to vault over the



cornea, replacing the cornea's irregular shape with a smooth, uniform refracting surface to improve vision.

"Piggyback" contact lenses: For keratoconus, this method involves placing a soft contact lens, over the eye and then fitting a GP lens over the soft lens. This approach increases wearer comfort because the soft lens acts like a cushioning pad under the rigid GP lens.

Intacs: Intacs or corneal inserts received U.S. FDA approval for treating keratoconus in August 2004. These tiny plastic inserts are placed just under the eye's surface in the periphery of the cornea and help re-shape the cornea for clearer vision. Intacs may be advised when keratoconus patients no longer can gain functional vision with contact lenses or eyeglasses. The recovery period is typically short with visual improvement noticed almost immediately.

Several studies show that Intacs can improve the best spectacle-corrected visual acuity (BSCVA) of a keratoconic eye by an average of two lines on a standard eye chart. The implants also have the advantage of being removable and exchangeable. The surgical procedure takes only about 10 minutes. Intacs might delay but can't prevent a corneal transplant if keratoconus continues to progress.

C3-R: Another new procedure for treating keratoconus, known as C3-R (corneal collagen cross-linking with riboflavin), is a non-invasive method of strengthening corneal tissue to stop bulging of the eye's surface.

Here, the corneas are crosslinked by application of the photosensitized riboflavin and exposure to UVA light (370 nm, 3 mW/cm2) for 30 minutes. Collagen crosslinking using riboflavin and UVA leads to a significant increase in corneal collagen diameter and cross linking. This alteration is the morphology leads to an increase in biomechanical stability.

The 1 & 2 year results of a clinical study in our centre have shown an arrest of progression of keratoconus in all treated eyes. Researchers conclude that this simple method of treatment might significantly reduce the need for corneal transplants among keratoconus patients. After halting of the progression of keratoconus with the use of C3R an implantable contact lens or intacs are used to reduce the dependence on glasses or contact lenses in such patients with excellent results.

> It is estimated that almost 21% of keratoconus patients ultimately progress to an advanced stage of disease requiring corneal transplantation surgery to restore corneal architecture and improve eyesight

Corneal transplant: In advanced stage of keratoconus, contact lenses or other therapies no longer provide acceptable vision. The last option available is corneal transplant. The results of corneal transplant in keratoconus are very good.

It is estimated that almost 21% of keratoconus patients ultimately progress to an advanced stage of disease requiring corneal transplantation surgery to restore corneal architecture and improve eyesight. But now with the availability of these options the need of corneal transplants can be delayed or reduced to a great extent.

(The author is Chairman and Medical Director, Centre for Sight Group of Eye Hospitals,New Delh)

RECONNECTING WITH THE WORLD

Ability to hear sounds is closely linked to mental development. Cochlear Implant has emerged as a ray of hope for people suffering from hearing loss

BY DR J C PASSEY

Hearing is a very important sense which helps us to communicate with each other. Lack of hearing makes the person mute also since the development of vocal skills is dependent on normal hearing.

Hearing loss can be present at birth which is termed as congenital hearing loss or it can develop after birth when it is called acquired hearing loss. The hearing loss occurring after the speech and language development is termed as post lingual hearing loss. Having hearing loss since birth and not developing speech and language is termed as prelingual deafness.

There are many causes of congenital deafness. These are hereditary causes which may sometimes be associated with syndromes like Down's syndrome, Waardenburg Syndrome, Usher, Alport etc. Hearing loss can also occur due to maternal infections, complications during childbirth and pregnancy or because of certain drugs taken during pregnancy. It has been observed that mutation in gene leading to synthesis of a protein connexin 26 is responsible for non-syndromic deafness. The incidence of congenital deafness in India is around 1-3 per thousand births.

It is essential to recognize any hearing loss in a child as early as possible since the speech, hearing and overall mental development depend on normal hearing abilities of the child. Parents have a very important role in early identification of such infants. Usually, the child moves his head or blinks in response to loud sound. Also the child may startle or stop moving his limbs when there is a loud sound. In case of suspicion the hearing status of the child must be objectively assessed at the earliest.

The government of India is trying to make the universal screening of every new born child mandatory before discharge from the medical facility. In case of institutional deliveries, child's hearing status is being routinely screened using otoacoustic emissions (OAE) which can be easily done with a portable

hand held machine. Presence of OAE indicates normal hearing but absence of OAE does not mean that the child is deaf and it needs to be confirmed by a more specific objective test.

The brain's ability to learn new things is slowly lost by the age of 5 years. When a child is rehabilitated for hearing after the age of five years, the normal speech may not develop as the brain has lost the ability to learn speech and language. That is why the deaf child must be diagnosed and rehabilitated at the earliest. Our aim should be to diagnose deafness and rehabilitate the child in the first year of life.

Rehabilitation depends on the degree of hearing loss. A child who is having mild to moderate hearing loss can be provided with a hearing aid. Hearing aid will amplify the sound above the hearing threshold of the child and he will be able to listen. Children with severe to profound deafness will require a cochlear implant though all such children must undergo a hearing aid trial before cochlear implantation.

Cochlear implant

Cochlear implant is a device which by-passes the inner ear and directly stimulates the cochlear nerve which is responsible for carrying the sound coded electrical signals to brain. The device has an internal part which is surgically implanted inside the ear and comprises of an electrode and a receiver magnet. The electrodes are inserted in the cochlea where they come in direct contact with the nerve endings of the cochlear nerve. The external part has receiver, speech processor and transmitter. The receiver has a microphone which picks up the sounds from external environment and sends it to the speech processor. The speech processor is like a computer which analyzes and digitizes the sound and sends them to a transmitter which stimulates the implanted receiver magnet just under the skin by electromagnetic induction.

(The author is Director Professor and Head, Department of ENT & Head Neck Surgery, Maulana Azad Medical College)

Handle with Care

Post-operative speech and rehabilitation programme is the most important part of Cochlear Implant, a unique method to re-construct audition for patients with severe to profound hearing loss

BY SANJEEV KUMAR

The success of the cochlear implant depends on good speech hearing rehabilitation. The implanted child needs to understand the auditory signals perceived by his brain to comprehend the speech and communicate using acquired speech and language abilities.

After six weeks of the operation, the audiologist fits the external speech processor and switch on the device. Thereafter, he connects it to the computer and adjusts the settings on the device. As soon as, the device gets switched on, the speech processor starts sending signals to the electrodes in the cochlea for the first time. After this, the speech microphone of the processor is activated and the patient starts hearing for the first time and it is usually like buzzing sound or mechanical sounds.

Speech and Hearing rehabilitation sessions after Mapping

Mapping or MAPping is the term used

for programming a cochlear implant according to the needs of its user. The program actually stimulates the electrodes of the implant and there by determine the exact amount of signal (electric activity) required for the patient to optimize the cochlear implant to any sound. This is done by connecting the cochlear implant processor to a computer. The computer than makes changes in the input to the electrodes array that is implanted into the cochlea. By giving series of acoustic signals in form "beeps" and measuring the patient response, the audiologist adjusts the T- and C- levels for each electrode. T-Levels, or Thresholds, are the softest sounds the cochlear implant users can detect while C-Levels are Comfortable loudness levels that are tolerable for the implant users.

The audiologist also adjusts the stimulation rate or programming strategy that is used to translate acoustic sound into the correct combination of electrode stimulations to give the cochlear implant user the same sensation of sound which a normal person would have.

After the implant is 'switched on', the patient usually takes few weeks to get used to hearing with the implant. At the same time, the audiologists keep on making adjustments to the computer settings as per the requirement and the performance of the child.

Simultaneously the implanted child receives lessons from a Speech & Hearing Therapist who helps in identifying different sounds and distinguishes vowels and consonants.

Overall, rehabilitation is an important stage of cochlear implant where the patient learns to make meaningful response to various sound stimuli coming to the brain. Speech therapy is an important part of rehabilitation process where the child learns about oro-motor control to produce meaningful words and sentences.

The training is usually longer and more complicated in the case of children who are born deaf. While recently deafened adults generally adapt faster to the use of their implant.

(The author is Audiologist, Cochlear Implant Program, Lok Nayak Hospital, New Delhi)

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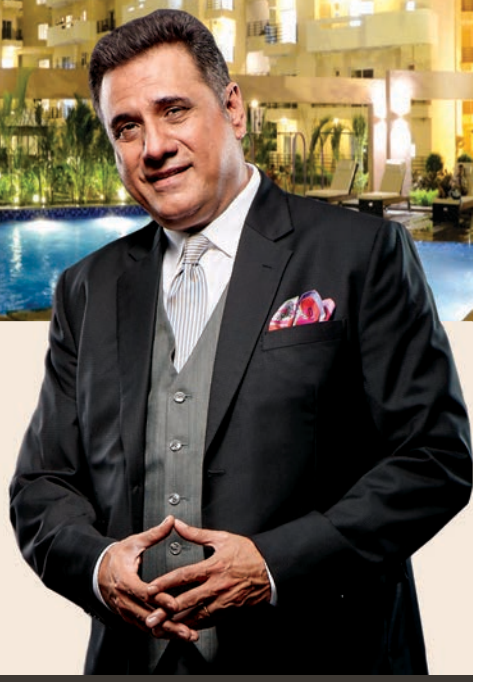

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A Matter of Precision

Cochlear implant requires sound medical expertise and thorough knowledge of the anatomy of the middle and the inner ear to avoid post-surgical complications

BY DR RAVI MEHER

The cochlear implant surgical procedure is done in the hospital setting under general anaesthesia. The procedure usually takes 2.5 to 3 hours.

The surgeon performing cochlear implant surgery must be experienced in ear surgery and ideally in some aspects of neurotologic surgery.

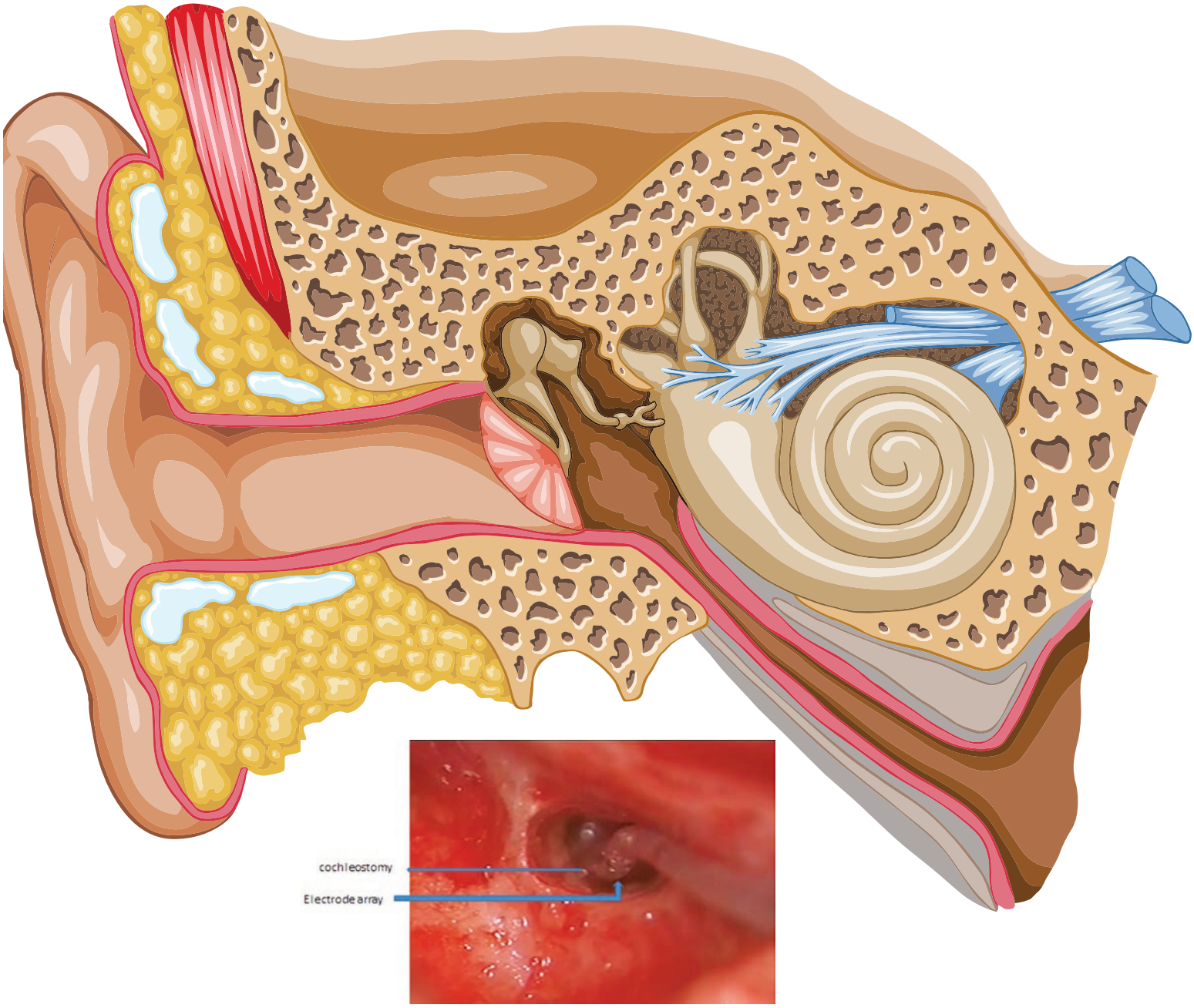
In-depth knowledge of the relevant surgical anatomy of the middle and the inner ear is important in properly performing the approach to the cochlea where in the electrodes are inserted. In addition, the relationship of the facial nerve, ear bones and inner ear needs to be understood properly to safely perform the surgical drilling to gain access to the middle ear.

Once the middle ear has been opened, knowledge of the inner ear structures and the round window anatomy is vital. Variations in anatomy, ossification of the inner ear, facial nerve must be anticipated. These variations make surgery even more difficult.

The surgical procedure is done under microscopic control and strict sterile conditions are maintained. An S shaped Incision is made behind the ear and bone (mastoid) is exposed anteriorly till the level of the ear canal and posteriorlyto allow for insertion and securing of the implant's receiver. The mastoid bone is drilled and the air cells in the bone are opened.

The external ear canal and ear drum are not disturbed during the procedure. A mastoid cavity (mastoidectomy) is created by drilling the surrounding mastoid air cells. Through this cavity, a small opening is made in the posterior ear canal wall to reach the middle ear. It is a critical step because facial nerve is very close and can be injured during drilling at this step.

Middle ear structures are then visualised under high magnification and another opening is made in the



inner ear near the round window. This opening which opens the basal turn of cochlea is called cochleostomy, through which the implant electrode is inserted. Next, bone behind the mastoid cavity is drilled to make a well for the internal magnet receiver of the implant. The receiver is then fixed in the well and secured by sutures.

The functioning of the all the electrodes is confirmed by doing neural telemetry intraoperatively. This confirms the functional status and right positioning of all the electrodes. The wound is then closed in layers and an aseptic dressing is applied. Patient is kept on antibiotics and analgesics for around 7 days. Once the wound heals the external device is put and switched on usually after 3 weeks of the surgery.

Complications

As with any surgical procedure, cochlear implant surgery may also have complications.These can be anaesthesia related which are because of drugs andanaesthetic gases. For most people, the risk of general anaesthesia is very low. However, for some with certain medical conditions, anaesthesia can be more risky.

Surgical risk can be injury to the facial nerve. This nerve goes through the middle ear to give movement to the muscles of the face. It lies close to where the surgeon needs to place the implant, and thus it can be injured during the surgery. An injury can cause a temporary or permanent

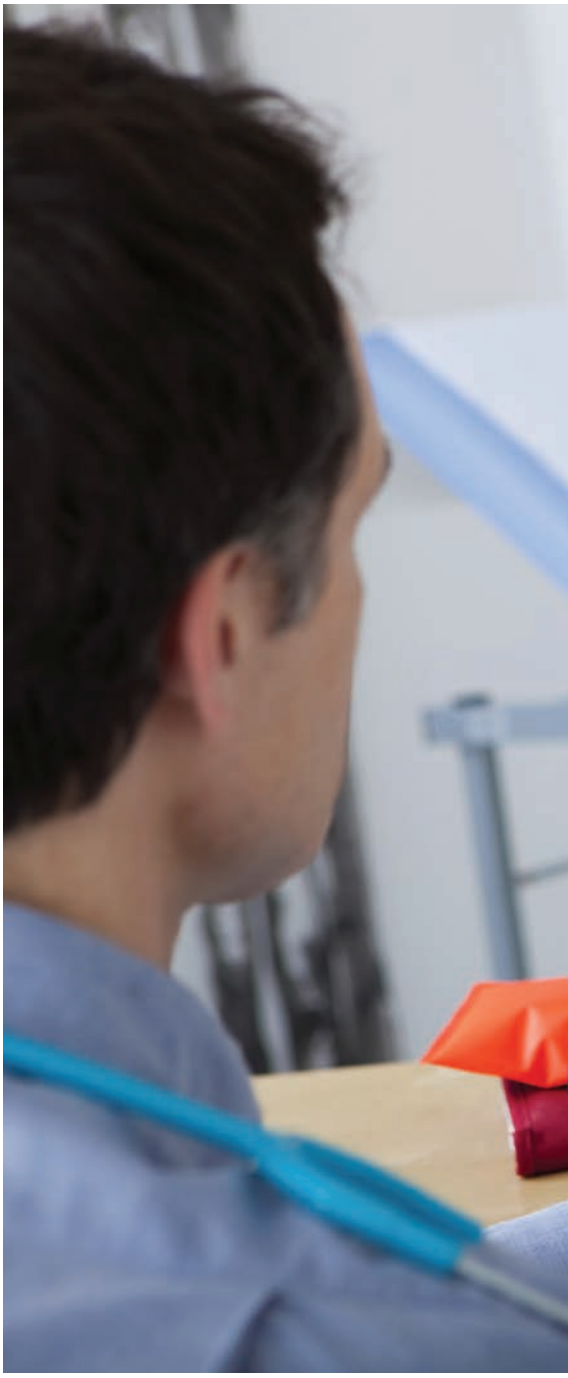
weakening or full paralysis of the face on the same side as of implant. Another complication is meningitis which is infection of the covering of the brain. Patients who have inner ear abnormality are at greater risk. Thirdly, there may be fluid leakage from a hole created in the inner ear to place the implant and is more commonly seen in patients with inner ear abnormality.

Infection of the skin wound and blood or fluid collection at the site of surgery can occur and may require drainage of the collected blood and fluid with antibiotics. Also, severe infection at the site of implant can sometimes lead to extrusion or rejection of the implant. Some patients may suffer from attacks of dizziness or vertigo and tinnitus, the latter is ringing or buzzing sound in the ear. This usually settles with time. The nerve that gives taste sensation to the tongue also goes through the middle ear and may be injured during the surgery.

People with a cochlear implant cannot undergo MRI as it may dislodge the implant or demagnetize its internal magnet. In cases of dire need of an MRI, the magnet from the internal part may be removed surgically. There are certain implants which are compatible with 1.5 Tesla MRI. The external as well as internal part of implant may get damaged with contact sports, automobile accidents, slips and falls, or other impacts near the ear. The implant may have to be removed temporarily or permanently if an infection develops after the implant surgery or there is implant failure.

The patient may develop irritation where the external part rubs on the skin and hence may necessitate temporary removal. The external parts of the implant may get damaged if it gets wet. Thus, the implantee would need to remove the external parts of the device while bathing, showering, swimming or participating in water sports.However, accessories are available which can be used to encase the implant while swimming.

(The author is Professor, Department of ENT & Head Neck Surgery, Maulana Azad Medical College)



Preparing for implant

Advances in the implant technology and improvement in surgical techniques point towards a gradual change in cochlear candidacy criteria, broadening its usage

BY DR DIVYA GUPTA

Cochlear Implant System is an effective, high performance solution for individuals with severe to profound sensorineural hearing loss. With the improvement in performance outcomes of cochlear implants uses of cochlear implant have increased manifold. Now most users can enjoy music or successfully participate in conversation, even in the most challenging listening situations.

Largely, it depends on the feasibility of surgical implantation, weighing the benefits of an implant over hearing aid or no prosthesis at all for an individual and availability of a supportive family and psychological, educational and rehabilitative situation to keep a cochlear implant working.

Audiological Evaluation

For both adults and children, certain hearing and speech tests are done to screen likely candidates. Pure Tone Audiometry (PTA), Brainstem Evoked Response Audiometry (BERA) and

> The primary ear care worker would carry out basic examination to screen and recognize patients with common ear diseases (wax, simple foreign body removal, discharging ear etc.) and counsel & refer patients requiring further medical/ surgical care

Auditory Steady State Response (ASSR) are the tests for hearing evaluation which determine the hearing thresholds. Whereas PTA depends on active cooperation of the subject, thereby proving utility only in people more than 5 years of age, both BERA and ASSR are objective tests which can reliably assess hearing status even in a new-born. For children aged 12-23 months, profound hearing loss, that is, PTA for both ears equalling or exceeding 90 dB is the criteria. Individuals older than 24 months are permitted cochlear implantation when they have severe to profound deafness (cut off PTA threshold value of 70 dB). In either case, the candidate should be fitted with a hearing aid at least for three months prior to the procedure and the benefits should be weighed.

Word and sentence recognition test

Whenever possible, outcomes from word and sentence recognition testing are also used to determine candidacy. Current guidelines permit implantation in adults with approximately 50-60% words correct on open-set sentence recognition tests.

Radiological Evaluation

Imaging with High resolution Computed Tomography of temporal bone (CT) and Magnetic Resonance Imaging (MRI) form an indispensable part prior to implantation procedure. They are used to evaluate the temporal bone anatomy of an individual, viz, the inner ear where electrodes are finally inserted, facial nerve which may be accidentally injured during the surgery, cochleovestibular nerve, brain and brainstem.

The latter three are best assessed on MRI and the presence of the nerve and the normality of brain are essential for taking up a patient for cochlear implantation. Absence of cochlear nerve is a contraindication for cochlear implant surgery. CT helps in estimating cochlear patency and may identify any abnormal variations that may affect electrode insertion or may warranty a change in the choice of side of implantation or a different surgical approach.

Psychological evaluation

The child must have normal IQ for maximal possible benefits of cochlear implant. A much harder to define candidacy criteria involves assessing whether the overall circumstances gyrating around a candidate are able to justify and promote the use of a cochlear implant. It is important to address the patient's and the family's expectations for life after implantation to do away with any unrealistic supposition they may embark with the surgery and to make them prepared for alternative pathways if the post-implant performance is not as expected. Postoperative speech and hearing rehabilitation is an equally significant task, which may continue extensively for two years and relies totally on the patient's (in case of post lingual deafness) and family's motivation.

(The author is Senior Research Associate, Department of ENT & Head Neck Surgery, Maulana Azad Medical College)

Hearing for All

Scientists of the country's premier Defence Research Development Organisation have come up with affordable variants of costly cochlear implant

BY DR A K AGARWAL

The two-year-old son of Amit Tyagi,a resident of East Delhi, who consulted me, has severe hearing loss and for his treatment Cochlear implantation is the only option. But its high cost has left Tyagi worried and he is really anxious about his child's future.

However, providing a ray of hope to millions of deaf people seeking economical solution to costly cochlear implant the scientists of the country's premier Defence Research Development Organisation (DRDO) have successfully developed a low-cost cochlear implant costing under Rs 50,000-1, 00,000 price bracket.

While in the West, the implantation costs are borne by insurance, in the absence of such an arrangement in India, it would be crucial to develop a cost-effective model on mission mode. The government is also considering waiving of levies on import of the device.

Cochlear implant, a lasting solution

Cochlear implant is an established, effective and long-term hearing solution for the people with moderate to profound hearing loss. Cochlear Limited pioneered cochlear implant technology and is today a world leader in implantable hearing solutions.

Unlike traditional hearing aids that amplify, or make sounds louder, a cochlear implant system can be a more effective hearing solution for certain people. A cochlear implant is capable of directly stimulating the cochlea hearing nerve, bypassing the damaged area of the hearing pathway.

Today, deaf people with cochlear implants are largely accepted in the deaf community. Bilateral cochlear implants are standard for young children.

Unlike traditional hearing aids that amplify, or make sounds louder, a cochlear implant system can be a more effective hearing solution for certain people. A cochlear implant is capable of directly stimulating the cochlea hearing nerve, bypassing the damaged area of the hearing pathway

Cochlear implants are not hearing aids. Hearing aids amplify sound. Cochlear implants are classified as medical devices by the U.S. Food and Drug Administration (FDA). Cochlear implants function differently from hearing aids. A cochlear implant uses electrical signals to stimulate the auditory nerve. This allows sound to skip around damaged hair cells in the cochlea and go directly to the brain.

The user has a speech processor that collects sound and converts it into electrical signals. The processor then sends those signals to the coil on the user's head (held in place by a magnet under the skin). The coil in turn transmits the electrical signals to the cochlear implant electrodes inside the cochlea. The electrodes stimulate the auditory nerve, and the auditory nerve sends the signals to be interpreted into soundto the person's brain.

Not everyone qualifies for a cochlear implant. A candidate can be rejected if he has too much residual hearing for an implant. This is because a cochlear implant destroys whatever natural hearing remains in the implanted ear. When the cochlear implant is not in use, the person cannot hear. This is not much different from what patient has experienced wearing a hearing aid.

Still, the decision to implant a child or to get one yourself is very personal. I faced this same issue myself. There are risks (including risks associated with any surgery), however minimal. These risks include facial nerve injury and infection in the surgical area. Furthermore, if a patient does not strive to develop good auditory skills, the implant may not produce good results.

It's preventable!

Hearing loss can be categorised as mild, moderate, severe, or profound and the half of hearing loss is preventable by immunisation, proper care around pregnancy, avoiding loud

noise, and avoiding certain medications. The World Health Organization (WHO) recommends that young people limit the use of personal audio players to an hour a day in an effort to limit exposure to noise.

Early identification and support are particularly important in children. For many hearing aids, sign language, cochlear implants and subtitles are useful.

As per 2013 data, hearing loss affects about 1.1 billion people to some degree. It causes disability in 5% (360 to 538 million) and moderate to severe disability in 124 million people. Of those with moderate to severe disability 108 million live in low and middle income countries. Of those with hearing loss, it began in 65 million during childhood.

Those who use sign language and are members of deaf culture see themselves as having a difference rather than an illness. Most members of Deaf culture oppose attempts to cure deafness and

some within this community view cochlear implants with concern as they have the potential to eliminate their culture. The term hearing impairment is often viewed negatively as it emphasises what people cannot do.

Hearing loss, also known as hearing impairment, is a partial or total inability to hear and a deaf person has little to no hearing. Hearing loss may occur in one or both ears and in children hearing problems can affect the ability to learn language, while in adults it can cause work related difficulties. In some people, particularly older people, hearing loss can also result in loneliness.

Whether temporary or permanent, hearing loss may be caused by a number of factors, including genetics, ageing, exposure to noise, some infections, birth complications, trauma to the ear, and certain medications, or toxins.

Chronic ear infections is also a common condition that results in hearing loss.Certain infections during pregnancy such as rubella may also cause this problem. Hearing loss is diagnosed when hearing testing finds that a person is unable to hear 25 decibels in at least one ear and so testing for poor hearing is recommended for all newborns.

(The author is renowned ENT Surgeon/Professor of Excellence and Ex-President, Delhi Medical Council, New Delhi)

Primary but Vital

There is acute need for skilled primary ear care workers for delivering essential ear and hearing care services, considering skewed doctor population ratio in the country

BY DR SUNEELA GARG/ DR TANU ANAND/ DEEKSHA KHURANA

In India, the estimated significant auditory impairment reaches up to 6.3% prevalence (moderate to severe hearing loss) out of the total population of 1.25 billion. It is important to note that nearly half of causes of hearing loss are preventable. Lack of awareness regarding importance of ear care is a major challenge in the country. People also have poor knowledge about the resources available for ear care. Myths and Misconceptions worsen the situation.

Also, there is inadequate manpower in the country for addressing ear and hearing care issues. In India, the doctor population ratio is skewed with only 0.7 doctor /1000 population as against WHO's recommended ratio of one doctor per 1000 population. When it comes to ENT specialists, the situation worsens with there being only 6 ENT doctors per one million

population.

In view of immense disease burden and scarce manpower, the existing ENT manpower is already overburdened. National Programme for Control of Blindness has a provision of Ophthalmic Assistant at the community health care level who is responsible for screening patients with eye ailments, test vision and prescribe glasses, assist in conducting eye care camps and organizing community education. However, there is no provision for such personnel under National Programme for Prevention & Control of Deafness. Therefore, the role of skill-based primary ear-care worker becomes vital for delivering essential ear and hearing care services. A skilled primary ear care worker can perform certain clinical and administrative duties and thereby play a significant role right from early identification of people with hearing loss to awareness generation, screening of patients to making adequate referrals.

Firstly, the primary ear care worker can obtain and record the history of patient having ear morbidities including history of patient's past ear diseases, family history of diseases affecting ear, social history including occupation and details of exposure to industrial or occupational hazards and patient's current and past general health and trauma, including any surgical procedures.

The primary ear care worker would carry out basic examination to screen and recognize patients with common ear diseases (wax, simple foreign body removal, discharging ear etc.) and counsel & refer patients requiring further medical/surgical care. He/she would also be responsible for promotion of ear and hearing health by creating awareness through community-based actions including promoting and teaching healthy ear and hearing habits, creating awareness of avoidable causes of hearing loss and ear disease, identifying the need for and means of early detection of hearing loss, recognizing signs of hearing loss in infants, children and adults, facilitate in providing and maintaining hearing aids, cochlear implants and other listening and signaling devices and offering support services for hearing aids users.

The primary ear care worker would also be responsible for carrying out hearing assessment and counseling of patients which could be done through an audiometer (a machine for testing hearing) or using voice tests.

Dr Suneela Garg

The worker's responsibility would encompass carrying out public health actions through promotion and implementation of immunization, maternal and perinatal health care and child health care. He/she would also undertake advocacy for appropriate ear and hearing services, including ontological and audiological services at health centres and hospitals as close to the community as possible. He would also facilitate in training all teachers in the community in aspects of primary ear and hearing care, the impact of hearing loss and provision of an effective learning environment for children with hearing loss.

Regarding the rehabilitative aspect, he/she would be responsible for informing children and adults with hearing loss, family members and the general public of available options for the inclusion and integration of people with hearing loss in the community. He/she would advocate for promoting the use of hearing aids and provide support services explaining the benefits and limitations of these devices. The worker would facilitate in sensitizing families of children with hearing loss understand the local policies relating to the education of such children.

> A skilled primary ear care worker can perform certain clinical and administrative duties and thereby play a significant role right from early identification of people with hearing loss

Deeksha Khurana

He/she would facilitate to educate teachers about the special needs of students with hearing loss, including deaf students. He/she would try and explore educational opportunities for children and students with hearing loss at preprimary, primary, secondary and higher levels of education and availability of non-formal and vocational training opportunities for people with hearing loss. He/she would take initiative for developing and encouraging training for speech and language development for persons with hearing loss. He/she would try and engage the local deaf community in the implementation of these activities.

A teleotology model conducted in certain parts of the country has demonstrated that trained community health workers who are equipped with an ear screening handheld device can be deployed in low income urban communities and rural areas. The customized application enables the health workers to gather patient's details, complaints and other details including an image of the tympanic membrane which could be transferred to an ENT surgeon. Patients with positive conditions are counseled for further treatment. The skilled primary ear care workers could also be trained to implement the teleotology model.

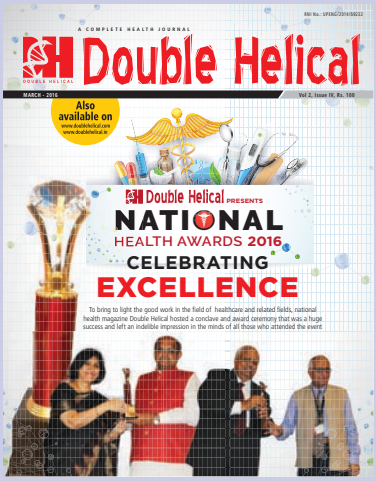
Additionally, his administrative roles and responsibilities would include scheduling appointments, maintaining medical records, recording vital signs and medical histories and preparing patients for further examination and surgeries.

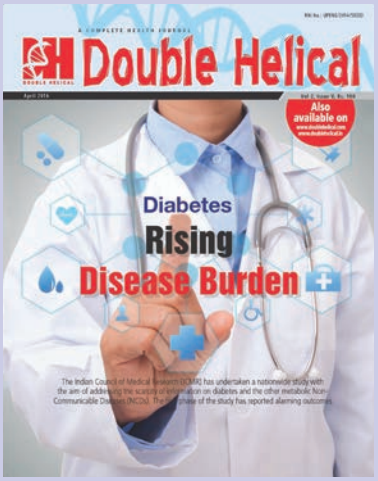
> The primary ear care worker would carry out basic examination to screen and recognize patients with common ear diseases (wax, simple foreign body removal, discharging ear etc.) and counsel & refer patients requiring further medical/ surgical care

To conclude, creation of a cadre of skilled primary ear care workers would go a long way in not only reducing the burden on the existing scare ENT manpower but also address the problem of avoidable hearing loss in the country.

(The authors are from Department of Community Medicine, Maulana Azad Medical College, New Delhi)

Your Guide to Healthy Living





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Mitigating suffering

Pain control in cancer survivors and patients with stable disease is an important part of the total care of cancer patients

BY DR HARPREET SINGH

Dr Harpreet Singh

As per a study, cancer pain occurs in more than 80% of cancer patients before death. Pain is often inadequately treated in patients with cancer. Because of the increase in the frequency of cancer deaths worldwide, it is imperative to address cancer pain as a public health problem.

Until recently, educational efforts were focused on treatment issues rather than adequate assessment. The approach to pain intensity as a multidimensional construct has helped in focusing treatments and identifying prognostic factors. Valid tools have been developed that allow multidisciplinary assessment of these prognostic factors and their complex interrelationship with the analgesic response.

In recent years, it has become evident that some specific pain syndromes need to be addressed using specific assessment and management techniques. Incidental pain, somatization, neuropathic pain, and cancer pain in patients with alcoholism and drug addiction are some of these syndromes.

Cancer pain can be controlled through relatively simple means in most patients. Unrelieved pain can lessen the patients' activity, function, appetite, and sleep. It can also induce fear and increase suffering in patients with cancer. Chronic unrelieved pain depresses patients and increases the risk of suicide. In addition to playing a major role in the quality of care for cancer patients at the end of their life, pain management is also vital to cancer survivors and patients with stable disease status.

Although they have survived the disease, patients may have chronic pain from disease or therapy. Adequate pain control is important to ensure that patients are able to function productively, maintain social relationships, and improve their quality of life. The most recent report on cancer incidence and mortality showed the first decline after nearly 20 years of a steady increase, thus, pain control in cancer survivors and patients with stable disease is an important part of the total care of cancer patients.

> Adequate pain control is important to ensure that patients are able to function productively, maintain social relationships, and improve their quality of life

The majority of cancer pain can be controlled with oral pharmacologic management. Both physicians and patients should understand that the long-term use of opioids for pain relief is different from substance abuse. Studies have shown that the number of individuals who become addicted to drugs by introducing them through medical use is extremely small. Clinicians should assess patients and, if pain is present, provide them with optimal relief throughout the course of illness. The treatment plan should include patient and family education about pain and its management and encourage patients to be active participants in pain management.

At Action Cancer Hospital we offer a variety of painless cancer

treatments. With the help of basic technologies like Intensity-Modulated Radiation Therapy (IMRT), Image Guided Radiation Therapy - (IGRT) Rapid Arc and Stereotactic body radiation therapy, we plan minimal pain for cancer patients. The Rapid Arc is a radiotherapy technology that is among the most advanced forms of intensity modulated radiation therapy (IMRT) and Image Guided Radiation Therapy(IGRT). During treatment, the radiation beam is shaped and reshaped as it continuously delivers beams at virtually every angle in a 360-degree revolution. In short, it allows us to deliver a high dose of radiation to kill or sterilize cancer cells in an extremely precise, targeted manner, which spares healthy tissues from damage. Even the most complicated targets can complete treatments in 15 minutes or less.

Intensity-Modulated Radiation Therapy (IMRT) which is a computer-based form of radiotherapy, allows radiation oncologists to send external beams in the 3-D shape of tumors in small multiple doses with precision. Because the tumour can be contoured more efficiently with IMRT, the radiation doses to healthy surrounding tissues are minimized, thus patients treated with IMRT experience fewer harsh side effects from radiation therapy. While Image Guided Radiation Therapy (IGRT) provides high-resolution, 3-D images to pinpoint tumour sites, adjust patient positioning when necessary, and complete a treatment. Patients are x-rayed before each treatment. Those x-rays are compared to the patient's initial CT scan and the patient is matched perfectly to their original set-up position - every single treatment. This positioning system is far superior to skin marks or tattoos that are placed on the patient's skin. IGRT can also account for daily organ movement and changes in the patient's internal anatomy throughout the course of their treatment.

IMRT is used to treat many kinds of cancers including prostate, breast, head and neck, lung and brain tumours. It is also very valuable for treating pediatric malignancies. IMRT is a particularly beneficial tool if you have had radiation treatment in the past.

Image Guided Radiation Therapy (IGRT) takes IMRT one step further. IGRT is the newest and most advanced system for the delivery of radiation, allowing much greater precision than proton therapy. Prior to beginning IGRT treatment, our patients undergo

this special MRI scan and a CT scan in our department. The information from the 2 scans are entered into our specialized computers and a customized treatment plan is created, tailored to fit each patient's anatomy precisely. IGRT is typically given for only a few minutes a day, five days a week. When combined with a seed implant, this part of the treatment is approximately 5 weeks long. If given without a seed implant, the treatment is typically for 8 1/2 weeks.

The IGRT component of therapy is

> Intensity-Modulated Radiation Therapy (IMRT) which is a computer-based form of radiotherapy, allows radiation oncologists to send external beams in the 3-D shape of tumors in small multiple doses with precision

completely painless and non-invasive. The most commonly reported side effects during treatment are slight fatigue and having to go to the urinal more frequently. You will NOT develop any nausea, abdominal pain, hair loss, or skin burning. You will NOT lose your ability to control your bowels or bladder. You will be able to continue working full-time and should enjoy all of your regular activities.

In IGRT, repeated imaging scans (CT, MRI, or PET) are performed during treatment. These imaging scans are processed by computers to identify changes in a tumor's size and location due to treatment and to allow the position of the patient or the planned radiation dose to be adjusted during treatment as needed. Stereotactic body radiation therapy (SBRT) delivers radiation therapy in fewer sessions, using smaller radiation fields and higher doses than 3D-CRT in most cases.

By definition, SBRT treats tumours that lie outside the brain and spinal cord. Because these tumours are more likely to move with the normal motion of the body, and therefore cannot be targeted as accurately as tumours within the brain or spine, SBRT is usually given in more than one dose. SBRT can be used to treat only small, isolated tumours, including cancers in the lung and liver.

(The author is Senior Consultant, Radiation Oncology, Action Cancer Hospital, New Delhi)

Detecting with precision

PET scan creates computerized images of chemical changes, such as sugar metabolism, that take place in a tissue.Most PET scans are now performed along with a CT scan. This helps find the exact location of tumour

BY DR. ASHWANI GUPTA

Dr Ashwani Gupta

These days, PET (Positron Emission Tomography) scans, a type of nuclear medicine imaging, plays a major role in determining whether a mass is cancerous. However, PET scans are more accurate in detecting larger and more aggressive tumours than they are in locating tumours that are smaller than 8 mm and/or less aggressive.

They may also detect cancer when other imaging techniques show normal results. PET scans may be helpful in evaluating and staging recurrent disease (cancer that has come back). PET scans are beginning to be used to check if a treatment is working - if tumour cells are dying and thus using less sugar.

A PET scan measures important body functions, such as blood flow, oxygen use, and sugar (glucose) metabolism, to help doctors evaluate how well organs and tissues are functioning.

CT imaging uses special x-ray equipment, and in some cases a contrast material, to produce multiple images or pictures of the inside of the body. These images can then be interpreted by a radiologist on a computer monitor. CT imaging provides excellent anatomic information.

Today, almost all PET scans are performed on instruments that are combined PET and CT scanners. A PET-CT scan is a sure to find cancer and learn its stage. Stage is a way to describe where the cancer is, if it has spread, and if it is changing how your organs work. Knowing this helps you and your doctor choose the best treatment. It also helps doctors predict your chance of recovery.

The doctors also use PET-CT scans to find the right place for a biopsy, see how well cancer treatments are working and then radiation therapy. A

> Today, almost all PET scans are performed on instruments that are combined PET and CT scanners. A PET-CT scan is a sure to find cancer and learn its stage

PET scan uses a small amount of radioactive material (tracer). The tracer is given through a vein (IV). The needle is most often inserted on the inside of your elbow. The tracer travels through your blood and collects in organs and tissues. This helps the radiologist see certain areas more clearly.

A PET scan can reveal the size, shape, position, and some function of organs. This test can be used to check brain function, diagnose cancer, heart problems, and brain disorders, see how far cancer has spread, show areas in which there is poor blood flow to the heart and determine if a mass in your lung is cancerous or harmless.

Several PET scans may be taken over time to check how well the patients are responding to treatment for cancer or another illness.A normal result means there were no problems seen in the size, shape, or position of an organ. There are no areas in which the tracer has abnormally collected. While abnormal results depend on the

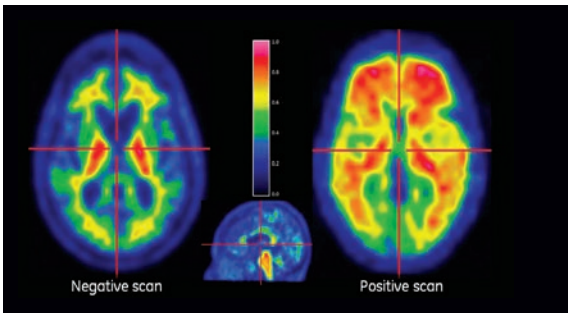
part of the body being studied. Abnormal results may be due to change in the size, shape, or position of an organ, cancer, infection and problem with organ function

There are also risks while the patients go through PET scan.For example, the amount of radiation used in a PET scan is about the same amount as used in most CT scans. These scans use short-lived tracers, so the radiation is gone from patient's body in about 2 to 10 hours.So the patient especially female must share the issues likepregnancy and breastfeeding with doctors. Infants developing in the womb are more sensitive to radiation because their organs are still growing.

Rarely, people may have an allergic reaction to the tracer material. Some people have pain, redness, or swelling at the injection site.

Most PET scans are now performed along with a CT scan. This combination scan is called a PET/CT. This helps find the exact location of the tumour. ThePET scan creates computerized images of chemical changes, such as sugar metabolism, that take place in tissue. The patient is given an injection of a substance that consists of a combination of a sugar and a small amount of radioactively labeled sugar. The radioactive sugar can help in locating a tumour, because cancer

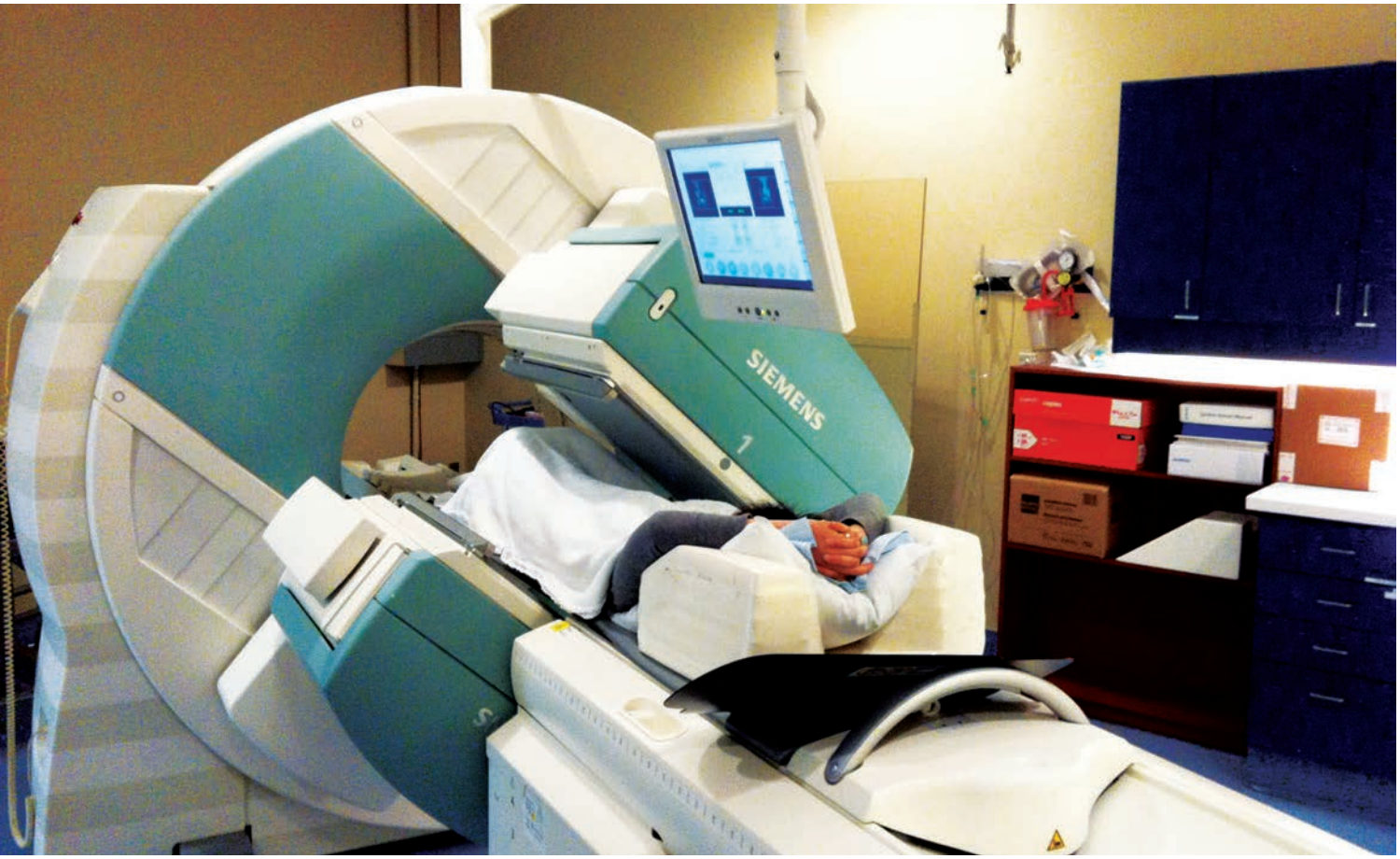
> The PET scanner is used to detect the distribution of the sugar in the tumour and in the body. By the combined matching of a CT scan with PET images, there is an improved capacity to discriminate normal from abnormal tissues



cells take up or absorb sugar more avidly than other tissues in the body.

After receiving the radioactive sugar, the patient lies still for about 60 minutes while the radioactively labeled sugar circulates throughout the body. If a tumour is present, the radioactive sugar will accumulate in the tumour. The patient then lies on a table, which gradually moves through the PET scanner 6 to 7 times during a 45-60-minute period.

The PET scanner is used to detect the distribution of the sugar in the



tumour and in the body. By the combined matching of a CT scan with PET images, there is an improved capacity to discriminate normal from abnormal tissues. A computer translates this information into the images that are interpreted by a radiologist.

How is a PET-CT scan different than a CT scan?

Doctors combine these tests because a CT scan and a PET scan show different things. A CT scan shows detailed pictures of tissues and organs inside the body. A PET scan shows abnormal activity. So, the two scans together provide more information about the cancer.

How does a PET-CT work?

A PET scan creates pictures of organs and tissues in the body. First, a technician injects you with a small amount of a radioactive substance. Your organs and tissues pick it up. Areas that use more energy pick up more. Cancer cells pick up a lot, because they tend to use more energy than healthy cells. Then a scan shows where the substance is in your body.

A CT scan uses X-rays to create a three-dimensional picture of the inside of the body. It shows anything abnormal, including tumours. You might get dye first, so the pictures show more detail.

PET scans, CT scans, and PET-CT scans do have risks. One risk is radiation exposure. The risk is small with a PET scan. This is because the radioactive substance only stays in your body for a short time. CT scans give you more radiation.

The benefits of these tests are usually greater than the risks. But you might have many CT scans or other tests with radiation. Tell all your doctors about your scans, so they know how many you get. Ask your doctor if you could have tests with less radiation.

When a patient schedules a PET-CT scan, the doctor will tell him/her how to get ready. For example, you might need to drink only clear liquids after midnight before the scan. Or you might need to stop eating and drinking at least four hours before the scan. For some scans, you might not need to stop eating and drinking. Therefore, it is important to tell the doctor if you have diabetes.

Before a PET scan, tell your doctor or nurse about all the medications you take. Ask if you should take them the day of your scan. Also, mention any allergies and other medical conditions. If you are breastfeeding or might be pregnant, tell your doctor. A PET scan could be dangerous for the baby.

(The author is Senior Consultant, Department of Nuclear Medicine, Action Cancer Hospital, New Delhi)

When Breathing Doesn't Come Easy

BY DR.PANKAJ SAYAL

Asthma is one of the most prevalent chronic disease affecting 100-150 million people worldwide, in developed and developing countries both.It is one of the common long-term disease that often starts in childhood, but can affect adults too.

The disease varies in severity from mild to frequent depending upon the patient. For some, it can just be a minor problem, but sometimes ashthma attacks greatly affect patient's quality of life, and can be life-threatening too. Asthmatic people often miss school, work, leisure outings, and avoid travel because of the disease effects.

As per WHO, there are around 15-20 million asthmatics in India, out of which 10-15% are children in the age group of 5-11 years. It is although a largely avoidable disease, still it tends to occur in epidemics. These rates are increasing by 50% every year. The economic costs associated worldwide with Asthma exceed to that of tuberculosis and HIV/AIDS combined.

Cause

The exact cause of asthma is still unclear, but combinations of environmental and genetic factors are to be blamed. Normally, the airways carry air to the lungs. As the air passes through the lungs, airways become smaller and smaller anatomically just like tree branches.

In ashthma, the airways to the lungs become inflamed and narrow causing constriction of the passage and restricting the amount of air that can enter. Less air gets in and out of the lungs. During asthmatic attack, airway constricts even more and throws more mucus in the passage, which further clogs up and reduces the amount of air going in and out of the lungs. This makes breathing difficult along with cough, wheezing and breath grasping.

Triggers

Various factors can trigger the symptoms including pollen, perfume, pets, exercise (stress on lungs), upper respiratory infection, cigarette smoke, dust, sulfites (in food or drink preservatives), indoor allergens like bedding mites, carpets, , outdoor pollution, etc.

Sometimes, people with asthma don't know themselves what triggers their disease. These include thunderstorm (causing pollen spread), intense emotions (laughter or stress can cause hyperventilation), acid reflux (can reach throat and cause irritation), food items (such as dairy products, peanuts, fish, soy, shellfish, wheat, etc), traffic on roads (pollution), occupational (chemical fumes, gases, dust), certain medications like beta blockers, etc.

Other risk factors include low birth weight, asthmatic patient related with blood, another allergic condition such as allergic rhinitis or atopic dermatitis, being overweight, and being a smoker. Urbanization has also to do lots with asthma.

Symptoms

The symptoms vary person to person. The symptoms include trigger cough, wheezing while exhaling, shortness of breath, and chest pain or tightness, or trouble sleeping. It is just like the feeling of drowning.

Emergency symptoms demanding immediate attention include rapid worsening of breath, no relief with inhaler, or shortness of breath with minimal physical activity.

Diagnosis minimally tests on the history provided

Physical exam is done to exclude asthma from other respiratory infection or chronic obstructive pulmonary disorder (COPD) along with other pulmonary (lung) tests.

Spirometry estimates the narrowing of bronchial tubes by checking the amount of air exhaled after a deep breath and rapidity of breathing.

Peak Flow device measures the hardness of exhalation. Low peak flow values suggest improper functioning of lungs and worsening of asthma. They are like thermometer.

These Lung function tests are done after giving bronchodialtors such as

albuterol to open the airways. If the lung functions improve after this medication, it's likely that the patient has asthma.

Methacholine challenge test is performed wherein methacholine, an asthma trigger is inhaled by the patient that causes constriction of the airway. This happens in case of any inflammation of the airways. This test is done even when lung functions are normal.

Nitric oxide test measures the amount of nitric oxide present in the breath. This gets high when airways are inflamed.

Imaging tests including chest x-ray and Computerized tomography can identify any structural abnormalities or disease (infection) causing breathing trouble.

Allergy tests can be performed through skin or blood to identify allergens such as pets, pollen, dust, etc.

Sputum eosinophils test looks out for white blood cells (eosinophils) in the sputum (saliva plus mucus). These become visible in sputum with rose coloured eosin dye.

Provocative test for exercise and cold-induced asthma measure airway obstruction induced after vigorous physical activity or after several cold air breaths.

Classification

This is now restricted more for research purpose. As asthma severity changes over time. It is generally categorized into 4 types like

Mild Intermittent- when symptoms are mild spreading over 2 days a week or 2 nights a month.

Mild Persistent- when symptoms attack more than twice weekly but not more than once a day.

Moderate Persistent-when symptoms occur once a day, more than one night weekly.

Severe Persistent- when symptoms remain throughout the day on most of the days and also frequently at night.

Treatment

The management of the disease varies as per symptoms, patient, age, trigger, and therapy. The disease cannot be cured but its symptoms can be managed or controlled. The disease severity can change over time.

Medications can calm down the symptoms by relaxing the muscles of the airway. These medications should be hands-on for such patients. These are mostly salbutamol inhalers, referred to as rescuers or the cornerstone of treatment. For allergen triggered asthma attacks, allergy medications also help manage the symptoms. Every patient of asthma does not take the same medicine.

Inhaled Corticosteroids are to be used for several days to weeks for maximum benefit. These are have lowest possible side effects and generally safe for long term usage.

Oral Medications like montelukast help relieve the symptoms for few hours. Rarely, these can be linked with psychological reactions.

Long acting Beta Agonists like

salmeterol are inhaled medicines that open the airways, but these too increase the risk for severe future attacks. That is why these are to be taken in combination with inhaled corticosteroid. These are contraindicated in acute attacks.

Combination Inhalers are used which have long acting beta agonist along with a cortiocosteroid.

Theophylline pill relaxes the muscles around the airways. It is not being advised nowadays.

Short acting Beta Agonists can be a hand held inhaler or a nebulizer and can be used for quick relief. Quick relief inhalers must not be used very frequently.

Oral and intravenous corticosteroids, mainly prednisone and methylprednisolone relieve airway inflammation. In long term use, these can have severe side effects.

Further treatment aims at reducing the inflammation of the airway on daily basis so as to prevent the occurrence of the symptoms and the attack thereby or at least lessen the severity.

Some patients are unable to get relief from medications and inhalers alone. For them, Bronchial Thermoplasty is the new approach to help open the airways. In this, a catheter is inserted into lungs via nose or mouth and its tip is expanded to touch the inner walls of the airway, which then delivers a therapeutic dose of radiofrequency energy, which warms and relaxes the tissues. It is given in 3 outpatients visits and has high success rate and relatively painless.

Prevention and long-term control of asthma is the key in management. The treatment plan should be flexible and assessed thoroughly by the doctor.

Patients must get vaccinated against influenza and pneumonia and learn to recognize the breathing pattern for any change.

Lifestyle Modifications

Several steps can be taken by the asthmatics to lessen their suffering including avoiding triggers by use of air conditioners as it removes airborne pollen, humidity and exposure to dust. Replace certain items from your room including mattresses, encase pillows. Use washable curtains and blinds. Maintain humidity at optimum level by using humidifiers. Clean all damp areas in kitchen and bathroom. Avoid pets and feathers. Clean your home regularly. Wear face mask in cold seasons.

Exercise regularly and maintain a healthy weight. It strengthens the muscles of the lungs and heart, and help relieve the symptoms. Control the heartburn if it worsens your symptoms.

Breathing exercises help reduce the medications in a great way.

Keep in mind that alternative system of medicine has not been able to replace the medical treatment. Talk to your doctor before taking any such medication.

(The author is Consultant Pulmonology at PSRI Hospital, New Delhi)

President Confers Florence Nightingale Awards

President Pranab Mukherjee recently conferred the Florence Nightingale Awards to 35 nurses from across the country on the occasion of International Nurses Day at the Rashrapati Bhavan.

The President congratulated the award winners and said that nurses play a vital role in all aspects of healthcare, be it national health campaigns like polio eradication, mid-wife services and community education. Their level of commitment and care are much valued in both urban and rural areas, including remote areas of the country.

The President added that their contribution is critical in the achievement of the nation's healthcare goals. Their inputs into health sector policies are equally important for they help in creating the necessary supportive work environment for their practice.

The President while commending all the nurses for their compassion, discipline and commitment to healthcare said that developing resilient health systems is a key to realize the United Nation's Millennium Developmental Goals. Emerging global threats such as microbial resistance, new pandemics, infections, and natural disasters have added to the pressure and demands on healthcare services. The services of nurses are crucial for a response system that a government creates to meet these challenges.

Union Minister for Health and Family Welfare, J P Nadda, who was present on the occasion, congratulated the award winners and appreciated their exemplary services. Acknowledging the strong caring and compassionate attitude of the nursing community, the Health Minister said that nurses play a pivotal role in providing healthcare at the primary, secondary and tertiary level. He added that through the competence they have demonstrated themselves to be role models for the young generation. He elaborated on the various schemes and initiatives taken up by the Ministry for strengthening and upgrading the infrastructure and human resource in the nursing sector.

J P Nadda also informed that the Ministry has undertaken number of initiatives for strengthening of nursing cadre. Some of them are establishment of ANM/GNM schools; upgradation of institutions from School of Nursing to College of Nursing; training of nurses, and development of nurse practitioner courses for critical care and primary healthcare services. The Minister further added that the national nursing and midwifery portal is being developed to bring out all nursing related information like Government of India initiatives in the field of nursing, information regarding nursing and midwifery education and human resource availability in the country, circulars, notifications, job opportunities and E-learning modules at a single platform.

Speaking on the occasion the Health Minister stated that work on creating an Indian Nurses Live Register will help in getting the latest, correct and real-time information of the current human resources in the field of Nursing in India. A technology platform called the Live Register has been initiated to include, capture and up-date the latest information of currently practicing nurses.

The Florence Nightingale awards are given to the outstanding nursing personnel employed in Central, state/UTs. Nurses working in government, voluntary organizations, mission institutions and the private institutions can apply with the due recommendation of concerned state government. The Florence Nightingale Awards carries Rs 50,000 in cash, a certificate, a citation certificate and a medal.

Also present at the award ceremony were Shri B P Sharma, Secretary (Health and Family Welfare) and senior officers from the Ministry of Health and Family Welfare along with invitees.

Government will soon decide on implementation issues

Most States are in favour of NEET in- principle. However, some States have expressed that there are some logistic issues that are impeding its implementation, and therefore they have desired for some more time". This was stated by Union Minister of Health & Family Welfare J P Naddaafter he met the Health Ministers from various States to hear their views on issues related to NEET, here recentl.

Union Health Minister stated that he had fruitful discussion with the Health Ministers from many States where they shared their State-specific issues in the context of holding the NEET this year. While they all agreed that the NEET was a welcome move to bring in transparency and remove several observed malpractices from the field of medical education, they pointed out that in some Sates the examination process was either underway or was soon to commence for induction to the State Government medical colleges. Also, there were issues of the syllabus of the CBSE being different than what the State Boards followed. Moreover, the States also pointed out that NEET should be allowed in regional languages in addition to Hindi and English in order to have parity for the students who have taken the State Board exams.

The Union Health Minister stated that the expressed views and concerns of the States shall be collated and soon a future course of action shall be thought of. He further said that the Government was committed to bring about transparency in medical education and remove malpractices.

Health Ministers and Health Secretaries/representatives of 18 States/UTs were present during the meeting along with senior officers of the Union Health Ministry.

Conference on cardiology leads to fruitful discussions

To create awareness and advancement in the intensive treatment to reduce cardiovascular diseases, Max Super Speciality Hospitals (Patparganj and Vaishali) recently organized a day-long Cardiology Update-2016 at Hotel Radisson Blu, Ghaziabad. The theme was to highlight the updates in the field of cardiology.

The conference was inaugurated by K G Suresh, Director General, Indian Institute of Mass Communication; Neeraj Mishra, Senior Vice President, Max Super Speciality Hospitals (Patparganj and Vaishali); Dr. Vinay Aggarwal, Director-Crosslay Remedies Ltd and Dr. Gaurav Aggarwal, Unit Head, Max Super Speciality Hospital, Vaishali; Dr. Arun Puri (Medical Advisor, Max Patparganj) and Dr. NP Singh, Medical Advisor (Max Vaishali); along with the Cardiology Team of Max Vaishali and Patparganj- Dr. Anand Kumar Pandey, Associate Director; Dr. Amit Malik, Dr. Ritwick Raj Bhuyan, Dr. Sanjiv Gupta, Dr. Pawan Zutshi, Dr. Kapil Dev Mohindra and Dr. Vivek Mittal.

The interactive conference saw an active participation of over 200 leading doctors (cardiologists and physicians) from Delhi-NCR and Western UP.

Dr. Anand Kumar Pandey said, “India is witnessing a spike in diseases related to lifestyle disorders which include hypertension, diabetes, obesity, Increasing cholesterol levels which ultimately leads to cardiovascular disease.“

The conference also highlighted the problems faced by the patients and we shared the knowledge of modern cardiology with practitioners of nearby areas to give better quality care. Dr. Pandey stressed upon the need for organizing such conferences at regular interval.

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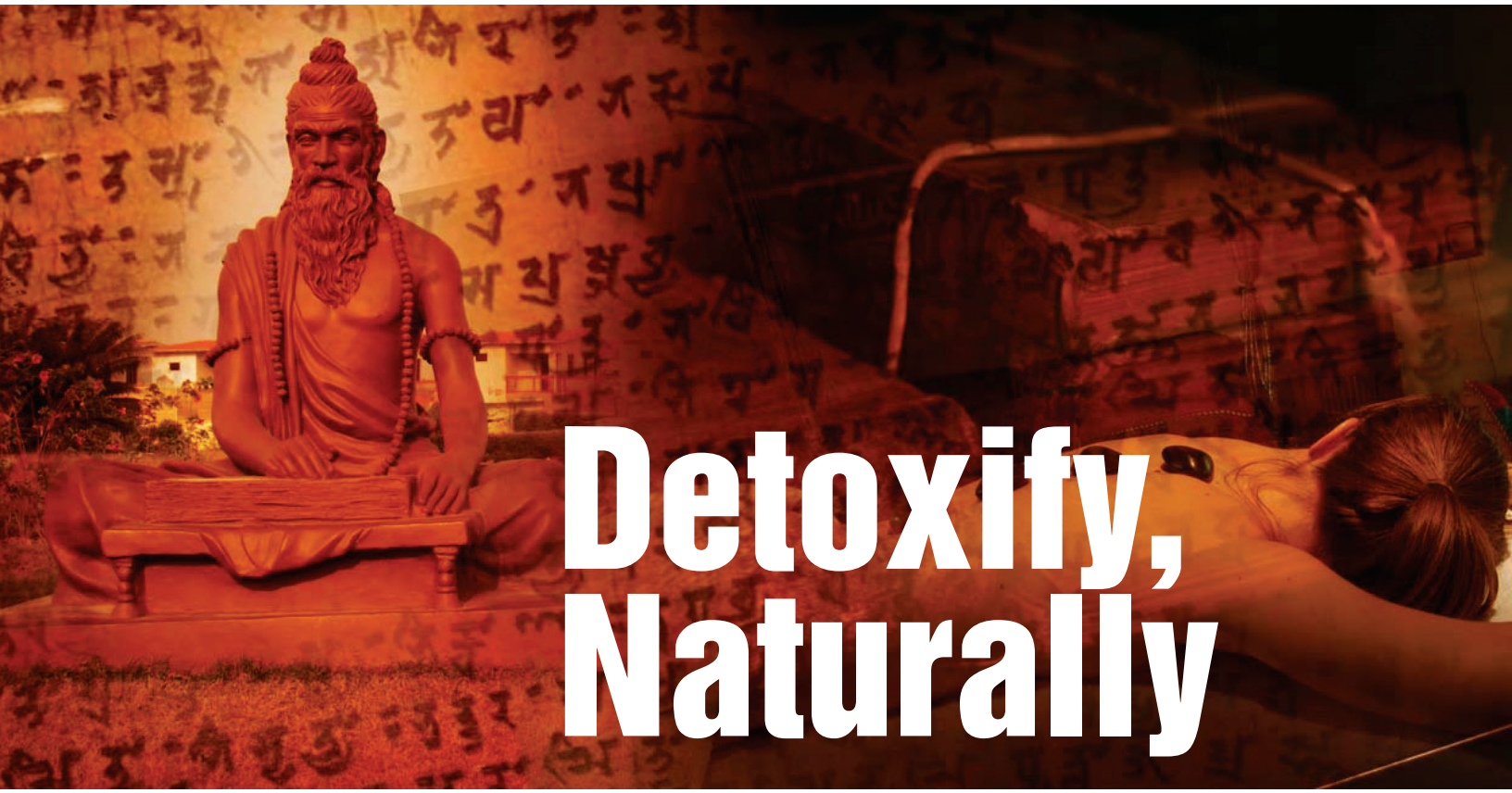


Detoxify, Naturally

Dr Partap Chauhan

Panchakarma works to loosen ama (toxins) through the body's natural channels of elimination

BY DR PARTAP CHAUHAN

Meaning 'five actions' or 'five treatments' in Sanskrit, this process is highly effective in cleansing the body of ama (toxins) produced due to faulty diet-lifestyle habits and poor nutrition. When ama accumulates in the body, it blocks the flow of energy and nourishment throughout the system. Ayurveda considers this build-up of toxins to be the underlying cause of all disease.

Panchakarma is a unique treatment procedure as it can be easily tailored to meet each individual's needs according to their body constitution and doshic imbalances. The therapies involved in this process work to loosen ama (toxins) from the deep tissues in order to be removed through the body's natural channels of elimination.

Spring - The ideal time for cleansing

Many people feel the signs of ama buildup in the Spring Season (late February to early April), more than at other times of year. This is mainly due to the fact that the toxins already present in the body start to display their symptoms during this time. The fact is, most of us do not follow a proper seasonal routine during the winter months (November to February) and the body ends up accumulating more toxins, thereby blocking the channels. At the same time, due to the cold temperature, the ama freezes in the walls of these channels. Even though you might not experience as many symptoms of ama during this time, your condition could worsen by the time spring comes. As it becomes warmer outside, the frozen ama starts to melt and flows into the body's channels. As a result, the channels get flooded with toxins, thereby highlighting the symptoms of ama presence.

The Ama Elimination Process

Before you undertake the process of Panchakarma, you should visit an Ayurvedic doctor who will determine your body constitution and current state of doshas. After identifying the cause of ama production in your body, he will

be able to pick the tissues, channels and organs that need to be addressed through Panchakarma and accordingly devise the right detox program specific to your needs.

An ideal Panchakarma detox program consists of three phases - Purvakarma, Pradhankarma and Paschatkarma - which are described below.

Purvakarma - Snehana, Abhyanga and Swedana

These pre-treatment techniques serve to prepare the body for the ama elimination process. Snehana (oleation) is the first step of Purvakarma and it consists of saturating the body with medicated oils in order to loosen ama and move it from deeper tissues into the gastrointestinal tract, from where it can be more easily cleansed. External oleation is called Abhyanga, which means complete body massage with medicated oils. Once the massage is completed, Swedana (steaming) is performed in order to dilate the channels and foster easy removal of ama.

Pradhankarma - Vaman, Virechan, Basti, etc.

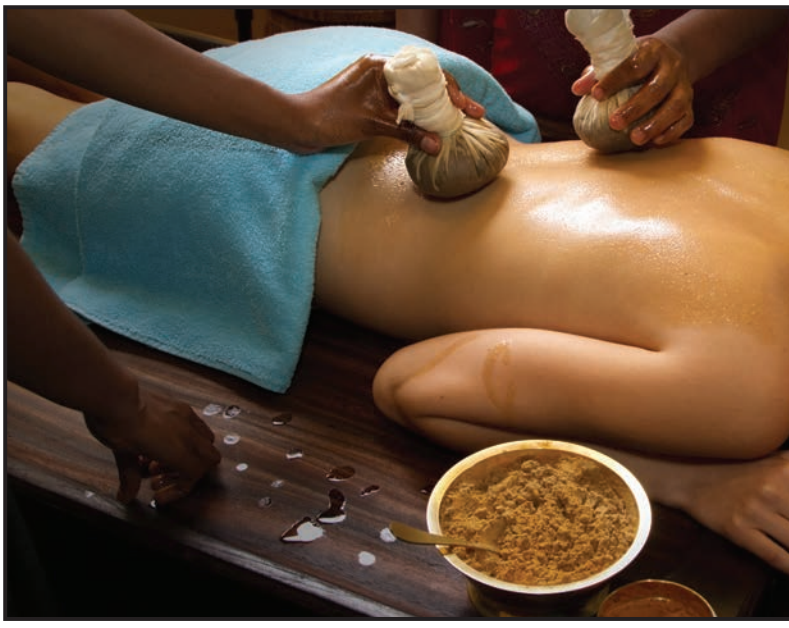
After Purvakarma, the ama moves into the gastrointestinal tract. Here, some main Panchakarma therapies such as Vaman (emesis), Nasya (nose cleaning), Virechan (purgation), and Basti (enema) can be used to remove ama through the body's normal channels of elimination.

> When ama accumulates in the body, it blocks the flow of energy and nourishment throughout the system. Ayurveda considers this build-up of toxins to be the underlying cause of all disease

Paschatkarma - Right Diet and Lifestyle

Paschatkarma refers to the set of procedures that are followed after the main Panchakarma therapies. This phase is aimed at reestablishing body immunity and metabolism. Most people do not realize that neglecting these post-treatment procedures may end up destabilizing the digestion process, thereby leading to continued ama production. Even after your Panchakarma treatment is over, it is advisable to keep eating light, nourishing foods, such as khichari and mung dal soup for a few days. Also, remember to gradually return to your regular activities and diet so that your body - which is in a sensitive state - does not become vulnerable after treatment.

(The author is Ayurvedacharya and Director, Jiva Ayurveda)



Deadly Heat

How to prevent yourself from heat stroke in which the temperature of the body increases due to excessive sun or heat but does not cool down easily? Follow Nature

BY DR PARTAP CHAUHAN

Dr Partap Chauhan

Heat stroke is the state in which the temperature of the human body start rising. The mechanism of human body is that the the heat withdraws from the body in the form of sweat. But during heat stroke the body loses its ability to cool itself. When the temperature of human body rises it is usually called fever of heat whereas in heat stroke the temprature of the body rises rapidly but it is very difficult to bring it again to normal.

Heat stroke can lead to: -

- Heat stroke is caused by excessive sunlight or heat.
- Dehydration, imbalance in thyroid, fall in sugar level in blood in the body give birth to heat stroke
- Alcohol consumption, medicines for high blood pressure, treatment of depression, etc. may also sometimes lead to heat stroke.
- Some other reasons of heat stroke include putting on excessive clothes, blockage in sweat glands

or any heart disease.

Symptoms of Heat stroke: -

- Headache
- Feeling uneasy
- Dryness in nose and skin
- Excessive sweating
- Muscle ache and Weakness
- Vomiting
- Rise in Blood pressure
- Feeling drowsiness
- Change in behavious and irritation

Due to extreme heat or temperature there is lot of sweating and due to heat stroke the body loses its ability to cool itself. When the human body temperature increases then it is termed as fever however in heat stroke the temperature of the human body increases but does not cool down easily.

> Heat stroke is the state in which the temperature of the human body start rising. The mechanism of human body is that the the heat withdraws from the body in the form of sweat

Health and Diet:-

- Consume water as much as possible during summers and also add little salt to it to remain safe from lack of iodine.
- Avoid heavy food which is deep fried or roasted, and try to eat light food and lots of liquid diet in daily routine.

Things to be remember:-

- Always keep Umbrella, water, glucose, sun glasses with you while going somewhere outdoor during summer. It will help you from direct sun light.
- If you are planning to go somewhere during summer vacation, try to avoid hot places and always keep lemon water or glucose water with you
- Usage of sunscreen lotion, face wash during summers will be beneficial for your skin..

(The author is Ayurvedacharya and Director, Jiva Ayurveda)

Empowering Parents

By Dr Manisha Yadav

Your child's health records will now be made available at a click of a button. India's first ever digital platform, Integrated Child Health Record (ICHR), to keep a child's health record, has been launched. Supported by cloud computing and mobile technology, ICHR is a revolutionary product to map a child's health and track vaccination. ICHR is supported by first-of-its-kind mobile application to address pressing concern of parents willing to track their child's growth and vaccination. The mobile interface will be available for both android and iOS users. The eminent scientist Samir K Brahmachari who was

present as chief guest to launch and endorse ICHR, said; "I am happy to announce/endorse product in ICT domain by young entrepreneurs with high social value, which is aligned to Government of India's digital vision."

ICHR provides and automates long-term surveillance of a child's growth. It has other benefits like it will also help in early detection of obesity and malnutrition in urban and rural population respectively. It also addresses the dire need of maintaining the data centrally for research purposes. Once fully implemented, ICHR will become a potent tool in providing authentic region specific data for analysing and identifying reasons and probable solutions for both child vaccination and growth related issues.

Commenting on the merits of ICHR, Dr. Raghuram Mallaiah, Director

Neonatologist, Fortis Le Femme, said, "This application is all about empowering parents regarding their child vaccination and growth. This application removes the manual vaccination cards and makes the experience paperless and traceable from any part of the world. This is the only app available in India to track the growth of premature babies both in the hospital and once they have been discharged from the hospital. This will be particularly beneficial for both doctors and parents to track the growth parameters of premature babies (Fenton Chart), not only while they are in hospital but even after their discharge up to 5 years (only app which continues from Fenton chart to the WHO chart).

"He further explained that the application can be used in both urban and rural areas to track growth parametres in children up to 5 years and help in early detection of obesity (increasing trend of obesity as per WHO guidelines) and malnutrition. This will also help in much needed collection of data across India with regards to vaccination uptake.

WHO data indicates that we have 235 million children 0-9 years out of our total population of 1.25 billion with physicians' density of 6.49 physicians per 10000 population. We witness 7 lakh neonatal deaths every year and almost 3 lakhs of such cases are because of lack of vaccinations. These kids died due to diarrhoea and pneumonia making India rank as third lowest amongst 15 other high burden countries across the globe. Once fully implemented, ICHR will come handy in providing authentic region specific data for analyzing and identifying reasons and probable solutions for such problems.

Harpreet Singh, Chief Technology Officer, Oxyent Medical, the company behind ICHR said, "Our main aim behind this product is to provide a paperless authenticated platform integrating doctors, hospitals and parents. The platform will provide automated vaccination record andwill monitor the growth schedule. Additionally, the technology is secure and HIPAA compliant. It is a cloud-based solution, which can be easily linked to hospital HIS/EMR system via HL7 or integration adaptors. There is no physical software installation needed to start using iCHR. Being on Amazon cloud, doctor can access real time patient information regarding growth & vaccination from any part of world using Internet.

"Our main aim behind this product is to provide a paperless authenticated platform integrating doctors, hospitals and parents. The platform will provide automated vaccination record and will monitor the growth schedule. Additionally, the technology is secure and HIPAA compliant. It is a cloud-based solution, which can be easily linked to hospital HIS/EMR system via HL7 or integration adaptors."

Harpreet Singh,
Chief Technology Officer,
Oxyent Medical

Oxyent Medical is the first one to bring such a technology in child health care. The company claims to provide a dedicated front end and back end team to support the users. On the pricing, Singh added that the technology is available at effective pricing. "It amounts to 1/3 rd of your monthly newspaper bill," he said.

(The author is a Medical Practitioner)

Coping with Deadly Disease

Thanks to medical advancements, people with HIV can today expect to live longer and healthier than ever before

BY DR VINAY AGGARWAL

It is important to know "How long one can expect to live after getting HIV? The answer is both simple and not-so-simple.

By and large, the outlook is extremely positive. With the proven effectiveness of antiretroviral therapy (ART), people with HIV can today expect to live longer and healthier than ever if infection is detected and treated early (before immune function is compromised) and if they are able to ensure viral suppression by maintaining life-long adherence once therapy started.

To some, that may seem like a lot of ifs and buts. But the truth is that HIV is a very different disease than it was just ten years ago. Maintaining adherence is far easier today with medications that offer lower pill burdens, fewer side effects, and far superior drug resistance profiles to previous generation drugs.

> One of the primary barriers to treating or developing effective vaccine for HIV is the high genetic diversity of the virus itself. While viruses that use double-strand DNA to replicate are relatively stable, retroviruses like HIV go backwards in their replication cycle (using single-strain RNA) and are far less stable

Because of this, a young like 21-year-old HIV-positive person on ART can now expect to live into his or her early 70s. Ultimately, longevity can only be determined by the cumulative factors that either increase or decrease life expectancy in a person with HIV. These factors range from things we can control (such as treatment adherence or lifestyle choices) to things we cannot (such as race or economic status).

Furthermore, the proper treatment and management of HIV is only part of the game. Even for people able to maintain full viral suppression, the risk for the development of non-HIV-related

comorbidities, such as cancer or heart disease, is far greater that of the general population, and generally develops 10 years earlier than people who don't have HIV.

So profound are these concerns that, in the developed world, a person living with HIV is far more likely to die prematurely of a comorbid condition than an HIV-related one.

Therefore, proactively addressing both HIV-related and non-HIV-related health issues is vital in ensuring not only long life, but long quality of life in people with HIV.

One of the primary barriers to treating or developing effective vaccine for HIV is the high genetic diversity of the virus itself. While viruses that use double-strand DNA to replicate are relatively stable, retroviruses like HIV go backwards in their replication cycle (using single-strain RNA) and are far less stable. As a result, HIV is highly prone to mutation—mutating, in fact, about a million times more frequently than cells using DNA.

As the virus' genetic diversity widens and different viral sub-types are passed from person to person, the mixed genetic material can create new HIV hybrids. While most of these hybrids die, the few surviving ones often exhibit greater resistance to HIV therapy and, in some cases, faster disease progression.

Antiretroviral drugs are organized into five classes based on the stage of the HIV life cycle they are known to inhibit. Today, there are 27 individual agents (known as "drug molecules") and 12 fixed dosed combination (FDC) drugs comprised of two or more of different molecules. Seven of the FDCs can, in fact, be used as a single-pill, once-daily therapies, ensuring greater treatment adherence and ease of use.

When one has been exposed to HIV through a known positive partner, by blood or other at-risk exposure, if he has been exposed to HIV in the last 72 hours, he may be able to take an HIV medication regimen called Post Exposure Prophylaxis (or PEP) to help reduce his/her risk of infection.

PEP is a preventative medication administered after suspected HIV exposure. It does not prevent HIV; it helps decrease the likelihood of HIV infection from the exposure. The PEP regimen was originally developed for health care professionals who were exposed to HIV through needle sticks and patient fluids. PEP is now available for non-occupational applications.

PEP costs can be substantial, but this should not deter you from seeking treatment after exposure. Many states offer health grants to clinics if the regimen has been started within a certain time frame.

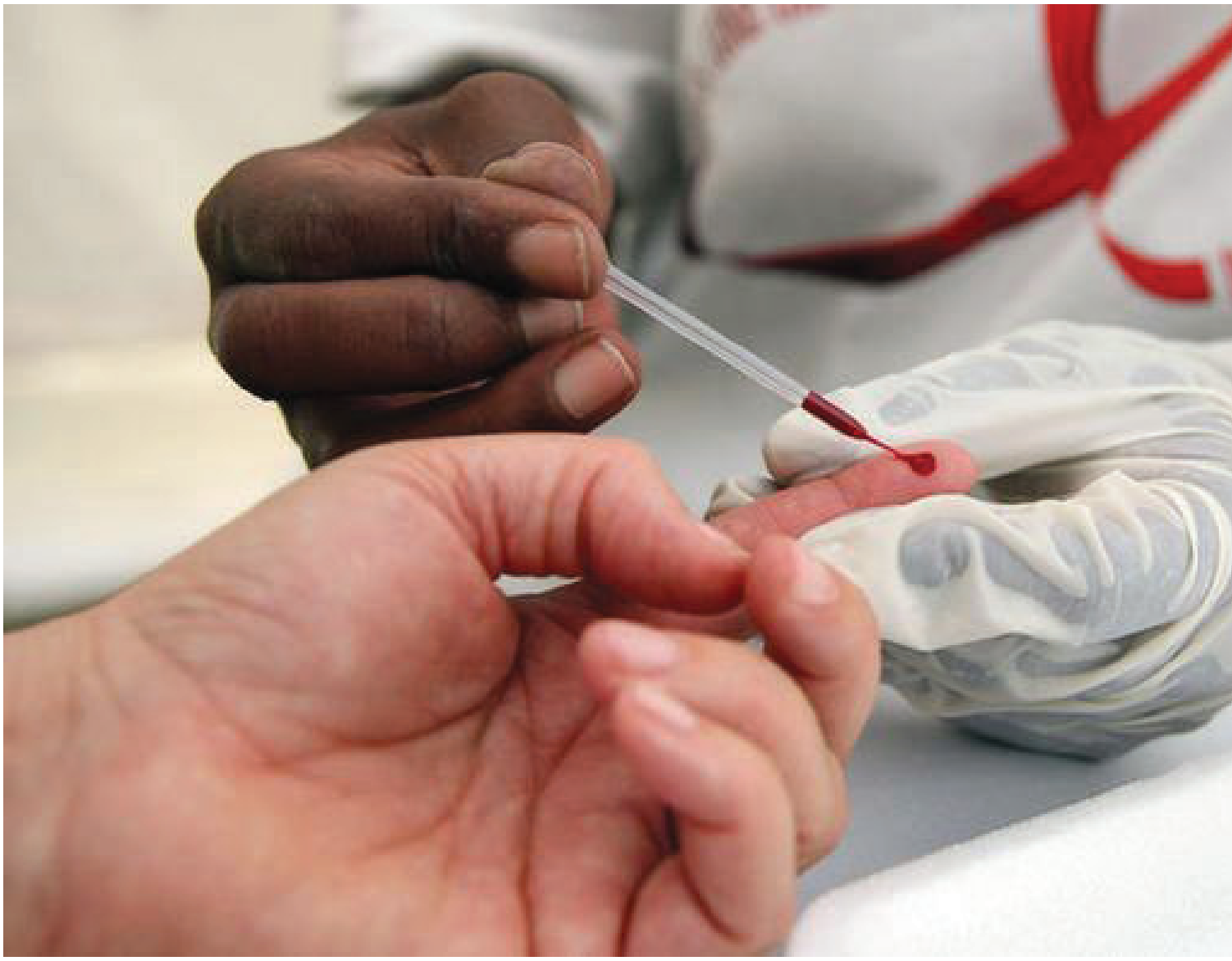
HIV exposure can happen through blood, genital secretions, or other potentially infected body fluids. Accidents happen (at work and in the bedroom). A condom may break for a serodiscordant couple. A poor decision may have been made to bareback after a night out partying. There are a number of scenarios where you may find yourself exposed to HIV.

When one has been exposed to HIV through a known positive partner, by blood or other at-risk exposure, if he has been exposed to HIV in the last 72 hours, he may be able to take an HIV medication regimen called Post Exposure Prophylaxis (or PEP) to help reduce his/her risk of infection

It is important to understand that PEP is not for continued at-risk behavior, such as repeated unprotected sex. PEP shouldn't be seen as HIV control or prevention, just as the morning after pill for pregnancy shouldn't be seen as birth control. PEP does not prevent HIV; it only decreases the likelihood of infection after exposure. The best way to prevent HIV is to prevent exposure. PEP is administered on a case-by-case basis and only if exposure was in the determined window, in some cases 36 hours.

PEP is not 100% effective in preventing transmission and because antiretroviral medications carry a certain risk for adverse effects and serious toxicities, PEP should be used only for infrequent exposures. Persons who engage in behaviors that result in frequent, recurrent exposures that would require sequential or near-continuous courses of antiretroviral medications (e.g., discordant sex partners who rarely use condoms or injection-drug users who often share injection equipment) should not take PEP. In these instances, exposed persons should instead be provided with intensive risk-reduction interventions.

(The author is Founder Chairman, Max Superspeciality Hospital Vaishali (Ghaziabad) and Ex-President, Indian Medical Association, New Delhi)



Emerging Complications

Standardisation of AIDS treatment regimens is still evolving and there are fears of patients developing drug resistance and side effects. Also, treatment of TB among the HIV-infected persons is a new challenge. Some of the drugs which are recommended for TB treatment pose complications in cases of HIV-infected persons

BY DR DAMODAR BACHANI

In India, the Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) epidemic is now 15 years old. Within this short period, it has emerged as one of the most serious public health problems in the country.

The initial cases of HIV/AIDS were reported among commercial sex workers in Mumbai and Chennai and injecting drug users in the north-eastern state of Manipur. The infection has since then spread rapidly in the areas adjoining these epicenters and by 1996 Maharashtra, Tamil Nadu and Manipur together accounted for 77 per cent of the total AIDS cases with Maharashtra reporting almost half the number of cases in the country.

Even though the officially reported cases of HIV infections and full-blown AIDS cases are in thousands only, there is a wide gap between the reported and estimated figures because of the absence of epidemiological data in major parts of the country. The latest estimate for the HIV/AIDS infected adult population in the country is 3.8 million in 2000. The overall prevalence in the country is still, however, very low, a rate much lower than many other countries in the Asia region.

The available surveillance data clearly indicates that HIV is prevalent in almost all parts of the country. In the recent years, it has spread from urban to rural areas and from individuals practising risk behaviour to the general population. Studies indicate that more and more women attending ante-natal clinics are testing HIV-positive thereby increasing the risk of perinatal transmission.

About 85 per cent of the infections occur from the sexual route (both heterosexual and homosexual), about 4 per cent through blood transfusion and another 8% through injecting drug use. About 89% of the reported cases are occurring in sexually active and economically productive age group of 18-49 years. One in every 4 cases reported is a woman. The attributable factors for such rapid spread of the epidemic across the country today are labour migration and mobility in search of employment from economically backward to more advanced regions, low literacy levels leading to low awareness among the potential high risk groups, gender disparity, sexually transmitted infections and reproductive tract infections both among men and women.

The social stigma attached to sexually transmitted infections also holds good for HIV/AIDS, even in a much more serious manner. The effects of stigma are devastating. Discrimination against people living with HIV/AIDS denies them access to treatment, services and support and hinders effective responses. It creates a climate in which decisive action from the government may be side stepped. There have been cases of refusal of treatment and other services to AIDS patients in hospitals and nursing homes both in government and private sectors.

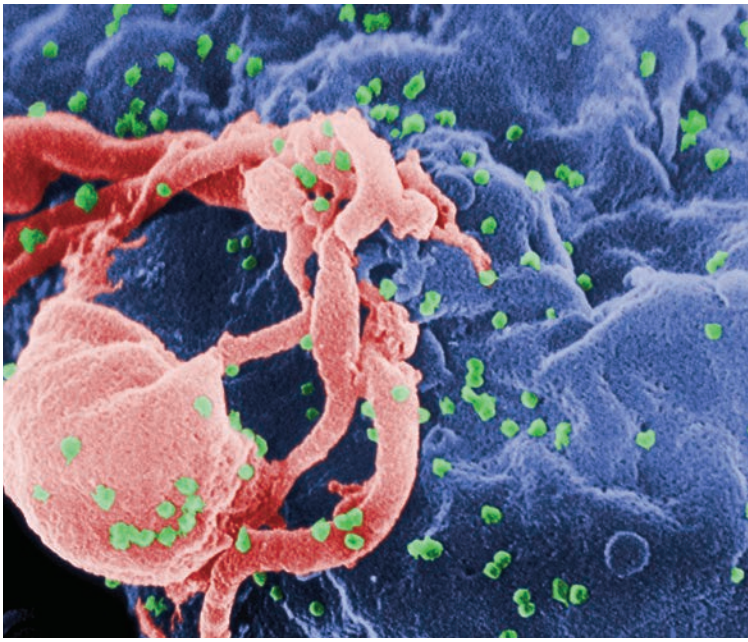
This has compounded the misery of the AIDS patients. More often it is mistaken to be a contagious disease and patients are isolated in the wards creating a scare among the general patients. In the workplace there are cases of discrimination leading, on some occasions, to loss of employment. The active part played by some non-governmental organisations in bringing out public interest litigations against such cases of discrimination and the judicial pronouncements by courts in support of the rights of such people has partly helped in alleviating the misery of the affected persons.

People living with HIV/AIDS have provided the best response to the stigma and the denial that shroud the epidemic. They bring faces and voices to the realities. Only clear and candid information about how HIV is and is not transmitted will alleviate unnecessary fear and discrimination. Efforts need to be made to train all medical and Para medical health care workers to create a congenial environment where HIV/AIDS patients are admitted and treated without any fear and scare.

The treatment options are still in the initial trial stage and are prohibitively expensive. While there is no vaccine in sight, multi-drug anti-retroviral therapy, popularly known as 'cocktail therapy', is not a cure to the disease and may help only in prolonging the life of the patient.

Standardisation of treatment regimens for these drugs is still evolving and there are fears of patients developing drug resistance and side effects if the therapy is not administered under proper medical supervision.

There are instances of quacks taking advantage of the situation and promising cures and defrauding unsuspecting people who are infected with the virus of large sums of money. Transmission of the disease through blood, though limited to 4% of the cases down from 8% in 1992, is also a serious issue as unsuspecting



population can get infected through this route if safe blood is not ensured.

Existence of a large number of small and medium blood banks, many of them in the private sector, also compounds the problem. The Supreme Court directive of May, 1996 has helped in phasing out unlicensed blood banks by May, 1997 and professional blood donors by December, 1997. Mandatory testing of blood for HIV along with Syphilis, Malaria Hepatitis B and C has helped in checking transmission of HIV virus through blood transfusion.

Transmission among injecting drug users is also one of the major causes for the spread of HIV/AIDS in the country. Even though the cases are more prevalent in the north-eastern states, incidence of HIV through injecting drug use is evident from many parts of the country, especially the urban areas.

Harm reduction programmes which involve exchange of syringes and needles, coupled with peer education, community outreach, access to health services and a range of treatment modalities from abstinence to oral drug substitution have been adopted by other countries to effectively reduce transmission of HIV through injecting drug use. In India the harm-reduction approach is yet to find wider acceptability because of ethical and moral considerations.

Although transmission of HIV through use of needles, razors and other cutting instruments in beauty parlors, hair-cutting saloons and dental clinics is insignificant, lack of hygienic practices in majority of these establishments also poses a health risk to the unsuspecting general population who visit these places every day. There is an urgent need to bring these establishments to acceptable standards of hygiene to minimise and almost eliminate the chances of HIV transmission through the use of needles and sharp cutting instruments. With a high prevalence of TB infection in India the problem of HIV/TB co-infection also poses a major challenge. Nearly 60% of the AIDS cases are reported to be opportunistic TB infection cases.

Treatment of TB among the HIV-infected persons is a new challenge to the National TB Control Programme which has now adopted Directly Observed Treatment Short-course (DOTS) strategy for control of TB infection. Some of the drugs which are recommended for TB treatment pose complications in cases of HIV-infected persons and had to be withdrawn in areas of high HIV prevalence. At the same time looking for HIV among TB infected persons will also cause the problem of scaring away a large number of TB infected cases in the country from seeking treatment under the DOTS strategy.

There is no risk of any TB patient getting infected with HIV unless he or she practises high risk behaviour or gets infected from transfusion of HIV-infected blood. HIV/AIDS is not a disease which spreads randomly and is transmitted as a consequence of a specific behavioural pattern and has strong socio-economic implications. It not only costs huge sums of money in terms of controlling the opportunistic infections such as TB, pneumonia and cryptococcal meningitis, but seriously affects individuals in their prime productive years causing serious economic loss to them and their families.

As a part of community medicine strategies, the national AIDS control policy principally aims at the prevention of further spread of the disease by(i) making the people aware of its implications and provide them with the necessary tools for protecting themselves. (ii) controlling STDs among vulnerable sections together with promotion of condom use as a preventive measure (iii) ensuring availability of safe blood and blood products; and (iv) reinforcing the traditional Indian moral values among youth and other impressionable groups of population.

(The author is Health Commissioner, Ministry for Health and Family Welfare, Govt of India)

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