




MENTAL HEALTH OF YOUNG PEOPLE IN THE CHANGING WORLD

Section Editor & Contributor

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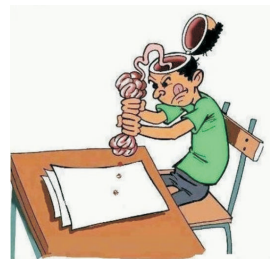


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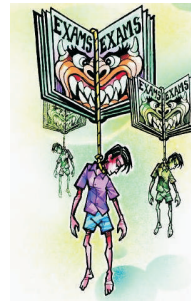
It is said that between 15 to 25 years age is the Golden age in one's life. During this period an adolescent child grows into an adult, acquiring knowledge and skills to live independently and start the family life. The individual has to face several examinations and his needs are taken care of by the parents / guardians. He / she has to face the following issues which may disturb him / her.



1. Academic Pressures:

Ours is a highly competitive world. More than 8 lakhs students take X std. exam, and 7 lakhs take P.U exam in Karnataka. There is severe pressure on every student to score very high grades to get placed in the course and college of one's choice. Students coming from different backgrounds, rural – urban – educated / uneducated families have to compete with each other. 15% of students have below average IQ, 15% above average IQ and 70% average IQ while 10% of students may have Specific Learning Deficits (SLD) in the subjects such as language, mathematics, science etc. It is found that only 15% students with good IQ, do well, score high and are happy while 15% students with low IQ can't do well and remain frustrated. They may decide to discontinue studies. They look for jobs and if they do not find one, they get disappointed.

The selection of course of study and career is done by majority in an unscientific manner. Students are forced to get into certain courses by the parents. Parents do not bother whether their son / daughter have the right aptitude and capacity to do well in that course. The courses of choice are only a few - M.B.B.S., B.E., B.Com., I.A.S. or I.P.S. There is a mad rush for these courses. Private colleges try to exploit the situation. Their donations, and fees are heavy. Even above middle class families find it difficult to meet the expenses. Students, who can't afford to get an entry, remain frustrated and develop an inferiority complex and emotional problems.



Exam Tension / Fear :

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A sizeable number of students develop severe tension / fear when they have to face X Std., PU II year exam, CET / NEET / other entrance exams. They entertain doubts about their ability to perform well and become fearful which reduces their efficiency. Our exams test students' memory only, but there is no medicine, tonic / or special food to increase memory. The students' request doctors for such medicines / tonics! However, there are 6 steps to improve memory (6 R methods).

6 R Methods

- I R - Read with concentration for 30 minutes. Understand what you read.
- II R - Recall what you have read and write the points. Repeat what you could not recall.
- III R - Relax for 2 to 3 minutes by doing breathing exercise or medication.
- IV R - Read again but different subject.
- V R - Revise as frequently as possible.
- VI R - Rehearsal: Write answers to questions in stipulated time. Learn to write fast and legibly.

Parents, and teachers should help and guide the students to enjoy examinations. They should avoid negative thoughts or anticipate failure. "I will prepare well. I will do well. I will get good marks" should be the slogan for every student.

Every student needs career counselling which will assist them in selecting the correct course as per their aptitude.



2. **Autonomy:**

Every adolescent / young individual wants to be autonomous. They don't like to take instructions and advice from parents and others. They want to eat what they want, want to dress according to their wish, select hobbies and entertainment of their choice. They want to be totally left to themselves and resent any kind of control. This leads to a struggle between students and parents, students and teachers. In the process they become rebels, aggressive and pick up fights

3. **Clarity, Confusion, Carelessness and Poor Communication:**

Because of poor knowledge, experience, analytical skills, the majority of youngsters have no clarity in their thinking and remain confused. They do not know what is right and what is wrong. They are not sure which is beneficial and which is not. They look at immediate gains but fail to recognise long time difficulties. They take wrong decisions; indulge in activities which can become dangerous in the long run.

Communication skills are inadequate in many people. They cannot express their opinions, views and emotions properly. They cannot negotiate, persuade and convince others. They are not properly understood by others which lead to misunderstanding and resentment.



4. Distractibility, Disappointments, Depression and Drug Abuse:

Youngsters get easily distracted by environmental stimulations. Attractions and distractions decrease their concentration. They get involved in many unwanted, unproductive activities. They waste time, money and efforts in useless activities finding no time for healthy and creative activities.

They have many desires which cannot be fulfilled. Their sense of reality is poor. They cannot appreciate the limitations of their family in terms of resources and affordability. They look at the glamorous life and achievements of a few others and get frustrated as they do not have or get those luxuries. They get depressed. They find easy and quick ways of coming out of depression. They get attracted towards smoking, drinking, or doping. They get involved in recreational activities which are un-ethical or even dangerous to themselves and others.

They are getting attracted towards mobile, (video - games, social media) T.V, internet. They are spending 3 to 10 hours every day with these gadgets and remain in a fantasy world of their own.

Out of disappointment and depression, they think of committing suicide. Suicides and para suicides are on the rise. Suicide is reported to be the 2nd biggest cause of deaths in persons between the ages of 15 to 29 years.



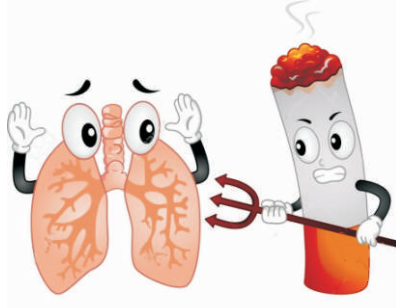
Drug abuse:

Smoking and chewing tobacco attract young people. Nearly 50% youngsters smoke and others start when they are in PU or College. Curiosity, peer pressure, anxiety, frustration appear to be motivating factors.

Popular beliefs about smoking in our Society

- Helps to reduce tension / anxiety / boredom / depression
 - Helps to think, solve problems
 - Increases creativity / energy
 - Is a sign of maleness / assertiveness
 - Is a sign of modern living for girls
 - Helps to pass time
 - Relieves constipation
 - Helps in socialisation
 - Keeps the body warm in winter / rainy season
 - Helps to attract members of opposite sex
 - Helps to express anger to protest against authority
 - Reduces stress
 - Is a sign of autonomy and boldness
 - Increases the sexual pleasure and to feel orgasm
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Nicotine is a mild stimulant of the brain and makes the person feel a sense of control and well-being for a short time. Cigarette smoke contains 9 harmful gases including carbon monoxide and 25% of the chemical particles are capable of converting normal cells into cancer cells.



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Youngsters have to be educated about the myths regarding smoking have. The hazards of smoking on body and mind have to be explained by the doctors. Prevention of smoking has to be given priority by all the concerned., especially by doctors.



Alcohol :

Majority of young people love to drink alcohol which they consider alcohol is a necessary item to relax, socialise, minimise or manage their frustration, boredom, to enjoy life!

There are many popular myths about alcohol:

- Alcohol is a tonic, medicine.
 - Is a stimulant
 - Increases sexual desire and performance
 - Increases creativity
 - Improves appetite and sleep
 - Decreases physical and mental pain
 - Helps to forget disappointments and painful experiences
 - Prevents heart attacks, stone formation in kidneys
 - Converts dark skin to a fair skin
 - Increases the bulk of the muscles
 - Makes you to be bold to forget / protest
 - Is a part of modern – social life-style

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Alcohol is available freely (legal substance) in different forms and young men and women visit bars, pubs to consume alcohol. They try to hide it from their parents and later get bolder. They claim that they are social drinkers and assure that they won't abuse alcohol. Over a period of time, 20 to 25% of these individuals start abusing alcohol and become victims of ill – effects including medical problems. Alcohol contributes heavily for road – accidents, crimes, fights, sexual misbehaviour in the young people.

Process of addiction:

A young social drinker who takes alcohol once in a way, at parties along with friends, on certain occasions, once in a way for fun or to manage his negative mood state, but gradually may move towards becoming an addict over a period of time ranging from a few months to a few years.

The frequency increases from once a week to twice a week to everyday and then morning drinking starts, alone either in the bar / at home

- Drinks inspite of hazards of alcohol
- Develops withdrawal symptoms and craving
- Drinks to reduce withdrawal symptoms
- Denies losing control
- Becomes blind to the problems created by his drinking
- Ignores, neglects the advice given by family members, doctors and well-wishers. Later becomes angry and aggressive with such advice and frequently get intoxicated.
- Becomes sick, health gets disturbed because of damage to liver, stomach, brain, nerves, heart and kidney. Suffers from malnourishment.

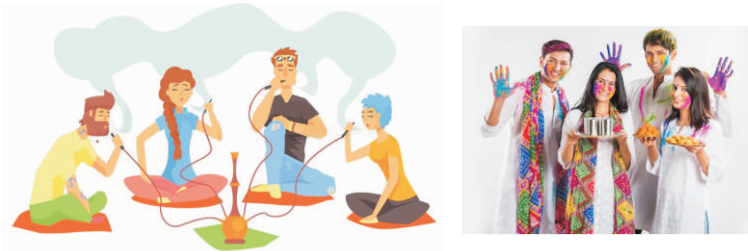
They are frequently seen in the hospitals as they ignore the doctors' advice to stop drinking. They need plenty of convincing to get de-addiction treatment.



GANJA – Cannabis

Ganja is one of the oldest psycho – active substance used by man. It was used in India as far back as 2000 BC. It is still being used as part of religious and spiritual activities. Bhang (Ramaras) is distributed during some festivals.

In 2014, 18 crores people used Ganja all over the world. It is reported more than 50% Americans use it in the form of smoking, vapourisation, mixed with milk (Ramaras). Different names are Speed, Weed, Hash, Charas, and Angel Dust etc.



Ganja produces euphoria (sense of well-being, helplessness, feeling high, illusions,(colours look more bright, sounds heard like music, touch becomes exciting!) hallucinations (visions of heaven, God) a feeling flying in air. These experiences start a few minutes after consumption and last for 2 or 6 hours, increased sexual desire, increased appetite especially for sweets. Side effects are dryness of mouth, temporary decline in memory, red eyes, movements become clumsy, fear and suspicion. Prolonged use of Ganga leads to:

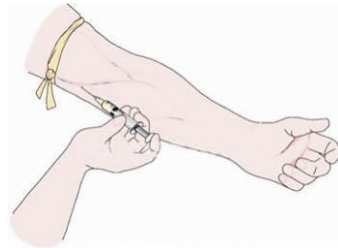
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- 1) **Addiction** to the substance
- 2) **Ill effects on lungs:** Cough, Sputum, Breathing, Wheezing, Difficulties, Cancer
- 3) **Heart and blood circulation:** Heart attack, Sudden Heart failure → death, Weak Heart muscles.
- 4) **Brain and Mind:** Poor memory, hippocampus damage, psychosis, suspicion, paranoid delusions. Fear aggression, hallucinations (It is known as Cannabis Psychosis resembles Paranoid Schizophrenia). The person becomes lazy, irresponsible, neglects his family and duties.

Medicinal Use: It relieves spasms and pain, prevents nausea / vomiting, increases appetite and to treat cancer.

Ganja is one of the important causes of vehicle – accidents next to alcohol use. It is an illegal drug in most of the countries. It is banned in India but easily available everywhere. Off late use of *Ganja* has become a public health problem in schools and colleges, among drivers and inmates of jails.

Heroin: The queen of all intoxicating drugs and highly addictive. Persons get hooked and addicted to it on 3rd or 4th dose. The person increases the dose of heroin 500 times to get the desired effect. The craving is severe, the withdrawal symptoms are so painful, and the person may be ready to do any heinous crime to get the drug. One kg of heroin may cost more than Rs 1.5 crores in India!



Heroin is used in many ways:

1. **Intra – venous injection** (drug is injected into the blood tube and within a minute / two the person gets intoxicated. (Taking a shot, Digging)
2. **Smoking / Chasing:** The powder is heated on an aluminium foil and smoke is inhaled.

Insufflation: The powder is inhaled directly.

3. **Suppository:** The drug is kept in the anus or vagina.

Withdrawal Symptoms of opiates like Heroin occur within 2 to 6 hours of last intake of drugs. Severe sweating, watering in the eyes, running water from nose, yawning, sneezing, heaviness of head, severe muscle spasms / cramps, malaise, fear, sadness, priapism (painful – sustained erection of penis). The individual becomes restless. A dose of the drug relieves him from these painful symptoms. Ill effects on body and mind:

IV users of the drug share the needle / syringe. They do not care for hygiene. They get infections.

- HIV, Hepatitis, Pneumonia, Abscesses. Many organs get infected. Veins collapse. Liver get damaged. They may develop Deep Vein Thrombosis (DVT) – blood supply gets reduced leading to gangrene.
- They become very aggressive, kill people commit suicide, cruel / criminal behaviours are exhibited. They obey people who supply the drug and take part in heinous crimes.

More than 75% of users become addicts. They cannot stop taking the drug because of severe painful withdrawal symptoms.

Doctors have to be vigilant and ask every young person who come to medical help, whether he / she uses any substance. If necessary carry on urine test for substances and abuse has to be identified and treated.

5. Emotional disturbances:



Young people are emotionally sensitive and unstable. Anxiety, fear, sadness, anger outbursts are common in them.

Anxiety-Fear arise out of

- I. Feelings of insecurity / uncertainty
- II. Anticipate failures
- III. Feel lonely, uncared by family members
- IV. Not getting sufficient love, support
- V. Feel inferior to age mates and others
- VI. Poor knowledge and skills
- VII. Inadequate experience in handling difficult situation or people
- VIII. Imaginary / real threats and dangers
- IX. Separation anxiety, being away from parents / known people, when they live in hostel / P.G / relative's house
- X. Guilt and shame
- XI. Using money, people, status
- XII. Having a serious ailment / disease / disability
- XIII. Disturbed relationship
- XIV. Stress of any kind beyond one's coping skills
- XV. Worries about future
- XVI. Big duties and responsibilities

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Severe anxiety / Fear when it disturbs the Individual's routines and one's performance is labelled as

Anxiety Disorder which is of 3 types

1. Generalised Anxiety Disorder
2. Phobia
3. Panic Disorder

Management:

Counselling: Find out the cause for anxiety. It can be a person, situation, issue, responsibility.

Make him to challenge negative thoughts. Induce positive thinking.

Teach the individual good coping skills.

Reassure him / her that the problem / issue can be managed with the help of others.

Teach him / her relaxation exercises / activities

Medication: Minor Tranquilisers such as Propranolol, Lorazepam, Nitrazepam, and Buspirone Antidepressants like Escitalopram, Fluoxetine Sertraline may be given for one to three months and then tapered off. Warn the individual not to continue the medicine or increase the dose without your permission.

Sadness – Depression



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About 30% young people suffer from sadness and depression at one time or the other. The common causes of sadness – depression are as follows:

- I. Basic needs like food, shelter are not met with
- II. Not getting love, support, encouragement from the family, being neglected / rejected.
- III. Parental separation
- IV. Death of parents / loved ones
- V. Failures, frustrations
- VI. Severe criticisms, negative comments and treatment like ragging – physical / mental abuse
- VII. Broken relationships
- VIII. Subjected to sexual abuse
- IX. Financial constraints / losses
- X. Diseases / disabilities
- XI. Feelings of guilt and shame about past mistakes or antisocial – unethical activities
- XII. Lack of social support system, loneliness
- XIII. Low dopamine / serotonin in the brain
- XIV. Low thyroxine level in the blood
- XV. Unemployment / under-employment

What are the features of Depression ?

-
- D - Dullness, dejected feelings, lack of activities, being withdrawn
 - E - Energy is less, No enthusiasm, No enjoyment
 - P - Poor concentration, memory, learning ability
Poor in any or all parts of the body, weakness
 - R - Remorseful, guilt
-

-
- E - Eating, sleeping gets disturbed
 - S - Socialisation is less
Sexual interest / activity comes down
 - S - Suicidal thoughts / attempts, Deliberate self-harming
 - I - Inferiority, insecurity, decreased interest even in pleasurable activities
 - O - Orphan feelings –feelings of loneliness and rejection
 - N - Negative thinking and approach, pessimism
-

50% patients in any clinic – hospital suffer from depression which has to be identified.

How to overcome sadness and depression?

Teach and train the person to:

- I. Assess and accept the loss, look at the cause of sadness and plan to manage the loss. Think what can be done.
- II. Do not be alone. Stay with people you like. Contact them and talk to them. Discuss the loss / problem, get their help.
- III. Do not be idle. Engage yourself in some activities which divert your attention. Stop brooding over the issue / event.
- IV. Assess your strength and weakness. Gather courage and strength to manage the loss.
- V. Reduce your needs, expectations. Try to be simple and contented as follows:
 1. Do things which make you happy: Listen to good music.
 2. Read good books. Pray to God. Talk to someone you like.
 3. Recall happy event, memorable positive events of your life.

Tell yourself: Like sunshine and showers, happiness and sadness keep coming in one's life.

'Today sadness Tomorrow happiness'.

Be optimistic. Be positive. Have positive thoughts.

Medicines: Anti-Depressant drugs: Safe and Effective

Prescribe one of the following:

ESCITALOPRAM

SERTRALINE

MIRTAZAPINE

VENLAFAXINE

DOTHIEPIN

They have to be taken for 2 to 3 months or in some cases for a longer duration .

In case of severe depression refer the person to a psychiatrist. Electro Convulsive Therapy (ECT) or Cognitive Behaviour Therapy may help the individual to recover faster.

Anger



Irritability, anger, aggressions are on the rise in young persons for the following reasons:

- I. Their needs are neglected.
- II. They are discriminated within the family and outside.
- III. People misbehave, un-necessarily comment and punish them.
- IV. Their rights are violated.

- V. They are forced to do activities which they do not like to do.
- VI. They are subjected to injustice.
- VII. They don't get recognised for their good work.
- VIII. Their independence / autonomy is curtailed.
- IX. They are subjected to severe restrictions.
- X. Their values beliefs and practices are questioned by others.
- XI. Social disparities, disorganisation, exploitation.
- XII. They may be suffering from Schizophrenia Bipolar Disorder or brain damage.

How young people express their anger?

- I. Sulking: Not talking, not responding, refusing to eat, go to college, work, and stay away.
- II. Back Talking and answering, argue.
- III. Abusive
- IV. Assault – become violent, destructive
- V. Take alcohol / intoxicating drugs
- VI. Carry on criminal activities

How to manage anger?

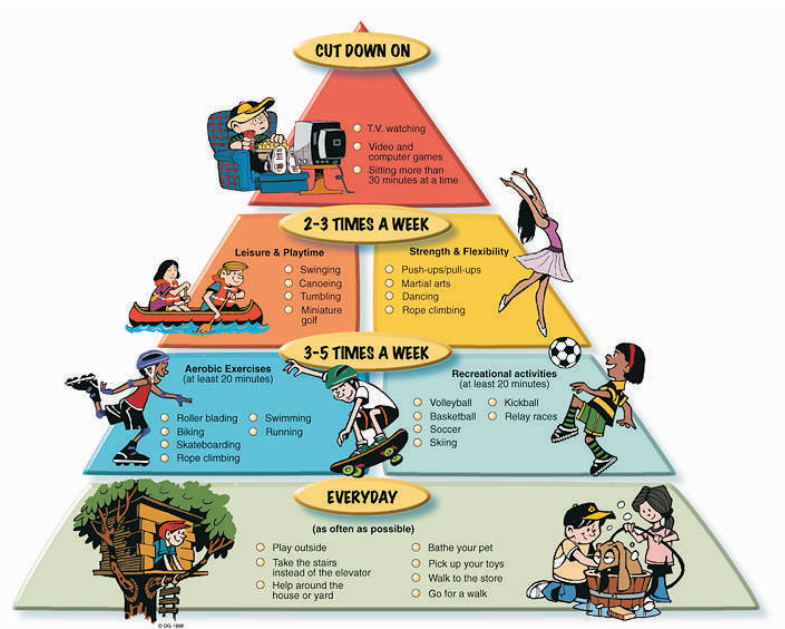
- Let him / her talk about why he / she is angry
- Sympathise with him / her. Give emotional support. Ask him not to blame others.
- Reassure that their needs will be taken care of.
- Talk to the family members and request them to support the individual.

Medicine: Prescribe minor / major tranquilizers to control anger. Mood stabilizers like Lithium, Valproate can also be prescribed.

Prevention is easy and much safer. Teach the young person to increase his / her tolerance.

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- I. Expect less from parents, friends and others.
- II. Be satisfied with what you get.
- III. Ignore comments, criticisms from others.
- IV. Plan to fight against discrimination, injustice.
- V. Relaxing by music, sports, yoga, meditation.
- VI. Leave it to God to punish people who cheat you or misuse or abuse you.
- VII. Pardon people who ill treat you.
- VIII. Mind your work, your goal and enjoy working.
- IX. Avoid jealousy when others get what you don't get.
- X. Write a diary and ventilate your frustrations.



6. Hobbies and habits:

Many young people do not pursue good and healthy hobbies and habits. They indulge in cheap unhealthy entertainment and activities like:

- a) Use mobile / internet, social media, video games, movies, songs – dances.
- b) Joy riding
- c) Picnics and tours
- d) Arranging and taking part in parties
- e) Excess and irregular eating habits. Eat more junk foods.
- f) Irregular sleeping habits.
- g) No discipline in daily routines.
- h) Tobacco and Alcohol abuse.
- i) Sexual activities

7. Moral and Ethical issues:

Young people enjoy breaking norms! They may dislike old traditions and frequently break social and legal norms. Some may tell lies, steal, and cheat others without feeling guilty.

They disrespect elders and disobey them.

They think of short cuts for immediate gains.

They don't mind following illegal path to reach the goals. They may enjoy troubling others.

They have to be encouraged to adopt the following 10 human values as advised by educationists.

1. **Simplicity:** Simple living, cutting down the needs and desires. Be contented with what you do / get.
2. **Humility:** Be polite and kind. Respect every individual irrespective of age, sex, class. Avoid excess self-pride.
3. **Trust:** Trust family members and friends. Trust in goodness of others who interact with us.

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4. **Hope:** Always be hopeful.
5. **Honesty:** We have to be honest in our efforts. We should not cheat anybody for any reason. We should not grab things / money which belong to others.
6. **Co-operation** with everybody at home and in work place.
7. **Unity:** Be united with family & friends. You can achieve success and reach goals. Together you can fight against any evil / problems.
8. **Love:** Unconditional love towards all living beings. Love your work, your family, your place and country.
9. **Freedom:** Let everybody have freedom to talk, express, work and do activities.
10. **Happiness:** Learn to be happy with what you have and with people with whom you have to interact.



8. **Sexuality:**

Young people are curious to know about sex and sexuality. They develop hetero sexual or homo sexual desires. They look for having sexual contacts and may indulge in sexual acts. In our country, talking about sex is a taboo. No sex education is given to our children and young people. There are many misconceptions, wrong beliefs and practices which make young people to develop anxiety / worries about their sexual health and strength. For example, they worry about:

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1. Masturbation and seeing porno pictures.
2. Size of sexual organ and other secondary sexual features.
3. Getting and giving sexual satisfaction.
4. Pre-marital sexual contacts and their implications.
5. Homosexuality.
6. Future marital sexual life and sex life partner.

As a doctor, you have to educate them.

Give them basic knowledge about human sexuality and normal sexual life. Remove their unscientific – harmful beliefs and practices. Warn them regarding fake sexologists.



9. Psycho-somatic symptoms and somatoform disorders:

Young people with mental health problems contact doctors (G.P, Family Physicians) for multiple psycho – somatic symptoms. Like having headache, chest pain, body aches – pains, weakness, easy fatigability, numbness, increased / decreased appetite, underweight / over-weight, insomnia, poor concentration, poor memory, fear of having serious diseases related to heart, brain, nerves, genital organs. They insist on laboratory tests, scanning, MRI and other sophisticated investigations. They want the doctors to confirm / rule out diseases. They demand for body and or mind tonics, injections or some kind of medication or specific foods to improve their body and or mental strength.

As a general practitioner or family doctor, you can help these youngsters with counselling and health education. Persuade an individual who needs psychiatric help to consult a psychiatrist. Keep having a dialogue with a psychiatrist to improve your mental health knowledge and management skills.



10. Targets:

- What one should become in life?
- What are short term, long term and life targets?
- How much money, materials, status, awards to be earned?
- How and when to settle in life?
- What path to be taken to reach the target?
- What should be the philosophy of life and living?

Such questions keep bothering every young person. Each one has to find her / her way and destination. There should be clarity and no confusion.

MAINTENANCE OF MEDICAL RECORDS IN DAY-TO-DAY MEDICAL PRACTICE

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MAINTENANCE OF MEDICAL RECORDS IN DAY-TO-DAY MEDICAL PRACTICE

Introduction:

Medical record is a document containing sufficient data written in sequences of events to justify the diagnosis, and warrant the treatment given and the end result. Importance of maintenance of medical record is that it contributes to the professional care rendered to the patient and reflects the quality care rendered by the institution



Objectives of Maintaining Medical Records:

1. Monitoring of the actual patient
2. Medical research
3. Medical/dental or paramedical education
4. For insurance cases, personal injury suits, workmen's compensation case, criminal cases, and will cases

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5. For malpractice suits
6. For medical audit and statistical studies.

Types of medical records:

Medical records are of two types (i) personal and (ii) impersonal used for research or statistics. They are further divided as: (i) paper records (hard copies) and (ii) computerized records.



Contents of medical record:

The health record as well as any electronically stored variant of the traditional paper files contains proper identification of the patient.

A complete medical record for inpatients should show the followings:

- Demographic data
- Para clinical data
- Clinical data
- Treatment data
- Documentary items
- Ancillary diagnostic media: X-Ray/CT/MRI Scans, pathology specimens/documents, ECG/EEG and photographs, etc.

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- Miscellaneous: Consent form, MTP forms, insurance records, legal documents and correspondence (referral form / consultation advise), etc.

Effective patient identification is the beginning of an efficient medical record system.

- The medical record number ((MRN) should be issued in straight numerical order from the NUMBER REGISTER commencing with the number 1. Many hospitals start with a six-digit number by adding a series of "0's". For example the number 1 could be shown as 00-00-01.
- If the patient has been an inpatient previously, the admission clerk must look for and find the old number in the MASTER PATIENT INDEX. If the patient has not been an inpatient previously, the next number in the NUMBER REGISTER is allocated.
- Number given should belong to the patient for the rest of his or her life and should never be given to another patient.
- A NUMBER REGISTER could be a bound book or a loose-leaf book where the sheets are bound at the end of each year to prevent loss.

Admission Procedure and the Master Patient Index (MPI):

1. A telephone inquiry about a patient from the admission clerk to the Medical Record Department where the MPI (MASTER PIN INDEX), (which is kept in the Medical Record Department), is checked to see if the patient has been in hospital previously and already has a MRN.
2. If the answer is yes, the number is given to the admission clerk to record on the FRONT SHEET of the patient's medical record.
3. If no, the admission clerk assigns the next unused number from the NUMBER REGISTER.

ALL patients admitted, whether admitted for the first time or the second, are listed in the **ADMISSION REGISTER**

Contents of the Admission Register

- Family name and given name.
- Reason for admission (presenting disease/illness).

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- Date of admission.
- Date of discharge.
- Discharge alive/dead.
- Other details may include doctor's name, sex, date of birth/age, ward etc.

The ADMISSION REGISTER is used to produce the admission statistics.

Indexing

- **Alphabetic or Master Index: Indexing based on patient's name sequenced in**
- alphabetic order. The primary purpose of a name index is to provide entry into
- the filing system and finding out MR for a patient. The patient index
- card is usually **3"x5" card giving identification data, registration number etc**

- **Disease index: Disease index is a catalogue of cards of 3"x5" or 5"x8",**
- maintained to find out groups of clinical records of patients having the same
- diagnosis.

Master Patient Index Card include:

- The patient's full name.
- The patient's full address.
- Hospital's identification number - that is, the medical record number.
- Patient's date of birth and sex.
- The patient's mother's maiden name and/or other unique patient characteristics.

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Medical record procedures commonly computerized in many countries include the:

- a. Master patient index (MPI).
 - b. Admission, transfer and discharge/death(ATD) system.
 - c. Disease and procedure index.
 - d. An automated record tracking system.
 - e. Medical Record Completion System.
 - f. Discharge Summary Abstracting System.
- a. Computerization of the MPI would be spread over a period of time through:
1. Entry of information already held on index cards from the manual MPI card system including all patients in hospital at the time of implementation.
 2. **Inpatient registration:** When a patient has been admitted to hospital, they become an **INPATIENT** and the **FRONT SHEET** is the beginning of the inpatient medical record.
 3. **Outpatient registration:**
 - In most countries, there are two types of outpatient clinics:
 1. **general outpatient clinic; and**
 2. **specialist outpatient clinic**
 - The data collected in an outpatient medical record should include:
 - Patient identification details.
 - Family health history, relevant history of presenting illness and physical findings.
 - Clinical observations.
 - Reports of tests and procedures performed.
 - The outcome of the visit. For example, follow-up for further treatment, admission to hospital, no further treatment etc.

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- There should be an appointment book for making appointments for each specialist.

a. **Important Points for the Operation of a Computerized MPI:**

- All name searches should use the name and at least one unique patient characteristic.
- Entry of at least one unique patient characteristic is compulsory when adding a patient to the MPI.
- Entry of the medical record number is compulsory when adding a patient to the MPI.
- The computer automatically issues medical record numbers in strict numerical order.
- The MPI should enable the manual entry of pre-existing medical record numbers.

b. **Computerized Admission, Transfer and Discharge (ATD) System:**

The ATD system is one of the most computerized systems involving medical records.

- The objectives of such a system are to:
- Provide an inpatient booking service for patients awaiting admission.
- Keep records of the bed state and bed allocation.
- Provide daily patient census reports and related statistics.
- Provide information for the MPI (directly linked to the MPI system).
- Provide a complete data base for all authorized users of patient identification and location information.

c. **Disease and procedure index:**

- A DISEASE INDEX lists diseases, conditions and injuries by the specific code number for each disease, condition or injury according to the coding system used in a hospital.
- A PROCEDURE INDEX lists operations and procedures performed in a hospital by the specific code number for each operation or procedure.

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A computerized disease and procedure index has been developed in many hospitals to enhance the retrieval of medical information for research.

d. **Automated record tracking system:**

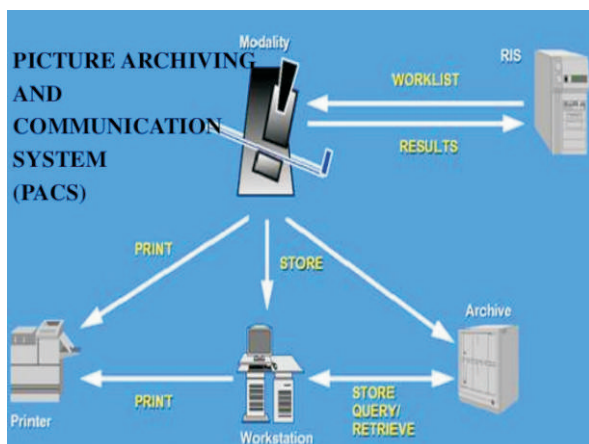
Many types of computerized file location/tracking systems are available. With such a system, the location of a medical record can be readily found. In addition, a list of previous places where the medical record was sent can be printed, e.g. clinics, including the date when the record was sent to that location. Some hospitals use a bar code system for this.

e. **Medical Record Completion System:**

- A computerized medical record completion system provides an efficient tool for tracking incomplete medical records and provides a list of the number of incomplete records awaiting completion by individual doctors.
- Such a program would be linked to the ATD system on discharge of the patient.

f. **Discharge Summary Abstracting System:**

With the establishment of a central data base of patient information linked to an ATD System, a summary of the patient's stay in hospital can be produced. The summary would include identifying information about the patient, admission and discharge dates, final diagnosis, treatment on discharge and follow-up details.



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The computerization of a number of hospital applications such as pathology, biochemistry, radiology etc., have been most successful as have the computerization of the MPI, ATD, etc.

A picture archiving and communication system (PACS) is a medical imaging technology which provides economical storage and convenient access to images from multiple modalities.

It consists of 4 components :

- The imaging modalities such as X-ray plain film (PF), computed tomography (CT) and magnetic resonance imaging (MRI).
- A secured network for the transmission of patient information.
- Workstations for interpreting and reviewing images.
- Archives for the storage and retrieval of images and reports.

PACS was the most useful tool in radiology department. **It was the first attempt of automation.**

The move to a fully electronic health record is a major undertaking and cannot be entered into lightly. The introduction of an EHR would drastically change the work of the Medical Record Department, particularly the basic procedures such as the admission, discharge and filing procedures. With a number of problems associated with maintaining manual medical records, particularly medical record storage space, some health care professionals and administrators want to move from a paper to a paperless environment.

The move to a fully electronic health record is a major undertaking, some countries have been successful and others have not yet reached their goal.

Before planning an electronic health record system, other administrative questions must be addressed, such as:

- What type of system would be required to meet perceived needs of an electronic health record for your health care facility/country?
- Is there available funding?
- What type and size of computers would be required to meet the needs within the funds available?

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- Does the hospital/country have an adequate and reliable electricity supply?
- Does the hospital/country have sufficient trained staff and the provision for training new staff?

Preservation and maintenance of medical record:

The records should be kept under lock and key, in the custody of the doctor concerned or authorized personnel only, in a medical record. Plan a periodical checking for the records. Proper care should be observed while handling the records. Fire extinguisher should be available in record room. Protect all records from dampness, water, and from hot and dry climate. The handling staff should receive periodic training in confidentiality of member information.

Fully computerized system may improve the effectiveness and efficiency of a Medical Record Department, but ONLY where the basic manual procedures are already in place and well organized.

Functions of medical record department:

- Filing of Medical records.
- Retrieval of medical records for patient care and other authorized use.
- Completion of medical records after an inpatient has been discharged or died.
- Coding diseases and operations of patients discharged or having died
- Evaluation of the Medical Record Service.
- Completion of monthly and annual statistics.
- Medico-legal issues relating to the release of patient information and other legal matters.

Rules while issuing certain Medical Records:

1. Prescription:

The prescription should be preferably on the OPD slip of the institution or on the letter pad of the doctor. Prescription must contain—patient's name, age, sex, address and institution/hospital name.

2. Reports:

All reports i.e. lab investigation, X-ray reports, ultrasound reports, computed tomography (CT-scan)/magnetic imaging resonance (MRI) reports, and histo-pathological reports should be issued by a qualified person.

3. Medical certificates:

While the health care provider record a medical certificate or other, they should follow the following three basics: (i) The doctor should keep a copy of medical certificate issued, (ii) maintain a register containing full details of medical certificate issued and (iii) it should be issued on an approved proforma.

Special attention has to be given while signing on medical records. Signing on a fake medical certificate can invite medical litigation

Users of medical records:

- **Primary users:** Attending physician (themselves) – By other physicians (for consultation).
- **Secondary users:** Nursing/ paramedical staff, patient (during consultation or referral/for future), hospital administrators, students teaching, clinical Research, epidemiology, statistics ,insurance companies.
- **Third party users:** Social worker, occupational therapist, audit purpose, accreditation purpose, MCI/CEA purpose ,government agencies ,court of law (during trial),investigating agencies (police, criminal negligence enquiry).

Problems of medical records

Following are the main problems:

- Legibility (hand writing, typed, computer generated)
- Retention and preservation
- Confidentiality
- Privileged communication

- Storage (space)
- Uniformity
- Utility
- Quality
- Retrieval (timing)
- Medico-legal reporting.

How Long to Maintain the Records:

1. Under the Consumer Protection Act, it is advisable to preserve all the inpatient records for a period of at least 5 years and OPD records for 3 years.

As per the MCI provisions under Regulations, 2002, every physician shall maintain the medical records pertaining to his/her indoor patients for a period of 3 years from the date of commencement of treatment in a standard Performa laid down by MCI.

2. For mentally retarded patient forever till hospital/institution is working.
3. From income tax point of view for 7 years.

PNDT act and medical record:

Section 29 of the PNDT Act, 1994 requires that all the documents be maintained for a period of 2 years or until the disposal of the proceedings. The PNDT Rules, 1996 requires that when the records are maintained on a computer, a printed copy of the record should be preserved after authentication by the person responsible for such record.

How to destroy the records:

1. Public notice of destroying the records in English newspaper and in one vernacular paper mentioning the specific date up to which destruction will be sought.

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2. Give a time limit of 1 month for taking away records for those who want the records with written consent.
3. After 1 month destroy the records up to date specified except for following
 - a. Where litigation is going on.
 - b. Where future trouble is expected.
 - c. Mentally ill or retarded patient.
 - d. Pre-litigation process of notice exchange is going on.

Conclusion:

Medical records form an important part of a patient management. It is important for the doctor and medical establishment to properly maintain the records of the patient for 2 important reasons. First one is that it helps in proper evaluation of the patient and to plan treatment protocol. Second is that the legal system relies mainly on documentary evidence in cases of medical negligence.

LONELINESS – SILENT EPIDEMIC

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A public health problem

Loneliness is often stigmatised, trivialised, or ignored, but—with the rapidly growing number of older adults in this countries, the increased likelihood of premature mortality, and the deleterious effects of loneliness that have been identified in animal models and human longitudinal investigations—loneliness is emerging as a public health problem.

Loneliness is a common experience; as many as 80% of those under 18 years of age and 40% of adults over 60 years of age report being lonely at least sometimes with levels of loneliness gradually diminishing through the middle adult years, and then increasing in old age (i.e., ≥ 70 years)¹. Loneliness is synonymous with perceived social isolation, not with objective social isolation. People can live relatively solitary lives and not feel lonely, and conversely, they can live in a joint family and feel lonely nevertheless. Loneliness is defined as a distressing feeling that accompanies the perception that one's social needs are not being met by the quantity or especially the quality of one's social relationships.

Epidemiological studies

For more than a quarter century, epidemiological studies have noted an association between objective measures of social isolation—typically operationalized as being unmarried, having less than monthly contact with friends and family, and/or having no participation in organizations, clubs, or religious group and health outcomes. The most common explanation for this association is the social control hypothesis, which postulates that interactions with friends, family, and congregations incline better health behavior, which in turn decreases risks for morbidity and mortality.

Each of us is capable of feeling lonely, and loneliness is an equal opportunity tenant for good reason. We can say that loneliness is the social equivalent of physical pain, hunger, and thirst; the pain of social disconnection and the hunger and thirst for social connection motivate the maintenance and formation of social connections necessary for the survival of our genes. For as many as 15–30% of the general population loneliness is a chronic state². Left untended, loneliness has serious consequences for cognition, emotion, behavior, and health

Social isolation has been recognized as a major risk factor for morbidity and mortality in humans for more than a quarter century. The brain is the key organ of social connections and processes, however, and the same objective social relationship can be experienced as caring and protective or as exploitive and isolating.

Physical health and quality of life

Increasing evidence suggests that perceived social isolation or loneliness is a major risk factor for physical and mental illness in later life. A growing body of longitudinal research indicates that loneliness predicts increased morbidity and mortality. The effects of loneliness seem to accrue over time to accelerate physiological ageing³. Similarly, loneliness was associated with increased systolic blood pressure in a population-based sample of middle-aged adults⁴, and a follow-up study of these same individuals showed that a persistent trait-like aspect of loneliness accelerated the rate of blood pressure increase over a 4-year follow-up period⁵.

Loneliness accrual effects are also evident in a study of mortality in the Health and Retirement Study, all-cause mortality over a 4-year follow-up was predicted by loneliness, and the effect was greater in chronically than situationally lonely adults⁶.

In 2010, a meta-analysis revealed that the odds ratio for increased mortality for loneliness is 1.45, which is approximately double the odds ratio for increased mortality for obesity and quadruple the odds ratio for air pollution⁷.

Among women in the National Health and Nutrition Survey, chronic high frequency loneliness (>3 days/week at each of two measurement occasions about 8 years apart) was prospectively associated with incident coronary heart disease (CHD) over a 19-year follow-up in analyses that adjusted for age, race, socioeconomic status, marital status, and cardiovascular risk factors⁸. Depressive symptoms have been associated with loneliness and with adverse health outcomes, but loneliness continued to predict CHD in these women after also controlling for depressive symptoms. Loneliness has also been shown to increase risk for cardiovascular mortality, individuals who reported often being lonely exhibited significantly greater risk than those who reported never being lonely⁹.

Mental and cognitive function

Several studies also indicate that loneliness is a risk factor for cognitive decline and dementia. Two recent longitudinal studies do speak to this question. Tilvis et al¹⁰, measured cognition by the Mini-Mental State Examination and the Clinical Dementia Rating at baseline and at 1-, 5-, and 10-year assessments of a population-based sample of 75- to 85- year-old individuals. Results at the 10-year follow-up assessment revealed that two biological measures and loneliness independently predicted cognitive decline. In a larger prospective study, Wilson et al¹¹, assessed 823 older adults free of dementia at enrolment. Participants completed an extensive battery of cognitive measures to assess global cognition, episodic memory, semantic memory, working memory, perceptual speed, and visuospatial ability. The lonelier the participants were, the poorer their cognitive performance within each of these domains at baseline. In addition, loneliness was associated with greater cognitive declines in every domain except working memory and episodic performance.

How does loneliness unravel

Loneliness posits¹² that perceived social isolation is tantamount to feeling unsafe, and this sets off implicit hyper vigilance for social threat in the environment. Unconscious surveillance for social threat produces cognitive biases, relative to non-lonely people, lonely individuals see the social world as a more threatening place, expect more negative social interactions, and remember more negative social information. Negative social expectations tend to elicit behaviours from others that confirm the lonely persons' expectations, thereby setting in motion a self-fulfilling prophecy in which lonely people actively distance themselves from would-be social partners even as they believe that the cause of the social distance is attributable to others and is beyond their own control.

This self-reinforcing loneliness loop is accompanied by feelings of hostility, stress pessimism, anxiety, and low self-esteem and represents a dispositional tendency that activates neurobiological and behavioural mechanisms that contribute to adverse health outcomes.

How does it affect our health behaviour

One of the consequences of loneliness and implicit vigilance for social threat is a diminished capacity for self-regulation. The ability to regulate one's thoughts, feelings, and behaviour is critical to accomplish personal goals or to comply with social norms. Feeling socially isolated impairs the capacity to self-regulate, and these effects are so automatic as to seem outside of awareness for self-regulation of lifestyle behaviours. Regulation of emotion can enhance the ability to regulate self-control behaviours¹³, as is evident from research showing that positive affect predicts increased physical activity. In middle-aged and older adults, greater loneliness was associated with less effort applied to the maintenance and optimization of positive emotions¹⁴. Physical activity is a well-known protective factor for physical health, mental health, and cognitive functioning, suggesting that poorer self-regulation may contribute to the greater health risk associated with loneliness via diminished likelihood of engaging in health-promoting behaviours.

Several theoretical pathways have been proposed to explain the health effects of loneliness in older adults. As noted, loneliness has been found to

be associated with adverse health behaviours – poorer health practices (e.g., alcohol use and smoking) and fewer health-promoting behaviours (e.g., less physical activity, poor nutrition) among older persons

Beside the behavioural issues there are neurobiological mechanisms¹⁵ that include age-related changes in neuroendocrine, cardiovascular, inflammatory stress responses, elevated vascular resistance, blood pressure, hypothalamic pituitary adrenocortical activity, leukocyte glucocorticoid resistance reflecting aberrant ratios of circulating white blood cells, lower inflammatory control and diminished immunity.

Cognitive processes have also been implicated as a potential mechanism in the loneliness-health relationship. For instance, severe and persistent feelings of loneliness have been shown to impair executive functioning, heighten sensitivity to negative social stimuli, and erode interpersonal trust.

Sleep

Countering the physiological effects of the challenge of daily emotional, cognitive, and behavioural experiences, sleep offers physiological restoration. Loneliness is associated with diminished sleep (e.g., shorter sleep duration, lower sleep efficiency, greater daytime fatigue) in later adulthood. Moreover, findings from two longitudinal health surveys of older adults¹⁶ suggest that loneliness predicts decrements in subjective sleep quality, which, in turn, feed forward to further exacerbate subsequent loneliness, suggesting a bidirectional causal relationship.

Sleep deprivation has adverse effects on cardiovascular functioning, inflammatory status, and metabolic risk factors¹⁷. In addition, short sleep duration has been associated with risk for hypertension¹⁸, incident coronary artery calcification, and mortality¹⁹.

What is less appreciated is that sleep quality may also be important in accomplishing sleep's restorative effects. Non-restorative sleep (i.e., sleep that is non-refreshing despite normal sleep duration) results in daytime impairments such as physical and intellectual fatigue, role impairments, and cognitive and memory problems. We have noted that loneliness heightens feelings of vulnerability and unconscious vigilance for social threat, implicit cognitions that are antithetical to relaxation and sound

sleep. Indeed, loneliness and poor quality social relationships have been associated with self-reported poor sleep quality and daytime dysfunction (i.e., low energy, fatigue), but not with sleep duration²⁰. Loneliness was associated with greater daytime dysfunction in a 3-day diary study of middle-age adults, an association that was independent of age, gender, race/ethnicity, household income, health behaviours, BMI, chronic health conditions, daily illness symptom severity, and related feelings of stress, hostility, poor social support, and depressive symptoms²¹.

Physiological functioning

Chronic social isolation, rejection, and/or feelings of loneliness in early childhood, adolescence, and young adulthood cumulated in a dose–response fashion to predict cardiovascular health risk factors in young adulthood (26 years old), including elevated blood pressure²². In our study of young adults, loneliness was associated with elevated levels of total peripheral resistance (TPR) TPR is the primary determinant of SBP until at least 50 years of age²³, which suggests that loneliness-related elevations in TPR in early to middle adulthood may lead to higher blood pressure in middle and older age.

Loneliness was associated with elevated SBP in a population-based sample of 50–68-year-old adults in the Chicago Health, Aging, and Social Relations Study²⁴. The association between loneliness and elevated SBP was exaggerated in older relative to younger lonely adults in this sample, suggesting an accelerated physiological decline in lonely relative to non-lonely individuals, These increases were cumulative such that higher initial levels of loneliness were associated with greater increases in SBP over a 4-year period. The prospective effect of loneliness on SBP was independent of age, gender, race/ethnicity, cardiovascular risk factors, medications, health conditions, and the effects of depressive symptoms, social support, perceived stress, and hostility²⁵. Elevated SBP is a well-known risk factor for chronic cardiovascular disease, and these data suggest that the effects of loneliness accrue to accelerate movement along a trajectory toward serious health consequences. There are many other confounding factors that may contribute to the vascular physiology, including increased arterial stiffness, diminished endothelial cell release of nitric oxide, enhanced vascular responsiveness to endothelial constriction factors, increases in

circulating catecholamines, vasodilator responses to circulating epinephrine due to decreased beta-adrenergic sensitivity in vascular smooth muscle.

Neuroendocrine effects

Changes in TPR levels are themselves influenced by a variety of physiological processes, including activity of the autonomic nervous system and the hypothalamic-pituitary adrenocortical (HPA) axis. The sympathetic branch of the autonomic nervous system plays a major role in maintaining basal vascular tone and TPR and elevated sympathetic tone is responsible for the development and maintenance of many forms of hypertension²⁶. To date, loneliness has not been shown to correlate with SNS activity at the myocardium but studies have shown that concentration of epinephrine is higher in overnight urine collection of middle-aged and older adult sample²⁷.

Activation of the HPA axis involves a cascade of signals that results in release of ACTH from the pituitary and cortisol from the adrenal cortex. Vascular integrity and functioning are obligated, in part, to well-regulated activity of the HPA axis. Dysregulation of the HPA axis contributes to inflammatory processes that play a role in hypertension, atherosclerosis, and coronary heart disease²⁸. Steptoe et al.²⁹ found that chronically high levels of trait loneliness in middle-aged adults (M=52.4 years) predicted greater increases in salivary cortisol during the first 30 min after awakening (i.e., cortisol awakening response) such that the cortisol awakening response in individuals in the highest loneliness tertile was 21% greater than that in the lowest tertile. In a study of middle-aged and older adults, day-to-day fluctuations in feelings of loneliness were associated with individual differences in the cortisol awakening response. For this study, diary reports of daily psychosocial, emotional, and physical states were completed at bedtime on each of three consecutive days, and salivary cortisol levels were measured at wakeup, 30 min after awakening, and at bedtime each day³⁰.

Social evaluative threat is known to be a potent elicitor of cortisol, and that loneliness is characterized by chronic threat of and hypervigilance for negative social evaluation is consistent with the finding that loneliness predicts increased cortisol awakening response. The relevance of the

association between loneliness and HPA regulation is particularly noteworthy given recent evidence that loneliness-related alterations in HPA activity³¹.

How does it affect our genetic and immunity

Cortisol regulates a wide variety of physiological processes via nuclear hormone receptor-mediated control of gene transcription. Cortisol activation of the glucocorticoid receptor, for instance, exerts broad anti-inflammatory effects by inhibiting pro-inflammatory signalling pathways. Given that loneliness is associated with elevated cortisol levels, loneliness might be expected to reduce risk for inflammatory diseases. Feelings of loneliness and social isolation are associated with increased risk for inflammatory disease. This finding may be attributable to impaired glucocorticoid receptor-mediated signal transduction failure of the cellular genome to “hear” the anti-inflammatory signal sent by circulating glucocorticoids permits inflammatory processes to continue relatively unchecked³².

In a study of older Taiwanese adults, this relationship was reflected in a positive correlation between cortisol levels and the ratio of neutrophil percentages relative to lymphocyte or monocyte percentages. However, in lonely individuals, this correlation was attenuated and nonsignificant, consistent with a diminished effect of cortisol at the level of leukocytes³³. The precise molecular site of glucocorticoid insensitivity in the pro-inflammatory transcription cascade has yet to be identified, and additional longitudinal and experimental research are needed to determine the degree to which chronic feelings of social isolation play a causal role in differential gene expression.

Loneliness differences in immunoregulation extend beyond inflammation processes. Loneliness has been associated with impaired cellular immunity as reflected in lower natural killer (NK) cell activity and higher antibody titers to the Epstein Barr Virus and human herpes viruses³⁴. Additional research is needed to examine the role of loneliness chronicity, age, life stress context, genetic predispositions, and interactions among these factors to determine when and how loneliness operates to impair immune functioning.

Interventions

Six qualitative reviews of the loneliness intervention literature have been published since, and all explicitly or implicitly addressed four main types of interventions: (1) enhancing social skills, (2) providing social support, (3) increasing opportunities for social interaction, and (4) addressing maladaptive social cognition^{35,36}.

All but one of these reviews concluded that loneliness interventions have met with success, particularly interventions which targeted opportunities for social interaction. implicit hypervigilance for social threat exerts a powerful influence on perceptions, cognitions, and behaviors, and that loneliness may be diminished by reducing automatic perceptual and cognitive biases that favor over-attention to negative social information in the environment. Interventions that targeted maladaptive social cognition (e.g., cognitive behavioral therapy that involved training to identify automatic negative thoughts and look for disconfirming evidence, to decrease biased cognitions, and/or to reframe perceptions of loneliness and personal control) would be more effective than interventions that targeted social support, social skills, or social access.

Health Implications of address loneliness

Reducing feelings of loneliness and enhancing a sense of connectedness and social adhesion are desirable goals in their own right, but a critical question is whether modifying perceptions of social isolation or connectedness have any impact on health. Would a successful intervention to lower loneliness produce corresponding benefits in physiological mechanisms and physical health outcomes. A recent study in which 235 lonely home-dwelling older adults (>74 years) were randomly assigned to an intervention or control group. In the treatment arm of the study, closed small groups of seven to eight individuals met with two professional facilitators once a week for 3 months to participate in group activities in art, exercise, or therapeutic writing. The control group continued to receive usual community care. Relative to the control group, individuals in the treatment group became more socially active, found new friends, and experienced an increase in feeling needed. This was accompanied by a significant improvement in self-rated health, fewer health care services and lower costs, and greater survival at 2-year follow-up³⁷.

Conclusion

In India, children usually continue to live with their parents past adulthood, as they become financially and socially stable. Both generations contribute to the running of the household. In turn, as parents grow old, the younger generation provides the emotional and economic support. Ideally, it is a rather beautiful system that inculcates close family ties across the generations. Unfortunately, no system is perfect, and sometimes the needs of ageing and dependent parents are ignored, with the changing demography and ever increasing proportion of nuclear family because of migration for job or education, older adults feel left out. Humans are such meaning-making creatures that we perceive social relationships where no objectifiable relationship exists (e.g., between author and reader, between an individual and God) or where no reciprocity is possible (e.g., in Para social relationships with television characters).

Conversely, we perceive social isolation when social opportunities and relationships do exist but we lack the capacity to harness the power of social connectedness in everyday life. Chronic perceived isolation (i.e., loneliness) is characterized by impairments in attention, cognition, affect, and behaviour that take a toll on morbidity and mortality through their impact on genetic, neural, and hormonal mechanisms that evolved as part and parcel of what it means to be human. Future interventions to alleviate the health burden of loneliness will do well to take into account our evolutionary design as a social species.

References

1. Pinquart M, Sorensen S. Influences on loneliness in older adults: A meta-analysis. *Basic and Appl Social Psychol* 2001; 23:245–266.
2. Theeke LA. Predictors of loneliness in U.S. adults over age sixty-five. *Arch Psychiatr Nurs*. 2009; 23:387–396.
3. Hawkey LC, Cacioppo JT. Aging and loneliness: Downhill quickly? *Current Directions in Psychological Science*. 2007; 16:187–191.
4. Hawkey LC, Masi CM, Berry JD, Cacioppo JT. Loneliness is a unique predictor of age-related differences in systolic blood pressure. *Psychol Aging*. 2006; 21:152–164.

5. Hawkey LC, Thisted RA, Masi CM, Cacioppo JT. Loneliness predicts increased blood pressure: Five-year cross-lagged analyses in middle-aged and older adults. *Psychol Aging*. 2010; 25:132–141.
6. Shiovitz-Ezra S, Ayalon L. Situational versus chronic loneliness as risk factors for all-cause mortality. *Int Psychogeriatr*. 2010; 22:455–462.
7. Holt-Lunstad J, Smith TB, Layton JB. Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine*. 2010; 7:e1000316.doi: 10.1371/journal.pmed.1000316
8. Thurston RC, Kubzansky LD. Women, loneliness, and incident coronary heart disease. *Psychosom Med*. 2009; 71:836–842.
9. Olsen RB, Olsen J, Gunner-Svensson F, Waldstrøm B. Social networks and longevity. A 14 year follow-up study among elderly in Denmark. *Soc Sci Med*. 1991; 33:1189–1195.
10. Tilvis RS, Kähönen-Väre MH, Jolkkonen J, Valvanne J, Pitkala KH, Strandberg TE. Predictors of cognitive decline and mortality of aged people over a 10-year period. *The Journals of Gerontology: Series A: Biological Sciences and Medical Sciences*. 2004; 59:M268–M274. DOI: 10.1093/gerona/59.3.M268.
11. Wilson RS, Krueger KR, Arnold SE, Schneider JA, Kelly JF, Barnes LL, ... Bennett DA. Loneliness and risk of Alzheimer disease. *Archives of General Psychiatry*. 2007; 64:234–240. DOI: 10.1001/archpsyc.64.2.234 [PubMed: 17283291].
12. Cacioppo JT, Hawkey LC, Ernst JM, et al. Loneliness within a nomological net: An evolutionary perspective. *Jour Res Personality*. 2006; 40:1054–1085.
13. Newall N, Chipperfield J, Clifton R, et al. Causal beliefs, social participation, and loneliness among older adults: A longitudinal study. *Journal of Social and Personal Relationships*. 20 26:273–290.
14. Tice DM, Bratslavsky E. Giving in to feel good: The place of emotion regulation in the context of general self-control. *Psychological Inquiry*. 2000; 11:149–159.
15. Cacioppo S, Capitanio JP, Cacioppo JT: Toward a neurology of loneliness. *Psychol Bull* 2014; 140: 1464–1504.

16. Hawkey LC, Preacher KJ, Cacioppo JT: Loneliness impairs daytime functioning but not sleep duration. *Health Psychol* 2010; 29: 124–129.
17. Mullington JM, Haack M, Toth M, Serrador JM, Meier-Ewert HK. Cardiovascular, inflammatory, and metabolic consequences of sleep deprivation. *Prog Cardiovasc Dis*. 2009; 51:294.
18. Gangwisch JE, Heymsfield SB, Boden-Albala B, et al. Short sleep duration as a riskfactor for hypertension: Analyses of the first national health and nutrition examination survey. *Hypertension*. 2006; 47:833–839
19. Kripke DF, Garfinkel L, Wingard DL, Klauber MR, Marler MR. Mortality associated with sleep duration and insomnia. *Arch Gen Psychiatry*. 2002; 59:131–136.
20. Jacobs JM, Cohen A, Hammerman-Rozenberg R, Stessman J. Global sleep satisfaction of older people: The Jerusalem Cohort Study. *J Am Geriatr Soc*. 2006; 54:325–329.
21. Hawkey LC, Preacher KJ, Cacioppo JT. Loneliness impairs daytime functioning but not sleepn duration. *Health Psychol*. 2010; 29:124–129.
22. Caspi A, Harrington H, Moffitt TE, Milne BJ, Poulton R. Socially isolated children 20 years later: Risk of cardiovascular disease. *Arch Pediatr Adolesc Med*. 2006; 160:805–811.
23. DeNiro DA. Perceived alienation in individuals with residual-type schizophrenia. *Issues Ment Health Nurs*. 1995; 16:185–200
24. Hawkey LC, Masi CM, Berry JD, Cacioppo JT. Loneliness is a unique predictor of age-related differences in systolic blood pressure. *Psychol Aging*. 2006; 21:152–164.
25. Hawkey LC, Thisted RA, Masi CM, Cacioppo JT. Loneliness predicts increased blood pressure: Five-year cross-lagged analyses in middle-aged and older adults. *Psychol Aging*. 2010; 25:132– 141.
26. Guyenet PG. The sympathetic control of blood pressure. *Nature Rev Neurosci*. 2006; 7:335–346.

27. Hawkey LC, Burleson MH, Berntson GG, Cacioppo JT. Loneliness in everyday life Cardiovascular activity, psychosocial context, and health behaviors. *J Pers Soc Psychol.* 2003; 85:105–120.
28. Whitworth JA, Schyvens CG, Zhang Y, Mangos GJ, Kelly JJ. Glucocorticoid-induced hypertension: From mouse to man. *Clin Exp Pharmacol Physiol.* 2001; 28:993–996
29. Steptoe A, Owen N, Kunz-Ebrecht SR, Brydon L. Loneliness and neuroendocrine, cardiovascular, and inflammatory stress responses in middle-aged men and women. *Psychoneuroendocrinol.* 2004; 29:593–611.
30. Adam EK, Hawkey LC, Kudielka BM, Cacioppo JT. Day-today dynamics of experience-cortisol associations in a population-based sample of older adults. *Proc Nat Acad Sci USA.* 2006;103: 17058–17063. 31) Cacioppo JT, Hawkey LC. Perceived social isolation and cognition. *Trends in Cognitive Sciences.* 2009; 13:447–454.
32. Cole SW, Hawkey LC, Arevalo JM, et al. Social regulation of gene expression in human leukocytes. *Genome Biology.* 2007; 8:R189.181–R189.113.
33. Cole SW. Social regulation of leukocyte homeostasis: The role of glucocorticoid sensitivity. *Brain Behav Immun.* 2008; 22:1049–1055.
34. Dixon D, Cruess S, Kilbourn K, et al. Social Support Mediates Loneliness and Human Herpesvirus Type 6 (HHV-6) Antibody Titers. *Jour Appl Soc Psychol* 2001; 31:1111–1132
35. Cattan M, White M. Developing evidence based health promotion for older people: A systematic review and survey of health promotion interventions targeting social isolation and loneliness among older people. *Internet Journ Hlth Promotion.* 1998; 13:1–9.
36. Cattan M, White M, Bond J, Learmouth A. Preventing social isolation and loneliness among older people: A systematic review of health promotion interventions. *Aging & Society.* 2005; 25:41–67.
37. Routasalo PE, Tilvis RS, Kautiainen H, Pitkala KH. Effects of psychosocial group rehabilitation on social functioning, loneliness and well-being of lonely, older people: Randomized controlled trial. *J Adv Nurs.* 2009; 65:297–305.

THE CURIOUS DOCTOR

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THE CURIOUS DOCTOR

Structured questions

Curiosity is a fundamental hallmark of doctors. What else would drive a doctor to take a medical history? We learn to funnel our curiosity into a series of questions to elucidate what happened in the clinical course of a disease that presents itself. Asking questions in a structured way is a learnt discipline and keeps fueling our curiosity when a gratifying diagnosis appears at the end of a series of questions. But curiosity is not exclusive to our profession. All areas of intellectual growth and engagement are defined by this, and it is the hallmark of great researchers as well. They too, spend their lives asking why phenomena occur, prefaced by the acknowledgement that they 'do not know'. Both professions, clinical medicine and research, are trained into a discipline of asking structured questions, and of arranging and interpreting the flow of information from the answers to come to a conclusion.

Curiosity

Disciplined thought therefore follows from curiosity. Coming to a diagnosis after asking a series of questions is almost algorithmic (note the word 'almost'). There is an art to the practice of Medicine as well, and that comes with experience. However, evidence-based approaches to medicine require that algorithmic discipline. The process of enquiry in research is much the same.

If curiosity is the sine qua non of being a good doctor, then clinical research should be second nature to all good doctors. That does not automatically happen. Two questions emerge: What causes curiosity to die out? And, what will keep that curiosity alive?

Part of the reason for the death of wonder and curiosity can be traced to the way we have been taught Medicine. Ask yourself: as medical students, how many times were you rewarded for disgorging a series of facts in the right order in a viva? Equally, how many times were you punished for saying "I don't know"? The viva was and is a very important

method in teaching, but it is now simply an unimaginative examination tool for many. The art of exploring in a non-adversarial confrontation, what a student does not know and eliciting answers; of engaging with uncertainty in a productive manner, is almost lost. If we “do not know”, we have a lot of questions to ask, and curiosity will stay alive and well.

On the other hand, the process of discovery is much more chaotic, but is fed very well by curiosity. It requires a broad vision, a willingness to engage with every little thing that is unexpected in the course of medical practice. It requires the courage and the energy to conduct pilot experiments and studies that would probably never see the light of day in respected journals. It requires the determination to pursue questions in the face of failure. It requires the careful questioning and documentation of phenomena. In its simplest form, it can result in the documentation of case series that are often the beginning of more formal research questions. But case reports and series are not considered or incentivized in academic careers, and this layers motivation on top of curiosity.

So, that brings another question. Is innate curiosity the same as the motivation to ask questions? Is the curious doctor just someone who also does clinical research? In a simple word, the answer is 'yes'. But the word is not simple; it never was. Career progression, post-graduate education and performance indicators in academic medical practice are linked to research publications in a very unimaginative way, fueled by metrics that do not require the reading of the publications. There is the answer: if the motivation for clinical research is underpinned by career progression, it is not the same as curiosity. Remove career progression from this equation – motivation and curiosity are natural bedfellows, without the need for a third. How often have we gone for a brilliant and interesting research presentation and come away motivated and curious to do similar things in our life? That is true motivation that should feed into natural curiosity. Aim for the stars simply because they are there.

Wide-angled vision

In some ways, chasing curiosity is akin to playing football, and playing it well. First, the talented player recognizes that football cannot be played without a team working in unison. Discovery is somewhat similar. Second,

the talented player requires the daring to run for the open spaces on the playing field, away from the ball, instead of towards it. In discovery, and in clinical research, one must run for uncharted spaces with a wide-angle vision, fully aware that one does not run alone, but that there is a sequence of events in a well-planned play, that brings the ball to one's feet.

There are many examples of curiosity and wide-angle vision that have driven discovery in medicine. Denis Burkitt was one such¹. A Surgeon who went to Uganda, had other interests in life, such as bird watching and geography. All these came together when he set out to document the geographic clustering of Burkitt's lymphoma in regions with high temperature and rainfall in Africa. It went further, when he gave a staff lecture in a UK hospital, which was attended by a pathologist who was interested in chicken viruses that caused cancer. The play was being made. The pathologist was Sir Michael Epstein², who went on to collaborate with Burkitt, and eventually discovered the Epstein-Barr virus. This is also a story that documents how failure leads to eventual triumph (more on failure and triumph later).

Initial attempts to culture the cells from lymphoma tumor samples flown to London from Uganda failed, thus isolating the virus also failed. One might have given up. Success came through what looked like yet another failure. This occurred when the flight carrying tumor samples from Uganda to the UK was delayed. The delay caused the sample to deteriorate, and caused the fluid holding the sample to turn cloudy. One might have thrown away this sample as 'spoilt', and one might be forgiven for viewing that particular sample transfer as a failure. But Epstein examined that sample anyway, and "saw huge numbers of free-floating, healthy looking tumour cells which had been shed from the edge of the tumour"². Examining the cells under electron microscope allowed him to see the virus, and along with his student Yvonne Barr, this led to the discovery of the eponymous Epstein-Barr virus. This is a story of wide angle-vision, collaboration and team play, and the ability to never accept failure.

Collaborations

Burkitt's wide-angle vision went further. He also noticed that he was not seeing quite as many cases of appendicitis and colonic disease in Uganda, as he had seen in the UK. Not willing to dismiss this as a chance, he set

about comparing a series of acute abdomen presentations in Uganda and in UK with his brother, who stayed behind³, and showed that the occurrence of acute appendicitis was very low in the former country. He set about examining faecal samples, geographical distributions and the diet of Ugandans, and came to the conclusion that something was not quite right with the UK diet (or the Western diet in general terms. Eventually, through many meetings and collaborations¹, the role of dietary fibre was elucidated.

Failure

This brings us to failure in the life of the curious doctor. First, and this is a critical thought, there is no such thing as “failure” in the context of research or curiosity. Every negative result, or even mistakes or unfortunate occurrences) is a learning and can sometimes lead to discovery. Alexander Fleming, a Scottish physician, who was described as a 'careless lab technician'⁴, came back from vacation to discover lysis in a *Staphylococcus* culture that had been carelessly left out in the open. That was a mistake and a failure of good laboratory practice. But subsequent curiosity, and the description of the mold causing this phenomenon, followed by the subsequent discovery of penicillin, changed the world. In Fleming's own words: “One sometimes finds what one is not looking for.” That the discovery of penicillin changed the world without 'validation' (no RCT was ever done before using it), is telling.

Failure then, is a positive event. Not immediately gratifying, no doubt, and certainly not something to be pursued or celebrated. But in the depths of despair and frustration, learnings are there to be found. Character is built. Even magical discoveries may be made, if one is lucky. When we watch young children trying to walk, taking their first steps and falling, we proudly say, “that child is learning to walk”. No one ever regretfully says, “that child is failing to walk”. The child educates us, as it explores its world (sometimes dangerously), about the inescapable fact that we are born curious. We have to work hard to keep this curiosity, keeping faith with it in everything we do in our lives. We are lifelong students, learning and discovering.

References

1. Cummings JH, Engineer A. Denis Burkitt and the origins of the dietary fibre hypothesis. *Nutr Res Rev.* 2018;31:1-15.
2. Epstein A. Why and How Epstein-Barr Virus Was Discovered 50 Years Ago. *Curr Top Microbiol Immunol.* 2015;390:3-15.
3. Burkitt DP Burkitt R. Acute abdomens – British and Baganda compared. *East Afr Med J* 1952,29:89–194.
4. Penicillin: An accidental discovery changed the course of medicine. <https://www.healio.com/endocrinology/news/print/endocrine-today/%7B15afd2a1-2084-4ca6-a4e6-7185f5c4cfb0%7D/penicillin-an-accidental-discovery-changed-the-course-of-medicine> (viewed 1/1/2019)

ASEPTIC TECHNIQUES IN OPERATION THEATRE

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Aseptic techniques in Operation Theatre



Introduction

It is common to find low standard aseptic techniques in surgeries. Any infection of a previously clean case should not be accepted with complacency. The evidences of a break in asepsis will allow delayed healing, redness or other signs of wound inflammation. The practice of asepsis has to be inculcated in all persons involved in operation theatre (OT) work, and it can be undertaken successfully by training and experience, as a habit - subconscious, reflex, automatic - instilled into the psyche of every surgeon, assistant and nurse.

Ideally, every branch of surgery including its specialties and sub-specialties should have its own theatre, where the OT staff is conversant with the instruments and techniques of surgery. A system should be established, to prevent staff and visitors moving to-and from- the theatre, without changing their clothes and shoes.

OT Complex

An operation theatre complex is the "Heart" of any major surgical institution. An operating theatre, operating room, surgery suite or a surgery centre, is a room within a hospital, wherein the operations are carried out. It is like a *temple*, hence very sacred. The sanctity of the temple has to be maintained at all costs. The patient is the centre point of a functioning OT complex. He/she is in isolation for varying period of times due to sickness, away from his/her near and dear ones.

Designing an Ideal Operating Room Complex

Designing of an operation theatre is a major exercise and is mainly intended to benefit the patient. The need for safety, convenience and economy will guide the planning of a modern operation theatre, whatever may be the size, number or the specialty. To achieve this goal we must establish the OT complex with utmost care, in order to avoid infection.

There should be different zones in the OT complex as follows:

1. Protective zone
2. Clean zone
3. Aseptic zone, and
4. Disposal zone

Sub areas (excluding OT place):

- Pre-operative check-in area (reception)
- Holding area
- Post anesthetic care units (PACU)
- Sanitary facility for staff
- Offices for nurse and anaesthesia staff
- Laboratory
- Induction room
- Staff room
- The anaesthesia gas / cylinder manifold room /storage area
- Rest rooms
- Seminar room

- Store room
- Separate dress changing rooms for male and female staff, postgraduates, interns, nursing staff and paramedical staff.
- Duty doctor room with attached washroom

Theatre sterile supply unit (TSSU):

Within the theatre area, the following are desirable – Maintenance of Temperature between 18° - 22° C and humidity of 40%- 50% is the aim. Air-conditioned should be with 10-12 air exchanges per hour. There should be areas for storage of sterile drapes, sponges, gloves, gowns, and other items ready for use. In addition an option to store in from one side and remove from another side should be there. There is need to have proper inventory to prevent running out of stock.

Principles to be taken into consideration while planning an O.T. (physical / architecture):

Location: Low rise buildings should be limited to two or three storey height. They are preferred because of the maximum advantage of having natural light and ventilation as appropriate. The OT should be separate from general 'traffic' and air movement of the rest of the hospital. There should be a zone-wise distribution of the area, so as to avoid crisscross movements of men and machines. Adequate and appropriate space has to be allotted as per utility of the area. There has to be a provision for emergency exit.

Provision has to be made for ventilation and temperature control, keeping in mind the need for laminar air flow, High Efficiency Absorbable Particulate Air (HEPA) filter air conditioner etc. Corridors should be not less than 2.85 m width for easy movement of men, stretchers and machines. Gas and suction (control, supply & emergency stock) facility should be made available for all operation theatres and areas where patients are retained. Proper drainage system has to be arranged. The safety in the working place is essential, and fire extinguishers have to be planned in the appropriate zones. Scrub area has to be planned for at least for 2-3

persons in each operation theatre. Besides there should be provision for normal supply of available water, at the rate of 400 liters per bed per day, and a separate reserve emergency overhead tank, should be provided for operation theatre. Elbow taps have to be minimum 10 cm. above wash basins.

Operation Rooms: The number and size of operation rooms can be as per the requirement but recommended size is minimum of 6.5 m x 6.5m x 3.5 m. Glass windows can be planned at least on one side of the operation room. The main door to the OT complex has to be of adequate width (1.2 to 1.5 m). The doors of each operation theatre should be spring loaded flap type, but sliding doors are preferred as no air currents are generated. All fittings in the operation theatre should be of a flush type and made of steel. Laminated polyester or smooth paint provides seamless wall. Tiles can break and epoxy paint can chip out. Collusion corners have to be covered with steel or aluminium plates. The colour of paint should allow reflection of light and yet soothing to eyes. Light colours (white, light blue or light green) washable paint will be ideal. A semi-matt wall surface reflects less light than a highly gloss finish and is less tiring to the eyes of OT team. The surface/flooring must be slip resistant, strong and impervious with minimum joints (eg., mosaic with copper plates for antistatic effect) or joint-less conductive tiles/terrazzo, linoleum etc.

Operation table: There should be one operation table per OT.

Electric points: Adequate electric points on the wall (at < 1.5 m height from the floor).

X-Ray illuminators (View box) : There should be X-ray film illuminators preferably recessed into the wall.

Illumination: Adequate illumination with shadowless lamps of 70,000-120,000 Lumens intensity, for assessing patient's colour and tissue visibility should be provided. All electrical equipment in the OT needs proper grounding.

Access to the OT areas and outside should be possible, but should be very limited. It should have a laminar flow hood, a refrigerator, space for drug storage, locked containers for controlled substances, computer, desk area for paperwork and pharmaceutical literature. Special kits for specific surgeries may also be arranged.

Usual areas of deficiency in OTs (existing OTs)

No reception area. No separate rooms (dress changing and rest rooms) for – Surgeons, Anaesthesiologists, Junior. doctors, Students, and OT attendants. Not enough number of change rooms for the different class of people. Inappropriate size and type of doors etc., lack of laminar air flow and mandatory air exchange systems in OT, Lack of standard OT protocol, No separate Central Sterile Supply Department (CSSD). Waiting Area – Recovery room, which is not well equipped with lack of basic amenities.

Ideal Operation Theatre/ Modular Operation Theatre

In Modular OT, the greatest integrated function is required, cleanliness must be kept and the safety of equipment, facilities, and devices must be maintained at any time. Modular OT in India, plenum ensures the bacteria- and dust- free clean air on the operation table. The return air riser will be re-circulated into the air in the OT, with the help of Air Handling Unit (AHU). The AHU capacity will depend on the class, which is required and the area of the room. The plenum will be available with the central light arrangement or side light arrangements.

Features of a Modular OT:

1. A constant flow of extremely clean 'bacteria-free' air is circulated below positive pressure, into the working field and air pollutants produced during surgery, are removed from the site.
2. Operation Theatre with anti-bacterial paint has a minimum durability of 15 years.
3. Easy to pure, steam cleaned, electrometric flow (ideal for high humidity areas), which is seamless.
4. Vapor permeability (allows substrate moisture to escape) protects against growth of mould, bacteria and yeasts.
5. Thaw resistance/freeze, moisture resistance.

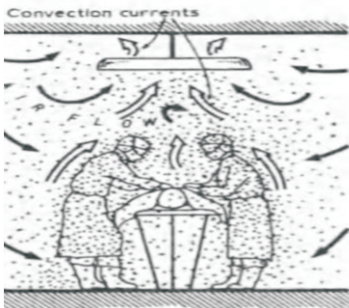
Charnley's Greenhouse OT (1,2)



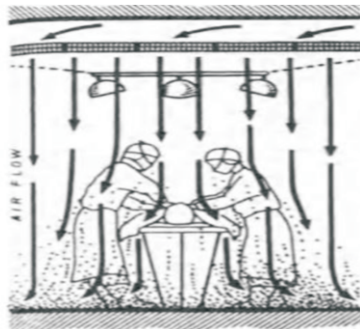
The first clean air enclosure made by Charnley and Craven which was appropriately named 'the greenhouse'. (By permission of the publishers of the British Journal of Surgery, Butterworth & Co (Publishers).

The first step is to establish a base-line, which is done by exposing culture plates in the theatre, to find out whether they are colonised by bacteria: the colony count per hour (cph) in the unmodified theatre is, on an average 80 to 90 indicates heavy contamination of the air.

Total numbers of bacteria in an empty operating theatre should be < 35 cfu (colony forming unit)/m³ with less than one colony of *Clostridium perfringens* or *S. aureus*. During an operation, total air counts should be < 180 cfu/m³ averaged over a 5-min period.



Turbulent air-flow.

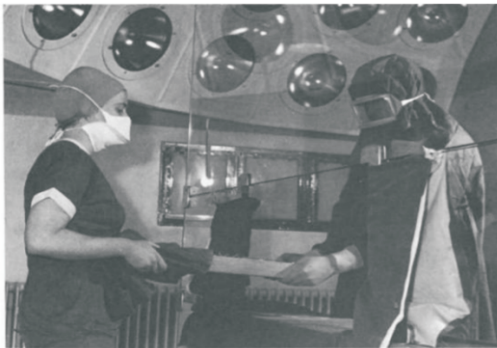


Removal of particles by laminary/linear system of air movement.

ASEPTIC TECHNIQUES IN OPERATION THEATRE



Charnely operating in the original enclosure. The surgical team are wearing hoods, but this is before the body exhaust system was introduced. Spectators can be seen outside the enclosure.



The circulating nurse is passing a tray of sterile instruments through the service opening to the nurse inside the enclosure. (LFA)

How to Collect Swab Samples for Microbiological Testing ?

Sterile swabs can be used, to test the level of microbial contamination on various surfaces of the operation theatre and equipments such as instrument trolley, table-top, lights, cameras, monitors, walls and Floors, etc.

Procedure to take Sterile Swabs for culture and sensitivity (C/S) :

- Wear gloves

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- Select a sampling area of about 10 cm X 10 cm (or 20 cm x 20 cm)
- Break the seal around the tube containing the swab
- Remove the swab from the tube and rub and roll it firmly several times across the sampling area.
- Return the swab into the tube and label the sample
- Send the sample to the laboratory for analysis.
- Fumigation should be repeated until you get the above-mentioned specifications.

Fumigation

Fumigation is a process of gaseous sterilization which is used to kill micro-organisms and prevent microbial growth in the air, the surface of wall or floor. Widely used fumigating agents include Formaldehyde, phosphine, methyl isocyanate, hydrogen cyanide, or methyl bromide.

Methods

Electric Boiler Fumigation Method:

For each 1000 cu.ft, 500ml of formaldehyde is added in 1000ml of water in a fumigator. Switch on the fumigator, leave the room and seal the door. After 45 minutes, switch off the fumigator without entering into the room.

Potassium Permanganate Method:

For every 1000 cu.ft add 450gm of potassium permanganate (KMnO₄) to 500 ml of formaldehyde. Take about 5 to 8 bowls, with equally divided parts of formaldehyde and add equally divided KMnO₄ to each bowl. This will cause auto boiling and generate fume. After the initiation of formaldehyde vapour, immediately leave the room and seal it for at least 48 hours. Neutralise residual formalin gas with Ammonia by exposing 250 ml of Ammonia per litre of formaldehyde used. Place the ammonia solution in the centre of the room and leave it for 3 hours to neutralize the formalin vapour.

Use of Shortwave UV Radiation

Shortwave UV radiation has been used to disinfect air and surfaces in operating rooms, patient rooms, laboratories as well as air in ventilation ducts. This technology has been relatively little used. The advantage of this method is that the UVC sources, ensure a continuous reduction in the number of airborne microorganisms, that are generated all the time. The disadvantage is that it may cause keratoconjunctivitis and erythema and requires protection of the skin and eyes of the people, exposed to levels above recommended exposure limits.

Emerging compounds in use for sterilization of operation theatre are Bacillocidrasant and VIKRON. It provides complete asepsis within 30-60 minutes. Formalin fumigation not required. The shutdown of OT for 24 hours not required. Used for cleaning hazardous spills, disinfecting surfaces and soaking equipment.

Fumigation of the Operation theatre shall be done in the following circumstances:

Newly constructed/ repair activity undertaken recently in that area. Other circumstances where the need for fumigation is felt include after surgery on infectious cases or major body spills like fecal matter. Routinely it has to be done twice a month, depending on the nature of civil infrastructure, no of surgical cases and movement of staff and equipment.

Careful attention must be paid to the movement of nurses and cleaning staff transporting patients to- and from-the theatre. Theatre discipline in this respect is of the greatest importance and applies equally to everyone, who work there from the senior surgeon to the youngest probationer nurse or theatre porter. Once within the sterile area, the staff has no business to move out of it, or until their turn of duty is complete. All the ancillary services, such as lavatories, showers, changing rooms etc., should be within the area.

Staff and Visitors

When an operating session is in progress, every individual entering the sterile area must change to theatre clothes and boots (3). Nobody should wear or be allowed to wear theatre clothes, over their dresses, which they wear and come to the theatre. If they are to be admitted to the operating theatre itself, they must wear a sterile gown, mask and a theatre cap. Masks must cover the nose as well as the mouth and should be made of an impervious layer. Many individuals who appear to be healthy are carriers of Staphylococci in the upper respiratory tract, and the use of the impervious masks is of greatest importance. Talking in the theatre should be minimized. This can be achieved by posting the trained theatre nurses and staff in the particular specialty, to those particular specialty theatres only, and not changing them frequently or daily. Since they will be well acquainted with surgeons and the surgical steps, so that they will assist by giving the instruments required, in every step of surgery, without speaking or uttering a single word.

Coughing and sneezing should be controlled. Nasal swabs should be taken from time-to-time and those with nasal infection should be treated with antibiotics etc. The cap must completely cover the hair and should be deep enough to cover the eyebrows because hairs often contain loads of Staphylococci. Gowns must be closely tied at the back; no unsterile clothing should be visible. Nurses and visitors should stand back. They must never come in contact with the instrument trolleys, theatre sisters or surgeons. If visitors, they must wear their sterile gowns with arms .

Patient's Preparation

The site of operation, and a generous area above and below should be shaved and prepared repeatedly for not less than 24 hours, and in the case of foot operations for 48 hours. Long preparation is needed because two types of organisms exist in the skin - 'transients' and 'residents'. Transient organisms are disposed of by a single washing with soap and water whereas resident organisms are eradicated by repeated washing, cleaning with ether, and painting with antiseptics. All patients, who are to undergo operation should have a patch test for Iodine sensitivity. The prepared area should be covered with at least two layers of sterile towels. The outer layer

can be removed in the anaesthetic room and inner layer should be removed only when the anaesthetised patient is in position on the operating table. Blankets and pillows teeming with bacteria, brought from the wards, must in no circumstances go into the sterile area with the patient and similarly OT material should not go out of OT.

Patient's Entrance inside the OT

The patient should be taken inside the OT after putting on the OT clothes and leggings. The patient must not lie uncapped or unmasked, and his eyes should be covered with the eye-pad, which should also cover the eyebrows, and his coughing must be carefully guarded. On reaching the barrier at the sterile area, the patient should be transferred from a ward trolley to a theatre trolley, with sheets, blankets and pillows, which are the equipments of the theatre and never leave the theatre. The final cleansing of the operating site with antiseptics must be carried out thoroughly, by the gloved surgeon within the theatre.

Operating Surgeons, Assistants and Nurses

Surgeons, assistants, and nurses must at all times avoid contact of their hands with the infected matter. They should change into clean operating clothes, caps, masks, theatre boots or shoes. They should remove the clothes and put on OT clothes. Nobody should be allowed to enter the OT without OT clothes, caps and masks, including surgeons and anaesthetists. They should not remove or lower their mask, when they are in the operation theatre. Routine scrub up is supplemented by washing with an antibiotic or antiseptic detergent solution, such as Hexachlorophane or Betadine.

If this routine is used, preliminary scrubbing of the hands must still be carried out to remove the surface dirt from the skin and the nails, for at least 5 minutes, followed by 3 minutes treatment with antibiotic solution. Avoid using an antiseptic rinse after this technique - because it removes an anti-bacterial layer, which is so important to keep the skin sterile under the gloves. A sterile gown should then be put on, with care without touch the outer surface of the gown or sleeves with the hands.

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After the tapes have been tied by the nurse, a sterile back panel should be fixed in position by the surgeon, in such a way as to cover the tapes and the gap between the gown which has been contaminated by tying. This is important in any lengthy operation, wherein moving from one position to another, the surgeon or sister may brush past an instrument trolley. Great care should be taken to avoid contamination of outside of the glove, when it is being put on, particularly when drawing it over the wrist (4). The contamination is less likely if the surgeon's glove is presented to him, by the scrub nurse with the cuff open, so that he/she can put his/her hand into it without touching anywhere.

The gloved hands should not come down below the umbilical level till they are degloved after surgery. Special precautions should be taken in the handling of instruments, the arrangement of the surgeon's instrument tray and as far as possible the adoption of non-touch technique. Even gloves do not afford full protection and allowing for the hands of surgeon, assistants, and nurses, there is at least one punctured glove in 75% of operations. Infected sweat inside a rubber glove can escape through a puncture hole and at least one theatre epidemic has been traced to surgeon's hands, carrying *Staphylococcus aureus* (5). In procedures, where direct handling of appliances cannot be avoided, two pairs of gloves should be worn, outer pair being changed immediately before the appliance is touched/taking the incision. If it is suspected that the glove has been perforated by contact with an instrument, it must be changed immediately and the instrument resterilized.





Thelwall Thomas

Thelwall Thomas of Liverpool always carried a pair of rubber gloves in his hip pocket and wore them when examining an ulcer, a sinus or an infected wound. The gloves were then resterilized and returned to his pocket, ready for the next examination. He claimed that his hands were always sterile. Thomas completed his medical training in Glasgow, where he was influenced by Lister's teaching. He was largely responsible for introducing the aseptic technique in Liverpool Hospital and with F.T. Paul of Paul's Tube fame, was a pioneer of abdominal surgery. He was a very dexterous surgeon. Nearly every operation was completed without a single stain on the side towels. This was his pride and no house surgeon who offended, by allowing a contact of a blood-soaked dab with the towels, ever dared to happen. He had the superb technical ability, that enabled him to complete an arthrodesis of the hip also without a blemish on the towels, thus, reducing the chances of infection.

Instruments and Linen Sterilization

Theatre equipment sterilization must be done in an autoclave. Towels, dressings, gowns etc., are sterilized in wrappings than the drums, and because of the relatively close packing of the linen, sterilization should be carried out in a high vacuum autoclave. Complicated mechanical instruments, such as a compressed air drill, must be sterilized in a hot oven. Swabs, instruments, towels, gowns and whatever sterile materials should be handed out with Cheatele forceps or lifters. Theatre nurse should avoid

touching an instrument by hand and whenever possible use sterile Cheatle forceps or lifters; needle should be threaded with forceps, or preferably atraumatic eyeless needles be used and passed to the surgeon in a needle-holder. Everyone directly involved in the operation – surgeons, assistants, and nurses, - must avoid touching the 'business end' of an instrument, such as the blade of the retractor or the point of the hemostat. If this happens inadvertently or if any instrument touches the patient's unprotected skin, it should be discarded or resterilized.

No-touch technique

Before completing the arrangement of sterile towels, by which to screen all the surrounding areas, the site of the operation itself should be covered either with a layer of sterile stockinette, fixed to the skin by matasol (which is a self-sterilizing agent), or with one of the proprietary skin covers.

After the skin has been covered it is possible to palpate the region, without danger of contamination of the surgeon's gloves, and to make an incision through the layer of the surgical drape, without contamination of tissues from the skin. Bleeding points should be secured with artery forceps, and ligature should be tied with two pairs of forceps, neither the surgeon nor the assistant ever touching the ligature by hand.

Swabs of dry gauze, used for mopping the wound are not touched by hand, but only with forceps; the assistant is never without a pair of forceps in one hand, for this purpose. Long retractors are used, so that hands are well away from the wound. Needles are held in needle-holders and sutures are tied with forceps. The Orthopaedic registrar recently trained in general surgical techniques, must resist the temptation, to use the reversed handle of the knife, as a convenient tissue dissector.

We must always remember that an infection after a bone or joint operation, may be the beginning of a lifelong tragedy. Therefore, every precaution must be taken to avert an infection which makes patients life a hell. To maintain asepsis is very important to avoid the infection, thus a lifelong tragedy to the patient and his family. For this, one of the great orthopaedic surgeons, Sir Reginald Watson-Jones has written... In order to maintain the asepsis in the OT, "Even the junior theatre nurse must not be allowed to enhance her charm by allowing stray curls to appear." Because hair carry loads of Staphylococci, which infect everything.

Responsibility of All

Hence it is a combined responsibility of all, to maintain asepsis in the OT. For this purpose, a senior nursing staff is appointed and given the responsibility to maintain the asepsis very strictly, to the extent that, even if a doctor is erring, he/she also should not be spared.

References

1. Charnley J A sterile air operating theatre enclosure. *British Journal of Surgery* 1964; 51:195
2. Charnley J 1964 A sterile air operating theatre enclosure. *British Journal of Surgery* 51:202
3. Mitchell NJ, Evans DS, Kerr A Reduction of skin bacteria in theatre air with comfortable, non-woven disposable clothing for operating theatre staff. *British Medical Journal* 1978; 1:696
4. Weed L A, Groves J L Surgical gloves and wound infection. *Surgery, Gynaecology and Obstetrics* 1942; 75:661
5. Devenish E A, Miles A A 1939 Control of *Staphylococcus aureus* in an operating theatre. *Lancet* i:1088

EATING DISORDERS IN CHILDREN

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EATING DISORDERS IN CHILDREN

Feeding is an interaction between the child and the care giver in the early stages. Later in life, eating refers to the act of consuming food for the sake of maintaining health, aiding growth and development and improving the immune status.

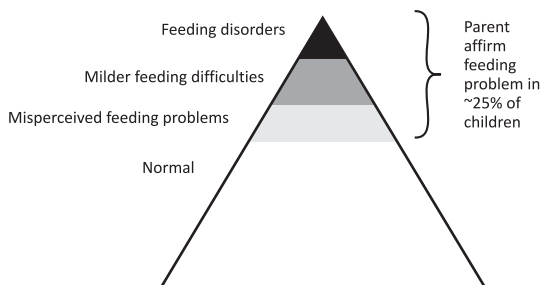
Epidemiology

In the stages of infancy and early childhood, nutritional intake is important as these are critical windows for physical growth and neurodevelopment, which have a long term effect on the outcomes if not treated properly. In young children, this process is dependent on the caregivers. According to reports, about 20-30% of infants and toddlers have food related issues that could result in growth faltering and nutritional disturbances.

The prevalence of feeding difficulties in young children with normal intellectual and adaptive development ranges between 25-35%, and increase up to 40-80% in those with developmental disabilities. The prevalence may be higher in children with failure to thrive.

In older children and adolescents, the point prevalence of various eating disorders varies. While bulimia nervosa affects approximately 1-2% of the female adolescent population, anorexia nervosa may be seen in around 0.48-0.7% of adolescent females. A heterogeneous group of disorders labelled as Eating disorders not otherwise specified (EDNOS) has been reported to have a prevalence of 4.8% in adolescents(3),

Pyramidal representation of feeding difficulties in young children



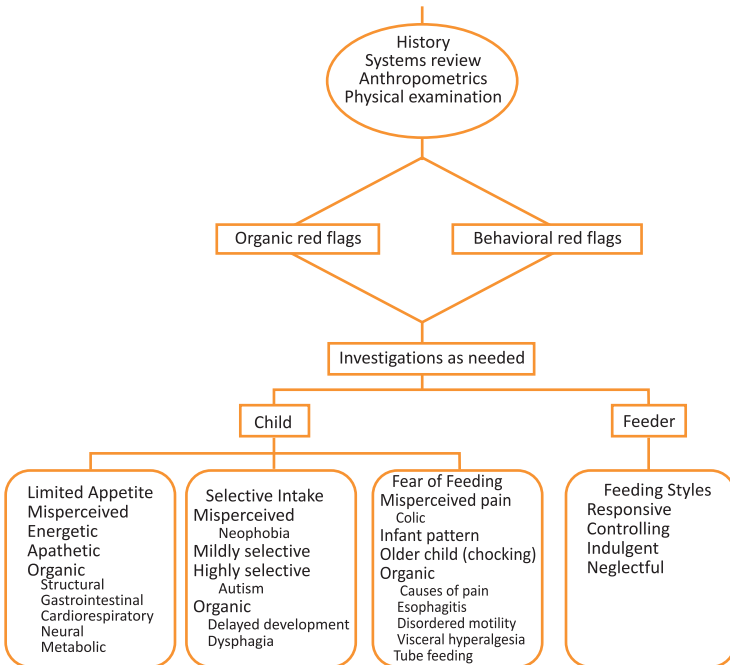
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Classification of feeding disorders in children

This may be

- Infantile anorexia – seen in 55.4% of children
- Organic feeding disorder – 16.9%
- Post traumatic- 12.3%
- Reciprocity type- 9.2%
- sensory food aversion seen in 3.1%
- state regulation type of feeding disorder- 3.1%
- Organic feeding disorders are associated with an underlying medical problem which interferes with the feeding and eating patterns.

Clinical approach to feeding difficulties in young children⁴



Red flags indicative of organic feeding problems¹

These pointers could indicate the presence of underlying pathology which interferes with the feeding patterns and causes disturbances in the child. These include:

- dysphagia
- choking and aspiration
- odynophagia or excessive crying and pain on feeding
- frequent vomiting
- profuse diarrhea
- developmental delay
- chronic cardiac or respiratory problems
- skin eczema
- growth faltering

Weight loss

Prematurity

Congenital anomalies

- features of autism

Preterm infants and those with neurological impairment or inborn errors of metabolism are at a high risk of organic feeding disorders and require investigation and treatment.

Those with normal neurological and physical examination and normal growth patterns do not require any investigations routinely. If organic disease is suspected and diagnosed, it must be treated first.

Some feeding problems

Picky eaters

The parents express their anxiety relating to the child's feeding behaviour. This may be due to the following three categories of issues:

- Those not eating enough- limited appetite

- Those eating inadequate variety of foods- selective intake
- Those afraid to eat- fear of feeding

Each of these categories may range from mild to severe.

Those with limited appetite are usually misperceived by the parents as picky eaters. These children are usually smaller than those of similar age and intake related to body size was similar to other age appropriate children and the nutrient intake is adequate. Studies have shown that these children are somewhat smaller than the control group, although the intake relative to the body size was equivalent to normal eaters and appropriate to meet the nutritional demands.

Sometimes, we come across energetic and active children who have a limited appetite. These children are classified as belonging to the category of Infantile anorexia, which usually develops during the phase of transition to self-feeding. There is usually no underlying organic problem and is mainly attributed to a conflict between the parent and the child, which needs to be resolved.

Another category of picky eaters appear to be the inactive, disinterested in eating as well as with their environment. These children do not communicate well with their care givers, appear depressed and interact poorly. These children are usually malnourished which further worsens the depression and anorexia, thus creating a vicious cycle that needs to be broken.

The management of these picky eaters has to be balance between the hunger and satiety of the child. The parents must be counselled in a manner that they understand and accept the child's interpretation of hunger and satiety.

It is important that parents understand that meal time discipline will go a long way in improving the eating habits of the child. A maximum of 5 meals per day that includes snacks with only water in between, healthy eating and a regular feeding schedule are important. The set limits for mealtime behaviour is important to ensure that the child cooperates. Some guidelines to be followed include:

Feeding Guidelines for All Children

Avoid distractions during mealtimes (television, cell phones, etc)

Maintain a pleasant neutral attitude throughout meal

Feed to encourage appetite

- limit meal duration (20-30 min)
- 4-6 meals/snaks a day with only water in between

Serve age - appropriate foods

Systematically introduce new foods (up to 8-15 times)

Encourage self-feeding

Tolerate age appropriate mess

- Adapted from Kerzer.¹⁴

It is a good strategy to minimize distractions during the meal time. Disruptive behaviour and undesirable habits must not be encouraged during the feeding times. Children who appear to be apathetic and depressed need close observation . some children have an aversion due to the taste, texture, smell , temperature or appearance of the food. They may also have additional sensory problems including adverse responses to textures, lights and noises. These are called as sensory food aversion which is different from selective picky eating eaters.

Post traumatic feeding disorders occur when fear sets in following a previous untoward incident during feeding, like choking, vomiting or naso gastric tube feeding¹. These cases need to be managed by reducing the preceding feeding related anxiety, removing the cause of pain and then applying individualized de-conditioning techniques with positive reinforcement. Occasionally the use of anxiolytic drugs may be indicated for these children.

Anorexia Nervosa

This is an eating disorder in which people have an intense fear of gaining weight and a disturbance in self perceived weight or shape and hence have a persistent restriction of energy intake⁵.

Anorexia Nervosa(AN) is characterized by the following:

- Restricted energy intake leading to lower than normal body weight. There any be a loss of considerable body weight over a short period of time.
- An intense fear of gaining weight even when already underweight or appearing starved or malnourished.
- Disturbed body image , with extreme emphasis on their appearance.

There are two types of AN

- Restrictive type- these children severely limit the amount of food that they consume. They mainly restrict carbohydrates and fat in their diet.
- Bulimic- bingeing and purging type- these children binge on the food, by eating too much. Then they make themselves throw up or take large amounts of laxatives to clear out their intestines⁶.

Predisposing causes:

- Feeding difficulties in childhood
- premorbid anxiety disorders possibly depression and dysthymic disorders
- family history of psychiatric disorders- noted in 44% of the cases with feeding disorders

Some associated symptoms include:

- Physical and mental health concerns including depression
- Amenorrhea
- Concentration and decision making concerns
- Headaches
- Irritability
- Cold hands or feet
- Constipation
- Dry skin, hair loss

- Social withdrawal
- Fainting or dizziness
- Obsessiveness related to food
- Lethargy

Diagnosis

Making a diagnosis of AN is dependent on the clinical skills, as no test is diagnostic. However, the SCOFF questionnaire may be utilized to assist in making a diagnosis of AN or bulimia. One point is awarded for every positive response and a score greater than 2 is suggestive of AN or bulimia.

SCOFF questionnaire

The SCOFF questionnaire, as follows, is a screening tool for eating disorders, with 1 point awarded for every positive reply and a score greater than 2 indicating likely anorexia nervosa or bulimia^[87]:

- Do you make yourself *Sick* because you feel uncomfortably full?
- Do you worry you have lost *Control* over how much you eat?
- Have you lost more than *One* stone * in a 3-month period?
- Do you believe yourself to be *Fat* when others say you are too thin?
- Would you say that *Food* dominates your life?

Some routine investigations may be performed:

- Hemoglobin level- usually is normal.
- White blood counts WBC levels are typically low due to the increased margination.
- Platelets- are reduced
- ESR is generally normal. If elevated, it is essential to search for an underlying organic cause
- Blood sugar levels may be reduced due to lack of intake of precursors.
- Blood urea nitrogen is usually normal , but may be elevated in cases of dehydration.

- Serum electrolytes are usually altered.
- Liver function tests LFT's are minimally elevated. Usually the Albumin and Protein levels are normal.
- Serum cholesterol may be dramatically elevated in cases of starvation. This may be due to the low levels of cholesterol binding globulin.
- Chest x-ray may show rib fractures due to repetitive and explosive vomiting
- ECG must be done for all patients with AN, as cardiovascular complications can result in much morbidity and mortality. The ECG may show evidence of sinus bradycardia, S-T segment elevation. T wave flattening , low voltage and rightward QRS axis. In case of Q-T prolongation, the patient may be at high risk of cardiac arrhythmias and sudden death.

Management of Anorexia Nervosa

This poses a challenge due to the various factors involved in its causation. Hence a multi-pronged approach is needed to ensure that the child recovers completely.

Most often, the acceptance of the diagnosis of AN is difficult.. Medical management of the underlying medical problems. Close monitoring of the patient is essential to ensure compliance.

- Weekly weight measurements , with the patient wearing only a gown.
- Restore physical activity, which is often compromised during the stages of AN
- Vitamin and mineral supplementation must be started
- Calcium supplementation must be initiated
- In case of severe osteopenia, oestrogen supplementation may need to be begun

Psychological therapy- is of various types

- Insight oriented individual therapy

- Cognitive analytic therapy
- Cognitive behavioural therapy
- Cognitive remediation therapy
- Interpersonal therapy
- Group therapy
- Family based therapy

In young children and adolescents, the Family based therapy produces better results. This has been found to be superior to individual therapy. The modification of the Cognitive behaviour therapy (CBT) which is called the Cognitive remediation therapy (CRT) and may be more effective than CBT in case of motivated individuals and adolescents.

In severe cases, where the patient's weight is below 85% of the expected weight or below the third percentile, the patient must be hospitalized. Tube feeds should be initiated with slow refeeding, so that the patient is not uncomfortable and the weight gain happens in a sustained manner.

Bulimia Nervosa

Bulimia Nervosa is an eating disorder that has certain specific characteristics. These include

- Recurrent episodes of binge eating , which is more than what an average person consumes in a 2-hour period, accompanied by a sense of loss of control⁸.
- Repetitive inappropriate compensatory behaviour to avoid weight gain, such as excessive exercise, fasting, use of laxative and diuretic medications
- This behaviour is followed at least once a week for a period of 3 months
- The body shape and weight are extremely important and influence self-evaluation
- This does not occur specifically with episodes of anorexia nervosa.

Clinical features

These depend on the extent and severity of the inappropriate and compensatory behaviour that the patient undertakes.

General symptoms include lightheadedness, giddiness, dry skin, palpitations etc.

The gastrointestinal symptoms generally predominate. These include pharyngeal irritation, abdominal pain especially in those with self-induced vomiting, blood in the vomitus due to irritation of the esophagus, difficulty in swallowing, sense of bloating, flatulence, constipation and gastroesophageal reflux disease. Sometimes the esophageal tears may be extremely severe and could be fatal due to the excessive blood loss.

Amenorrhea occurs in up to 50% of the women, while a significant proportion suffer from irregular periods, menstrual irregularity and scanty periods.

Occasionally these patients may suffer from dehydration, electrolyte imbalances cardiac changes with QT prolongation and increased p wave amplitude, widened QRS complex and depressed ST segment. Aspiration pneumonitis and [pneumomediastinum are rare symptoms.

On examination of these patients there may be some classical signs that could help to point towards the diagnosis:

- Parotid gland hypertrophy which is bilateral
- Multiple dental caries that results from the reflux of induced vomiting
- Russell's sign- hypertrophy of the skin over the knuckles due to recurrent induced vomiting
- Cutaneous manifestations like dry hair, diffuse hair loss, acne dry skin, nail dystrophy, scarring from self-induced trauma
- Bradycardia or tachycardia, hypothermia and hypotension
- Edema
- Clinical obesity or, rarely, morbid obesity

Investigations

These are generally non specific . However, Some lab studies may be used as a baseline. These include:

- Complete blood count
- Urinalysis
- Urine toxicology screen
- Pregnancy test(in case of females only)
- Amylase level
- ECG – will help to detect arrhythmias, cardiomyopathy or any other associated cardiac defects
- Imaging techniques- may not be routinely indicated in uncomplicated or typical cases of BN
- DEXA or dual energy radiographic absorptiometry may be useful in case of suspected osteopenia.

Management

These patients need close monitoring and supervision during the stage of management, as well as post management follow up. Studies have shown that almost 60% of cases of BN do not fully abstain from the core symptoms even after receiving fully supported treatments

Non pharmacologic interventions

- Cognitive behaviour therapy CBT
- Cognitive behaviour therapy enhanced CBT-E for those with co-morbid conditions and complex cases
- Interpersonal psychotherapy IPT
- Nutritional rehabilitation counselling
- Family therapy

Occasional **pharmacologic agents** are required, especially when there is altered mental status and depression some drugs have been approved for sue in BN . These include

- Fluoxetine and other antidepressants
- Mood stabilizers- Topiramate, lithium and valproic acid

Studies have evaluated the outcomes from employing the various non pharmacologic methods of management⁹. It has been shown that the Cognitive Behaviour Therapy CBT was the most effective method to achieve, remission at the end of treatment.

Avoiding undesirable eating habits, diary keeping, behaviour analyses of antecedents and consequences of binge eating and progressive response [prevention regarding binge eating and purging are some of the areas addressed during the CBT sessions. Hence CBT is indicated as the first line treatment in cases of Bulimia Nervosa.

Family therapy wherein the attitudes and dynamics of the family , dysfunctional relationships , communication and behaviour patterns and other factors that may precipitate abnormal eating behaviours are examined and must be addressed.

Avoidant / Restrictive Food Intake Disorder (ARFID)

A significant number of children and adolescents who have eating disorders do not fall into any classification of eating disorders. These cases do not fit into either Anorexia Nervosa nor Bulimia Nervosa and often are given a diagnosis of eating disorders not otherwise specified (EDNOS).

Table 1. DSM-5 diagnosis of Avoidant / Restrictive Food Intake Disorder [13]

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- A. An eating or feeding disturbance (e.g., apparent lack of interest in eating or food; avoidance based on the sensory characteristics of food; concern about aversive consequences of eating) as manifested by persistent failure to meet appropriate nutritional and/or energy needs associated with one (or more) of the following:
1. Significant weight loss (or failure to achieve expected weight gain or faltering growth in children).
 2. Significant nutritional deficiency.
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3. Dependence on enteral feeding or oral nutritional supplements.
 4. Marked interference with psychosocial functioning.
- B. The disturbance is not better explained by lack of available food or by associated culturally sanctioned practice.
- C. The eating disturbance does not occur exclusively during the course of anorexia nervosa or bulimia nervosa, and there is no evidence of a disturbance in the way in which one's body weight or shape is experienced.
- D. The eating disturbance is not attributable to a concurrent medical condition or not better explained by another mental disorder. When the eating disturbance occurs in the context of another condition or disorder, the severity of the eating disturbance exceeds that routinely associated with the condition or disorder and warrants additional clinical attention.

Studies have shown that those with ARFID are clinically different from those with AN or BN¹¹. The children and adolescents who fit this criteria tend to be younger and were more often males. The % median body weight (%MBW) was low, but in-between those with a diagnosis of AN and BN. These patients may also have an anxiety disorder, but less likely to suffer from depression. They were also more likely to have an associated medical condition compared to the other groups.

The signs and symptoms tend to be atypical, and the condition may be observed in older children and adolescents too¹². The management of these patients requires the support of a dietician- nutritionist, with an understanding of the requirements of the age appropriate nutrition. Clinical judgement is warranted when assessing the significance of a patient's weight status and degree of nutritional deficiency. Competence related to the challenges associated with feeding are a definite advantage.

References

1. Yang HR . How to approach feeding difficulties in young children. Korean J Pediatr 2017;60(12):379-84.

2. Bravender T, Bryant-Waugh R, Herzog D et al. Classification of eating disturbances in children and adolescents: proposed changes for DSM-V. *Eur Ear Disord Rev* 2010;(2):79-89.
3. Campbell K, Peebles R. Eating disorders in children and adolescents : state of the art review article. *Pediatr* 2014;134(3):582
4. Kerzner B, Milano K, MacLean Jr WC et al. A practical approach to classifying and managing feeding difficulties. *Pediatr* 2015;135(2). Available at <http://pediatrics.aappublications.org/content/135/2/344>. Accessed 3 Jan 2019.
5. National eating disorders collaboration. *Anorexia Nervosa*. Available at <https://www.nedc.com.au/eating-disorders/eating-disorders-explained/types/anorexia-nervosa/>. Accessed on 4 Jan 2019
6. https://www.hopkinsmedicine.org/healthlibrary/conditions/pediatrics/anorexia_nervosa_in_children_90,P02554
7. Bernstein AE. Anorexia nervosa clinical presentation. Available at <https://emedicine.medscape.com/article/912187-clinical>
8. Hilty DM. Bulimia Nervosa. Available at <https://emedicine.medscape.com/article/286485-overview>
9. Hilty DM .Bulimia Nervosa . Treatment and management. Available at <https://emedicine.medscape.com/article/286485-treatment#d7>
10. Fisher MM, Rosen DS, Ornstein RM. Characteristics of avoidant/restrictive food intake disorder in children and adolescents: a “new” disorder in DSM-5
11. Zimmerman J, Fister M. Avoidant/restrictive food intake disorder. *Curr Probl Pediatr Adolesc Health Care*. 2017;47(4):95-103
12. [https://jandonline.org/article/S2212-2672\(16\)31064-4/pdf](https://jandonline.org/article/S2212-2672(16)31064-4/pdf)