सत्यमेव जयते
Ministry of Ayush
Government of India

STANDARD TREATMENT GUIDELINES
ON
MANAGEMENT OF METABOLIC DISORDERS
IN
HOMOEOPATHY SYSTEM OF MEDICINE

AYUSH VERTICAL
DIRECTORATE GENERAL OF HEALTH SERVICES
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राज्य मंत्री (स्वतंत्र प्रभार)
आयुष मंत्रालय और
राज्य मंत्री
स्वास्थ्य एवं परिवार कल्याण मंत्रालय
भारत सरकार

आज़ादी का अमृत काल

सत्यमेव जयते

प्रतापराव जाधव
PRATAPRAO JADHAV

Minister of State
(Independent Charge) of
Ministry of Ayush and
Minister of State in
Ministry of Health and Family Welfare
Government of India

देश का प्रकृति परीक्षण अभियान

स्वयं और समाज के लिए योग
Yoga for self and society

MESSAGE

India has a rich legacy of traditional healthcare systems that offer time-tested approaches to health and well-being. In recent years, there has been a growing recognition of the role Ayush can play in addressing contemporary health challenges through holistic approach.

The release of the Standard Treatment Guidelines (STGs) for Metabolic Disorders in respective Ayurveda, Siddha, Unani, and Homoeopathy (ASU&H) systems, with the inclusion of Yoga, marks another significant milestone in our efforts to mainstream Ayush systems within India's healthcare landscape. Building on the success of STGs for musculoskeletal disorders, this initiative underscores our commitment to integrating traditional wisdom with modern scientific validation, enhancing healthcare quality and accessibility.

These guidelines offer evidence-based recommendations for the prevention and management of prevalent conditions such as Diabetes Mellitus, Dyslipidaemia, Obesity, Gout and Non-Alcoholic Fatty Liver Diseases (NAFLD), thereby equipping healthcare practitioners with structured, holistic approaches to patient care.

I am confident that these STGs will help to improve clinical outcomes, promote integrative healthcare models, and reinforce the relevance of Ayush systems in addressing the growing burden of lifestyle-related disorders in our nation.

I heartily appreciate the efforts and congratulate all the experts, institutions, and stakeholders who have contributed to the development of these comprehensive guidelines.

(Prataprao Jadhav)

25 April,2025
New Delhi

Room No. : 101, Ayush Bhawan, 'B' Block, GPO Complex, INA, New Delhi-110023
Tel : 011-24651955, 011-24651935 E-mail : minister-ayush@nic.in
Room No. 250-A, Nirman Bhawan, Maulana Azad Road, New Delhi-110011, Tel. : 011-23061551, 23061016
Residence : 23, Ashoka Road, New Delhi-110001, Tel.: 011-23740412, 23345478, Fax : 011-23740413

वैद्य राजेश कोटेचा
सचिव
Vaidya Rajesh Kotecha
Secretary

सत्यमेव जयते

आज़ादी का अमृत महोत्सव

भारत सरकार
आयुष मंत्रालय
आयुष भवन, 'बी' ब्लॉक, जी.पी.ओ. कॉम्प्लेक्स,
आई.एन.ए, नई दिल्ली–110023
Government of India
Ministry of Ayush
Ayush Bhawan, B-Block, GPO Complex,
INA, New Delhi-110023
Tel. : 011-24651950, Fax : 011-24651937
E-mail : secy-ayush@nic.in

FOREWORD

Metabolic disorders represent a growing public health concern in India, contributing significantly to the national burden of non-communicable diseases. Addressing these conditions calls for a comprehensive, patient-centric approach—one that not only addresses symptoms but also fosters long-term health and well-being. Ayush systems hold immense potential in the prevention and management of lifestyle-related disorders, including Diabetes Mellitus, Dyslipidemia, Obesity, Gout and Non-Alcoholic Fatty Liver Disease (NAFLD).

Recognizing this potential, the Ayush vertical under the Directorate General of Health Services (DGHS) has undertaken a commendable step in formulating Standard Treatment Guidelines (STGs) for metabolic disorders across Ayurveda, Siddha, Unani, and Homeopathy systems. These guidelines have been developed through an extensive process of expert consultations, critical review of classical texts, and incorporation of contemporary clinical evidence. The STGs aim to support practitioners in delivering consistent, safe, and effective care through Ayush systems, promoting standardization and quality assurance in clinical practice.

I hope these guidelines will not only lead to improved clinical outcomes but also contribute meaningfully to realizing the vision of integrative healthcare in India. By establishing uniform standards of practice, they pave the way for generating high-quality evidence. This, in turn, can support the global pursuit of wellbeing by addressing one of today's most pressing healthcare challenges—non-communicable diseases—through the holistic and time-tested approaches of Ayush. As we move ahead, such initiatives will continue to affirm the evolving and vital role of Ayush in tackling lifestyle-related health issues and in shaping a more holistic, inclusive, and sustainable healthcare system.

I congratulate the teams of experts, institutions, and stakeholders whose dedication and collaborative efforts have made this initiative possible.

(**Rajesh Kotecha**)

New Delhi.
23.04.2025

प्रो.(डॉ.) अतुल गोयल
Prof. (Dr.) Atul Goel
MD (Med.)
स्वास्थ्य सेवा महानिदेशक
DIRECTOR GENERAL OF HEALTH SERVICES

सत्यमेव जयते

भारत सरकार
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स्वास्थ्य सेवा महानिदेशालय
Government of India
Ministry of Health & Family Welfare
Directorate General of Health Services

Foreword

In the past two decades, there has been a resurgence of traditional medicine globally, including the Ayush system in India. Advocates of the Ayush system of medicine, including practitioners and scientists, have consistently highlighted its personalized predictive approach and diversity of Ayush formulations and therapies. As we traverse the terrain of healthcare, necessity of a holistic treatment approach becomes increasingly important. Ayush system of medicine, with its centuries-old wisdom and emphasis on natural healing modalities, offers a distinct perspective on managing metabolic disorders. Its approach, centered on restoring an equilibrium of mind, body, and spirit, complements modem medicine, thereby widening the care available to patients

Publication of Standard Treatment Guidelines (STGs) on Metabolic Disorders by Ayush system of medicine represents a significant footstep towards our commitment to comprehensive healthcare for our citizens. These guidelines, curated by experts in the field, are a testament to efficacy and relevance of Ayush in addressing public health. In order to ensure clarity and accessibility for all stakeholders, conventional terminology has been seamlessly integrated throughout the document. Each disease condition is introduced alongside its corresponding ICD classification, providing a clear clinical narrative that enhances understanding for all stakeholders.

I appreciate the Ayush vertical of this directorate, as well as contributions of various experts from National Institutes and Research Councils under the Ministry of Ayush, in bringing forth this initiative. Additionally, my gratitude to experts from medicine department of LHMC for their invaluable support in incorporating modern perspective on metabolic disease conditions into the STGs. By bridging gaps between traditional and modern medicine, we attempt to foster inclusivity and collaboration between various systems of medicine for benefitting patients.

I sincerely hope that these guidelines will serve as a valuable resource for Ayush healthcare practitioners, empowering them to deliver optimal care to individuals afflicted with metabolic diseases.

(Atul Goel)

Room No. 446-A, Nirman Bhawan, New Delhi-110011
Tel. No.: 011-23061063, 23061438, Fax No.: 011-23061924, email:dghs@nic.in

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26.	Dr. Rahul Singh	SRF(Ayurveda) Ayush vertical, DGHS, MoHFW

SUBJECT EXPERTS/ CONTRIBUTORS

Facilitation and guidance	Dr Subhash Kaushik, Director General, Central Council for Research in Homoeopathy (CCRH), New Delhi
Coordinator	Dr Varanasi Roja, Research Officer(H)/Scientist-4, CCRH, New Delhi
Rapporteur	Dr Khushboo Garg, RO(H)/S-1, CCRH, New Delhi
Developer	• Dr. Hima Bindu Ponnam, RO(H)/S-4, RRI(H), Hyderabad • Dr. Divya Taneja, RO(H)/S-3, CCRH, New Delhi • Dr. Pooja Gautam, RO(H)/S-2, Lady Hardinge Medical College & Hospital, New Delhi • Dr. Baidurjya Bhattacharjee, RO(H)/S-1, RRI(H), Siliguri, West Bengal • Dr. Roshni, Senior Research Fellow (H), CCRH, New Delhi
Experts/Clinicians	• Dr A. Raghu, Deputy Director General (Ayush), Directorate General of Health Services, Ministry of Health & Family Welfare, Nirman Bhawan, New Delhi • Dr Pratima Pal, Assistant Professor, Materia Medica, National Institute of Homoeopathy, Kolkata, West Bengal • Dr. Sunil S. Ramteke, Deputy Director General (Homoeopathy), CCRH, New Delhi • Dr. Prashant Tamboli, Director, Research & Medical Informatics, Dr M L Dhawale Memorial Organizations, Palghar, Mumbai • Dr. Naveen Pawaskar, Director, Jeeyar Integrative Medical Services (JIMS) Homoeopathic Medical College and Hospital, Hyderabad, Telangana. • Dr. Siva Rami Reddy E, Professor and Head, Department of Practice of Medicine, MNR Homoeopathic Medical College & Hospital, Hyderabad, Telangana • Dr. Jaswant Patil, Chairman, Deep Ganga Total Health Solutions Pvt. Ltd, Goregaon East, Mumbai.
Editing Team	• Dr Varanasi Roja, RO(H)/S-4, CCRH, New Delhi • Dr Khushboo Garg, RO(H)/S-1, CCRH, New Delhi

TABLE OF CONTENTS

ABBREVIATIONS

ACR	Albumin- to- Creatinine Ratio
ACR	American College of Rheumatology
ADA	Adenosine Deaminase Test
ALT	Alkaline Transaminase
Apo B	Apolipoprotein B
APRI	Aspartate Aminotransferase to Platelet Ratio Index
ASCVD	Atherosclerotic cardiovascular diseases
ASMD	Acid sphingomyelinase deficiency
AST	Aspartate Aminotransferase
BARD	Body Mass Index, Aspartate Aminotransferase/ Alkaline Transaminase(AST/ ALT) ratio and Presence of Diabetes
BD	Twice a day
b-hCG	Beta-human chorionic gonadotropin
BMI	Body Mass Index
CAD	Coronary Artery Disease
CAP	Controlled Attenuation Parameter
CDT	Carbohydrate-deficient transferrin
CKD	Chronic Kidney Disease
CRP	C- Reactive Protein
CT scan	Computed Tomography
CVD	Cardiovascular disease
DALY	Disability-adjusted life year
DASH	Dietary Approaches to Stop Hypertension-style diet
DCS	Double contour sign
DECT	Dual-energy Computed Tomography
DIP	Distal Interphalangeal Joint
DXA	Dual Energy X-Ray absorptiometry
ECG	Electrocardiogram
ESR	Erythrocyte Sedimentation Rate
FAST	FibroScan- aspartate aminotransferase
FBS	Fasting blood glucose
FH	Follicle Stimulating Hormone
FPG	Fasting Plasma Glucose

FT4	Free Thyroxine
GFR	Glomerular Filtration Rate
HBA1C	Glycosylated Haemoglobin
HBsAg	Hepatitis B
HCC	Hepato cellular Carcinoma
HCG	Human Chorionic Gonadotropin
HDL	High Density Lipoprotein
HeFH	Heterozygous Familial Hypercholesterolemia
HELLP	Hemolysis, Elevated Liver enzymes and Low platelets
HLA-B27	Human Leucocyte Antigen B27
HOMA-IR	Homeostatic Model Assessment for Insulin Resistance
ICD	International Classification of Diseases
IFG	Impaired Fasting Glucose
IGT	Impaired Glucose Tolerence
kPa	Kilopascals
LAL	Lysosomal acid lipase
LDL	Low Density Lipoprotein
LDL-C	Low-density lipoprotein cholesterol
LFT	Liver Function Test
LH	Luteinizing Hormone
LSM	Liver stiffness measurement
MAFLD	Metabolic Dysfunction Associated Fatty Liver Disease
MEFIB	Magnetic Resonance Elastography plus Fibrosis- 4
MRCP	Magnetic Resonance Cholangiopancreatography
MRE	Magnetic Resonance Elastography
MRI	Magnetic Resonance Imaging
MS	Metabolic Syndrome
MSU	Monosodium Urate crystal
MTP	metatarsophalangeal joint
MTTP	Microsomal Triglyceride Transfer Protein
MUFA	Monounsaturated Fatty Acid
NAFLD	Non-Alcoholic Fatty Liver Disease
NASH	Non-Alcoholic Steatohepatitis
NFHS	National Family Health Survey
NFS	BMI, diabetes status, AST/ALT ratio, platelet count, and albumin levels.

Non-HDL-C	Non-high-density lipoprotein cholesterol
OA	Osteoarthritis
OD	Once Daily
OGTT	Oral Glucose Tolerance Test
OHS	Obesity Hypoventilation Syndrome
OSA	Obstructive Sleep Apnea
PCOS	Polycystic Ovarian Syndrome
PUFA	Polyunsaturated Fatty Acid
RA factor	Rheumatoid Arthritis factor
RBSK	Rashtriya Bal Suraksha Karyakaram
RSSDI	Research Society for the Study of Diabetes in India
SF	Synovial Fluid
SM - S	Sphingomyelin
T2DM	Type 2 Diabetes Mellitus
TC	Total Cholesterol
TDS	Three times a day
TG	Triglyceride
TSH	Thyroid stimulating hormone level (TSH).
USG	US: ultrasonography / Ultrasonography (USG)
UTI	Urinary Tract Infection
VLDL	Very Low Density Lipoprotein
WAGR syndrome	Wilms tumor, aniridia, genitourinary malformations and a range of developmental delays
WC	Waist Circumference
WHO	World Health Organisation
WHR	Waist-Hip Ratio
YLD	Years Lived with Disability
YLL	Years of life lost

CHAPTER

1

DIABETES MELLITUS

DIABETES MELLITUS

ICD 10 CODE: E11.0 TO E11.9
ICD 11 CODE: 5A11

CASE DEFINITION

Diabetes Mellitus is a chronic disorder resulting from aberrations in insulin secretion, insulin action, or both. Long term damage, dysfunction, and failure of different organs resulting in this condition is attributed to the persistent hyperglycaemia state[1]. Type 2 Diabetes Mellitus previously referred as non-insulin-dependent diabetes accounts for approximately 90 – 95% of all diabetes cases. The condition also known as adult-onset diabetes is due to insulin resistance and relative insulin deficiency[1,2].

INTRODUCTION (*incidence/prevalence, mortality/morbidity*)

- Diabetes is the eight-leading cause of mortality and has a prevalence of 529 million cases worldwide in 2021 with a global age standardised prevalence of 6.1%. International Diabetes Federation report indicated an expenditure of US$ 996 billion globally due to the disease[3,4].
- Diabetes is also contributing to two-fold excess risk for ischemic heart disease and stroke, which attributes to the first and second leading cause of death worldwide[3,5].
- A report published by the *Lancet* commission in 2020 highlights that the majority of disease burden (80%) is from Low- and Middle-income countries (LMICs)[6].
- Globally, the disease attributed to 37.8 million Years of Life Lost (YLL), 41.4 million Years of healthy life lost due to disability (YLD) and 79.2 million Disability-adjusted life year (DALY) in 2021[3].
- Between 2021-2050, the global age-standardised total diabetes prevalence is expected to increase by 59·7% resulting in 1.31 billion cases in 2050[3].
- The NFHS-5 survey reported prevalence of diabetes of 4.90% among Indian individuals aged 15-49 years with 24.82% of individuals with undiagnosed diabetes[7].
- The ICMR-INDIAB survey conducted reported 26.6% of Indians above 20 years having dysglycaemia with 11.4% suffering from diabetes and 15.3% suffering from a pre-diabetic state[8].
- Several non-modifiable risk factors like age, ethnicity, genetic predisposition, family history of diabetes, and modifiable factors like sedentary lifestyle, obesity, unhealthy diet, stress, intrauterine environment, environmental pollutants, etc. are associated with the incidence of the disease.
- The COVID-19 pandemic has resulted in a significant rise of new-onset of diabetes mellitus in all age groups especially during the post-acute phase of the disease[9]. The pandemic shows an increase of 14.4% of new onset of diabetes mellitus including T2DM among the hospitalized patients[10].

CLINICAL PRESENTATION

The presentation of T2DM to the clinician in quite varied and a majority is discovered incidentally during regular blood testing for routine check-up, pre-surgery checkup, dental care, or any medical procedure. The classical presentation of T2DM like polyuria, polydipsia, and fatigue is observed mainly in older individuals. Often recurring bacterial and fungal infections, blurred vision, and delayed wound healing is classically observed in patient especially in older individuals. With a majority of the cases being asymptomatic, the patient may present to the clinician with a macrovascular complication of coronary heart disease, peripheral vascular disease, and cerebrovascular disease or a microvascular one of diabetic nephropathy, retinopathy, nephropathy or diabetic foot ulcer. In the recent years cancers (hepatocellular, pancreatic, colorectal, etc.), infections, Non-Alcoholic Fatty Liver Disease including steatohepatitis and cirrhosis, obstructive sleep apnoea, affective disorders, dementia, erectile dysfunction, and functional disability at workplace is also considered as emerging complications of T2DM. In severe cases especially in older individuals, hyperosmolar coma is observed especially during medications for major events like Myocardial infraction and Stroke [11]

CLINICAL EXAMINATION

The assessment of a patient with Type 2 diabetes shall first involve the diagnosis and confirmation of the type of diabetes by blood glucose and HbA1C evaluation. Addition evaluation includes the evaluation of the diabetes complications, presence of co-morbidities, and overall health status. The clinician must explore behavioural factors (eating pattern, calorie counting, physical activities, sleep behaviour, addictions), medications and vaccinations, technology use, and social life assessment. A comprehensive physical examination of the patient must be conducted with special emphasis on fundoscopic examination, skin examination, foot examination, cognitive function, mental state examination, and bone health assessment. [12]

DIFFERENTIAL DIAGNOSIS

Table: 1

Condition	Differential features
Type 1 Diabetes Mellitus[13]	• Associated with autoimmune β cell destruction of the pancreas • Onset in a younger age group • Family history of auto-immunogenicity • Serum insulin levels are diminished • C-peptide levels are diminished <200 pmol/L • Detection of antibodies in serum
Maturity onset of diabetes in Young/ Monogenic diabetes[13]	• Onset at an age before 25 years of age • Impaired serum insulin levels • Usually, obesity is not co-existent
Diseases of the exocrine pancreas[13]	• Associated with conditions like pancreatitis (acute or chronic), trauma/ pancreatectomy, neoplasia, cystic fibrosis, hemochromatosis, etc. • Demonstration of pancreatic injury by blood parameters like amylase, lipase, faecal elastase, and imaging studies.

Condition	Differential features
Stress induced hyperglycaemia[14]	• Usually noted in persons within 48 hours of hospital admission • Blood levels 180 mg/dl and above • Increased levels of cytokines, cortisol, glucagon, catecholamines in blood.
Medications like steroids[12]	• Develops due to side effects of glucocorticoids used as anti-inflammatory or immunosuppressive purposes • Mostly observed with oral and injected glucocorticoids
Acromegaly[15]	• Increased secretion of Growth Hormone and Insulin like Growth Factor-1 results in gluconeogenesis, impairs insulin sensitivity • Characteristic physical appearance • Often surgery for pituitary tumour causing reversal of diabetes
Cushing's Disease	• Circulating glucocorticoids results in increased glucose levels in the blood. • Cortisol levels after dexamethasone suppression test aids in the diagnosis.

SUPPORTIVE INVESTIGATIONS

Essential:

- Blood Sugar Profile: Fasting Blood sugar (FBS) ≥ 126 mg/dL, Post-prandial Blood sugar (PPBS) ≥ 200 mg/dL, Glycated Haemoglobin HbA1C ≥ 6.5%
- Complete haemogram, urine examination for glucose, proteins, ketone bodies, and microscopic examination for pus cells.

Advanced:

- Blood for serum creatinine, lipid profile and liver function tests.
- Serum electrolytes, Blood urea, Urine microalbumin,
- Creatinine clearance, ACR
- Electro-cardiography
- Chest skiagram- Postero-anterior view
- Ophthalmoscopic examination
- Ultrasonography with colour doppler for upper and lower extremity arteries
- Nerve conduction velocity tests
- Electroencephalogram
- Serum C-peptide, Insulin autoantibodies, and Fasting insulin levels
- Genetic testing (INSR Single Gene Test)

DIAGNOSTIC CRITERIA

The diagnosis of Diabetes Mellitus among non-pregnant individuals has been defined by the American Diabetes Association (ADA) and Research Society for the Study of Diabetes In India (RSSDI) as per the following criteria[13]:

Table: 2

Criteria of diagnosis of Diabetes among non-pregnant individuals
HbA1C ≥ 6.5%. The test should be performed in a laboratory using a method that is NGSP certified and standardized to the DCCT assay*
Or
FPG ≥ 126 mg/dL. Fasting is defined as no caloric intake for at least 8h*
Or
In an individual with classic symptoms of hyperglycaemia or hyperglycaemic crisis, a random plasma glucose ≥ 200 mg/dL. Random is any time of the day without regard to time since previous meal.

*In the absence of unequivocal hyperglycaemia, diagnosis requires two abnormal test results obtained at the same time (e.g., HbA1C and FPG) or at two different time points.

The criteria for specific detection of type 2 diabetes mellitus are difficult and diagnosis is often mistaken especially in ~40% of adults with new onset of Type 1 diabetes mellitus and maturity-onset diabetes in young.

Pre-diabetes

Pre-diabetes is defined as a clinical condition where the levels of glucose and HbA_1C do not meet the criteria for diabetes, but yet the individual suffers from abnormal carbohydrate metabolism. The condition poses significant risk for the progression to overt Diabetes, cardiovascular diseases and several other cardio-metabolic outcomes.

The criteria for diagnosis of prediabetes have been defined by the American Diabetes Association and RSSDI as follows:

Table: 3

Impaired fasting glucose (IFG): FPG 110 mg/dL to 125 mg/dL
Or
HbA1c ≥5.7%-6.4%

PRINCIPLES OF MANAGEMENT

Red Flag signs:

These signs should be assessed before initiating treatment for need for management/ consultation through modern medicine.

1. Severe cardiovascular disease including valvular and ischemic heart disease.
2. Severe associated infective morbidity like pneumonia, tuberculosis, sepsis, etc.
3. Advanced stages of malignancy
4. Visual loss due to diabetic retinopathy
5. Severe motor or autonomic dysfunction
6. Severe renal dysfunction with severely reduced GFR
7. Diabetic ketoacidosis
8. Hypoglycemia
9. CVA

10. Hyponatremia
11. Hyperosmolar non-ketotic coma

A) **Preventive management**[16]

Prevention of diabetes includes approaches for primary, secondary, and tertiary management of the condition. The primary measures shall target persons with obesity/ increased BMI. A targeted 7% weight loss and moderate physical exercise may be useful for prevention or reversal of the disease. Trials also suggest that individualized low-calorie diet plan and lifestyle/ behavioural therapy results in prevention or delay of Type 2 diabetes mellitus and related cardiovascular morbidity. Opportunistic screening must be conducted for the following criteria.

Table: 4

Persons with age of 18 years and above
Persons with a high BMI (≥ 25 kg/m^2)
Women with a history of gestational diabetes
First- or second- degree relative with diabetes
Hypertensive individuals
Sedentary lifestyle
Signs of insulin resistance or conditions associated with insulin resistance (acanthosis nigricans, hypertension, dyslipidemia, polycystic ovarian syndrome, small-for- gestational age birth weight)
If results are normal, testing should be repeated at a minimum of 3-year intervals, with consideration of more frequent testing depending on initial results and risk status.

Yoga* and *Pranayama[17]

Adherence to practices of *yoga* and physical exercises on a regular basis will help regulate the eating patterns and aid physical fitness thereby facilitating good glycaemic control.

The general guidelines of *yoga* recommended for T2DM patients

Table: 5

Criteria	Yoga Techniques	Approximate duration	Effects
Asanas (*yoga* postures)	*Trikonasanam* (triangle pose)	Recommended to hold the final pose for 15 seconds, gradually increasing the duration up to 1 minute	Enhances insulin receptor expression in the muscles, causing increased glucose uptake by muscles. Have positive effects on glucose utilization and fat redistribution in type 2 diabetes
	Tadasana (palm tree pose)		
	Vakrasana (spinal twist)		
	Paschimottasana (seated forward bend)		
	Bhujangasana (cobra pose)		

Criteria	Yoga Techniques	Approximate duration	Effects
	Naukasana (boat pose)		
	Pavanamuktasana (wind releasing pose),		
	Setubandhasana (Bridge pose)		
	Sarvangasana (shoulder stand)		
	Surya namaskara	Slow speed, 3–7 rounds according to an individual's capacity	Stimulates insulin production through brain signalling Significantly decreases hip circumference, exerting beneficial effects on glycaemic outcomes
Pranayama (*yogic* breathing)	*Anuloma viloma* (alternate nostril breathing)	5–10 minutes	Improves components of health-related fitness, i.e., cardiorespiratory endurance, flexibility, and body fat percentage
	Chandra bhedana (left nostril breathing)	5 minutes	Parasympathetic stimulation
	Surya bhedana (right nostril breathing)	5 minutes	Sympathetic stimulating effect; may be recommended in people with diabetes.
	Bhastrika (bellows breath)	3–5 minute	Regulation of pineal, pituitary, and adrenaline glands, important role in the regulation of metabolism
	Bhramari (humming bee breath)	3–5 minutes	Soothing and calming effect on the mind, improves mental and physical health
	Sheetali/Sitkari (cooling breath)	5 rounds	Lowers blood pressure, cooling effect
Bandha (lock)	*Uddiyan bandha* (abdominal lock)	5 rounds	Negative pressure created in the abdominal cavity may improve pancreatic function
Mudras (hand gestures)	*Linga mudra, surya mudra, prana mudra, apana mudra, gyana mudra*	15–45 minutes	Promote deep relaxation and eliminate stress. Boost metabolic rates, promote weight loss, and reduce sugar levels.
Shuddhi kriya (cleansing processes)	*Kapalbhati* (frontal brain purification)	5 rounds, 120 strokes	Abdominal pressure created during exhalation improves the efficiency of β-cells of the pancreas Helps in the production of insulin and controlling glucose levels in the blood

Criteria	Yoga Techniques	Approximate duration	Effects
	Agnisara kriya (stimulating the digestive fire)	5 rounds	The 'vacuum' effect of this action massages the internal organs and increase blood flow to the area Boosts metabolism and facilitates proper functioning of the abdominal organs
	Vaman dhauti (stomach cleansing)	Once a week	Increases glucose uptake, minimizes insulin resistance, and promotes the function of insulin by reducing levels of circulating free fatty acids in the body
	Full *shankhaprakshalana* (intestine cleansing)	Once a year	Significantly reduces blood glucose levels, Increases insulin production
	Laghu shankhaprakshalana (short cleansing)	Every 40 day	
Dhyana (Meditation)	Meditation	10 minutes or more	Beneficial psychological effects, such as faster reactions to stimuli and being less prone to various forms of stress

**Yoga* and exercise should be performed as per the advice of qualified *yoga* instructor or physiotherapist

INTERVENTIONS

At every level of care, if the patient is already under standard care, the physician may advice to continue the same along with add-on homoeopathy and can be assessed for the same in the follow ups for tapering or discontinue the treatment in consultation with conventional physician.

<u>At Level 1</u> (Solo physician clinics/health clinics/PHCs (Optimal Standard of treatment where technology and resources are limited)

Clinical Diagnosis

Type 2 Diabetes mellitus presents at the clinic in an adult with either the classical presentation of polydipsia, polyuria, fatigue, or often as an incidental discovery of raised blood glucose levels during a routine health check-up. There may be an increase in occurrences of bacterial and fungal infections and pruritus vulva in women. In many cases any complication of the disease may be the initial presenting symptom of the disease. Patients may also present with levels of prediabetes on incidental discovery. The diagnosis will be made by the following investigations:

- Blood Sugar Profile: Fasting Blood sugar (FBS) ≥ 126 mg/dL, Post-prandial Blood sugar (PPBS) ≥ 200 mg/dL, Glycated Haemoglobin HbA1C ≥ 6.5%.
- Urine examination for glucose, proteins, ketone bodies, and microscopic examination for pus cells.
- Blood for serum creatinine, lipid profile and liver function tests.

Management

Several studies have been conducted in Homoeopathy to demonstrate the potential role of homoeopathic medicines in Type 2 Diabetes Mellitus[18–24]. Studies have shown that patients are often exploring and accepting different CAM therapies including homoeopathy for treatment of diabetes mellitus[25,26]. Classical approach of homoeopathic treatment includes the approach of treating the case on the basis of the '*totality of symptoms*'. The complete picture of the individual corroborating points of the physical and mental symptoms and traits are essential for determination of the individualized homoeopathic medicines. Determining the chronicity of the disease condition, consideration of the miasm of the patient and subsequent anti-miasmatic treatment is essential. The repetition of doses is often essential at regular intervals with often requirement of a sequence of different remedies according to Kent's 12 observations (complimentary, follows wells, cognates, change of plan of treatment). Many remedies are often used in physiological doses and have been observed to obtain better glycaemic control[19]. Flow-diagram for management is placed at annexure I.

Some commonly indicated medicines in Homoeopathic treatment of Type 2 Diabetes Mellitus are as follows (indications of medicines is placed at annexure II) [27,28]:

Table: 6

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants
1.	**Phosphoric acid**	Varies as per the need if the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				Organ specific medicines (Mother tinctures and lower dilutions/ triturations): • Abroma augusta • Syzygium jumbolanum • Gymnema sylvestre • Cephalandra indica • Pancreatinum Schussler's biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Calcarea fluoricum, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum,Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	**Arsenicum album**					
3.	**Sulphur**					
4.	**Natrum sulphuricum**					
5.	**Phosphorus**					
6.	**Lachesis mutus**					
7.	**Lycopodium clavatum**					
8.	**Kali carbonicum**					
9.	**Natrum muriaticum**					
10.	**Secale cornutum**					
11.	**Sepia officinalis**					
12.	**Opium**					
13.	**Argentum metallicum**					

Do's and Don'ts while taking homoeopathic medicine [29]

Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British homoeopathic practice.

Recommended diet and lifestyle

Dietary and lifestyle counselling is an important aspect of management of Type 2 diabetes mellitus and adherence to medical nutritional therapy along with regular exercise is very essential for the management of the disease.

Diet

The diet is responsible for promoting weight loss, improving glycaemic control, and reducing of cardiovascular complications[30]. Carbohydrate in the diet (50-60% of total caloric intake) should include grains with low glycaemic index and low glycaemic load. Complex carbohydrates must be preferred over refined products. Total fibre consumption should be 25-40 gms/day. Protein intake must be 15% of the total caloric intake depending on the age, sarcopenia, and renal function. Oils rich in MUFA and PUFA must be advised.

Dietary habits

- A diet rich in fruits, nuts, leafy vegetables, fibre, whole grains, and unsaturated fat is preferred. The plate must also include pulses, legumes, unprocessed vegetables, and low-fat dairy.
- Change in eating patterns like early dinner must be advised.
- Extreme diets like low-carbohydrate ketogenic diet must be planned and executed in consultation with a physician and trained nutritionist, and for a short period.
- Intermittent fasting reduces body weight and reduce diabetes parameters such as fasting glucose, fasting insulin, insulin resistance (HOMA-IR) index, and glycated hemoglobin (HbA1c) [31].

Physical exercise

- ≥ 30 minutes of moderate intensity aerobic exercise each day including, swimming, walking, cycling, running, jogging, and rowing.
- 15-30 minutes of work-related activity.
- 15 minutes of muscle-strengthening exercise (at least 3 times a week), which includes lifting weights, working with resistance bands, hill climbing/ inclined walking, sit-ups, and squats.
- At least 5000 steps per day
- Use of smart watch or fitness bands for monitoring of physical activity must be encouraged.
- Physical activity must be included on the basis of patient's willingness and ability.
- A minimum of 150 minutes/week of exercise is recommended for healthy Indian individual considering the high risk of T2DM and CVD.

Yoga[17]

As indicated above.

Restricted diet and lifestyle

- Consumption of processed grains should be avoided.

- Intake of red meat must be limited. Fats should be < 30% of the total caloric intake especially from nuts and seeds.
- Saturated fats like butter, ghee, margarine, coconut oil must be limited to <10% of caloric intake. Use of hydrogenated vegetable oils and recooking or refrying of oil must be avoided.
- Sugar intake must be reduced to 6 teaspoons (25g) daily. Salt intake must be restricted to <5 gms/day. Artificial sweeteners must be avoided as it alters the gut microbiota and increases insulin resistance.
- Sweetened beverages must be avoided.
- Smoking cessation must be advised for all. Therapies may be undertaken for persons who wish to quit smoking in a stepwise manner.
- Persons with habit of alcohol consumption may consume moderate amount of alcohol amounting to ≤ 2 drinks in men and ≤ 1 drink in women, but cessation is recommended. (one drink is equal to a 12-oz beer, a 5-oz glass of wine, or 1.5oz of distilled spirits)

Follow-up (at an interval of 7 days or earlier as per the need)

Reviews should include:

- Monitoring the person's symptoms and the ongoing impact of the condition on their everyday activities and quality of life.
- Management of T2DM in terms of diet, exercise, and other interventions.
- Discussing the person's knowledge of the condition, any concerns they have, their personal preferences, and their ability to access services.
- Reviewing the effectiveness and tolerability of all treatments.
- Self-management support.
- Monitoring the long-term course of the condition with periodic review.

Referral criteria

- ✓ Nonresponse to treatment
- ✓ Target organ involvement and investigations
- ✓ Complications of diabetes mellitus including all macrovascular, microvascular, and emerging complications
- ✓ Complications related to glycemic control including uncontrolled hyperglycemia and frequent hypoglycemic episode.
- ✓ Substantial impact on their quality of life and activities of daily living
- ✓ Diagnostic uncertainty

<u>At Level 2</u> (CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, X-ray)

Clinical Diagnosis: Same as Level 1. Any fresh case or referred case from Level 1 shall be evaluated thoroughly for confirmation of diagnosis and complications.

Investigations: Same as Level 1.

Supportive investigations to assess organ involvement includes:

1. Serum electrolytes
2. Blood urea
3. Urine microalbumin, creatinine clearance, ACR
4. Electro-cardiography
5. Chest skiagram- Postero-anterior view
6. Ophthalmoscopic examination

Management: Same as Level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient. Complications of the disease is an important clinical presentation at this stage of care especially the early signs and symptoms of such complications. Conditions like diabetic foot ulcer shall require surgical debridement of the lesion and antiseptic dressing along with integrative management for glycaemic control. Hypoglycaemia state requires acute management by fast acting glucose and long-term management with constitutional treatment. In case of hypoglycaemia, patients on oral hypoglycaemic agents and/or insulin therapy may require review of the dosage of conventional medications [32,33]. Other complaints of neurological, ophthalmological, hepatic, cardiovascular, and nephrological involvement may be managed by integrative management of Homoeopathy and Modern Medicine. The scheme of management shall include adequate glycaemic control and symptomatologic treatment of the presenting complaints.

Table: 7

S No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants
1.	**Lacticum acidum**	Varies as per the need if the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc. Schussler's biochemic remedies may also be prescribed as per the need of the case.				Organ specific medicines (Mother tinctures and lower dilutions/ triturations): 1. Abroma Augusta 2. Syzygium Jambolanum 3. Gymnema sylvestre 4. Cephalandra Indica 5. Pancreatinum Schussler's biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Calcarea fluoricum, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum,Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	**Rhus aromatica**					
3.	**Uranium nitricum**					
4.	**Helonias dioica**					
5.	**Manganum aceticum**					
6.	**Chionanthus virginica**					
7.	**Aurum Metallicum**					
8.	**Plumbum Metallicum**					
9.	**Phaseolus nanus**					
10.	**Crataegus oxyacantha**					

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up (at an interval of 7 days or earlier as per the need)

Referral criteria:

- ✓ Same as level 1
- ✓ Nonresponsive to treatment

At Level 3 (Ayush hospitals attached with teaching institution, District Level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities), multiple departments/facilities for diagnosis and interventions.

Clinical Diagnosis: Same as Level 1 and 2. Confirmatory diagnosis with advanced biochemistry and serological tests. Evaluation and assessment of complications.

Investigations: Same as Levels 1 and 2.

Additional Investigations may be done as follows:

- ✓ Ultrasonography with colour doppler for upper and lower extremity arteries
- ✓ Nerve conduction velocity tests
- ✓ Electroencephalogram
- ✓ Serum C-peptide, Insulin autoantibodies, and Fasting insulin levels
- ✓ Genetic testing (INSR Single Gene Test)
- ✓ Psychological assessment with a trained psychiatrist

Management: Same as Levels 1& 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to the Level 1 and Level 2 management strategies, Homoeopathy has a number of uncommonly prescribed medicines that can ease pain and other symptoms in patients with T2DM or in those who have not responded to treatment due to lack of symptoms, co-morbid conditions, or the use of other immunosuppressives, oral hypoglycaemic agents, or antihypertensives. Homoeopathic medicines can be prescribed based on the sphere of action or keynote symptoms as a part of supportive management in these disorders as well as other advanced pathological states.

Table: 8

S No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants
1.	**Curare**	Varies as per the need if the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc. Schussler's biochemic remedies may also be prescribed as per the need of the case.				Organ specific medicines (Mother tinctures and lower dilutions/triturations): 1. Abroma Augusta 2. Syzygium Jambolanum 3. Gymnema sylvestre 4. Cephalandra Indica 6. Pancreatinum

S No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants
2.	**Serum anguillae**					**Schussler's biochemic remedies** (Calcarea sulphurica, Calcarea phosphoricum, Calcarea fluoricum, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum,Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
3.	**Terebinthinum**					
4.	**Urea Pura**					
5.	**Crotalus Horridus**					
6.	**Conium Maculatum**					
7.	**Anthracinum**					
8.	**Aceticum acidum**					
9.	**Calcarea arsenicosum**					
10.	**Viscum album**					

Recommended diet and lifestyle: Same as Levels 1 and 2

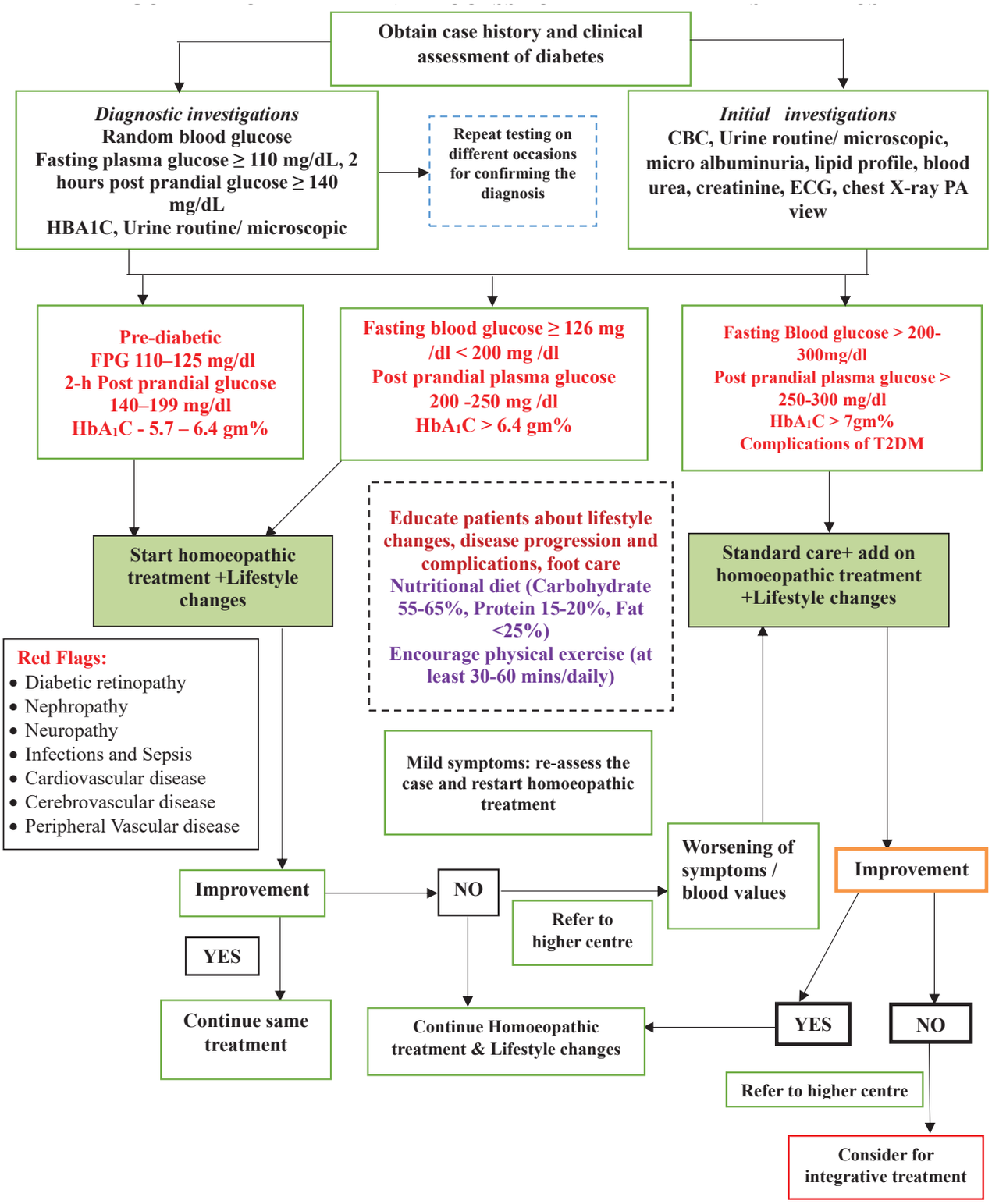
Restricted diet and lifestyle: Same as Levels 1 and 2

Follow-up (at an interval of 7 days or earlier as per the need)

Referral criteria

- ✓ Same as Level 2, plus
- ✓ Any condition or serious complication beyond the scope of Homoeopathic treatment

ALGORITHM OF TREATMENT PROCESS FOR TYPE-2 DIABETES MELLITUS



ANNEXURE II

Indications of medicines for Type 2 Diabetes Mellitus:

S. No.	Medicines	General Indications	Characteristic particulars
1	**Phosphoric acid**	*Phos acid is found in young people who grow rapidly, overtaxed, mentally or physically. Debility is very marked in this remedy, nervous exhaustion.* *Mental debility first; later physical.*	• Urine frequent, profuse, watery, milky • Polyuria with dry mouth and throat • Diabetes with a history of sexual excesses and severe emotional or mental strain • Micturition, preceded by anxiety and followed by burning • Paralytic weakness and formication along spine
2	**Arsenicum album**	*Chilly patient; rapid disproportionate prostration; burning pains better by heat (except headache) cadaveric odour of discharges and body; anxiety, anguish, fear for death and restlessness*	• After urinating, feeling of weakness in abdomen. Polyuria with bulimia. • Great thirst, drinks much but little at a time. • Burning all over the body due to acute or chronic pathology of nerves and blood vessels which becomes better from warm application • Paleness of skin; disposition to gangrene and skin affections • Gangrenous inflammation with black; flat; pus thin, ichorous Fetid smell, ichorous suppuration, ready bleeding, putridity, and bluish or greenish colour of the ulcers
3	**Sulphur**	*Hot patient kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve.*	• Frequent micturition, especially at night. Mucus and pus in urine; parts sore over which it passes. • Excoriation, troublesome itching and burning sensation in genitals; with papular eruption around them. • Burning in the vagina; is scarcely able to keep still.
4	**Natrum sulphuricum**	*Hot patient; extreme desire for fat;< in damp, cold weather; tendency for early morning diarrohea; irritable in morning, dislike to speak or to be spoken to*	• Loaded with bile. • Brisk-dust sediment. • Excessive secretion. Diabetes
5	**Phosphorus**	*Tall, fast growing child with tendency to stoop; haemorrhagic tendency; Chilly patient Craving for salt, cold foods and drinks. Oversensitive to external impressions.*	• Glycosuria; urine pale, watery or turbid, whitish like curdled milk • Albuminuria with brick dust sediment etc. • Numbness and paralysis of lower limbs • Polyuria; Urine with white, serous, sandy and red, or else yellow sediment. Turbid urine, with sediment like brick-dust.

S. No.	Medicines	General Indications	Characteristic particulars
6	**Lachesis mutus**	*Hot patient; thin and emaciated; haemorrhagic diathesis; great sensitiveness to touch; hot flushes and perspiration; Desires oysters, alcohol, farinaceous food, all complaints worse after sleep; loquacious, jumps from one idea to another, jealous, suspicious, indolent*	• Hot perspiration, • Boils, carbuncles, ulcers, with bluish, purple surroundings.
7	**Lycopodium clavatum**	*Hot patient, Intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4- 8 pm; right sided complaints or symptoms shifts from right to left; desire for warm foods and drinks , sweet; dominating, cranky, lack of self-confidence, precocious.*	• Constant hunger and thirst worse at night. • Numbness, drawing and tearing in limbs especially at night. • Polyuria at night. Urine milky, turbid. Burning in general and urine in particular • No erectile power, impotence, diminished sexual power and desire (impotency); • Great emaciation; mental and bodily exhaustion; tendency for lithic acid gravel and tardy wound healing • Urgent want to urinate, with too frequent emission, with discharge of large quantities of pale urine • Dark urine with diminished discharge.
8	**Kali carbonicum**	*Chilly patient; puffiness, weakness, backache and profuse perspiration;< in the morning 2-4 am; excessive flatulence; distended stomach as if it would burst*	• Tearing pain in limbs with swelling. Limbs sensitive to pressure. • Great drowsiness during day and early in evening. Falls asleep while eating. • Obliged to rise several times at night to urinate. • Pressure on bladder long before urine comes. Involuntary urination when coughing, sneezing, etc
9	**Natrum muriaticum**	*Hot patient: poorly nourished, great emaciation (marked on neck); losing flesh while living well; craving for salt; aversion to bread and fatty things; constipated.* *increased thirst; mapped tongue with red insular patches; melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates.*	• Pain just after urinating. Increased, involuntary when walking, coughing, etc. • Frequent and urgent want to urinate, day and night, sometimes every hour, with copious emission. • Bulimia, without appetite, with fulness and satiety, however little may have been eaten. • Great drowsiness during day, with frequent yawning. • Numbness of one side of parts lain on, with paralysis; fingers, parts seem short.

S. No.	Medicines	General Indications	Characteristic particulars
10	**Secale cornutum**	*Contraction of the muscles of blood vessels and uterus. Decomposition of blood with thin, fetid, watery, black, oozing continuously. Worse: Warmth, loss of fluids, covers, touch Better: Cold bathing, uncovering, fanning, rocking, forcible stretching.*	• Paralysis of bladder. • Retention, with unsuccessful urging. • Discharge of black blood from bladder. Enuresis in old people • Diabetes accompanied by hypertension • Rapid emaciation; of paralyzed part, with much appetite and excessive thirst.
11	**Sepia officinalis**	*Chilly patient; tall, thin built with yellow saddle across upper part of cheeks and nose, big belly; dry flabby skin. Predisposed to take cold at change of weather. Desire for sour food which aggravates Cheerful, active when well but indifferent and quarrelsome when sick self-absorbed, sad, weeping and indolent.*	• Red, adhesive, sand in urine • Involuntary urination, during first sleep. • Chronic cystitis, slow micturition, with bearing-down sensation above pubis.
12	**Opium**	*Affections of nerves, mind, senses producing insensibility of nerves, painlessness, drowsy, stupor, torpidity and general sluggishness. Excretions except of skin are suppressed. Loss of power, self. Stupid sleep accompanies all complaints. Depression*	• Urine slow to start, feeble stream. • Retained or involuntary, after fright. • Loss of power or sensibility of bladder.
13	**Argentum metallicum**	*Affections of the joints, bones, condyles, cartilages and ligaments. Secretions of mucous membranes are thick, Gray or tenacious, or like boiled starch. Pains gradually increase, become violent then suddenly cease < by touch. Lack of control over mind and body. Worse: Using voice, mental strain, cold damp weather, touch, pressure Better: Motion, wrapping up*	• Diuresis. Urine profuse, turbid, sweet odour. • Legs weak and trembling, worse descending stairs. • Frequent urination. • Polyuria.
14	**Lacticum acidum**	*Pain, swelling, and stiffness and tenderness of joints < by motion, and flying pains about limbs. Weakness as if from exercise, with rheumatic pains in the bones. Aversion to exercise. Restless all night. Does not sleep well.*	• Frequent passing of large quantities of saccharine urine. • Hot acrid eructation, < smoking • Rheumatic pains in joints, knees, < by motion

S. No.	Medicines	General Indications	Characteristic particulars
15	**Rhus aromatica**	-	• Severe pain at beginning or before urination • Diabetes, large quantities of urine of low specific gravity • Renal and urinary affections, especially diabetes • Haematuria and cystitis come within the range of this remedy
16	**Uranium nitricum**	*Excessive thirst, nausea, vomiting, excessive appetite. Great emaciation, debility and tendency to ascites and general dropsy.* *Is known to produce nephritis, diabetes, degeneration of the liver, high blood pressure and dropsy.*	• Diuresis. • Incontinence of urine. • Diabetes. • Emaciation and tympanites. Burning in urethra, with very acid urine. • Unable to retain urine without pain. • Enuresis Complete impotency, with nocturnal emissions. Organs cold, relaxed sweaty.
17	**Helonias dioica**	*Sensation of weakness, dragging and weight in the sacrum and pelvis, with great languor and prostration. Languor, unusually tired, yet knows no reason. Over-sensitiveness to air, < from uncovering; > in warm air.*	• Dropsy from albuminuria, general debility • Involuntary discharge of urine after the bladder seemed to be empty • Urine phosphatic; profuse and clear, saccharine. • Diabetes
18	**Manganum aceticum**	*Special affinity for inner ear, larynx, trachea, periosteum, joints, ankles, and lower limbs. The bones are very sensitive; red spots on skin, which are elevated, owing to the affections of the bones.* *Excitement, low spirits, flushing, whistling through ears, fulness of head with tightness around it, dim vision, swelling of hands and feet and a stinging as if frost-bitten*	• The skin does not heal easily; every injury tends to ulceration. • Excoriation and fissures in bend of the joints. • Voluptuous itching; > by scratching. • Diabetes accompanied by psoriasis
19	**Chionanthus virginica**	*Weak feeling, < standing or walking about, > sitting or lying down. Exceedingly nervous, cannot lie still.*	• Large amount of high specific gravity; frequent urination. • bile and sugar in urine. Urine very dark.
20	**Aurum Metallicum**	*Erratic ebullitions, venous congestion, orgasm as if blood boiling in all the veins. Pains wander, impelling motion, and finally attack the heart. Acute mental depression, hopelessness, and loss of love of life.* *Worse: Emotions, mental exertion, night, cloudy weather. Better: Cool open air, cold bathing, becoming warm, walking. Weary, but cannot rest or sleep*	• Painful retention of urine, with urgent inclination to make water, and pressure on the bladder. • Turbid, like buttermilk, with thick sediment. • Painful retention.

S. No.	Medicines	General Indications	Characteristic particulars
21	**Plumbum Metallicum**	*Lead paralysis is chiefly of extensors, forearm or upper limb, from centre to periphery with partial ancśthesia or excessive hyperasthesia, preceded by pain. Symptoms appear slowly, insidiously, progressively, often with violent side effects of very changeable and incoherent character. Impulse to stretch with abdominal distress.*	• Frequent, ineffectual tenesmus. • Albuminous; low specific gravity. • Chronic interstitial nephritis, with great pain in abdomen. • Urine scanty. Tenesmus of bladder. Emission drop by drop.
22	**Phaseolus nanus**	*Heart symptoms quite pronounce.*	• Diabetic urine.
23	**Curare**	*Muscular paralysis without impairing sensation and consciousness. Reflex action diminished. Debility of the aged and from loss of fluids.*	• Diabetes mellitus, • Glycosuria with motor paralysis.
24	**Serum anguillae**	*The serum of the eel has a toxic action on the blood, rapidly destroying its globules Secondarily, the liver and the heart are affected, and the alterations observed are those usually present in infectious diseases.*	• The presence of albumin and renal elements in the urine, • Haemoglobinuria, prolonged anuria.
25	**Terebinthinum**	*Has a selective affinity for bleeding mucous surfaces. Tongue: smooth, glossy, red, as if deprived of papillae, or as if glazed. Tympanites and urinary symptoms very marked. Inflammation of kidneys*	• Strangury, with bloody urine. • Intense burning in uterine region. • Haematuria: blood thoroughly mixed with the urine; sediment, like coffee-grounds; cloudy, smoky, albuminous; profuse, dark or black. • Scanty, suppressed, odour of violets, painless
26	**Urea Pura**	*General uneasiness; felt ill, poisoned.*	• Albuminuria, diabetes; uraemia • Urine thin and of low specific gravity. • Renal dropsy, with symptoms of general intoxication.
27	**Crotalus Horridus**	*General disorganization of the blood, haemorrhages and jaundice. Blood decomposition, haemorrhages (dark fluid that forms no clots), tendency to carbuncles.*	• Dark, bloody urine. Casts. Inflamed kidney. Albuminous, dark, scanty. • Black, thin, offensive, like coffee-grounds. Intestinal haemorrhage; blood dark, fluid, non-coagulable. • Unable to retain anything; violent vomiting of food; bilious vomiting, vomiting of blood.
28	**Conium Maculatum**	*Chilly patient perspires during sleep; desires salt; glandular affection; emotionally closed, flat or hard people, mental dullness or confusion; debility of mind and body; generally, aggravation from suppression of sexual desire; the complaints of conium originates slowly and progressively.*	• Muscular weakness, especially of lower extremities. Heavy, weary, paralyzed; trembling; bands unsteady; fingers and toes numb. • Much difficulty in voiding. It flows and stops again. • Interrupted discharge. • Dribbling in old men.

S. No.	Medicines	General Indications	Characteristic particulars
29	**Anthracinum**	*Terrible burning. Induration of cellular tissue, abscess, bubo, and all inflammation of connective tissue in which there exists a purulent focus.*	• Hemmorages, black, thick, tar-like, rapidly decomposing, from any orifice. • Carbuncle; with horrible burning pains • Ulceration, sloughing and intolerable burning. Erysipelas.
30	**Aceticum acidum**	*Profound anæmia, with some dropsical symptoms, great debility, frequent fainting, dyspnœa, weak heart, vomiting, profuse urination and sweat. Wasting and debility.*	• Large quantities of pale urine. Diabetes, with great thirst and debility. • Emaciation. edema of feet and legs.
31	**Calcarea arsenicsum**	*Fleshy women at climacteric, slightest emotion causing palpitation. Affections of spleen and mesenteric glands. Haemoglobin and red corpuscles are low. Anger, anxiety. Desire for company.*	• Kidney region sensitive to pressure. • Albuminuria passes urine every hour.
32	**Viscum album**	*Lowered blood pressure. Dilated blood vessels but does not act on the centres in the medulla*	• Hypertrophy with valvular insufficiency; pulse small and weak; unable to rest in a reclining position. • Albuminuria
33	**Crataegus oxyacantha**	*Cardiac symptoms with Diabetes. Cross, irritable patients with cardiac symptoms. Produces giddiness, lowered pulse, and air hunger. Apprehensive, despondent. Very nervous and irritable with pain in back of head and neck. Excessive perspiration. Insomnia of aortic patients. Worse, in warm room. Better, fresh air, quiet and rest.*	• Heart- Cardiac dropsy. Extreme dyspnoea on least exertion, without much increase of pulse. • Pain in region of heart and under left clavicle. Heart dilated; first sound weak. Pulse accelerated, irregular, feeble, intermittent. All aggravated by exertion or excitement. Sustains heart in infectious diseases.

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CHAPTER

2

DYSLIPIDEMIA

DYSLIPIDEMIA

(ICD 11 code: 5C8Z)

CASE DEFINITION

Dyslipidemias are the disorders of lipoprotein metabolism resulting in High total cholesterol (TC), High low-density lipoprotein cholesterol (LDL-C), High non-high-density lipoprotein cholesterol (non-HDL-C), High triglycerides [1].

INTRODUCTION *(Incidence/prevalence, morbidity/mortality)*

1. The global prevalence of hypercholesterolemia among adults was 39% (males 37% & females 40%) as per the WHO 2008 report. Further WHO estimates showed that the prevalence of hypercholesterolemia in adults was (53.7%) in Europe, (47.7%) in America, (30.3%) in Southeast Asia and (23.1%) in Africa [2]. In India specific, the prevalence of hypercholesterolemia varies from 10 to 15 % in rural to 25–30 % in urban populations[3].
2. Dyslipidaemia is one of the established risk factors for cardiovascular disease. In-depth reviews concluded that elevated LDL-c is a significant contributor to atherosclerotic cardiovascular disease (CVD) [4-7] while some studies had shown that non-HDL-c predicts CV risk better than LDL-C [8].
3. Epidemiological studies have reported variable prevalence rates of important dyslipidemias in India. The prevalence of total cholesterol 200 mg/dl ranges from 25 to 30 %, non-HDL cholesterol 160 mg/dl 25-30 %, LDL cholesterol 130 mg/dl: 25-30 %, non-HDL cholesterol 130 mg/dl: 50-55 %, triglycerides >150 mg/dl: 30-40 % and low HDL cholesterol: 60-70 %. Most national studies have reported higher prevalence of hypercholesterolemia in most Southern and a few North Indian states, more in urban than rural areas, whereas the prevalence of high triglycerides and low HDL cholesterol is similar throughout the country[9].

Classification[10, 11]

Dyslipidemias are mainly classified into two types:

Primary: Primary dyslipidemia is caused by genetic mutations and can be inherited as an autosomal dominant, autosomal recessive, or X-linked.

Secondary: Secondary dyslipidemia is caused by improper lifestyle such as lack of physical activity, unhealthy food habits, alcohol intake, smoking etc., and by some health conditions such as obesity, hypothyroidism. Diabetes, CKD, liver disease etc.

International Classification of dyslipidemia gives 5 categories, according to Frederickson phenotype (World Health Organization) [13]:

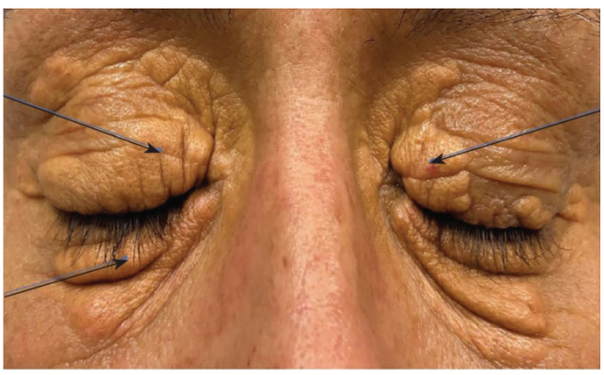
- Phenotype I is an abnormality of chylomicrons and will result in triglycerides greater than 99 percentiles.

- Phenotype IIa consists mainly of LDL cholesterol abnormality and will have a total cholesterol concentration greater than 90 percentile and possibly apolipoprotein B greater than 90 percentile.
- Phenotype IIb consists of abnormality in LDL and VLDL cholesterol. This type will result in total cholesterol or triglycerides greater than the 90 percentile and apolipoprotein greater than the 90 percentile.
- Phenotype III is an abnormality in VLDL remnants and chylomicrons, which results in elevated total cholesterol and triglycerides greater than 90 percentile.
- Phenotype IV is mainly when VLDL is abnormal and results in total cholesterol greater than 90 percentile. This type can also present with triglycerides greater than 90 percentile and low HDL.
- Phenotype V is when chylomicrons and VLDL are abnormal, and triglycerides are greater than 99 percentiles.

CLINICAL PRESENTATION [11-12]

Dyslipidemias majority of the times are asymptomatic and are accidentally diagnosed on routine blood tests. Few patients with severe or untreated dyslipidemia may present with signs and symptoms related to the complications of dyslipidemia, such as coronary artery disease, peripheral arterial disease, stroke, atherosclerosis and heart failure. Some of the possible presentations (signs & symptoms) of dyslipidemia are as below:

1. Xanthomas (yellowish fat deposits visible on the skin).



2. Arcus senilis (gray or white ring around the eye's cornea that is caused by cholesterol depositing in the corneal margin).
3. Lipemia retinalis (milky appearance in the retinal vessels due to high blood triglyceride levels with blurred vision).
4. Lower limb ischemia (common symptom of peripheral artery disease, caused by the narrowing or blockage of the arteries that supply blood to the legs due to atherosclerosis; this condition is usually characterized by pain or cramping during physical activity and improves with rest).
5. Angina (caused by the narrowing or blockage of the arteries that supply blood to the heart due to atherosclerosis. The uncomfortable pressure, fullness, squeezing or pain in

the centre of the chest usually occurs when the heart needs more oxygen, such as during physical or emotional stress, and may radiate to the neck, jaw, shoulders, left arm or back).

6. Transient ischemic attacks and strokes (atherosclerosis in cerebral arteries, contributing to sudden interruption of blood flow to the brain due to a clot or a bleed in weakened blood vessel walls. Symptoms may include sudden weakness, slurred speech, transient loss of consciousness or visual disturbances).
7. Non- Alcoholic Fatty liver disease / Metabolic Dysfunction Associated Steatohepatitis(MASH).

DIFFERENTIAL DIAGNOSIS[13-15]

Several disease conditions remain as secondary causes for dyslipidemia. They are as follows:

Table 1: Differential Diagnosis

S. No.	Disease condition	Findings
1.	Hypothyroidism	Fatigue, increased sensitivity to cold, dryness of skin, constipation, hair loss, dyspnea, hoarse voice, irregular menses, paresthesia, peripheral edema, elevated TSH levels
2.	Nephrotic syndrome	Swelling in legs, feet, ankles, face and hands. Weight gain, fatigue, foamy or bubbly urine, anorexia, high protein levels in urine, low levels of protein in blood and kidney biopsy to confirm exact cause,
3.	Biliary obstruction, Hepatoma	Right upper quadrant abdominal pain, fever, nausea, vomiting and weight loss. Jaundice with clay colored or acholic stools, dark urine and pruritis, elevated bilirubin levels, EUS, magnetic resonance, cholangiopancreatography (MRCP), or direct cholangiography
4.	Pregnancy	Elevated HCG levels, USG abdomen
5.	Drugs (oral estrogens, glucocorticoids, tamoxifen, thiazides)	Past history of drugs intake, elevated levels of estrogen, cortisol etc in Blood tests.
6.	Alcohol abuse	Past history of excess alcohol intake
7.	Obesity	Weight gain, breathlessness, swellings, joint pains, skin changes
8.	Niemann Pick Disease Type C	Lipidosis due to intracellular cholesterol transport defect (acid sphingomyelinase deficiency) (ASMD), that catalyzes the hydrolysis of sphingomyelin (SM) to ceramide and phosphocholine. Due to this, SM and its precursor lipids begin to accumulate in lysosomes, mainly in macrophages.
9.	Wolman's Disease	It is an autosomal recessive storage condition characterized by extremely low (or nonexistent) lysosomal acid lipase (LAL) activity. This enzyme deficiency results in significant intracellular buildup of cholesteryl esters and triglycerides.
10.	Cerebrotendinous xanthomatosis	A rare autosomal recessive genetic condition caused by a mutation in the CYP27A1 gene, resulting in a lack of mitochondrial enzyme sterol 27-hydroxylase. This enzyme is required to convert cholesterol into chenodeoxycholic acid, a bile acid.

SUPPORTIVE INVESTIGATIONS[10, 16,17]

Essential:

- **Fasting lipid profile:** The National Cholesterol Education Program provides the Adult Treatment Panel III—widely acknowledged guidelines for dyslipidemia screening. Guidelines recommend a fasting lipid panel every 5 years for adults 20 years and older.
- **Body Mass Index**: Measuring Body Mass Index as follows:

Table 2: WHO's Classification of Adults according to BMI [18]

Classification	BMI	Risk of comorbidities
Underweight	<18.50	Low (but risk of other clinical problems increased)
Normal range	18.50-24.99	Average
Overweight: Preobese Obese class I Obese class II Obese class III	≥25.00 25.00-29.99 30.00-34.99 35.00-39.99 ≥40.00	Increased Moderate Severe Very severe

Table 3: Classification of weight by BMI in adult Asians

Classification	BMI (kg/m^2)	Risk of co- morbidities
Underweight	<18.5	Low (but increased risk of other clinical problems)
Normal range	18.5-22.9	Average
Overweight	23-24.9	Increased
Obese I	25-29.9	Moderate
Obese II	≥ 30	Severe

Reference: World Health Organization, author. The Asia-Pacific perspective: redefining obesity and its treatment. WHO; 2000.

Advanced:

As per the need and symptomatology, the following may be done:

1. Apolipoprotein B (ApoB), apolipoprotein A1
2. Lipoprotein(a)
3. Treadmill Test.
4. High sensitivity C-reactive protein.
5. Glycosylated hemoglobin (HbA1c).
6. Fasting blood glucose (FBS).
7. Thyroid stimulating hormone level (TSH).
8. Liver function tests.
9. Serum creatinine.
10. Creatine kinase.
11. Urine analysis.
12. Homocysteine levels.
13. Fundoscopy

14. Waist hip ratio, waist circumference, skin fold thickness
15. Plasma leptin
16. Upper Abdominal Ultrasound

DIAGNOSTIC CRITERIA[10,19,20]

Dyslipidemia is often diagnosed with routine screening tests. Dyslipidemia is diagnosed by measuring serum lipids. Routine measurements (lipid profile) include total cholesterol (TC), TGs, HDL-C, and LDL-C; these results are used to calculate LDL-C and VLDL-C. A modern updated clinical algorithm for the diagnosis of dyslipidemia is as below:

Table 4: Diagnostic biochemical parameters for dyslipidemia in adults

Levels of risk	TC	LDL-C	TG	HDL-C
Mild-to-moderate risk				
Levels	200-239 mg/dL	130-194 mg/dL	175-499 mg/dL	25-35 mg/dL
Severe risk				
Levels	≥ 240 mg/dL	≥ 194 mg/dL	≥ 499 mg/dL	< 25 mg/dL

Abbreviations: TC, Total Cholesterol; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; TG, triglyceride.

PRINCIPLES OF MANAGEMENT

The principles of management include assessment of signs and symptoms before initiating treatment and the need for management through conventional treatment for associated co-morbidities. If the patient is already under standard care, the physician may advice to continue the same along with add-on homoeopathy and can be assessed for the same in the follow ups for tapering or discontinue the treatment in consultation with the conventional physician.

Red Flags[21,22]

- Early age of onset for coronary artery disease in self or in family (includes heart attack, stent, bypass)
- Recurrent vascular events and Atherosclerotic cardiovascular diseases (ASCVD) with genetic dyslipidemias (FH & High Lp(a))
- Clinical evidence of atherosclerotic CAD
- Atherosclerotic disease in other vascular beds
- Heterozygous Familial Hypercholesterolemia (HeFH) with ASCVD, or coronary imaging showing >50 % lesion in 2 coronary vessels.
- Total cholesterol ≥ 220 mg/dL or LDL cholesterol ≥ 190 mg/dL in individual.
- Tendon Xanthomas
- Uncontrolled co-morbidities

A. Prevention management[14]

Preventing dyslipidemia is essential to reduce the risk of cardiovascular complications and improve the quality of life. The prevention strategies include:

- Screening for dyslipidemia regularly, especially for people with a family history or other risk factors. The frequency and type of screening depend on the individual's age, sex, and health status, but generally, a lipid profile test is recommended every 4 to 6 years for adults and every 2 years for children and adolescents.
- Adopting a healthy lifestyle by eating a balanced diet with plenty of fruits, vegetables, whole grains, lean proteins, and healthy fats, such as omega-3 fatty acids from fish, nuts, and seeds. Avoid foods high in cholesterol, saturated fats, transfats, added sugars, and salt. If possible, engage in physical activity for at least 150 minutes weekly.
- Maintaining a healthy weight and body mass index, quitting smoking, and limiting alcohol intake are all recommended.
- Comorbidities such as diabetes, hypertension, hypothyroidism, chronic kidney disease, or liver disease can affect lipid levels or increase the risk of cardiovascular disease; therefore, it is important to remain compliant with any medications.

Table: 5 Common Yoga Protocol[23]

Sr. No.	Name of Posture/Procedure	
Invocation/Prayer		
Chalana Kriyas (Loosening Practices/Warmups)		
1.	Neck Movements	Forward/Backward Bending
		Right/Left Bending
		Right/Left Twisting
		CW/ACW Rotation
2.	Shoulder Movements	Stretching
		CW/ACW Rotation
3.	Trunk Movements	Right/Left Twisting
4.	Knee Movements	Squats
Standing Yoga Positions		
5.	*Samasthiti*	Standing Alert Posture
6.	*Tadasana*	Palm Tree Posture
7.	*Vrksasana*	Tree Posture
8.	*Uttanasanan*	Standing Forward Bend
9.	*Pada-Hastasana*	Hand to Feet Posture
10.	*Ardha Chakrasana*	Half Wheel Pose
11.	*Trikonasana*	Triangle Pose
Sitting Yoga Positions		
12.	*Visramasana*	Long Sitting Posture
13.	*Sukhasana*	Easy Pose
14.	*Padmasana*	Lotus Pose

Sr. No.	Name of Posture/Procedure		
15.	*Dandasana*	Stick/Staff Pose	
16.	*Bhadrasan*	Gracious Pose or Butterfly Pose	
17.	*Vajrasana*	Thunderbolt Pose	
18.	*Ushtrasana*	Camel Pose	
19.	*Ardha-Ushtrasana*	Half Camel Pose	
20.	*Sasankasana*	Hare Posture	
21.	*Balasana*	Child Pose	
22.	*Uttana Mandukasana*	Stretched Up Frog Posture	
23.	*Vakrasana*	Spinal Twist Posture	
24.	*Paschimottanasana*	Seated Forward Bend	
25.	*Simhasana*	Lion Pose	
26.	*Marjarasana*	Cat Pose	
Prone Positions			
27.	*Makarasana*	Crocodile Posture	
28.	*Bhujangasana*	Cobra Pose	
29.	*Salabhasana*	Locust Posture	
30.	*Dhanurasana*	Bow Pose	
Supine Positions			
31.	*Chatuspadasana* *Setubandhaasana*	Bridge Posture	
32.	*Uttanapadasana*	Raised Leg Posture	
33.	*Matsyasana*	Fish Pose	
34.	*Ardhahalasana*	Half Plough Pose	
35.	*Pavanmuktasana*	Wind Releasing Posture	
36.	*Markatasana*	Monkey Pose	
37.	*Shavasan*	Corpse Body Posture	
38.	*Kapalbhati*	Forceful Rapid Exhala-tions	Sukhasana/Padmasa-na/Vajrasana 1 inhalation :20-30 exhala-tion
Breathing Exercises			
39.	Anuloma-Viloma/ Nadishodhana Pranayam/ *Suryabhedan*	Alter-nate Nostril Breath-ing	Left Palm on Left Knee (Jnana Mudra) Right palm in Nasagra Mudra Without Kumbhaka With Kumbhaka (Kumbhaka means retention of breath)

Sr. No.	Name of Posture/Procedure		
40.	*Shitali Pranayam*	Cooling breath	*Jnana Mudra or Dhyan Mudra or Anjali Mudra (Namaste Pose)* Inhale through Tongue Tube and exhale through nostrils
41.	*Bhramari Pranayam*	Humming bee breath	*Sanmukhi Mudra* *IMRL Thumb-Eye Nose Mouth Ear*
42.	*Dhyana*	Meditation	*Jnana Mudra or Dhyan Mudra or Anjali Mudra* *Tip of thumb to Tip of Index finger* *Other fingers straight/relaxed*

B. Interventions

At Level 1- Solo physician clinic, health clinic, PHC (optimal standard of treatment where technology and resources are limited)

Clinical diagnosis: Understanding the signs and symptoms of dyslipidemia is crucial for timely intervention and preventing associated complications. Clinicians should consider the broader clinical context, including family history and risk factors, to guide appropriate interventions and reduce the burden of cardiovascular diseases associated with dyslipidemia. Pertinent social history would include tobacco use or specific details about diet. Diagnosis of dyslipidemia is primarily arrived at with the help of investigations as ***fasting lipid profile.*** However other investigations may be advised based on the presentation.

Management

Homoeopathy has a definitive role to play in managing dyslipidemia. Research studies have shown the efficacy of homoeopathic medicines in managing dyslipidemia[24-28] and improved patients' quality of life. Many remedies are listed in homoeopathic literature to treat this condition; however, the totality of symptoms presented by the patient is the sole indication and guide for treating each patient. Because of the chronicity of the disease, a single dose may not be sufficient. Repetition of doses, change of potency, and change of remedy during follow-up are based on the totality of symptoms, miasmatic cleavage, Kent's 12 observations, and other homoeopathic principles. The flow-diagram for management is given at annexure I.

Some of the commonly prescribed medicines are as follows (indications of medicines is given at annexure II)[29-31]:

Table: 6

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	**Ammonium muriaticum**	Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Organ specific medicines (Mother tinctures and lower dilutions/triturations):** • Rauwolfia serpentina • Terminalia chebula • Terminalia arjuna • Allium sativum

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
2.	**Antimonium crudum**					• Fucus vesiculosus • Gautteria gaumeri • Adonis vernalis • Ocimum sanctum • Cholesterinum Other Schussler's biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Calcarea fluorica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
3.	**Arnica montana**					
4.	**Arsenicum album**					
5.	**Aurum metallicum**					
6.	**Calcarea carbonicum**					
7.	**Capsicum**					
8.	**Graphites**					
9.	**Kalium bichromicum**					
10.	**Kalium carbonicum**					
11.	**Lycopodium**					
12.	**Natrum muriaticum**					
13.	**Nux vomica**					
14.	**Phosphorus**					
15.	**Pulsatilla nigricans**					
16.	**Sulphur**					

Do's and Don'ts while taking homoeopathic medicines

Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British homoeopathic practice.[32]

Recommended Diet and Lifestyle

- Healthy Diet regimens - Mediterranean diet, Dietary Approaches to Stop Hypertension [DASH])[33].
- Systematic physical activity such as aerobics enhances cardiorespiratory fitness and ameliorates dyslipidemia. High-intensity intermittent aerobic training can reduce myocardial oxygen demand and help control exercise intensity and increase HDL-C levels vs. moderate-intensity continuous aerobic training. Aerobic training can bring about an approximate 30–40% reduction in TG and 20% increase in HDL-C levels in patients with moderate hypertriglyceridemia[34].

Integrative treatment approach: If a case of dyslipidemia is associated with other co-morbid conditions (diabetes, hypothyroidism, etc.), a multidisciplinary integrative approach with other medical experts such as diabetologists, endocrinologists, and registered nutritionists is essential to achieve a sustained improvement and benefit to the patient [35].

Restricted Diet and Lifestyle [36-39]

- Avoid high Carbohydrate diet.
- Avoid consumption of red and processed meat.
- Avoid consumption of alcohol and smoking.
- Avoid strenuous physical exercises which may trigger cardiac events.
- Avoid diet rich in trans fats such as fried food.

Follow up (every 14 days or earlier as per need)[40]
Reviews should include:

- Monitoring the person's symptoms and the ongoing impact of the condition on their everyday activities and quality of life.
- Monitoring the long-term course of the condition.
- Management of dyslipidemia in terms of lifestyle modifications.
- Discussing the person's knowledge of the condition, concerns, personal preferences, and ability to access services.
- Review the effectiveness and tolerability of ongoing treatment. If the patient is improving, continue treatment, and if not, review the totality for further prescription.
- Self-management support.

Referral criteria

- Non-response to treatment.
- Evidence of an increase in severity/complications
- Substantial impact on their quality of life and activities of daily living
- Diagnostic uncertainty
- Uncontrolled co-morbidities, such as diabetes, hypertension or associated cardiac disease.

At level 2- CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, ECG and 2D Echo)

Clinical Diagnosis: Same as level 1. The case referred from Level 1, or a fresh case, must be evaluated thoroughly for any complications.

Investigations:

The diagnosis would be primarily clinical. However, investigations may be necessary to investigate complications or exclude other differential diagnoses as follows:

- High sensitivity C-reactive protein.
- Apolipoprotein B (ApoB), apolipoprotein A1
- Lipoprotein(a)
- Glycosylated hemoglobin (HbA1c)
- Fasting blood glucose (FBS)
- Thyroid stimulating hormone level (TSH)
- Transaminase (ALT)
- Serum creatinine
- Creatine kinase

- Urine analysis
- Homocysteine levels
- Fundoscopy

Management: Same as Level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition, or the case may be reassessed for the totality of symptoms, and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered; however, the totality of the patient's symptoms is the sole indication guide for treating each patient.

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up (every 14 days or earlier as per the need)

Referral criteria

- Same as mentioned earlier at Level 1, plus
- Psychological imbalance
- Any red flag signs.
- Signs of CVD as stroke, transient ischaemic attack, and angina.

At Level 3- Ayush hospital attached to teaching institute, district level/ integrated state Ayush hospital, tertiary care hospital, tertiary care allopathic hospital having Ayush facilities), multiple departments/ facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, exercise therapy).

Clinical Diagnosis: Same as levels 1 & 2. Confirm diagnosis and severity with the help of the following investigations:

- Plasma Leptin
- Treadmill Test or Exercise stress Test to evaluate the efficacy of functioning of heart during exercise.

Management: Same as Levels 1 & 2. For the patients referred from Level 1 or 2, treatment given in Level 1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for identification of causes of overweight / obesity and the totality of symptoms, and the treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to the Level 1 and Level 2 management strategies, Homoeopathy has several specific remedies that can ease pain and other symptoms in patients with FM or in those who have not responded to treatment due to lack of symptoms, co-morbid conditions, or the use of other immunosuppressives, oral hypoglycemic agents, or antihypertensives. Homoeopathic medicines can be prescribed based on the sphere of action or keynote symptoms in these disorders as well as other advanced pathological states. A few homoeopathic medicines that can be considered as per indications are given below[22,41-44]:

Table: 7

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	**Adrenalinum**	Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Organ specific medicines (Mother tinctures and lower dilutions/triturations):** • Rauwolfia serpentina • Terminalia chebula • Terminalia arjuna • Allium sativum • Fucus vesiculosus • Gautteria gaumeri • Adonis vernalis • Ocimum sanctum • Cholesterinum Other Schussler's biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Calcarea fluorica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	**Ammonium carbonicum**					
3.	**Baryta muriaticum**					
4.	**Cactus grandiflorus**					
5.	**Cholesterinum**					
6.	**Crataegus**					
7.	**Digitalis**					
8.	**Glonoine**					
9.	**Lachesis**					
10.	**Lithium carbonicum**					
11.	**Plumbum metallicum**					
12.	**Strontium carbonicum**					
13.	**Strophanthus hispidus**					
14.	**Tabacum**					
15.	**Viscum album**					

Recommended diet and lifestyle: Same as Levels 1 & 2

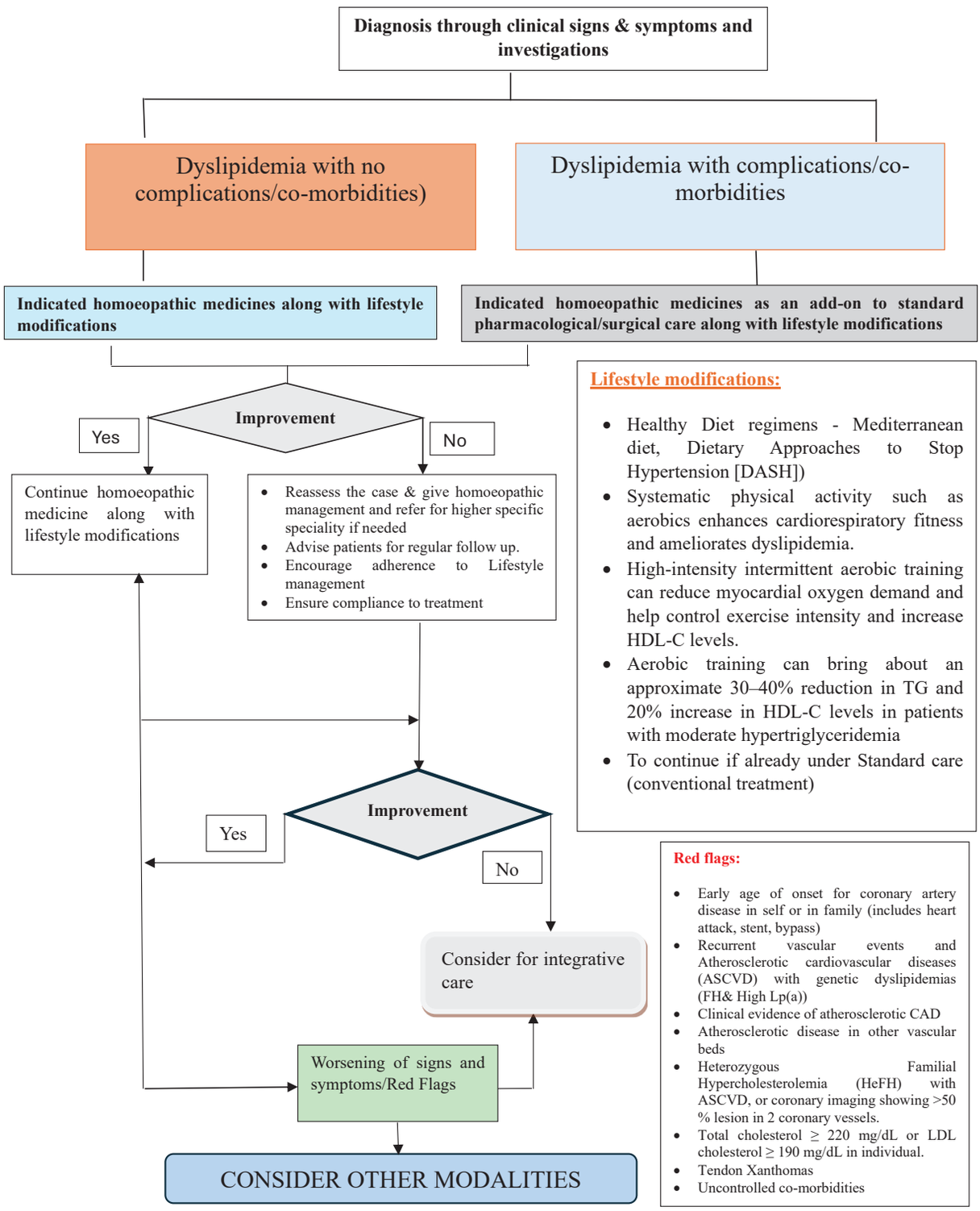
Restricted diet and lifestyle: Same as Levels 1 & 2

Follow up (every 14 days or earlier as per need)

Referral Criteria[45]

- Same as mentioned earlier at Level 2, plus
- Morbid obesity not responding to treatment
- Uncontrolled hypertension
- Worsening Hypertriglyceridemia
- Worsening insulin resistance and hyperglycaemia
- Suspected Cardiac arrythmias
- Recurrent vascular events and ASCVD with genetic dyslipidemias (FH& High Lp(a)
- Suspected Polycythemia
- Other modalities can be considered depending on the case and to rehabilitate properly.

ALGORITHM OF TREATMENT PROCESS FOR DYSLIPIDEMIA



Indications of medicines for Dyslipidemia:

S. No.	Medicines	General Indications	Characteristic particulars
1.	**Calcarea carbonicum**	*Chilly patient, Apprehensive, low spirited. A jaded state, mental or physical, due to overwork. Persons of scrofulous type, who take cold easily, with increased mucous secretions, children who grow fat, are large-bellied, with large head, pale skin, chalky look, the so-called leuco-phlegmatic temperament; affections caused by working in water. Great sensitiveness to cold; partial sweats; Crave eggs and eat dirt and other indigestible things.*	• Palpitation at night and after eating. • Palpitation with feeling of coldness, with restless oppression of chest. • Cramps in calves • Old sprains. Tearing in muscles.
2.	**Lycopodium clavatum**	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4- 8 pm; right sided complaints or symptoms shifts from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious.*	• Aneurism. • Aortic disease. Palpitation at night. Cannot lie on left side. • Limbs go to sleep. Twitching and jerking. • Cramps in calves and toes at night in bed.
3.	**Pulsatilla nigricans**	*Mild, gentle, yielding disposition. Sad, crying readily; changeable, contradictory. Dread of the opposite sex. seeks open air. Chilly patient. Thirstless, peevish. Fears in evening to be alone, dark, ghost. Likes sympathy. Averse to fat food, warm food, and drink. taste of food remains a long time. Crack in middle of lower lip. Yellow or white tongue, covered with a tenacious mucus. Worse, from heat, rich fat food, after eating, towards evening. Better, open air, motion, cold applications, cold food and drinks*	• Vertigo; better in open air. • Neuralgic pains • Short breath, and palpitation when lying on left side. Smothering sensation on lying down. • Legs feel heavy and weary.
4.	**Arsenicum album**	*Great anguish and restlessness. Changes place continually. Fears, of death, of being left alone. Sensitive to disorder and confusion. Cannot bear the sight or smell of food. Chilly patient, debility, exhaustion, and restlessness, with nightly aggravation. irritable weakness. Burning pains. Unquenchable thirst. Burning relieved by heat. Great thirst; drinks much, but little at a time. Worse, wet weather, after midnight; from cold. Right sided*	• Palpitation, pain, dyspnoea, faintness. • Irritable heart in smokers and tobacco-chewers. • Pulse more rapid in morning. • Cyanosis. • Fatty degeneration. • Angina pectoris, with pain in neck and occiput. • Trembling, twitching, spasms, weakness, heaviness, uneasiness. • Cramps in calves.

S. No.	Medicines	General Indications	Characteristic particulars
5.	**Nux vomica**	*Chilly patient, thin, spare, quick, active, nervous, and irritable. a male remedy. irritable, nervous system, hypersensitive and over-impressionable. Zealous fiery temperament. sensitive to all impressions. Ugly, malicious. Cannot bear noises, odours, light, etc., Sullen, fault-finding. Flatulence and pyrosis. frequent ineffectual desire for stool. Worse, morning, mental exertion, after eating, touch, spices, stimulants, narcotics, dry weather, cold.*	• Vertigo: brain feels turning in a circle. • Arms and hands go to sleep. • Legs numb; feel paralyzed. • Cramps in calves and soles. • Craves stimulants like tobacco, alcohol
6.	**Kalium bichromicum**	*Hot patient, fleshy, fat, light complexioned persons subject to catarrhs or with syphilitic or scrofulous history. pains migrate quickly, rheumatic and gastric symptoms alternate. tough, stringy, viscid secretion. Pains fly rapidly from one place to another. Pains in small spots. Better, from heat. Worse, beer, morning, hot weather, undressing.*	• Vertigo with nausea when rising from seat. • Cold feeling around heart. • Alcoholics
7.	**Kalium carbonicum**	*Chilly patient, Fleshy aged people, with dropsical and paretic tendencies. Sweat, backache, and weakness. Throbbing pains. Tendency to dropsy. Tubercular diathesis. "Giving out" sensation. Stinging pains in muscles and internal parts. Very irritable. Full of fear and imaginations. Obstinate and hypersensitive to pain, noise, touch. Flatulence. Desire for sweets. Small of back feels weak. Worse, after coition; in cold weather; from soup and coffee; in morning about three o'clock. Better, in warm weather, though moist; during day, while moving about.*	• Fatty degenerations. • Vertigo on turning. • Uneasiness heaviness and tearing in limbs and jerking. • Backs and legs give out. • Limbs go to sleep easily. • Sensation as if heart were suspended. • Palpitation and burning in heart region. • Weak, rapid pulse; intermits, due to digestive disturbance. Threatened heart failure.
8.	**Sulphur**	*Hot patient, an elective affinity for the skin, heat and burning, with itching; Inertia and relaxation of fibre; feebleness of tone. stoop shouldered. Ebullitions of heat, dislike of water, dry and hard hair and skin, red orifices, sinking feeling at stomach about 11 am, and cat-nap sleep; Complaints that relapse. General offensive character of discharge and exhalations. thinks rags beautiful things. very selfish. Busy all the time. Milk disagrees. Great desire for sweets. Great acidity. Morning diarrhoea, painless, drives out of bed. Every little injury suppurates. Worse, at rest, when standing, warmth in bed, washing, bathing, in morning, 11 am, night, from alcoholic stimulants.*	• Chest feels heavy; stitches, with heart feeling too large. • Flushes of heat in chest rising to head. • Oppression, as of a load on chest. • Dyspnoea in middle of night, relieved by sitting up. • Pulse more rapid in morning than in evening. • Drawing and tearing in arms and hands.

S. No.	Medicines	General Indications	Characteristic particulars
9.	**Phosphorus**	*Chilly patient, tall, slender persons, narrow chested, with thin, transparent skin, weakened by loss of animal fluids, with great nervous debility. Left sided. Great susceptibility to external impressions, to light, sound, odors, touch, electrical changes, thunderstorms. Great lowness of spirits. Easily vexed. Fearfulness. Restless, fidgety. Hypo-sensitive, indifferent. Polycythaemia. Blood extravasations. Worse, touch; physical or mental exertion; twilight; warm food or drink; change of weather, from getting wet in hot weather; evening; lying on left or painful side; during a thunderstorm; ascending stairs. Better, in dark, lying on right side, cold food; cold; open air; washing with cold water; sleep.*	• Fatty degenerations • Vertigo of the aged, after rising. Vertigo, with faintness. • Violent palpitation with anxiety, while lying on left side. • Pulse rapid, small, and soft. • Heart dilated, especially right. • Tightness across chest; great weight on chest. • Arms and hands become numb.
10.	**Graphites**	*Chilly patient, fat, chilly, and costive, with delayed menstrual history, take cold easily. Children impudent, teasing, laugh at reprimands. Tendency to develop the skin phase of internal disorders. Great tendency to start. Timid. Fidgety while sitting at work. Music makes her weep. Moisture and eruptions behind the ears. Aversion to meat. Sweets nauseate. Hot drinks disagree. Worse, warmth, at night, during and after menstruation. Better, in the dark, from wrapping up.*	• Tendency to obesity. • Constriction of chest • Left hand numb; arms feel asleep • Stiffness and contraction of toes.
11.	**Natrum muriaticum**	*Hot patient, A great remedy for certain forms of intermittent fever, anaemia, chlorosis. Great debility: most weakness felt in the morning in bed. Emaciation most notable in neck. Dry mucous membranes. ill effects of grief, fright, anger, etc. Depressed. Consolation aggravates. Wants to be alone to cry. Eruptions around mouth and vesicles like pearls on lips. Tongue mapped. Worse, noise, music, warm room, lying down about 10 a m; at seashore, mental exertion, consolation, heat, talking. Better, open air, cold bathing, going without regular meals, lying on right side; pressure against back, tight clothing.*	• Tachycardia. • Sensation of coldness of heart. • Heart and chest feel constricted. • Fluttering, palpitating; intermittent pulse. • Heart's pulsations shake body. Intermits on lying down. • Every movement accelerates the circulation.
12.	**Ammonium muriaticum**	*Adapted to fat and sluggish patients who have respiratory troubles. Mucous secretions are increased and retained. Many groups of symptoms are accompanied by cough, profuse glairy secretions. Melancholy, apprehensive; like from internal grief. Desire to cry but cannot. Consequences of grief. Thirst for lemonade. Better, open air. Worse, head and chest symptoms in the morning; abdominal symptoms in the afternoon.*	• Fat and sluggish patients • Excessive fatty deposit around abdomen. • Oppression of chest. • Burning at small spots in chest.

S. No.	Medicines	General Indications	Characteristic particulars
13.	**Antimonium crudum**	*Excessive irritability and fretfulness, together with a thickly coated white tongue. All the conditions are aggravated by heat and cold bathing. Cannot bear heat of sun. Much concerned about his fate. Cross and contradictive. Child cannot bear to be touched or looked at. Cracks in corners of mouth. Loss of appetite. Desire for acids, pickles. Eructation tasting of the ingesta. diarrhoea alternates with constipation. Worse, in evening, from heat, acids, wine, water, and washing. Wet poultices. Better, in open air, during rest. Moist warmth.*	• Tendency to grow fat. • Heaviness in forehead with vertigo.
14.	**Capsicum**	*Chilly patient, persons of lax fibre, weak; diminished vital heat. A relaxed plethoric sluggish, cold remedy. Excessive peevishness. Homesickness, with sleeplessness and disposition to suicide. Delirium tremens. Sore throat of smokers and drinkers. Hot feeling in fauces. Much thirst; but drinking causes shuddering. Bloody mucus, with burning and tenesmus. Better, while eating, from heat. Worse, open air, uncovering, draughts.*	• Persons are fat, indolent • Constriction of chest. • Pain at apex of heart or in rib region, worse touch.
15.	**Aurum metallicum**	*Chilly patient, Hopeless, despondent, and great desire to commit suicide. Exostosis, caries, nightly bone-pains, especially cranial, nasal, and palatine. Glands swollen in scrofulous subjects. Frequently indicated in secondary syphilis and effects of mercury. Pining boys; low spirited, lifeless, weak memory. Feeling of self-condemnation and utter worthlessness. disgust of life, Talks of committing suicide. Over-sensitiveness; to noise. Knobby tip of nose. Atrophy of testicles in boys. Worse, in cold weather when getting cold. Many complaints come on only in winter; from sunset to sunrise.*	• Arterio-sclerosis, high blood pressure; nightly paroxysms of pain behind sternum. • Sensation as if the heart stopped beating for two or three seconds, immediately followed by a tumultuous rebound, with sinking at the epigastrium. • Pulse rapid, feeble, irregular. Hypertrophy. • High Blood Pressure-Valvular lesions of arterio-sclerotic nature Vertigo. • Palpitation and congestions.
16.	**Lachesis**	*Great loquacity. Amative. Sad in the morning. wants to be off somewhere all the time. Derangement of the time sense. Delirium tremens with much trembling and confusion. Hot patient decomposes the blood, haemorrhagic tendency, Purpura, septic states, diphtheria, and other low forms of disease. Left sided. Collar and neckband must be very loose. cannot bear anything around waist. pains all relieved by the flow. Sleeps into an aggravation. Worse, after sleep. sleeps into aggravation; ailments that come on during sleep; left side, in the spring, warm bath, pressure or constriction, hot drinks. Closing eyes. Better, appearance of discharges, warm applications.*	• Vertigo. Relieved by onset of a discharge. • Palpitation, with fainting spells, especially during climacteric. • Constricted feeling causing palpitation, with anxiety. • Cyanosis. • Irregular beats. • Cramp-like distress in precordial region. • Breathing almost stops on falling asleep.

S. No.	Medicines	General Indications	Characteristic particulars
17.	**Cactus grandiflorus**	*Melancholy, taciturn, sad, ill-humoured. Fear of death. Screams with pain. Anxiety. Acts on circular muscular fibres. Haemorrhage, constrictions, periodicity, and spasmodic pains. Body feels as if caged, each wire being twisted tighter. Sensation as of a weight on vertex. Right sided prosopalgia. Worse, about noon, lying on left side; walking, going upstairs, 11 am and 11 pm. Better, open air. Great periodicity.*	• Atheromatous arteries and weak heart. Congestions; irregular distribution of blood. Favors formation of clots speedily. • Cactus is pulseless, panting and prostrated. • Threatening apoplexy. • Blood-vessels to the head distended. • Endocarditis with mitral insufficiency together with violent and rapid action. • Cardiac incompetence. • Heart weakness of arterio-sclerosis. Tobacco heart. • Angina pectoris, with suffocation, cold sweat, and ever-present iron band feeling. • Pain in apex, shooting down left arm. Palpitation, with vertigo • Constriction; very acute pains and stitches in heart. • Pulse feeble, irregular, quick, without strength. • Endocardial murmurs, excessive impulse, increased precordial dullness, enlarged ventricle. • Low blood pressure.
18.	**Crataegus oxycantha**	*Apprehensive, despondent. Very nervous and irritable, with pain in back of head and neck. Mental dullness. Giddiness, lowered pulse, and air hunger and reduction in blood-pressure. Insomnia of aortic sufferers; Diabetes, especially in children. Worse, in warm room. Better, fresh air, quiet and rest.*	• Acts on muscle of heart and is a heart tonic. Pulse accelerated, irregular, feeble, intermittent. • Myocarditis. Irregularity of heart. • Chronic heart disease, with extreme weakness. Very feeble and irregular heart action. General anasarca. • Cardiac dropsy. Fatty degeneration. • Aortic disease. • Extreme dyspnoea on least exertion, without much increase of pulse. • Pain in region of heart and under left clavicle. • Heart dilated; first sound weak. • Valvular murmurs, angina pectoris. • Cutaneous chilliness, blueness of fingers and toes; all aggravated by exertion or excitement.

S. No.	Medicines	General Indications	Characteristic particulars
19.	**Digitalis purpurea**	*Despondency; fearful; anxious about the future. Melancholia, dull lethargic with slow pulse. Comes into play in all diseases where the heart is primarily involved. Jaundice from induration and hypertrophy of the liver. Jaundice with heart disease. Faint, as if dying. Bluish appearance of face. White, chalk-like, ashy, pasty stools. Worse, when sitting erect, after meals and music. Better, when stomach is empty; in open air.*	• Pulse is weak, irregular, intermittent, abnormally slow. • Slow pulse in recumbent posture, but irregular and dicrotic on sitting up. • Stimulates the heart's muscles, increases force of systole, increases length. • Cardiac muscular failure when asystole is present. • Weakness and dilatation of the myocardium. Auricular fibrillation • Great weakness and sinking of strength, faintness, coldness of skin, and irregular respiration; cardiac irritability and ocular troubles after tobacco. • Vertigo, when walking and on rising, in cardiac and hepatic affections. • Sensation as if it would cease beating, if he moves. • Irregular heart especially of mitral disease. • Hypertrophy with dilatation. • Cardiac dropsy.
20.	**Strophanthus hispidus**	*Corpulent persons. Anaemia with palpitation and breathlessness. Exophthalmia goitre. Nausea with special disgust for alcohol and so aids in treatment of dipsomania. After the long use of stimulants. Restores tone to a brittle tissue, especially of the heart muscle and valves. Hives.*	• Irritable heart of tobacco-smokers. • Arterio-sclerosis; rigid arteries of aged. • Pulse quickened. Heart's action weak, rapid irregular, due to muscular debility; and insufficiency. • Cardiac pain.
21.	**Strontium carbonicum**	*Chronic sequelae of haemorrhages, after operations with much oozing of blood and coldness and prostration. For shock after surgical operations. Neuritis, great sensitiveness to cold. Pains make patient faint or sick all over. Better immersing in hot water; worse, change of weather; from being quiet, when beginning to move.*	• Arterio-sclerosis. • High blood pressure with flushed face pulsating arteries, threatened apoplexy. • Vertigo with headache and nausea. • Hiccough causes chest pains; cardialgia.
22.	**Lithium carbonicum**	*Uric acid diathesis. Rheumatic nodes. Whole body is sore. Gout and tophi. Headache ceases while eating. Acidity, nausea, gnawing, relieved by eating. Barber's itch. Worse, in morning, right side. Better, rising and moving about.*	• Chronic rheumatism connected with heart lesions and asthenopia. • Pain in heart; extends to head. • Rheumatic soreness in cardiac region. • Sudden shock in heart. • Throbbing, dull stitch in cardiac region. • Pains in heart before menses, and associated with pains in bladder, and before urinating; better, after. • Trembling and fluttering in heart, extending to back.

S. No.	Medicines	General Indications	Characteristic particulars
23.	**Plumbum metallicum**	*Fear of being assassinated. Quiet melancholy. Slow perception; loss of memory; amnesic aphasia. Delirium, coma and convulsions. Mental depression. General sclerotic depression. Paralysis of extensors, forearm or upper limb, from centre to periphery with partial anaesthesia or excessive hyperesthesia, preceded by pain. Progressive muscular atrophy. Constrictive sensation in internal organs. distinct blue lines along margins of gums. Worse, at night, motion. Better, rubbing, hard pressure, physical exertion*	• Hypertension and arteriosclerosis. • Cardiac weakness. • Pulse soft and small, dicrotic. Wiry pulse • Cramp-like constriction of peripheral arteries. • Stinging and tearing in limbs, also twitching and tingling, numbness, pain or tremor.
24.	**Baryta muriaticum**	*Nymphomania and satyriasis. Indicated in organic lesions of the aged and dwarfish, both mentally and physically. Icy coldness of body, with paralysis. Multiple sclerosis of brain and cord. Voluntary muscular power gone but perfectly sensible. General feeling of lassitude in the morning, especially weakness of the legs, with muscular stiffness. Stupid-appearing, hard of hearing.*	• Arterio-sclerosis and cerebral affections. • Vertigo, due to cerebral anaemia and noises in ears. • Hypertension and vascular degeneration. • Increased tension of pulse. • Arterio-sclerosis where a high systolic pressure with a comparatively low diastolic tension is attended by cerebral and cardiac symptoms. • Aneurism. • Arterio-sclerosis of the lung
25.	**Adrenalinum**	*Arteries, heart, supra-renal bodies and vaso-motor system are prominently affected. stimulation of the sympathetic endings, causing constriction of the peripheral arterioles, with resulting rise in blood pressure. Acute congestion of lungs, Asthma. Sensation of thoracic constriction with anguish, vertigo, nausea and vomiting*	• Slowing of pulse and strengthening of heartbeat. • Arterio-sclerosis • Chronic aortitis • Angina pectoris • Shock or heart failure during anaesthesia
26.	**Glonoine**	*Sensation of pulsation throughout body. Pulsating pains. Congestive headaches, hyperaemia of the brain from excess of heat or cold. Effects of sunstroke; heat on head, as in typesetters and workers under gas and electric light. Head heavy but cannot lay it on pillow. Cannot bear any heat about head. Throbbing headache. Sun headaches; increases and decreases with the sun. Shocks in head, synchronous with pulse. Better, brandy. Worse, in sun; exposure to sunrays, gas, open fire; jar, stooping, having hair cut; peaches, stimulants; lying down; from 6 am to noon; left side.*	• Laborious action of heart. Fluttering. Palpitation with dyspnoea. Cannot go uphill. Any exertion brings on rush of blood to heart and fainting spells. • Throbbing in the whole body to fingertips. • Surging of blood to head and heart. Vertigo on assuming upright position. • Threatened apoplexy. • Small, wiry pulse, pallor, arterial spasm, anaemia of brain, collapse, • Feeble heart, syncope, dicrotic pulse.

S. No.	Medicines	General Indications	Characteristic particulars
27.	**Cholesterinum**		• For cancer of the liver. Obstinate hepatic engorgements. • Burning pain; on walking holds his hand on side. Opacities of the vitreous. Jaundice; gallstones.
28.	**Viscum album**	*Epilepsy, chorea, and metrorrhagia. Hypertensive albuminuria. Symptoms like epileptic aura and petit mal. Worse, winter, cold, stormy weather; in bed. Movement; lying on left side.*	• Lowered blood pressure. Dilated blood vessels • Valvular disease, with disturbances in sexual sphere. • Persistent vertigo. • Hypertrophy with valvular insufficiency; pulse small and weak; unable to rest in a reclining position. Palpitation during coitus. • Weight and oppression of heart; as if a hand were squeezing it; tickling sensation about heart.
29.	**Tabaccum**	*Forgetful. Discontented. Very despondent. Pale, blue, pinched, sunken, collapsed, covered with cold sweat. Nausea, giddiness, death-like pallor, vomiting, icy coldness, and sweat, with the intermittent pulse. antiseptic, antidotal to cholera germs. Prostration of the entire muscular system. Collapse. Gastralgia, enteralgia, seasickness. Constriction of throat, chest, bladder, rectum. Worse, opening eyes; evening; extremes of heat and cold. Better, uncovering, open fresh air.*	• Arteriosclerosis of the coronary arteries. • Angina pectoris, with coronaritis. • Pallor, breathlessness, hard-cordlike pulse. • Vertigo on opening eyes • Palpitation when lying on left side. • Pulse intermits, feeble, imperceptible. • Angina pectoris, pain in precordial region. • Tachycardia. Bradycardia. • Acute dilatation caused by shock or violent physical exertion
30.	**Ammonium carbonicum**	*Stout women who are always tired and weary, take cold easily, suffer from cholera-like symptoms before menses, lead a sedentary life, have a slow reaction generally. Chilly patient. Swollen glands, dark red sore throat, faintly developed eruption. Heaviness in all organs. Forgetful, ill-humoured, gloomy during stormy weather. Uncleanliness. Worse, evenings, from cold, wet weather, wet applications, washing, and during 3 to 4 am, during menses. Better, lying on painful side and on stomach; in dry weather.*	• Fat patients with weak heart, wheezing, feel suffocated. • Audible palpitation with fear, cold sweat, lachrymation, inability to speak, loud breathing and trembling hands. • Heart weak, wakes with difficult breathing and palpitation. • Cramps in calves and soles.

S. No.	Medicines	General Indications	Characteristic particulars
31.	**Arnica montana**	*Fears being struck on approach; says nothing to him, answers slowly, with an effort. Best acts on plethoric, dark haired people of rigid muscles, with a nervous, sanguine nature, but it acts feebly in debilitated people with impoverished blood. Especially adapted to those who remain long impressed by even slight mechanical injuries. Sore, lame, bruised feeling, as if beaten. Painful and offensive remedy. Worse: in evening, night, touch, motion, damp cold · Better: on lying down*	• Fatty heart and hypertrophy. • Marked effect on the blood. Affects the venous system inducing stasis. • Angina pectoris; pain especially severe in elbow of left arm. Stitches in heart. • Pulse feeble and irregular. • Cardiac dropsy with distressing dyspnoea. • Extremities distended, feel bruised and sore.

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CHAPTER

3

GOUT

GOUT

(ICD 10 code: M10
ICD 11 Code: FA25.2)

CASE DEFINITION[1,2,3]

Gout is a chronic disease of deposition of monosodium urate crystals (crystal-induced arthritis), which form in the presence of increased urate concentrations. It is characterized by severe pain, redness, tenderness in joints which occur due to too much uric acid crystal deposits in the joints.

INTRODUCTION **(incidence/ prevalence**, **morbidity/mortality/risk factors)**[4,5,6]

- It is the most common inflammatory arthritis in men and in older women.
- Globally, the Gout is prevalent in a range of <1% to 6.8% and an incidence of 0.58-2.89 per 1,000 person-years. Gout is more prevalent in men than in women, with increasing age, and in some ethnic groups.
- In India, approximately 0.12-0.19% population is affected by gout with male preponderance. The reported male to female ratio is approximately 7:1 to 9:1 but in people over the age of 65 this ratio is reduced to 3:1. Polyarticular gout is more frequent in the elderly and females.
- Initial presentation is predominantly monoarticular with the ankle joint being the commonest to be involved. But overall, the first metatarsophalangeal (MTP) joint is the commonest joint affected with > 90% having this joint involvement at some point of the disease.
- Risk factors include hyperuricemia, genetic factors, dietary factors like intake of meat, seafood, sugar-sweetened soft drinks, and foods high in fructose, alcohol consumption, especially beer and hard liquor, obesity, hypertriglyceridemia, metabolic syndrome, increased diuretic use, chronic renal disease, and recent surgery or trauma, hypertension, diabetes, menopause.[7,8,9,10]

CLINICAL EXAMINATION

The signs and symptoms of gout almost always occur suddenly, and often at night. They include:

- **Intense joint pain**: Gout usually affects the large joint of your big toe, but it can occur in any joint. Other commonly affected joints include the ankles, knees, elbows, wrists and fingers. The pain is likely to be most severe within the first four to 12 hours after it begins.
- **Lingering discomfort:** After the most severe pain subsides, some joint discomfort may last from a few days to a few weeks. Later attacks are likely to last longer and affect more joints.

- **Inflammation and redness:** The affected joint or joints become swollen, tender, warm and red.
- **Limited range of motion:** As gout progresses, patients may not be able to move joints normally.

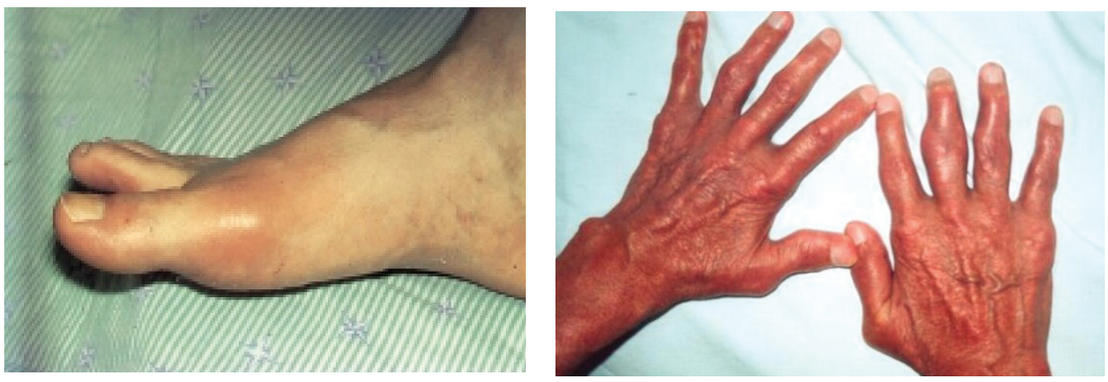


Fig. 1[11]: (a) Acute gout. Note the swelling and erythema of the first metatarsal phalangeal joint. (b) Diffuse swelling of the dorsum of the left hand is evident in this patient with acute gouty arthritis (left panel).

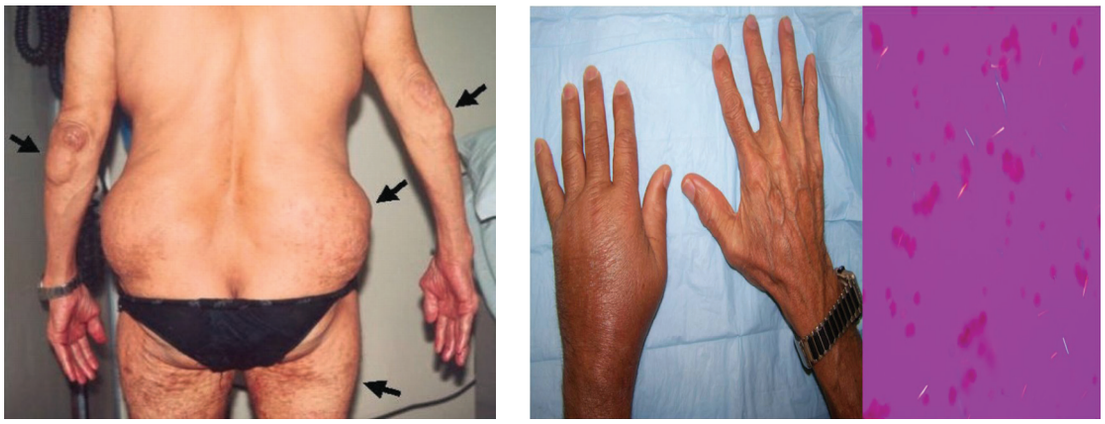


Fig. 2[12]: Generalized chronic tophaceous Gout (a) Nodules located in the hands, elbows, legs, buttocks, and abdominal wall (arrows) (b) Nodules in periarticular structures and arthritis only in few joints.

DIFFERENTIAL DIAGNOSIS[13,14,15,16,17,18,19]

The following diseases must be considered in differential diagnosis of acute gout:

Table: 1

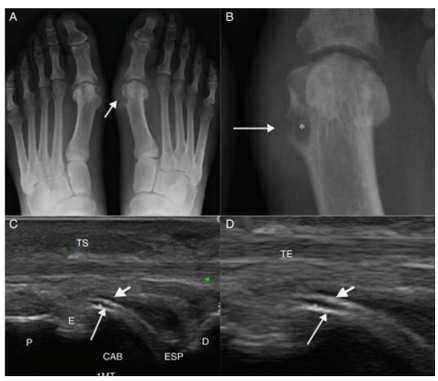
Condition	Differential Features
Septic arthritis	• Knee is most commonly involved (may be any joint distribution) • Synovial fluid findings: o WBC Count > 50,000 per mm^3 o Culture positive o Synovial fluid crystals absent o Radiography findings- Joint effusion; radiography results otherwise normal early in the disease

Condition	Differential Features
Trauma	History of injury will be present.
Pseudogout	• Knee, wrist, or first metatarsophalangeal joints are commonly involved. • Synovial fluid findings: o WBC Count 2,000 to 50,000 per mm^3 o Culture negative o Synovial fluid crystals-Rhomboid shaped, weak positive birefringence o Radiography findings-soft tissue swelling, chondrocalcinosis (calcification of cartilage)
Rheumatoid arthritis	• Arthritis of three or more joint areas • Symmetrical arthritis • Morning stiffness (> 1 hour) • Positive rheumatoid factor • Positive anti-CCP antibody • Elevated ESR and CRP
Psoriatic arthritis	• Onset usually between 25 and 40 years of age • Most commonly in patients with current or previous skin psoriasis (70%) • Affection of the DIP joints of the hands. However, unlike hand OA, psoriatic arthritis may target just one finger, often as dactylitis, and characteristic nail changes are usually present. • HLA-B27 Positive.
Reactive arthritis	• Monoarthritis or oligoarthritis following a recent infection (e.g., urethritis, enteric). • Asymmetric pattern of joint involvement • Symptoms or signs of enthesopathy, Keratoderma blennorrhagica or circinate balanitis • Radiologic evidence of sacroiliitis and/or spondylitis • The presence of human leukocyte antigen (HLA) B27
Monoarthritis	• Inflammation of single joint. Laboratory tests (blood chemistries, urinalysis) and diagnostic modalities (X-rays, CT scans, MRI) should be considered to confirm clinical impression.
Acute bursitis	• Gout can mimic bursitis as well, especially at the olecranon, prepatellar, and infrapatellar bursa, as these joints are common locations for the formation of gouty tophi or pain from pseudogout. • Imaging can be helpful to narrow down the differential diagnosis. MRI can be used to evaluate the deeper bursa. Aspiration of the inflamed bursa can be helpful when there is a question of septic bursitis.
Tenosynovitis	• Centesis of the tenosynovial sheath and microscopic examination should be encouraged in acute tenosynovitis as gout flares may mimic infectious tenosynovitis.

SUPPORTIVE INVESTIGATIONS[20,21,22]

Identification of urate crystals in fluid from an affected joint is the definitive diagnostic test for the diagnosis of gout. In practice, this test is applied to only a minority of patients. Guidelines exist for clinical diagnosis without joint aspiration. Other tests which may be considered are:

Table: 2

Test	Comment
Essential	
Serum urate concentration	Level may go down in few cases during an acute attack (serum uric acid levels ≤6 mg/dL)
Advanced	
X ray	X-ray has low sensitivity for diagnosis of Gout. In the initial presentation only an increased soft tissue volume and density can be seen. In chronic tophaceous gout, radiographic signs include visualizing tophi as soft tissue or intraosseous masses, whether or not containing calcifications; and the presence of a non-demineralizing arthropathy accompanied by erosions presenting margins which may be sclerotic or protruding. The Martel's sign (Fig. 3) consists in the presence of a protruding, salient bone edge separated from a tophus and leaning on it.  Fig. 3[22]
Ultrasonography (USG)	Characteristic for the diagnosis of gout is the "double contour signal", which is characterized by an irregular linear hyper echoic layer on the superficial margin of the anechoic hyaline cartilage and parallel to the bone cortex, without a posterior acoustic shade.
Dual Energy Computed tomography (DECT)	CT allows the visualization of tophi in both the subcutaneous tissue and in intra-articular areas. This method also helps to identify bone erosion.
Synovial fluid examination	Presence of MSU crystals in the synovial fluid (SF) by polarizing microscopy
Complete blood count /ESR	To exclude myeloproliferative disorders; raised white cell count may indicate septic arthritis
Renal function	Hyperuricemia can occur in renal failure
Fasting lipids, glucose, and thyroid functions	Hyperlipidemia, diabetes mellitus, hypothyroidism, and possibly hyperthyroidism is associated with gout
Urinary urate excretion	Some authorities advise measuring this if the serum urate concentration is >0.8 mmol/l because of risk of renal stone formation
CRP	High levels of CRP are expected in patients experiencing acute gout attacks.
RA factor	To rule out Rheumatoid arthritis.

DIAGNOSTIC CRITERIA[5,23]

The diagnosis of Gout is primarily clinical and made after a complete medical history and physical examination. Gout undergoes four phases during its course, which are stated below:

- **Asymptomatic hyperuricaemia:** In this stage, patients have no symptoms or signs and are usually accidentally discovered when measuring serum uric acid (serum level greater than 7 mg/dL).
- **Acute gouty attack:** Classically, it produces an acute mono-arthritis of rapid onset, often waking patients from sleep, reaching a peak within 24 to 48 hours. The pain is intense, and patients often cannot wear socks or touch bed sheets during flare-ups with marked exacerbation of pain even at the simple touch. The affected joints become red, shiny, and tender in a few hours. The most affected joints are big toe also known as podagra (50% of initial attacks), foot, ankle, mid-tarsal, knee, wrist, finger, and elbow. Acute flares also occur in periarticular structures, including bursae and tendons. No Hyperuricemia conditions can also be seen in acute gouty attacks in that case it is diagnose dclinicsally.
- **Inter-critical period:** During the period between acute attacks the patient is asymptomatic even if monosodium Urate (MSU) deposition may continue to increase silently.
- **Chronic tophaceous gout:** It is characterized by the deposition of solid MSU crystal aggregates in various locations including joints, bursae, and tendons as tophi. Tophaceous gout may lead to significant morbidity and, if untreated, can cause prominent joint damage and marked functional impairment.

The ACR/EULAR gout classification criteria 2015[24]
STEP 1- Entry Criterion: If yes, Classification criteria required for positive diagnosis
≥ 1 episode of swelling, pain or tenderness in a peripheral joint/ bursa
STEP2- Sufficient Criterion: If yes, diagnosis is positive
Presence of Monosodium Urate (MSU) crystals in a symptomatic joint, bursa or tophus
STEP 3: Classification Criteria:

Table: 3

	Criteria	Categories	Score
Clinical	Pattern of joint/bursa involvement during symptomatic episode(s) ever	Ankle or midfoot	1
		Involvement of the first metatarsophalangeal joint	2
	Characteristics of symptomatic episode(s) ever 1. Erythema overlying affected joint 2. Cannot bear touch or pressure to the affected joint 3. Great difficulty with walking or inability to use the affected joint	One characteristic	1
		Two characteristics	2
		Three characteristics	3
	Time course of episode(s) ever • Time to maximal pain < 24 hours • Resolution of symptoms in ≤ 14 days • Complete resolution (to baseline level) between symptomatic episodes	One typical episode	1
		Recurrent typical episodes	2
	Clinical evidence of tophus	Present	4

	Criteria	Categories	Score
Laboratory	Serum urate: measured by the uricase method (mg/dL)	< 4	-4
		6 to < 8	2
		8 to < 10	3
		≥ 10	4
	Synovial fluid analysis of a symptomatic (ever) joint or bursa	Monosodium urate crystal negative	2
Imaging	Imaging evidence of urate deposition in symptomatic (ever) joint or bursa: ultrasound evidence of double-contour sign or DECT demonstrating urate deposition	Present (either modality)	4
	Imaging evidence of gout-related joint damage: conventional radiography of the hands or feet shows at least one erosion	Present	4
Total			**23**

A threshold score of ≥ 8 classifies an individual as having gout.

PRINCIPLES OF MANAGEMENT

Red Flag signs:

These signs should be assessed before initiating treatment for need for management/ consultation through modern medicine.

- Uncontrollable pain
- Joint destruction
- Constitutional features such as fever, weight loss and malaise
- Renal failure

Patients should be educated on their diagnosis. They should be educated about the natural history of disease with possible complications. Therapeutic options need to be discussed along with dietary restrictions and lifestyle changes such as exercise and weight control that might be helpful. **Asymptomatic Hyperuricemia should not be treated** but lifestyle modifications like dietary changes and increased exercise may be advised.

(A) Prevention management

Primary, secondary, and tertiary prevention strategies are necessary to prevent increasing incidence of Gout and Hyperuricemia resulting from increasing incidence of lifestyle disorders.

Primary prevention strategies include maintaining serum uric acid levels within normal limit, achieving and maintaining a normal weight, avoiding alcohol consumption, adherence to Dietary Approaches to Stop Hypertension (DASH)-style diet, and to avoid use of diuretics. Weight loss is required for obesity[25].

- **Yoga:** Various Yoga practices are helpful for the management of Gout . These include Pranayama like Bhastrika, Kapalabhati and Anuloma-Viloma; various relaxation techniques viz. twisting movement of the body; yogasanas like Vajrasana, Trikonasana,

Dhanurasana, Naukasana, Ardha Matsyendrasana, Pavana Muktasana and Surya namaskara.

(B) Interventions

At Level 1- Solo Physician Clinic/Health Clinic/PHC (Optimal Standard of treatment where technology and resources are limited)

Clinical Diagnosis: The diagnosis of Gout is primarily clinical and made after a complete medical history and physical examination. However, some investigations, like a complete hemogram, urine routine/microscopic, and serum uric acid level, RA factor, CRP may be done.

Management[26,27]

Research studies indicate that homoeopathic medicines play a considerable role in not only alleviating the serum uric acid in gout but also a significant role in improving the well-being, activity and quality of life of patients with gout, without any adverse effects[28,29,30,31,32,33]. The therapeutic strategy for the management of gout would depend, among other factors, upon the stage of the disease and if the patient is consuming allopathic medication which would interfere with the expressions of the symptoms of the disease. Gout undergoes four phases during its course: asymptomatic hyperuricemia, acute gouty attack, inter- critical period & Chronic tophaceous gout. Intervention depends under which phase patient is reporting for treatment.

- Asymptomatic hyperuricemia, inter-critical period or chronic tophaceous gout may be managed with individualized homoeopathic treatment along with advice for lifestyle modifications.
- In acute gouty attack, homoeopathic medicine based on acute totality may be prescribed followed by constitutional medicine along with advice for lifestyle modifications.

Flow-diagram for management is placed at annexure I.

Some of the commonly prescribed medicines are as follows (indications of medicines is placed at annexure II): [26,27]

Table: 4

S. No.	Drugs*	Dose form*	Dose*	Time*	Duration*	Adjuvants
1.	**Colchicum autumnale**	*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Mother tincture:** Urtica urens Q **Schussler's biochemic remedies:** (Calcarea phosphorica, Calcarea fluoricum, Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	**Benzoicum acidum**					
3.	**Ledum palustre**					
4.	**Lycopodium clavatum**					
5.	**Pulsatilla nigricans**					
6.	**Sabina**					
7.	**Rhododendron**					
8.	**Antimonium crudum**					

S. No.	Drugs*	Dose form*	Dose*	Time*	Duration*	Adjuvants
9.	**Berberis vulgaris**					
10.	**Aconite napellus**					
11.	**Belladonna**					
12.	**Bryonia alba**					
13.	**Apis mellifica**					
14.	**Nux vomica**					

Dos and don'ts while taking homoeopathic medicine[34]

Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British Homoeopathic practice.

Other procedures:

Correct rest for the joint can also contribute to the treatment of an acute gout flare. The affected joint should be raised, and an ice pack can be particularly good at reducing pain and swelling.

Recommended Diet and Lifestyle[25,35,36,37,38,39]

Lifestyle and dietary recommendations for gout patients should consider overall health benefits and risk since gout is often associated with metabolic syndrome and an increased future risk of cardiovascular disease (CVD) and mortality. Some of the measures are:

- Exercise: In apparently healthy, vigorously active men, the prevention of weight gain through the promotion of vigorous physical activity may help to prevent gout.
- Yoga: Low purine diet and yoga exercises such as *kriyas (kunjal and kapalbhati), simple joint movements, practices of sukshma vyayama, yogasanas* (tadasana, Katichakrasana, konasana, urdhwa hastottanasana, uttana padasana, vaksana, gomukhasana, marjari asana, ushtrasana, bhadrasana, bhujangasana, makarasana, shavasana*), pranayama* (nadishodana pranayama, suryabhedi pranayama, bhramari), *yoga nidra practice and meditation.*
- Overweight patients should aim for a normal weight but should not crash-diet or follow protein rich diet.
- Patients known to suffer from gout and kidney stones should be instructed to consume sufficient fluids (>2 L /day).
- Adherence to Dietary Approaches to Stop Hypertension (DASH)-style diet.
- Encourage low fat or non-dairy products, yellow lentil (moong dal).

Restricted Diet and Lifestyle[13,14,40]

- Reduced-fat foods and vegetarian sources of protein should be integrated into the diet.
- Avoid or reduce purine (protein) rich foods such as meat and yeast, sweet breads, liver, kidney, consumption of alcohol, particularly beer and spirits. Patients should be encouraged to refrain from consuming alcohol on at least 3 days per week.

- Avoid sugar-sweetened beverages, fruit juices, and sweetened soda as fructose inhibits uric acid excretion by the kidneys.
- Avoid sea foods, juicy fruits, oats, and germinated gram.

Follow Up (every 7 days or earlier as per the need)

Reviews[41] **should include:**

- Monitoring the person's symptoms and the ongoing impact of the condition on their everyday activities and quality of life.
- Monitoring of serum uric acid levels.
- Monitoring the long-term course of the condition.
- Discussing the person's knowledge of the condition, any concerns they have, their personal preferences, and their ability to access services.
- Reviewing the effectiveness and tolerability of all treatments.
- Reviewing the co-morbidities associated with gout.

Referral criteria:

- Uncontrollable pain and no response to treatment
- Joint destruction
- High fever, weight loss and malaise
- Rise in serum creatinine and serum urea above normal limits
- Suspected cardiovascular complications due to Gout
- Patients taking chemotherapy for neoplastic diseases
- Uncontrolled comorbidities
- Evidence of an increase in severity/complications
- Diagnostic uncertainty
- Substantial impact on their quality of life and activities of daily living.

At Level 2- CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine, investigation, X-ray)

Clinical Diagnosis: Same as level 1. The case referred from Level 1, or a fresh case must be evaluated thoroughly for any complications.

Investigations: The diagnosis would be primarily clinical along with some investigations which will be necessary to investigate complications or exclude other differential diagnoses as follows:

- Serum urate concentration
- Complete blood count/ESR
- Renal function Test
- Fasting lipids, glucose, and thyroid functions
- Urinary urate excretion

Management: Same as level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

Recommended Diet and Lifestyle: Same as level 1

Restricted Diet and Lifestyle: Same as level 1

Follow Up (every 7 days or earlier as per the need)

Referral Criteria

- Same as mentioned earlier at level 1, plus
- Failure of acute exacerbation to respond to initial medical management.
- Cases with prominent joint damage and marked functional impairment.
- Extra articular tophi
- Uncontrolled complications such as acute uric acid nephropathy
- Any other complications that threaten the life of the patient.

At Level 3- Ayush hospitals attached with teaching institution, District Level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities, multiple departments/facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, and physiotherapy unit.

Clinical Diagnosis: Same as levels 1& 2.

Confirm diagnosis and severity with the help of investigations such as MRI, CT scan, DECT, Cystatin C, IVP, chemical analysis of uric acid renal stones if present.

Management: Same as levels 1& 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to the level 1 and level 2 management strategies, homoeopathy has a number of remedies that can ease pain and other symptoms in patients in those who have not responded to treatment due to a lack of symptoms, co-morbid conditions, or the use of other immune suppressive, oral hypoglycemic agents, or antihypertensive. Medications can therefore be prescribed based on the sphere of action or keynote symptoms as a part of supportive management in these disorders as well as other advanced pathological states. There are remedies which can be used during acute exacerbation conditions. Some of the remedies which can be considered are given below[26,27]:

Table: 5

S. No.	Drugs*	Dose Form*	Dose*	Time*	Duration*	Adjuvants*
1.	**Acidum uricum**	***Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Mother tincture:** Urtica urens Q **Schussler's biochemic remedies** (Calcarea phosphorica, Calcarea fluoricum, Calcarea sulphurica, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	**Ammonium phosphoricum**					
3.	**Ammonium benzoicum**					
4.	**Arnica montana**					
5.	**Formic acid**					
6.	**Urtica urens**					
7.	**Chininum sulphuricum**					
8.	**Guaiacum officinale**					
9.	**Lithium carbonicum**					
10.	**Abrotanum**					

Recommended Diet and Lifestyle: Same as levels 1 & 2

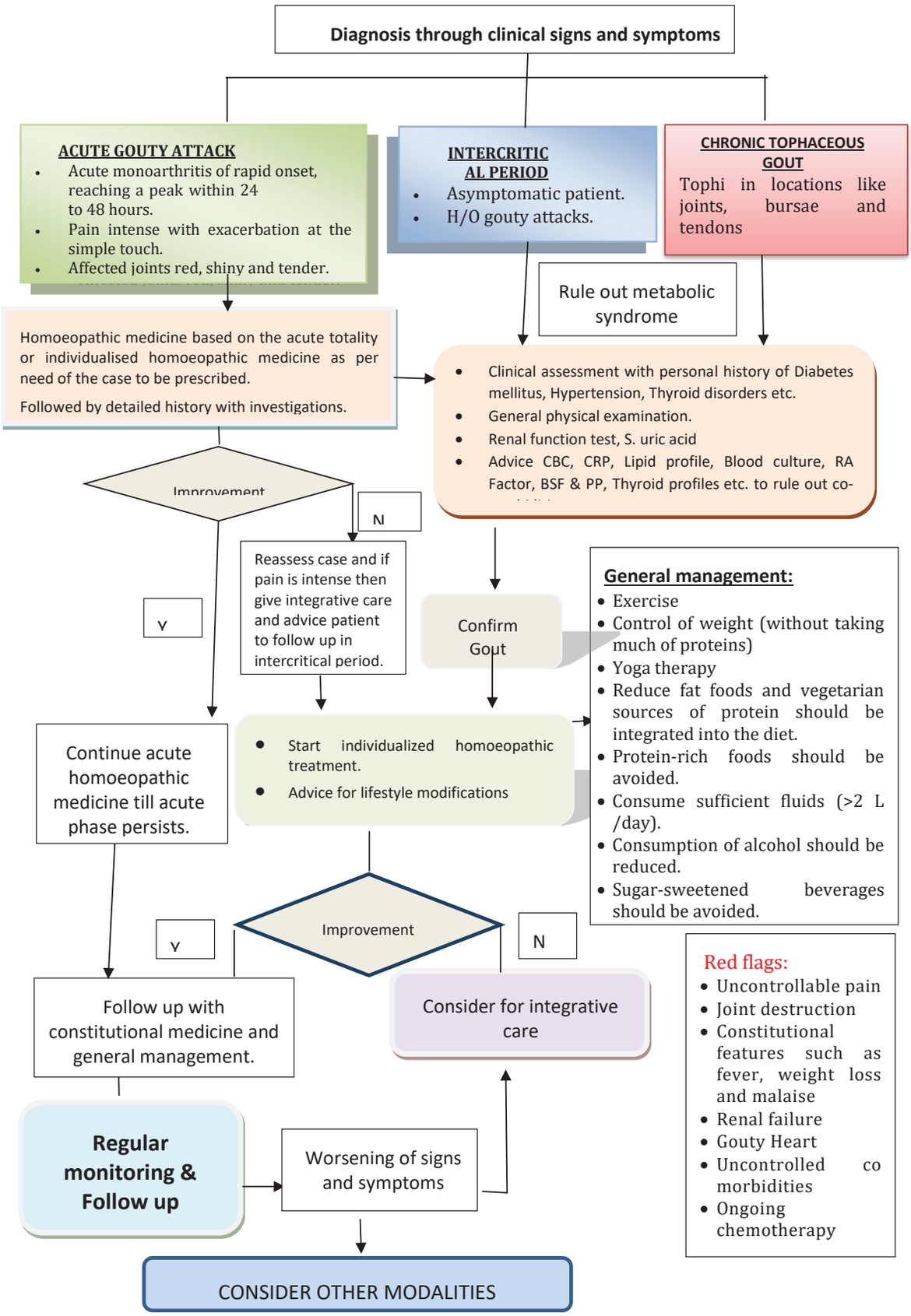
Restricted Diet and Lifestyle: Same as levels 1 & 2

Follow Up: (every 7 days or earlier as per the need)

Referral Criteria:

- Same as mentioned earlier at level 2, plus
- Other modalities can be considered depending on the case.

ALGORITHM OF TREATMENT PROCESS FOR GOUT



Indications of medicines for Gout:

S. No.	Medicines	General indications	Characteristics particulars
1.	**Colchicum autumnale**	*Adapted to the rheumatic, gouty diathesis; persons of robust vigorous constitution; diseases of old people. Affects periosteum and synovial membranes of joints markedly. There is always great prostration, internal coldness, and a tendency to collapse. Shifting rheumatism, tearing pain worst in the evening, at night, and in warm weather, motion. Smell is painfully acute; nausea and faintness from the odor of cooking foods, especially fish, eggs or fat meat.*	• Has a specific power in gouty paroxysms. • Pins and needle pricking pain in hands and wrist, fingertips are numb. • Inflammation of the great toe, gout in the heel, cannot bear to have it touched or moved. Parts are red hot and swollen. • Joints become stiff with feverish feeling. • Arthritic pains in joints; patient screams with pain on touching a joint or stubbing a toe.
2.	**Benzoic acidum**	*It has a marked action on metabolism, it can produce and cures symptoms of a uric acid diathesis with high colored, very offensive urine and gouty symptoms. Pains suddenly change their locality. Gouty and asthmatic. Worse in open air and by uncovering. Useful after Colchicum fails in gout.*	• Tearing and stitching pain in tendo-Achillis and great toe. • Rheumatic gout, nodes are very painful. • Gouty deposits. • Bunion, with tearing pain of great toes. • Swelling of wrists and knees.
3.	**Ledum palustre**	*Affects especially the rheumatic diathesis, going through all the changes, from functional pain to altered secretions and deposits of solid, earthy matter in the tissues. There is a general lack of animal heat, and yet heat of bed is intolerable. Better, holding feet in cold water. Worse, at night, and from heat of bed.*	• Gouty pains shoot all through the foot and limbs and especially in small joints. • Swollen hot pale joints. • Gouty nodosites. • Ball of great toes and ankles are swollen. • Ankles and soles are painful, can hardly steps on them, • Rheumatism begins in lower limb and ascends. • Easy spraining of ankles and feet. • Throbbing pain and pressure in right shoulder, worse during motion. • Cracking in joints; worse in warmth of bed.
4.	**Lycopodium clavatum**	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; complexion pale, dirty, sallow with deep furrows; looks old; Lycopodium patients are thin, withered, lack of vital heat; has poor circulation, cold extremities. Pains come and go suddenly. Mild temperaments of lymphatic constitution, with catarrhal tendencies.*	• Chronic gout with chalky deposits in the joints • Pain in the heels on treading, as if from a pebble. • Painful callosities on soles • Toes and fingers are contracted. • Right foot hot, left cold. • Cannot lie on painful side especially at rest and at night.

S. No.	Medicines	General indications	Characteristics particulars
		Desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious. Right-sided complaints or symptoms shift from right to left and are worse from about 4 to 8 pm. In nearly all cases where Lycopodium is the remedy, some evidence of urinary or digestive disturbance will be found.	• Worse from heat or warm room, hot air, bed • Better by motion, on getting cold, from being uncovered.
5.	**Pulsatilla nigricans**	*Hot patient pre-eminently a female remedy; marked changeability of symptoms; aversion to fatty foods, warm foods and drinks. Dislikes butter; thirstless with great dryness of mouth; tongue coated yellow or whitish; worse towards evening and in warm room, rich fat, lying on left or on painless side when allowing feet to hang down. better in open air even though he is chilly, by slow, gentle motion and cold applications; desire for company, mild, gentle, affectionate, yielding, weeping disposition.*	• Drawing tensive pain letting up with a snap with restlessness and chilliness. • Hip joint painful, knees are swollen with tearing drawing pain. • Pain in limbs shifting rapidly. • Boring pain in heels towards evening; suffering worse from letting the affected limb hang down. • Pains appear suddenly, leaves gradually.
6.	**Sabina**	*Has a special action on the uterus; also, upon serous and fibrous membranes; hence its use in gout. Pain goes from sacrum to the pubis, from one bone to another. Worse from heat, least motion, warm air. Better in cool fresh air.*	• Shooting in heels and metatarsal bones. • Gout worse in a heated room. • Red shining swelling. • Gouty nodosites.
7.	**Rhododendron**	*Rheumatic gouty symptoms are well marked. The modality worse before a storm is a true guiding symptom. All symptoms reappear in rough weather, night, towards morning. Better, after the storm breaks, warmth, and eating.*	• Joints swollen. • Gouty inflammation of the great toe. • Rheumatic tearing in all limbs, especially at right side, worse at rest and in stormy weather, • Cannot sleep unless legs are crossed. • Pain in bones in spots, reappears with change of weather.
8.	**Antimonium crudum**	*Thickly white coated tongue are the true guiding symptoms for many forms of disease calling for this remedy. Gout with gastric symptoms. Absence of pain where it could be expected is noticeable. All conditions are aggravated by heat and by cold bathing, in evening; Better in the open air, during rest, moist warmth.*	• Arthritic pain in fingers, and pain in heels. • Weakness and shaking of hands in writing followed by offensive flatulence.

S. No.	Medicines	General indications	Characteristics particulars
9.	**Berberis vulgaris**	*Rapid change of symptoms – pain changes in regard to place and character. Thirst alternates with thirstlessness. Persons with pale, earthy complexion, with sunken cheeks and hollow, blue-encircled eyes. Listless, apathetic, indifferent. Anxiety before sleep in the evening. Hepatic and rheumatic affections, particularly with urinary, hemorrhoidal and menstrual complaints.* *Worse in motion, standing.*	• Old gouty constitution. • Rheumatic paralytic pain in the shoulders, arms, hands and fingers, legs and feet. • Neuralgia under the fingernails with swelling of finger joints. • Heels painful as if ulcerated. • Stitching pain between metatarsal bones as if from a nail when standing. • Pain in balls of feet on stepping.
10.	**Urtica urens**	*A remedy for agalactia and lithiasis. Profuse discharge from mucous surfaces. Enuresis and urticaria. Spleen affections. Antidotes ill-effects of eating shellfish. Symptoms return at the same time every year. Worse, from snow-air; water, cool moist air, touch.*	• Gout and uric acid diathesis. • Favors elimination. • Pain of acute gout; deltoid, pain in ankles, wrists.
11.	**Ammonium phosphoricum**	*Unsteady, tottering gait. Coldness from least draft of air.*	• Remedy for chronic gout. • Uric acid diathesis indicated in nodosities of the joints of the fingers and back of hands. • Pain in shoulder joint.
12.	**Ammonium benzoicum**	*Urinary incontinence in the aged, Smoky, scanty. Albuminous and thick deposits.*	• Remedy for albuminuria, especially in patients with gout diathesis. • Gout, with deposits in joints.
13.	**Arnica montana**	*Nervous women, sanguine plethoric persons, lively expression and very red face.* *Great fear of being touched or approached. Limbs and body ache as if beaten; joints as if sprained. Bed feels too hard. Tendency to tissue degeneration, septic conditions, abscesses that do not mature. Sore, lame, bruised feeling.* *Worse at rest, while lying down. Better from contact and motion.*	• Gout with extreme soreness. • Sprained and dislocated feeling. • Soreness after over-exertion. • Everything on which he lies seems too hard.
14.	**Formica rufa**	*An arthritic medicine. Gout and articular rheumatism. Pain worse at right side, motion, better pressure. Complaints arises from over lifting.*	• Gout, chronic myalgia, muscular pain, and soreness. • Chronic gout and stiffness in joints. • Rheumatic pains; stiff and contracted joints. • Acute outbursts of gouty poisons, especially when assuming the neuralgic forms.

S. No.	Medicines	General indications	Characteristics particulars
15.	**Chininum sulphuricum**	*It is indicated homeopathically whenever there is marked periodicity and spinal sensitiveness. Bloody. Turbid, slimy, clay-colored, greasy sediment. Small amount of urea and phosphoric acid with excess of uric acid and abundance of chlorides, accompanied by subnormal temperature.*	• Polyarticular gout. • Acute articular rheumatism.
16.	**Guaiacum officinale**	*Chief action on fibrous tissue, and is especially adapted to the arthritic diathesis, rheumatism, and tonsillitis. Worse, from motion, heat, cold wet weather; pressure, touch, from 6 pm to 4 am. Better, external pressure. Sensitiveness and aggravation from local heat. Contraction of limbs, stiffness, and immobility. Feeling that he must stretch.*	• Gouty tearing, with contractions. • Immovable stiffness. • Joints swollen, painful, and intolerant of pressure; can bear no heat. • Arthritic lancinations followed by contraction of limbs. • Gouty pain in head and face, extending to neck.
17.	**Lithium carbonicum**	*Rheumatic nodes. Uric acid diathesis Whole body is sore.* *Worse, in morning, right side. Better, rising and moving about and by hot water.*	• Swelling and tenderness of finger and toe joints. • Paralytic stiffness and itching about joints. • Pain in hollow of foot, extending to knee. • Gout and tophi.
18.	**Acidum uricum**		• Uric ac. has been used on inferential grounds in gouty conditions. • Most useful in cases where deposits persist; it stirs them up and helps to eliminate them. • Useful in gouty eczema where the eczema has been “the cutaneous outlet for the constitution.” with Uric ac. 3x.
19.	**Belladonna**	*Belladonna stands for violence of attack and suddenness of onset. Belladonna always is associated with hot, red skin, flushed face, glaring eyes, throbbing carotids, excited mental state, hyperesthesia of all senses.*	• Shooting pains along limbs. Joints swollen, red, shining, with red streaks radiating. • Tottering gait. Shifting rheumatic pains. Jerking limbs. Involuntary limping. • Cold extremities.
20.	**Bryonia alba**	*Acts on all serous membranes and the viscera they contain.* *The general characteristic of the pain here produced is a stitching, tearing, worse by motion, better rest. These characteristic stitching pains, greatly aggravated by any motion, are found everywhere.*	• Hot swelling of feet. Joints red, swollen, hot, with stitches and tearing; worse on least movement. Every spot is painful on pressure. • Complaints are Worse in, warmth, any motion, morning, hot weather, exertion, touch and better by, lying on painful side, pressure, rest, cold things.

S. No.	Medicines	General indications	Characteristics particulars
		Bryonia affects especially the constitution of a robust, firm fiber and dark complexion, with tendency to leanness and irritability. *It prefers the right side, the evening, and open air, warm weather after cold days, to manifest its action most markedly.* *Dryness of mouth, tongue, and throat, with excessive thirst. Tongue coated yellowish, dark brown.*	
21.	**Apis mellifica**	*The very characteristic effects of the sting of the bee furnish absolute indications for its employment in disease. Swelling or puffing up of various parts, oedema, red, rosy hue, stinging pains, soreness, intolerance of heat, and aggravation from slightest touch, and afternoon are some of the general guiding symptoms.*	• Dropsical effusions and anasarca, acute, inflammation of kidneys, and other parenchymatous tissues are characteristic pathological states corresponding to Apis. • Knee swollen, shiny, sensitive, sore, with stinging pain. Feet swollen and stiff. Feel too large-Synovitis. • *Worse*, heat in any form; *touch*; pressure; late in afternoon; after sleeping; in closed and heated rooms. Right side; *ameliorated* in open air, uncovering, and cold bathing.
22.	**Aconitum napellus**	*Acute, sudden, and violent invasion, with fever, call for it.* *A state of fear, anxiety; anguish of mind and body. Physical and mental restlessness, fright, is the most characteristic manifestation of Aconite.* *First remedy in inflammations, inflammatory fevers. Serous membranes and muscular tissues affected markedly. Aconite causes only functional disturbance; its sphere is in the beginning of an acute disease and not to be continued after pathological change comes.*	• Burning in internal parts; tingling, coldness *and* numbness. • Rheumatic inflammation of joints; worse at night; red shining swelling, very sensitive. • Weak and lax ligaments of all joints. • Amelioration in open air; *worse* in warm room, in evening and night; *worse* lying on affected side, from tobacco-smoke, dry, cold winds.
23.	**Nux vomica**	*The typical Nux patient is rather thin, spare, quick, active, nervous, and irritable. Cannot sleep after 3 am until towards morning; awakes feeling wretchedly. Drowsy after meals, and in early evening.* *Desire for stimulants. Loves fats and tolerates them well. Dyspepsia from drinking strong coffee. Difficult belching gas. Wants to vomit but cannot.*	• Backache in lumbar region. Burning in spine; worse, 3 to 4 am. • worse, touch. Must sit-up in order to turn in bed. Sitting is painful.

S. No.	Medicines	General indications	Characteristics particulars
		Constipation, with frequent ineffectual urging, incomplete and unsatisfactory; feeling as if part remained unexpelled.	
24.	**Abrotanum**	*Ill effects of suppressed conditions especially in gouty subjects- Metastasis.* *A very useful remedy in marasmus, especially of lower extremities only, yet with good appetite.*	• Pain in shoulders, arms, wrists, and ankles. Pricking and coldness in fingers and feet. Legs greatly emaciated. Joints stiff and lame. • Complaints are Worse in, cold air, checked secretions. Better by motion.

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CHAPTER

4

NON ALCOHOLIC FATTY LIVER DISEASE

NON-ALCOHOLIC FATTY LIVER DISEASE

ICD 10 CODE: K76.0
ICD 11 CODE: DB92

CASE DEFINITION

Non-alcoholic fatty liver disease (NAFLD) is a spectrum of chronic liver disease characterized by accumulation of fat in the liver, Non-alcoholic steatohepatitis (NASH), and liver fibrosis unrelated to recent or ongoing significant amount of alcohol intake and due to over-nutrition and its associated metabolic syndrome[1]. An international group of expert consensus statement suggested to change the name to Metabolic-associated Fatty Liver Disease (MAFLD)[2]. But due to the unavailability of an acceptable definition of metabolic dysfunction, currently the nomenclature of the condition is still to be accepted as NAFLD[3].

INTRODUCTION (*incidence/prevalence, mortality/morbidity*)

- NAFLD is a spectrum of disorder ranging from Non-alcoholic Fatty liver to Non-Alcoholic steatohepatitis (NASH), NASH with fibrosis, NASH- cirrhosis and NASH associated with hepatocellular carcinoma (HCC)[4,5].
- The prevalence of NAFLD in India varies from 9-35% as per the accordance to ultrasonography data[6,7]. Studies demonstrated area-wise prevalence data of NAFLD with 16.6 % in Western India, 24.5 % in Eastern India, and 32 % in South India[6].
- A certain proportion of patients suffering from NAFLD may have normal body mass index and such cases are known as 'Lean NAFLD'. A pooled proportion of studies show that Lean NAFLD consists of 16.97% of all persons suffering from NAFLD[3].
- Metabolic syndrome (MS) or 'Syndrome X' characterized by a constellation of various components namely, obesity, type 2 diabetes, dyslipidemia, and hypertension. NAFLD and MS share the same associations and risk factors, and often NAFLD is considered as the hepatic manifestation of MS[7].
- NAFLD is consistently associated with type 2 diabetes mellitus (28-55%) and dyslipidemia (27-92%). Two other factors namely hypertriglyceridemia (62%) and low HDL-cholesterol (54%) are found in NAFLD patients[7].
- NAFLD is known to be associated with several extrahepatic conditions like chronic kidney disease (CKD)[8], cardiovascular diseases[9–11], osteopenia, osteoarthritis[12], obstructive sleep apnoea[13], hypothyroidism[14], and polycystic ovarian syndrome[15,16]. NAFLD has also been shown to increase the risk of extrahepatic malignancies like carcinoma colon, gastric cancer, carcinoma pancreas, uterine, and breast conditions[17].
- The most common cause of mortality in patients with NAFLD is cardiovascular diseases. Cancer related mortality is among the top three causes of death in patients with NAFLD. Patients with NASH have a higher liver-related mortality rate[18].

CLINICAL PRESENTATION AND EXAMINATION

The majority of patients with NAFLD are asymptomatic and do not experience any specific symptoms related to the disease. Few individuals complain of symptoms like fatigue, nausea, vomiting, pruritis, ascites, memory impairment, right upper quadrant discomfort, hepatomegaly, acanthosis nigricans and lipomatosis[19]. A certain proportion of patients with NASH-cirrhosis may present with signs of end stage liver disease such as spider angiomas, erythema, caput medusae, gynecomastia, petechiae, dupuytren contracture. On clinical examination, mild to moderate hepatomegaly may be the most common finding. Patients of NAFLD may often present with obesity and hypertension[20]. The National cholesterol Education Program – Adult treatment Panel III (NCEP ATP III) criteria modified for Indians has been developed for determining certain risk factors associated with metabolic syndrome[21]. Patients with such risk factors must be screened as it has been observed that Metabolic syndrome is closely associated with NAFLD[22].

Table: 1

Abdominal obesity	Waist circumference > 90 cms in males and > 80 cms in female
Impaired fasting glucose	Fasting glucose ≥ 110 mg/dl or on pharmacological treatment
Hypertension	Blood pressure ≥ 130/85 mm of Hg or on antihypertensives
Hypertriglyceridemia	Serum triglycerides ≥ 150 mg/dl or on pharmacological treatment that lowers triglycerides
Decreased HDL	Serum HDL < 40 mg/dl in males and < 50 mg/dl in females

DIFFERENTIAL DIAGNOSIS

As the diagnosis of NAFLD is mainly driven by exclusion of the alternate causes of hepatic steatosis. The alternate causes of hepatic steatosis are as follows:

Table: 2

Macro-vesicular steatosis	*Micro-vesicular steatosis*
Excessive alcohol consumption	Reye's syndrome
Hepatitis C (genotype 3)	Medications like valproate and antiretroviral drugs
Wilson's disease	Acute fatty liver of pregnancy
Lipodystrophy	HELLP syndrome
Starvation	Inborn errors of metabolism
Parenteral nutrition	
Abetalipoproteinemia	
Medications like methotrexate and steroids	
Kwashiorkor	
Anorexia nervosa	
Personality Disorders	

SUPPORTIVE INVESTIGATIONS

With a paucity of specific symptoms for the diagnosis of NAFLD, imaging and other

investigations remain the main diagnostic indicator for the condition. Though hepatic histology is considered as the gold standard for the diagnosis of the condition, the complexity, complications associated with the procedure, and lack of preference among the patients prevents this method of investigation as a popular modality for diagnosis[3]. Non-invasive tests remain the investigation of choice among the physicians and patients alike.

Table: 3

<table>
<tr><th>Investigations</th><th colspan="2">Findings</th></tr>
<tr><td colspan="3">Essential</td></tr>
<tr><td>Liver function tests</td><td colspan="2">Mild to moderately elevated serum transaminases (AST and ALT), ALT elevation more common than AST, raised alkaline phosphatase levels, albumin and bilirubin levels raised. Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) are often somewhat raised, ranging from two to five times the upper limit of normal, with ALT being larger in a 2:1 ratio to AST. Since the AST and ALT in alcoholic hepatitis typically differ by a ratio of more than 2:1, this pattern of elevated serum aminotransferase aids in the differentiation of NAFLD from alcoholic hepatitis.</td></tr>
<tr><td>Other blood investigations</td><td colspan="2">Serum ferritin and transferrin saturation levels, abnormal clotting time, HbA1c, Fasting Blood glucose, Celiac disease screening test, Lipid Profile, HBsAg, Hepatitis C</td></tr>
<tr><td rowspan="4">Ultrasonography</td><td colspan="2">The grading of hepatic steatosis in ultrasonography are done as per the following criteria:</td></tr>
<tr><td>Grade of fatty liver</td><td>USG findings</td></tr>
<tr><td>Grade 1 (Mild)</td><td>Increased echogenicity of the liver in comparison to spleen and right kidney</td></tr>
<tr><td>Grade 2 (Moderate)</td><td>Blurring of intravascular structures in addition to Grade 1 findings</td></tr>
<tr><td></td><td>Grade 3 (Severe)</td><td>Deep attenuation of ultrasound signal; diaphragm cannot be readily discerned from posterior surface of live in addition to Grade1/2 findings</td></tr>
<tr><td colspan="3">Advanced</td></tr>
<tr><td>Non contrast CT scan</td><td colspan="2">Hepatic steatosis can be inferred by comparing the attenuation of liver in comparison to the spleen. Liver attenuation index (LAI) < - 10 HU is suggestive of moderate to severe macrovesicular steatosis, while LAI > + 5 HU suggests absence of significant steatosis[23].</td></tr>
<tr><td>Magnetic resonance – proton density fat fraction (MR-PDFF)</td><td colspan="2">Higher sensitivity compared to all imaging procedures but not recommended for routine detection of hepatic steatosis.</td></tr>
</table>

Assessment of hepatic fibrosis

Hepatic fibrosis is the most important parameter for the prognosis, treatment, and outcome in patients with NAFLD. Non-invasive scoring methods of assessing hepatic inflammation and fibrosis are performed using certain scores by combining results of elastography and blood parameters.

Table: 4

Name of score	*Measuring components*	*Utility*
FAST score[24]	Median liver stiffness by TE, CAP and blood AST	Hepatic inflammation. FAST score varied on a scale from 0 to 1, with the patients being classified as having low (<0.35), intermediate (0.35–0.67), or high (>0.67) probability of having SH with significant inflammatory activity and fibrosis.
AST to Platelet Ratio Index (APRI) score[25]	AST and platelet levels	Hepatic fibrosis.
Fibrosis-4 score (Fib-4)[26]	AST, ALT, age, and platelets	Hepatic fibrosis
NAFLD fibrosis scores (NFS)[27,28]	BMI, Age, AST/ALT ratio, Albumin, and presence of insulin resistance and diabetes	Hepatic fibrosis
BARD score[28]	BMI, Age, AST/ALT ratio, and presence of diabetes	Hepatic fibrosis
Magnetic resonance elastography (MRE) and Fibrosis-4 score (MEFIB)[29]	Magnetic resonance elastography and Fibrosis-4 scores	NASH

*A score of greater than 1 with APRI less than 0.676 with NFS and greater than 2.67 with Fib-4 predicts the presence of advanced fibrosis, while NFS less than -1.455 and Fib-4 score less than 1.3 suggests a low risk for advanced fibrosis.[30]

DIAGNOSTIC CRITERIA

Most of the diagnosis of NAFLD takes place incidentally on ultrasonographic (USG) examination of the abdomen done for dyspepsia or asymptomatic rise of blood transaminases. There are also recommendations for screening of NAFLD in patients with type 2 diabetes mellitus, obesity and metabolic syndrome[3,18,31]. The diagnosis of NAFLD includes documentation of hepatic steatosis of variable severity on imaging and exclusion of secondary causes of hepatic steatosis. Investigations into alcoholic hepatic steatosis, especially with a history of significant alcohol intake, hepatitis B and C, and autoimmune hepatitis must be conducted to rule out alternate causes of hepatic steatosis.

PRINCIPLES OF MANAGEMENT

The principles of management include assessment of signs and symptoms before initiating treatment and the need for management through conventional treatment for associated co-morbidities. If the patient is already under standard care, the physician may advice to continue the same along with add-on homoeopathy and can be assessed for the same in the follow ups for tapering or discontinue the treatment in consultation with the conventional physician.

Red Flags

- NASH-associated cirrhosis
- End-stage liver disease
- Hepatocellular carcinoma (HCC)
- Uncontrolled co-morbidities

- LSM ≥ 20
- Platelet count < 150 x 10^6 / L
- Portal hypertension
- Hepatic encephalopathy
- Weight loss or anorexia

The major challenge in the management of the condition is that there are no specific symptoms for the disease and the majority of the patients are asymptomatic. Such circumstances become difficult to the physicians to encourage the patients to undergo treatment or lifestyle modification. The first step for initiation of treatment includes appropriate counselling of the patients and educating them about the disease condition. The patient must be educated that NAFLD is not a mere gastrointestinal disorder, but a metabolic disorder and dietary modification alone may not be helpful for resolving the condition. Adequately guided individualized therapy and overall lifestyle modification is essential for the treatment of the condition.

A) Prevention management

Lifestyle interventions including dietary calorie management and exercise constitute the main pillars of NAFLD management. Studies have demonstrated that there is a dose-response relationship between the magnitude of weight loss and the degree of histological improvement of NAFLD. 3-5%, ≥ 7%, and ≥ 10% of weight loss has been associated with regression in steatosis, steatohepatitis, and fibrosis respectively[32]. Daily caloric restriction by 30% with cutting down of both carbohydrates and fat in the staple diet. Intermittent fasting (e.g. alternate day fasting, 5:2 fasting with 2 days of severely reduced caloric intake and 5 days of normal consumption) may be a promising approach but sufficient evidence is still not available to routinely recommend such practice[33]. Exercise shall consist of moderate-intensity aerobic exercises such as brisk walking, jogging, running, swimming, etc. supplemented by resistance exercises[34,35].

B) Interventions

At level 1- Solo Physician Clinic/Health Clinic/PHC (Optimal Standard of treatment where technology and resources are limited)

Clinical diagnosis

The diagnosis of NAFLD shall be done in level 1 especially in cases who have incidental discovery of fatty liver disease. Depending on the infrastructural setup of the clinic/health center an ultrasonography examination may be conducted. To confirm the diagnosis the alternate cases of hepatic steatosis must be ruled out by clinical history and available investigations.

Investigations

1. Blood for Liver function tests (Bilirubin, transaminases, total protein), Lipid profile (Total cholesterol, HDL, LDL, VLDL, Triglycerides), Fasting and post-prandial blood sugar, Urea, Creatinine, Complete haemogram, HBsAg, Celiac disease screening.
2. Assessment scores like APRI, Fib-4, and BARD.
3. Ultrasonography of upper abdomen (if available)

Management

Homoeopathic treatment of NAFLD shall focus on an individualized approach with much focus on the constitutional approach of treatment. The physical and mental generals, physical make-up, and dispositions of the patient shall be the major indications for prescribing considering the paucity of symptoms or presentation of the disease in an 'one-sided manner'. Often it is noted that a sequence of several medicines one after the other along with intercurrents in between their course may be useful for the treatment of NAFLD. Other approaches to prescription like miasm-based, mental symptom based, temperament based, keynote based etc. may be utilized by the physician in case of NAFLD. Further, medicines may be given on the basis of organopathic approach if needed. Therapy should target not only improving the hepatic features but overall improvement in the metabolic dysfunction. The totality of symptoms presented by the patient is the sole indicative and guide for treating each patient, however, a single dose may not be sufficient. Repetition of doses, change of potency, and change of a remedy during follow-up are based on the totality of symptoms, miasmatic cleavage, Kent's 12 observations and other homoeopathic principles. Flow-diagram for management is given at annexure I.

Some commonly indicated medicines in Homoeopathic treatment of NAFLD are as follows (indications of medicines is given at annexure II) [36,37]

Table: 5

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	**Aurum metallicum**	Varies as per the need if the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Organ specific medicines (Mother tinctures and lower dilutions/ triturations):** • Fucus vesiculosus • Allium sativum • Gymnema sylvestre • Gautteria gaumeri • Carduus marianus • Chionanthus virginica • Phyllanthus niruri Schussler's biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Calcarea fluoricum, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum,Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	**Calcarea carbonica**					
3.	**Calcarea fluoricum**					
4.	**Chelidonium majus**					
5.	**China officinalis**					
6.	**Kali bichromicum**					
7.	**Lycopodium clavatum**					
8.	**Magnesium muriaticum**					
9.	**Manganum aceticum**					
10.	**Mercurius solubilis**					
11.	**Natrum muriaticum**					
12.	**Natrum sulphuricum**					
13.	**Nux vomica**					
14.	**Phosphorus**					
15.	**Plumbum metallicum**					
16.	**Sulphur**					

Do's and Don'ts while taking homoeopathic medicine [38]

Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British homoeopathic practice.

Recommended diet and lifestyle modifications[3]

Targeting a weight loss of 7-10% is recommended in overweight and obese patients with NAFLD.

Exercise recommendations

- Moderate intensity aerobic or resistance exercises for 30-45 min/day at least 5 days in a week in all patients of NAFLD irrespective of body weight.
- Moderate intensity aerobic exercise includes brisk walking, jogging, running, swimming, cycling, etc.
- Resistance exercises may supplement aerobic exercises and may be particularly useful for patients with who cannot partake in aerobic exercises like patients with arthritis, morbid obesity, poor cardiorespiratory fitness, etc.
- **Yoga:** Various Yoga practices are helpful for the management of NAFLD. These include Pranayama like Bhastrika, Kapalabhati and Anuloma-Viloma; various relaxation techniques viz. twisting movement of the body; yogasanas like Vajrasana, Trikonasana, Dhanurasana, Naukasana, Ardha Matsyendrasana, Pavana Muktasana and Surya namaskara.

Restricted diet and lifestyle

In obese and overweight individuals, the dietary calorie intake should be restricted by 30% or 500-1000 kcal by cutting down carbohydrates and fats in staple diet. In lean individuals, energy intake should be balanced with energy expenditure.

- Total fat consumption should not exceed 30% of total energy intake with saturated fats being <10% and trans-fat <1% of total energy intake.
- Free sugar intake must be limited to < 10% of total energy intake and further 5% reduction may have additional benefits. Fructose and sweetened beverages should be curtailed.
- Protein restriction is not required in patients with NAFLD, although meat proteins may be replaced with plant, dairy and fish proteins.
- Evidence shows benefit of > 2 cups of caffeinated coffee per day in NAFLD. But the standard habit of sweetening and use of milk/cream should be avoided.

Follow-up (at an interval of 14 days or earlier as required)

Reviews should include:

- ✓ Monitoring the person's symptoms and the ongoing impact of the condition on their everyday activities and quality of life.

- ✓ Management of NAFLD in terms of diet, exercise, and other interventions.
- ✓ Discussing the person's knowledge of the condition, any concerns they have, their personal preferences, and their ability to access services.
- ✓ Reviewing the effectiveness and tolerability of all treatments.
- ✓ Self-management support.
- ✓ Monitoring the long-term course of the condition with periodic review.

Referral criteria

- ➢ Non-response to treatment
- ➢ Progression of the disease to NASH, NASH- associated Cirrhosis, or NASH associated Hepatocellular Carcinoma
- ➢ Any other hepatic or extra-hepatic complications such as Gallstone disease commonly seen in older age and higher grade of NAFLD.
- ➢ Evidence of an increase in severity/complications
- ➢ Co-morbidities, such as cardiac disease.
- ➢ Substantial impact on their quality of life and activities of daily living
- ➢ Diagnostic uncertainty

At level 2- (CHC/Small hospitals (10-20 bedded hospitals with basic facilities such as routine investigations and imaging facilities)

Clinical diagnosis

Same as Level 1. Any fresh case, cases on incidental discovery, or referred case from Level 1 shall be evaluated thoroughly for confirmation of diagnosis and complications.

Investigations:

Same as Level 1. Ultrasonography examination must be conducted compulsorily with proper grading of the hepatic steatosis.

Management:

Same as Level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient. Complications of the disease is an important clinical presentation at this stage of care especially the early signs and symptoms of such complications. Conditions progressing to steatohepatitis and fibrosis may be treated according to the presenting complications. Accessory management of co-morbidities like diabetes mellitus, dyslipidemia, and hypertension must be accordingly managed.

Table: 6

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants
1.	**Ambra grisea**	Varies as per the need if the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				**Organ specific medicines (Mother tinctures and lower dilutions/ triturations):** • Fucus vesiculosus • Allium sativum • Gymnema sylvestre • Gautteria gaumeri • Chelidonium majus • Carduus marianus • Chionanthus virginica • Phyllanthus niruri Schussler's biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Calcarea fluoricum, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	**Arsenicum album**					
3.	**Bromium**					
4.	**Cornus Circinata**					
5.	**Dolichos pruriens**					
6.	**Hippozaeninum**					
7.	**Kali chloricum**					
8.	**Lac defloratum**					
9.	**Laurocerasus**					
10.	**Lyssin**					
11.	**Mercurius corrosivus**					
12.	**Phlorizinum**					
13.	**Phytolacca decandra**					
14.	**Picric acid**					
15.	**Podophyllum**					
16.	**Ptelea trifoliata**					
17.	**Stellaria media**					
18.	**Tabacum**					
19.	**Vanadium metallicum**					

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow-up (at an interval of 15 days or earlier as per the need)

Referral criteria:

- ✓ Same as level 1
- ✓ Failure of acute exacerbation to respond to initial medical management.

At level 3- Ayush hospitals attached with teaching institution, District Level/Integrated/ State Ayush Hospitals, Tertiary care allopathic hospitals having Ayush facilities, multiple departments/facilities for diagnosis and interventions.

Clinical diagnosis

Same as Level 2. The diagnosis must be confirmed using advanced biochemistry, serology and imaging studies.

Investigations: Same as Level 1

Supportive investigations:

1. Non-contrast CT scan
2. MRI based Elastography
3. Blood levels for carbohydrate-deficient transferrin (CDT), Gamma glutamyl transferase for determination of chronic alcoholism.
4. Hepatitis C antigen
5. Serum copper levels and ceruloplasmin to rule out Wilson's disease (only if needed)
6. Metabolic profile for ruling out lipodystrophy, and starvation
7. Genetic testing for apo B and MTTP to rule out abetalipoproteinemia (only if needed)

Management

Same as Levels 1& 2. For the patients referred from Level-1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

In addition to the Level 1 and Level 2 management strategies, Homoeopathy has a number of uncommonly prescribed medicines that can ease pain and other symptoms in patients with NAFLD or in those who have not responded to treatment due to lack of symptoms, co-morbid conditions, or the use of other immunosuppressives, oral hypoglycaemic agents, or antihypertensives. Homoeopathic medicines can be prescribed based on the sphere of action or keynote symptoms as a part of supportive management in these disorders as well as other advanced pathological states.

Table: 7

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants
1.	**Aurum muriaticum natronatum**	Varies as per the need if the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				Organ specific medicines (Mother tinctures and lower dilutions/ triturations): • Fucus Vesiculosus • Allium sativum • Gymnema sylvestre • Gautteria Gaumeri • Chelidonium Majus • Carduus marianus • Chionanthus Virginica
2.	**Cadmium sulphuricum**					
3.	**Calcarea arsenicosum**					
4.	**Ceanothus americanus**					
5.	**Crotalus horridus**					
6.	**Cuprum metallicum**					
7.	**Fel tauri**					
8.	**Fluoricum acidum**					
9.	**Hydrastis canadenesis**					
10.	**Leptandra virginica**					
11.	**Mercurius dulcis**					
12.	**Muriaticum acidum**					
13.	**Quassia amara**					

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants
14.	**Senecio aureus**					Schussler's biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Calcarea fluoricum, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum,Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
15.	**Urea pura**					

Recommended diet and lifestyle: Same as Levels 1 & 2

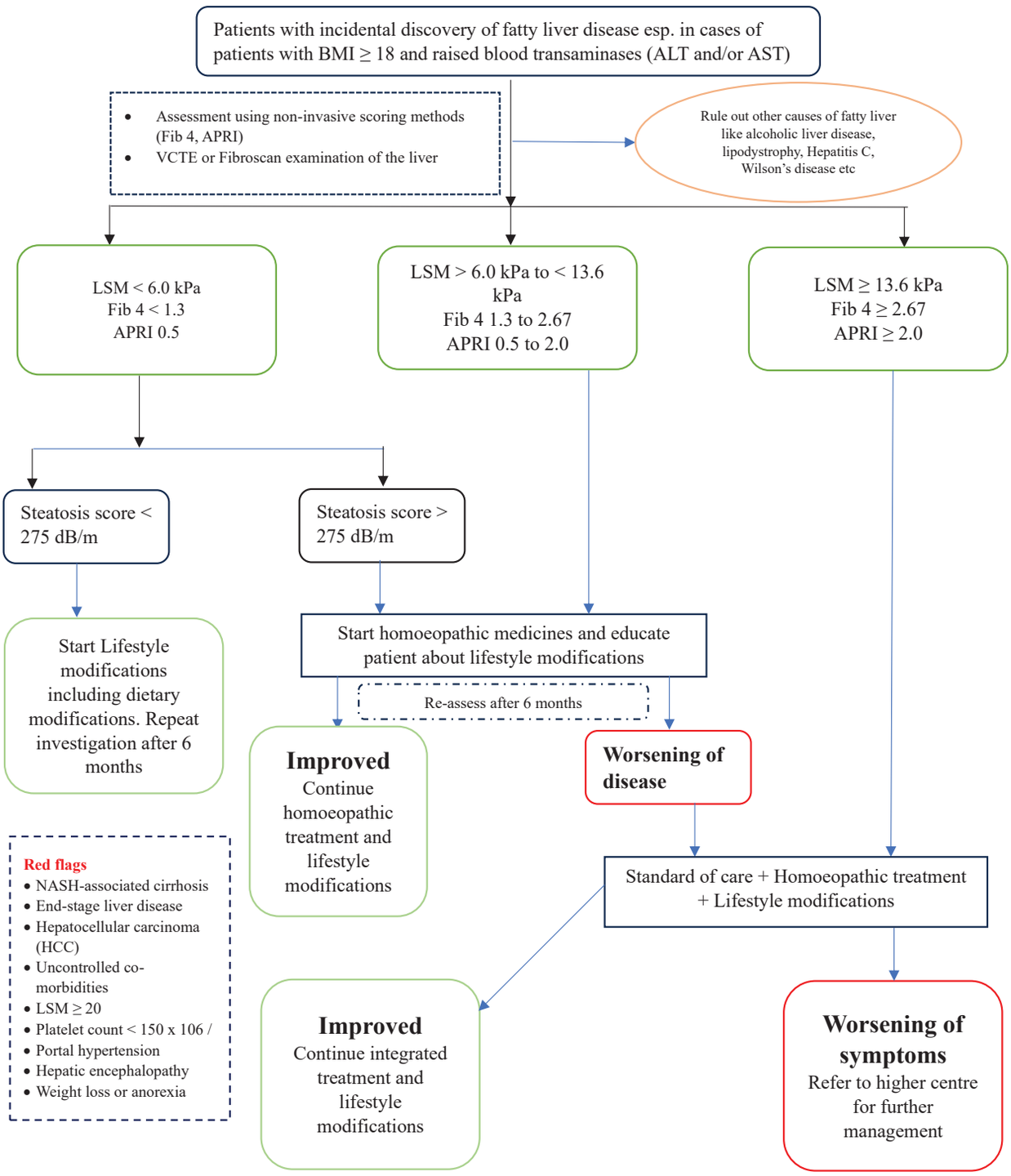
Restricted diet and lifestyle: Same as Levels 1 & 2

Follow-up (at an interval of 15 days or earlier as per the need)

Referral criteria:

- ✓ Same as Levels 1 & 2, plus,
- ✓ Hepatic encephalopathy
- ✓ Portal hypertension
- ✓ Haematemesis or melaena or any condition requiring blood transfusion or critical care management
- ✓ Any condition or serious complication beyond the scope of homoeopathic treatment
- ✓ Other modalities can be considered depending on the case and to rehabilitate properly.

ALGORITHM OF TREATMENT PROCESS FOR NON-ALCOHOLIC FATTY LIVER DISEASE



ANNEXURE II

Indications of medicines for Non-Alcoholic Fatty Liver Disease:

S. No.	Medicines	General Indications	Characteristic particulars
1.	**Phosphorus**	*Tall, fast growing child with tendency to stoop; haemorrhagic tendency; Chilly patient Craving for salt, cold foods and drinks. Oversensitive to external impressions. Worse, touch; physical or mental exertion; twilight; warm food or drink; change of weather, from getting wet in hot weather; evening; lying on left or painful side; during a thunderstorm; ascending stairs. Better, in dark, lying on right side, cold food; cold; open air; washing with cold water; sleep.*	• Enlargement, induration and Fatty degeneration of the liver. Pain in the hepatic region on pressure. • Sensitiveness in hepatic region, < when lying on r. side, with pain on touch • Painful pulsation in right hypochondrium. Contractive pain in abdomen. • A very weak, empty, gone sensation felt in whole abdominal cavity.
2.	**Natrum sulphuricum**	*Hot patient; extreme desire for fat;< in damp, cold weather; tendency for early morning diarrhoea; irritable in morning, dislike to speak or to be spoken to. Worse, music; lying on left side; dampness of basement, damp weather. Better, dry weather, pressure, changing position.*	• Stitches in the region of the liver while walking in the open air. Throbbing, tension, and lancinations in hepatic region • Pains as from a bruise in abdomen, at night, with pains in loins; the patient is awakened by pains, which are insupportable, except when lying on side. • Pinching in whole abdomen, with rumbling, shifting and subsequent diarrhoea. • Cannot bear tight clothing around waist • Painful sensitiveness of the hepatic region to the touch, during a walk, or to a sudden jar
3.	**Lycopodium clavatum**	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4- 8 pm; right sided complaints or symptoms shifts from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious.*	• Cramp-like pain in diaphragm, and contusive pain in liver, aggravation on stooping. • Pain when walking in upper part of right hypochondrium, as if the suspensor ligament of the liver would tear. Pressive pain in right hypochondrium, at times took away the breath. • Inflammation and induration of the liver • Immediately after a (light) meal the abdomen is bloated, full, distended

S. No.	Medicines	General Indications	Characteristic particulars
4.	**Chelidonium majus**	*Persons of light complexion, blondes; thin, spare, irritable; subject to hepatic, gastric and abdominal complaints. Ailments: brought on or renewed by change of weather; all lessen after dinner. Yellow-grey colour of the skin; wilted skin; of the palms of hands. Desire for very hot food and drinks, unless almost boiling stomach will not retain them.*	• Shooting stitching through liver to back; crampy pain inner angle of scapula • Fermentation and sluggish bowels. Constriction across, as by a string. • Enlargement of liver • Fatty liver, border of which extends to navel, with icterus • A kind of numbness in muscles of hepatic region and in whole right side of neck, face and head. • < right side, early morning, motion, cough, and change of weather, > pressure
5.	**Aurum metallicum**	*Sanguine, ruddy people, with black hair and eyes; lively, restless, anxious about the future. Old people; weak vision; corpulent; tired of life. Profound melancholy: feels hateful and quarrelsome; desire to commit suicide; life is a constant burden. Uneasy, hurried, great desire for mental and physical activity; cannot do things fast enough. oversensitive: least contradiction excites wrath; to pain; to smell, taste, hearing, touch*	• Burning heat and cutting pain in r. hypochondrium • Right hypochondrium hot and painful. • Swelling of liver consecutive to cardiac hypertrophy • Painful accumulation of gas below left ribs, causing stitching pains • Pressure in hypochondria, as from flatulence; < after food or drink, and motion.
6.	**Kali bichromicum**	*Fat, light-haired persons who suffer from catarrhal, syphilitic or psoric affections. Fat, chubby, short-necked children disposed to croup and croupy affections. Affections of the mucous membranes - eyes, nose, mouth, throat, bronchi, gastro-intestinal and genito-urinary tracts - discharge of a tough, stringy mucus which adheres to the parts and can be drawn into long strings. Complaints occurring in hot weather. Liability to take cold in open air. Pains: in small spots, can be covered with point of finger; shift rapidly from one part to another; appear and disappear suddenly*	• Dull, heavy pressure or stitches in region of liver. • Pain in a small spot in right hypochondrium; < by a chill, or great bodily exertion, motion, pressure • Fatty infiltration of liver and soft tissue; increased soreness in right hypochondrium. • Appetite good
7.	**Manganum aceticum**	*Anxiety and fear; better lying down. Strongly exaggerated reflexes and physical disturbances, evidenced by men making fun of each other's gait. It has an action on the blood-forming process like iron and has been successfully used in cases of anaemia. General soreness and aching; every part of the body feels sore when touched*	• Pressure in hypochondria. • Abdomen large, distended. • Contraction, with sensation of heat from middle of abdomen to chest, with nausea • Movements (when walking) in abdomen, as if intestines were striking against each other • Constipation. Difficult, dry, knotty evacuations

S. No.	Medicines	General Indications	Characteristic particulars
8.	**Calcarea fluoricum**	*A powerful tissue remedy for hard, stony glands, varicose and enlarged veins, and malnutrition of bones. Induration threatening suppuration.*	• Dull weight and discomfort in right hypochondrium. • Acute indigestion from fatigue and brain-fag; much flatulence. • At 8 A. M., frequent attacks of lancinating pains in hepatic region; < when sitting, > when walking about.
9.	**Mercurius solubilis**	*Best adapted for light-haired persons, skin and muscles lax. Profuse perspiration attends nearly every complaint but does not relieve; may even increase the suffering. Great weakness and trembling from least exertion. Breath and body smell foul. Hurried and rapid talking. Ptyalism; tenacious, soapy, stringy, profuse, fetid, coppery, metallic-tasting saliva. Tongue: large, flabby, shows imprint of teeth. Face yellow or dark red; great thirst; white coated tongue; debility;*	• Abdomen hard and inflated, with soreness when touched, principally in umbilical region • Chronic atrophy of liver, with emaciation and desiccation of the body. Swelling and hardness of liver. • Painful sensitiveness of hepatic region, with shooting, burning pains, < by every movement of body, or of the parts affected. • Region of liver swollen, painfully sensitive to contact; cannot lie on right side. • The pains accompanied by shivering, or by heat and redness of cheeks.
10.	**Magnesium muriaticum**	*Especially adapted to diseases of women; spasmodic and hysterical complaints, complicated with uterine diseases; who have suffered for years from attacks of indigestion or biliousness. Great sensitiveness to noise. Continual raising of white froth in mouth. Eructations, tasting like rotten eggs, like onions.*	• Hepatic affections with tendency to haemorrhages from various organs. • Affections of right hypochondrium; inner region of liver. Congestion of left lobe of liver. • Aching pains in liver, when walking, or pressing the part, < lying on right side. • Marked enlargement of liver, accompanied by ascites. • Violent and constant distension of abdomen, with constipation
11.	**Nux vomica**	*Adapted to thin, irritable, careful, zealous persons with dark hair and bilious or sanguine temperament. Disposed to be quarrelsome, spiteful, malicious; nervous and melancholic. Debauchers of a thin, irritable, nervous disposition; prone to indigestion and haemorrhoids. Anxiety with irritability and inclination to commit suicide but is afraid to die. Hypochondriac: literary, studious persons, who are too much at home, suffer from want of exercise, with gastric, abdominal complaints and costiveness; especially in drunkards. Oversensitive; to external impressions; to noise, odours, light or music*	• Sensation as if everything in abdomen would fall down, obliging him to walk carefully. • Stitches in region of liver; < from contact or motion. Throbbing pain as from hepatic abscesses. • Liver swollen, indurated, sensitive, with pressure and stinging; caused by high living, abdominal plethora, debauchery. Enlarged liver of drunkards. • Contractive pain in the hypochondria. Cannot bear tight clothes around hypochondria.

S. No.	Medicines	General Indications	Characteristic particulars
12.	**Natrum muriaticum**	*For the anaemic and cachectic; whether from loss of vital fluids - profuse menses, seminal losses - or mental affections. Great emaciation; loosing flesh while living well. Irritability: child cross when spoken to; crying from slightest cause; gets into a passion about trifles, especially when consoled with. Awkward, hasty, drops things from nervous weakness. Marked disposition to weep; sad weeping mood without cause, but consolation from others < her troubles. Craving for salt. Tongue: mapped, with red insular patches; like ringworm on sides.*	• Dull, heavy aching and distension about liver after eating. • Liver inflamed, swollen, skin yellow, earthy; violent pressive pain, stitches, tension in hepatic region. • Bending to left causes stiffness in liver. • Liver disease causes dropsy. • Constipation, sometimes prolonged, or every second day. • Frequent, urging, and ineffectual effort to evacuate, or scanty evacuation. • Stools difficult to discharge, hard, dry, crumbling, like sheep's dung
13.	**China officinalis**	*For stout, swarthy persons; for systems, once robust, which have become debilitated, "broken down" from exhausting discharges. Apathetic, indifferent, taciturn; despondent, gloomy, has no desire to live, but lacks courage to commit suicide. Ailments: from loss of vital fluids, especially haemorrhages, excessive lactation, diarrhoea, suppuration. Marked periodicity; return every other day. Great debility, trembling, aversion to exercise; sensitive to touch, to pain, to drafts of air; entire nervous system extremely sensitive. Unrefreshing sleep or constant sopor; < after 3 a. m.*	• Pain in hepatic region, as from subcutaneous ulceration; < from touch. • Shooting in region of liver; tenderness and pain when touching the part. • Sensitiveness in region of liver to least pressure. • Swollen, hard liver.
14.	**Plumbum metallicum**	*Excessive and rapid emaciation; general or partial paralysis; extreme, with anaemia and great weakness. Muscular atrophy from sclerosis of spinal system. Lassitude; faints on going into a room full of company. Slow of perception; intellectual torpor, gradually increasing apathy. Assumes strangest attitudes and positions in bed. Complexion: pale, ash-coloured, yellow, corpse-like cheeks sunken; expressive of great anxiety and suffering. Skin of face, greasy, shiny Worse, at night, motion. Better, rubbing, hard pressure, physical exertion*	• Hepatic region sensitive to pressure. • Persistent sticking pain in hepatic region, first anteriorly, then posteriorly. • Sensation of heat and burning in liver and spine. • Continued darting pain in region of liver. • Cirrhosis of liver; first enlarged then contracted.
15.	**Picric acid**	*"Nervous prostration". Neurasthenia. Brain fag. Weariness, progressing from a slight feeling of fatigue on motion to complete paralysis.*	• Sticking through hepatic region, < in muscles. • Liver full of fat granules (in animals poisoned with Pic. ac.)

S. No.	Medicines	General Indications	Characteristic particulars
16.	**Vanadium metallicum**	*A remedy in degenerative conditions of the liver and arteries. Anorexia and symptoms of gastrointestinal irritation.*	• Fatty liver, atheroma of the arteries, much pain corresponding to the course of the basilar artery, large, deeply pigmented patches on forehead, profound adynamia. • A remedy in degenerative conditions of the liver and arteries
17.	**Lyssinum**	*The sight or sound of running water or pouring water aggravates all complaints. Lyssophobia; fear of becoming mad. Bluish discoloration of wounds. Complaints resulting from abnormal sexual desire. Mental emotion or mortifying news always makes him worse. Cannot bear heat of sun*	• A pressing pain: in right side, near last ribs, with breathing; in hypochondria, after quick walking.
18.	**Lac defloratum**	*Diseases with faulty and defective nutrition with reflex affections of nervous centres. Despondent; does not care to live; has no fear of death but is sure he is going to die. Great restlessness, extreme and protracted suffering from loss of sleep. Feels completely exhausted, whether she does anything or not; great fatigue when walking.*	• Abdomen sore and sensitive to touch. • Great fatigue from walking, on account of heaviness as of a stone in abdomen. • Constipation. Stools hard, large, with great straining; painful, lacerating anus.
19.	**Hippozaeninum**		• Liver greatly enlarged, often showing signs of fatty degeneration. • Hepatitis with gangrenous and ulcerative inflammation of gall-ducts. • Inguinal glands swollen.
20.	**Ptelea trifoliata**		• Stomach and liver symptoms associated with pain in limbs. • Griping in epigastric region, with dryness of mouth. • Liver sore, swollen, sensitive to pressure. Retraction of abdomen. • Weight and dragging in hypochondria on walking; standing; sitting erect; **>** stooping forward. **<** lying left side, > lying right side. • Pains shoot from right hypochondrium downwards. • Borborygmi and colic. Involuntary discharge of flatus

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21.	**Podophyllum**	*Is especially adapted to persons of bilious temperament. It affects chiefly the duodenum, small intestines, liver, and rectum The Podophyllum disease is a gastro-enteritis with colicky pain and bilious vomiting. Stool is watery with jelly-like mucus, painless, profuse. Gushing and offensive. Many troubles during pregnancy; Torpidity of the liver; portal engorgement with a tendency to haemorrhoids, hypogastric pain, fullness of superficial veins, jaundice.*	• Fulness in right hypochondrium, with flatulence, pain, and soreness. • Pain in region of liver with inclination to rub the part with the hand. • Excessive secretion of bile, great irritability of liver. • Twisting in right hypochondrium with burning. Stitches in hypochondria, **<** while eating • Symptoms generally, and especially abdominal symptoms, < morning, > evening.
22.	**Phytolacca decandra**	*Aching, soreness, restlessness, prostration. Pre-eminently a glandular remedy. Glandular swellings with heat and inflammation. Has a powerful effect on fibrous and osseous tissues; fasciae and muscle sheaths; acts on scar tissue*	• Intense vomiting and purging, with griping pains and cramps in abdomen. • Soreness and pain in right hypochondrium • Digging in upper and lower portions of liver. • Chronic hepatitis, with enlargement and induration
23.	**Cornus circinata**	*Chronic malaria, hepatitis, jaundice. Weakness in morning. Pain in pit of stomach, with distended abdomen. Vesicular eruption associated with chronic liver disease or aphthous stomatitis.*	• Chronic hepatitis and bilious derangement. • Constant working in bowels as if all in motion. • Borborygmus
24.	**Arsenicum album**	*Great prostration, with rapid sinking of the vital forces; fainting. Mentally restless, but physically too weak to move; cannot rest in any place: changing places continually; wants to be moved from one bed to another and lies now here now there. Great exhaustion after the slightest exertion. Burning pains. Unquenchable thirst. Burning relieved by heat. Seaside complaints. Ailments from alcoholism, ptomaine poisoning, stings, dissecting wounds, chewing tobacco; ill effects from decayed food or animal matter; odour of discharges is putrid; in complaints that return annually.*	• Compression in the region of the liver. • Liver and spleen enlarged and painful. • Violent cutting pains, cramp-like pains, digging, pulling, tearing, and gnawing in the abdomen. • Abdomen swollen and painful. Pain as from a wound in abdomen on coughing. • Ascites and anasarca. • Gnawing, burning pains like coals of fire; relieved by heat.
25.	**Laurocerasus**		• Distension of region of liver, with pains, as from subcutaneous ulceration. • Sticking pains in liver with pressure. • Induration of liver. Atrophic nutmeg liver. • Borborygmi, rumbling, and grumbling in abdomen and in stomach. Flatulence pressure outward at perineum; pressing on bladder • Pinching in umbilical region.

S. No.	Medicines	General Indications	Characteristic particulars
26.	**Dolichos pruriens**	*A right-sided medicine, with pronounced liver and skin symptoms. A general intense itching without eruption. Exalted nervous sensibility. Senile pruritus. Haemorrhoidal diathesis.*	• Constipation, with intense itching; bloated abdomen. • Swelling of liver.
27.	**Ambra grisea**	*Suitable to excitable, nervous children and thin, nervous patients. Nervous bilious temperament. Thin, scrawny women. For patients weakened by age or overwork, who are anaemic and sleepless. One-sided complaints call for it. Music aggravates symptoms.*	• Hepatic pains, most frequently pressive • Heaviness in the belly. • Sensation of coldness in abdomen. • Incarcerated flatus. • Sensation of drawing in the abdominal muscles in the evening • Flatulent colic in the night.
28.	**Stellaria media**		• Liver engorged, swollen, with stitching pain and sensitive to pressure. • Sensation as if liver too large for body. • Burning pains all over liver. • Liver sore to touch. • Hepatic torpor. • Wandering pains around navel, settling between navel and liver. • Constipation or alternating constipation and diarrhoea. • Clay-coloured stools.
29.	**Tabacum**	*The nausea, giddiness, death-like pallor, vomiting, icy coldness, and sweat, with the intermittent pulse, are all most characteristic. Complete prostration of the entire muscular system. Gastralgia, enteralgia, seasickness, cholera infantum; cold, but wants abdomen uncovered. Constriction of throat, chest, bladder, rectum. Pallor, breathlessness, hard-cordlike pulse.*	• Pressure in hepatic region, as from a heavy body. Shooting in hepatic region. • Hepatic pain, when pressing on the part. • Great sensitiveness of abdomen to slightest touch. Painful distension of abdomen. • Pressive pains in abdomen, especially in umbilical region, with spasmodic retraction of that part. • Uncovering abdomen **>** nausea and vomiting
30.	**Kali chloricum**	*Chronic nephritis; hepatitis. Septicaemia. Anaemia.*	• Pressure in left hypochondrium; in right hypochondrium extending to umbilicus; tensive in right side, **>** emission of flatus
31.	**Bromium**	*Scrofulous children with enlarged glands. Blonde type. Enlarged parotid and goitre. Tendency to spasmodic attacks. Left-sided mumps. Sense of suffocation; excoriating discharges, profuse sweats and great weakness. Complaints from being over-heated. Tendency to infiltrate glands, become hard, but seldom suppurate.*	• Tympanitic distension of abdomen, and passage of much wind. • Enlargement and induration of spleen.

S. No.	Medicines	General Indications	Characteristic particulars
32.	**Hydrastis canadensis**	*Old, easily tired people, cachectic individuals, with great debility. Weak muscular power, poor digestion and obstinate constipation. Lumbago. Emaciation and prostration. Its action on the liver is marked. Cancer and cancerous state, before ulceration, when pain is principal symptom. There is thick, yellowish, ropy secretion. from anywhere, throat, stomach, uterus, urethra, -it is always characterized by this peculiar mucous discharge.*	• Liver atrophied. • Jaundice, with catarrh of stomach and duodenum. • Burning in region of navel, with "goneness," faintness in epigastrium. • Torpor of the liver, with pale, scanty stools.
33.	**Aurum mur natronatum**	*Suited to Carbo-nitrogenoid and mercurio-syphilitic constitutions. Burnett considers it to have more power over uterine tumours than any other gold preparation.*	• Pressure in the right hypochondrium. • Dropsy.
34.	**Muriaticum acidum**	*Irritable and peevish; fretful Loud moaning. Great restlessness. Sad, taciturn; suffers in silence. Patient becomes so weak she slides down the bed. Decomposition of fluids. Involuntary stools while passing urine. Haemorrhages. Mouth and anus chiefly effected.*	• Fulness and inflation of the abdomen; from small quantities of food. • Cramp-like pains in abdomen, with cuttings and pinchings, extending from umbilical region into sides, accompanied by borborygmi. • Uneasiness in abdomen, as in serious illness.
35.	**Fluoricum acidum**	*Especially adapted to chronic diseases with syphilitic and mercurial history. Glabella region bloated. Acts especially upon lower tissues, and indicated in deep, destructive processes, bedsores, ulcerations, varicose veins, and ulcers. Patient is compelled to move about energetically. Complaints of old age, or the prematurely aged, with weak, distended blood vessels. Early decay of teeth. Old cases of nightly fevers, coming on periodically.*	• Hob-nailed liver of alcoholics. • Soreness over liver. • Flatus and eructation
36.	**Mercurius dulcis**	*Diarrhoea, with soreness of anus. Remittent bilious attacks. Pallor, flabby bloatedness, and turgid flaccidity. Especially indicated in systems disposed to remittent bilious fevers, in peritonitis and meningitis with plastic exudate. Dropsies due to combined renal and cardiac diseases, especially with jaundice.*	• Cirrhosis of the liver, especially in the hypertrophic form. • Violent pain in abdomen; griping; tenderness. • Bloated, hot, painful abdomen

S. No.	Medicines	General Indications	Characteristic particulars
37.	**Crotalus horridus**	*Weeping mood; clouded perception and memory; impatient. Loquacious, with desire to escape. Sadness. Delusions of cerebral decay. Haemorrhagic diathesis. Acts as a sedative. Sleeps into his symptoms. More right-sided in its action. Hungry, craves stimulants, sugar, averse to meat. Worse, right side; open air; evening and morning; in spring, coming on of warm weather; yearly; on awaking; damp and wet; jar.*	• Liver distended, hot, and tender. Pain in the region of liver. • Unable to retain anything; violent vomiting of food; bilious vomiting, vomiting of blood. • Cannot lie on right side, without vomiting dark-green matter. Black or coffee-grounds vomiting. • Trembling, fluttering feeling below the epigastrium. • Intolerance of clothing about epigastrium. • Faintness and sinking at stomach.
38.	**Senecio aureus**	*Inability to fix mind upon any one subject. Despondent. Nervous and irritable. Great drowsiness, with unpleasant dreams. Nervousness and sleeplessness.*	• Early cirrhosis of liver. • Stitches in hypochondria; sharp cutting in diaphragm. • Pains about navel, spreading thence in all directions; **>** by stool; griping pains **>** bending forward. • Rumbling of wind • Abdomen much enlarged and very tense
39.	**Cuprum metallicum**	*Symptoms disposed to appear periodically and in groups. Constant protrusion and retraction of the tongue, like a snake. Face distorted, pale, bluish, with blue lips. Contraction of jaws, with foam at mouth. Worse, before menses; from vomiting, contact. Better, during perspiration, drinking cold water.*	• Neuralgia of abdominal viscera. • Abdomen tense, hot and tender to touch; contracted • Hiccough preceding the spasms. • Nausea. Vomiting, relieved by drinking cold water; with colic, diarrhoea, spasms. • Strong metallic taste. When drinking, the fluid descends with gurgling sound. • Craves cool drink.
40.	**Quassia amara**	*Acts on gastric organs as a tonic. Pain in right intercostal muscles above the liver. Pressure and stitches in liver, and sympathetically in spleen.*	• Slight drawing in both hypochondria, with sensation as if abdomen empty and retracted to spinal column; **<** by deep breathing, with sensation as if he would have a stool. • Sticking pains between umbilicus and stomach. • Abdomen hard and distended • Peculiar beating through abdomen extending into extremities, with general nervous troubles. • Cirrhosis of liver with ascites.

S. No.	Medicines	General Indications	Characteristic particulars
41.	**Leptandra virginica**	*A liver remedy, with jaundice and black, tarry stools. Bilious states. Enfeebled portal circulation. Malarial conditions.*	• Aching in region of liver extending to spine, which feels chilly. • Burning distress in back part of liver and spine • Dull aching in liver, **<** near gallbladder. • Periodical liver derangement, every two or three months. • Sharp, distressing pains between navel and epigastrium. • Malignant disease of liver with black, tarry stools. Jaundice with clay-coloured stools. • Rumbling and distress in whole bowels, esp. in hypogastrium, with black stools.
42.	**Fel tauri**	*Increases the duodenal secretion, emulsifies fats and increases the peristaltic action of the intestines. Liquefies bile and acts as a purgative and cholagogue. Disordered digestion, diarrhoea, and pain in nape of neck are among its chief symptoms. Obstruction of gall ducts. Biliary calculi. Jaundice. Tendency to sleep after eating.*	• Eructations, gurgling in stomach and epigastric region. • Violent peristaltic movements.
43.	**Ceanothus americanus**	*A left-sided remedy generally. Anaemic patients where liver and spleen are at fault. Chronic bronchitis with profuse secretion. Active haemostatic, materially reducing the clotting of blood.*	• Pain in liver and back. • Immediately after dinner, dull pain in region of liver • Full feeling in region of liver. Unable to lie on left side. • Pain in liver **<** lying on right side • Sensitiveness in umbilical region with desire to relax abdominal muscles • Whole abdomen moves with the beat of heart. Bearing down in abdomen **<** after eating
44.	**Calcarean arsenicosum**	*Complaints in fat women around climacteric. Anger, anxiety. Desire for company. Confusion, delusions, illusions. Great depression. Fleshy women at climacteric, slightest emotion causing palpitation. Dyspnoea, with feeble heart. Chilliness. Albuminuria. Dropsy. Affections of spleen and mesenteric glands. Haemoglobin and red corpuscles are low.*	• Enlarged liver and spleen in children.

S. No.	Medicines	General Indications	Characteristic particulars
45.	**Cadmium sulphuricum**	*Indicated in very low forms of disease, like cholera, yellow fever, where, with exhaustion, vomiting, and extreme prostration, the disease runs deathward. Patients must keep quiet. Chilliness and coldness even when near the fire.*	• Abdomen sore, tender, and tympanitic. Region of liver sore. • Pain and pulsation in sides of abdomen. • Pain in abdomen with vomiting. • Symptoms of stomach and hypochondria **<** by walking or carrying burdens.
46.	**Urea pura**	*General uneasiness. Lumps. Enlarged glands. A hydrogogue diuretic in the treatment of dropsies*	• In right hypochondrium, a steady, dull sensation • Intolerable sensation in abdomen and burning of the skin
47.	**Calcarea carbonica**	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated.*	• Liver region painful when stooping. Cutting in abdomen; swollen abdomen. • Abdomen sensitive to slightest pressure. • Incarcerated flatulence. • Inguinal and mesenteric glands swollen and painful. • Cannot bear tight clothing around the waist. • Frequent sour eructations; sour vomiting. Dislike of fat. Loss of appetite when overworked.
48.	**Sulphur**	*Hot patient kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat, when the best selected remedy fails to improve. Worse, at rest, when standing, warmth in bed, washing, bathing, in morning, 11 am, night, from alcoholic stimulants, periodically. Better, dry, warm weather, lying on right side, from drawing up affected limbs.*	• Abdomen very sensitive to pressure; internal feeling of rawness and soreness. • Pain and soreness over liver. Colic after drinking. • Movements as of something alive. • Complete loss of, or excessive appetite. Putrid eructation. Food tastes too salty. • Drinks much, eats little. Milk disagrees. Great desire for sweets. Great acidity, sour eructation. Burning, painful, weight-like pressure.
49.	**Mercurius corrosivus**	*Face: Swollen. Red, puffy. Lips black, swollen. Sordes. Facial neuralgia within the bones. Worse, evening, night, acids, Better, while at rest.*	• Incessant, green, bilious vomiting. • Epigastrium very sensitive. • Bruised sensation; caecal region and transverse colon painful. Bloated; very painful to least touch. • Dysentery: tenesmus, not relieved by stool; incessant. Stool hot, bloody, slimy, offensive, with cutting pains and shreds of mucous membrane.

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CHAPTER

5

OBESITY

OBESITY

(ICD 10 code: E 66.0-E 66.9)
(ICD 11 code: 5B81.0-5B81.Z)

CASE DEFINITION

Obesity is a chronic complex disease defined by excessive fat deposits that can impair health. Obesity in ICD- 10 (and in ICD- 11) is defined as a body mass index (BMI) of 30 kg/m2 or higher and BMI between 25 and 30 kg/m^2 is defined as overweight. The WHO Asia -Pacific region defined BMI ≥ 23kg/m^2 as overweight and ≥ 25kg/m^2 as as Obesity. Obesity is defined as a body mass index (BMI) equal to or greater than the 95th percentile for age and sex.[1.]

INTRODUCTION **(Incidence/Prevalence, morbidity/mortality)**

- In 2022, 1 in 8 people in the world were living with obesity. 2.5 billion Adults (18 years and older) were overweight. Of these, 890 million were living with obesity.[2]
- As per National Family Health Survey-5 (NFHS-5), one in every four Indians is now having obesity. There are 135 million obese individuals in India. The prevalence of abdominal obesity in the country was found to be 40% in women and 12% in men.[3]
- In 2022, overweight affected around 37 million children under 5 globally, and over 390 million children and adolescents aged 5–19 years were overweight, including 160 million who were living with obesity – 75% of whom live in low- and middle-income countries. [4]
- Obesity and overweight are a major risk factor for non-communicable diseases such as heart disease, stroke, type 2 diabetes, PCOS, and certain cancers (endometrial, breast, ovarian, prostate, liver, gallbladder, kidney, and colon).[5] Therefore, Obesity is more effectively defined by assessing its linkage to morbidity and mortality.[6] The current guidelines, deal with management of both overweight and obesity.

CLINICAL EXAMINATION[7]

Persons presenting with overweight, or obesity must have a detailed history taken, a clinical examination performed, and appropriate investigations done (Figure – 1). This is done to identify the environmental, genetic and lifestyle factors responsible for obesity and at the same time identify impact of overweight and obesity on the individual, physically, mentally and socially.

Clinical History

- **Body weight history** in persons who are overweight or present with pre-obesity/obesity may begin with an assessment of body weight increases or reductions over the individual's lifetime (e.g., slow and gradual, rapid and sudden, or a combination) and factors influencing weight change. Short sleep duration and poor sleep quality may increase the risk of obesity, making it important to record sleep patterns in patients.[8]

- **A detailed family history** is important and often suggests a genetic predisposition.
- **Drug history** should be taken to identify possible drugs that may be contributing to weight gain, such as steroid hormones, antidepressants (tricyclics), antipsychotics (phenothiazines and butyrophenones), anticonvulsants (valproate and carbamazepine), lithium, and antihyperglycemics (insulin, sulfonylurea, and thiazolidinediones).
- **The psychological aspects of eating behaviour** should be explored, such as loneliness, boredom, or stress. Often obese persons express feelings of low self-esteem and depression. Eating disorders should be particularly sought.
- A thorough **Review of Systems** must be taken to assess any co-morbidities that are directly or indirectly related to obesity, to identify any evidence of endocrine disease as an occult aetiology of obesity.
- A thorough **examination of the patient's present dietary habits** is essential. This evaluation can be conducted by a dietitian. It should involve assessing the total daily calorie intake and determining the percentage of calories derived from fat. Individuals with obesity often show abnormal eating patterns. The eating disorders that have been most frequently studied in individuals with obesity are binge eating disorder and bulimia nervosa.
- **History pertaining to physical activity**. Physically active and fit individuals are considerably less likely to be obese than physically inactive and unfit individuals. Therefore, it's essential to gather comprehensive information to understand their current activity level, any past injuries or limitations, their exercise preference and Lifestyle Factors.

Clinical and imaging indicators of obesity

Apart from BMI, waist circumference, waist-hip ratio, and skin-fold thickness, the variations in lean muscle mass and body fat percentage are also assessed utilizing the body composition analyzer.[9]

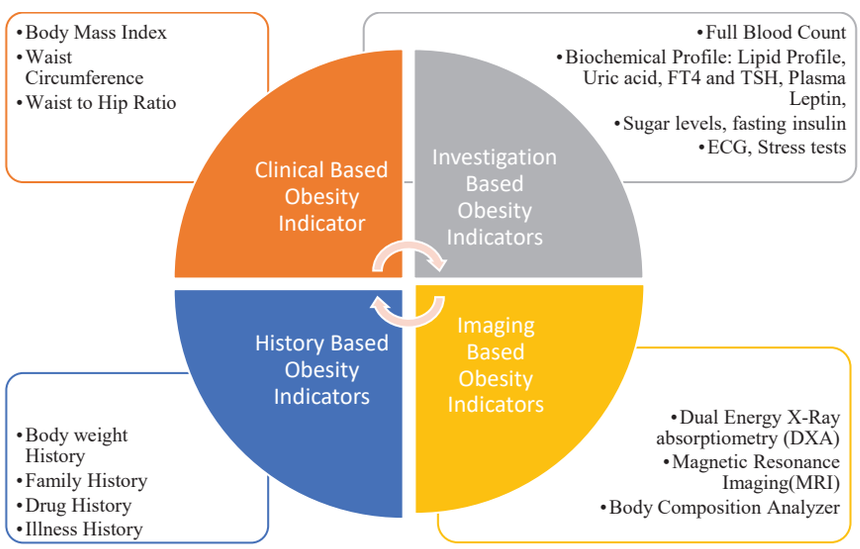


Figure 1 Assessments in overweight and obese persons

Physical Examination[10]

- Height.
- Weight.
- BMI.
- Waist Circumference, Hip circumference, neck circumference, wrist circumference
- Waist to Hip Ratio (WHR).
- Blood Pressure.
- Pulse.
- Percentage of body fat determined by skinfold thickness measurements.[11]
- Tongue examination (Size, Colour, Texture).
- Markers of insulin resistance- Skin tags, acanthosis nigricans.

Comorbidities and Complications[12]

Obesity and Overweight are associated with raised risk of disabilities and a number of comorbidities and complications [13] as listed in Table 1, which must be diagnosed timely.

Table 1 – Complications and Comorbidities.

SYSTEM	DISEASES
Respiratory	• Obstructive sleep apnoea (OSA) • Obesity Hypoventilation Syndrome (OHS)
Cardiovascular	• Coronary Heart Disease • Congestive Cardiac Failure • Hypertension
Cerebrovascular	• Stroke
Gastrointestinal	• Gastroesophageal Reflux Disease • Barrett's Oesophagus • Erosive Oesophagitis • Diverticular Disease • Oesophageal Cancer • Colon Cancer • Abdominal Hernia
Metabolic	• Dyslipidemia • Type 2 Diabetes Mellitus • Hyperinsulinemia • Metabolic Syndrome • Gout • Gestational Diabetes
Hepato-biliary	• NASH (Non-alcoholic steatohepatitis) • Liver Cirrhosis • Hepatocellular Carcinoma • Gallstone • Gall Bladder Cancer
Musculoskeletal	• Osteoarthritis
Cutaneous	• Acanthosis nigricans • Cutaneous fungal and yeast infections • Venous stasis

SYSTEM	DISEASES
Reproductive disorders	• Male: gynaecomastia • Female: Menstrual Irregularities, PCOS, Infertility
Cancer	• Male: Liver cancer, Pancreas cancer, Rectum cancer, Prostate • Female: Gall bladder, Bile duct, Breast, Ovary, Uterine, Cervix

DIFFERENTIAL DIAGNOSIS

Obesity is known to be multifactorial, occurring due to complex interactions occurring between genetics and environmental factors. Where genetic factors per se can affect lipid metabolism and adiposity, the endocrinal factors affecting metabolism may also have genetic and environmental causations.

Identification of underlying cause of overweight and obesity are the mainstay of its management and treatment.

Table 2: Differential diagnosis

S.No.	Condition	Features
1.	**Obesity due to lifestyle factors**	• Imbalanced diets and sedentary lifestyles are linked to weight gain and adiposity. Physical inactivity is a hallmark of sedentary living and is often associated with increased body weight. • Unhealthy eating patterns, including frequent consumption of fast food and sugary beverages, along with a low intake of fruits and vegetables, eating much more rapidly than usual, eating until uncomfortably full, and consuming large amounts of food when not physically hungry, are symptoms of Binge Eating and may contribute to the rising rates of obesity. • Snacking and reliance on fast food are recognized as significant contributors to childhood overweight and obesity[14]
2.	**Obesity due to endocrinal conditions**[15]	The mechanisms underlying the development of obesity vary according to the abnormalities of endocrine function, whilst at the same time, increase in body fats also tends to lead to abnormalities in endocrinal functions. Some endocrinal disorders associated with obesity are: • Hypothyroidism • Cushing's Syndrome • Insulinoma • Ovarian disorders, hyperovarian syndrome • Hypogonadism in men • Hypothalamic tumours or damage to this part of the brain as a consequence of irradiation, infection, or trauma
3.	**Obesity with genetic conditions** [16]	Genetic and epigenetic variations contribute to obesity by influencing the function of metabolic pathways in the body and regulating neural pathways and appetite centres. Subsequently, these variations influence insulin resistance, dyslipidaemia, inflammation, hypertension, and ectopic fat deposition-especially in the liver, which are the markers of obesity. Obesity can be syndromic due to

S.No.	Condition	Features
		• Chromosomal rearrangements, monogenic due to mutations in leptin signalling pathways or polygenic i.e. multiple mutations coding for proteins in skeletal and adipose tissues • Down's syndrome • Prader-Willi syndrome • WAGR syndrome • SIM1 syndrome • Bardet-Biedl syndrome • Fragile X syndrome • Cohen syndrome • Albright hereditary Osteodystrophy/PHP Type 1 a • Alstrom syndrome • Carpenter syndrome • Chudley-Lowry syndrome, etc.
4.	**Drugs-Induced obesity**[17, 18]	Weight gain or body fat redistribution are common side effects of many widely used drugs, some of which are given below: • **Anticonvulsants:** Sodium Valproate, Phenytoin • **Hypoglycaemics:** Insulin, Sulfonylurea (SU), Thiazolidinediones • **Beta-Blockers**: Atenolol, Metoprolol, Propranolol • **Antidepressants:** Amitriptyline, Nortriptyline, Imipramine, Desipramine, Dosulepin, Doxepin, Clomipramine • **Antipsychotics:** Haloperidol, Perphenazine

INVESTIGATIONS[19]

The role of laboratory and other investigations is to exclude possible underlying causes of overweight/ obesity and its complications. Some key investigations that can be conducted for identifying causes / complications of overweight and obesity are as follows:

Essential

- Complete Blood Count/ESR
- Fasting lipid profile
- Fasting plasma glucose
- Fasting Insulin levels
- Serum uric acid
- Serum FT4 and TSH
- HbA1C

Advanced

- 24-hour urine free cortisol
- Electrolyte Panel test
- ECG and chest x-ray
- Respiratory function tests
- Liver function test
- USG whole abdomen and pelvis
- Plasma Leptin
- Test For Insulin Resistance (Insulin Sensitivity Test, Insulin Tolerance Test)
- Hormonal Assay (FH, LH, Prolactin, Androstenedione, Progesterone Testosterone) in cases of Females

DIAGNOSTIC CRITERIA

Diagnosis of overweight and obesity is made by measuring people's weight and height and by calculating the body mass index (BMI). BMI equals the ratio of weight in kilograms divided by height in meters squared (kg/m^2): weight (kg)/height (m^2).

The BMI categories for defining obesity vary by age and gender in infants, children, and adolescents.

- Obesity in adults is defined as a BMI greater than or equal to 30; overweight is defined as a BMI greater than or equal to 25
- In children aged below 5 years, overweight is 2 standard deviations and obesity is greater than 3 standard deviations above the WHO Growth Reference median[20]
- In children aged between 5–19 years, overweight is 1 standard deviation and obesity is greater than 2 standard deviations above the WHO Growth Reference median[21]

The classification of body weight as per BMI in adults and children is given in Tables 3 & 4 respectively.

Table – 3 Classification of obesity by BMI in adults[22]

CLASSIFICATION	OBESITY CLASS	BMI
OBESITY	I	30.0-34.9
Severe Obesity	II	35.0-39.9
Morbid Obesity	III	40.0-49.9
Severe Morbid Obesity	III	>50

Proposed classification of weight by BMI in adult Asians

Classification	BMI (kg/m^2)
Underweight	<18.5
Normal range	18.5-22.9
Overweight	23-24.9
Obese I	25-29.9
Obese II	≥ 30

Reference: World Health Organization, author. The Asia-Pacific perspective: redefining obesity and its treatment. WHO; 2000.

Table – 4 Classification of BMI in children[23]

CLASSIFICATION	BMI
Overweight	85th percentile to less than the 95th percentile
Obesity	95th percentile or greater
Severe Obesity	120% of the 95th percentile or greater 35 kg/m^2

The BMI percentile chart for children aged 6 to 18, as provided by RBSK, is given at Annexure-I

The body mass index is a surrogate marker of fatness and additional measurements, such as the waist circumference, are also used to diagnose obesity.[24] Measures of overweight and obesity and their cut off for Indian population are given in Table – 5.

Table – 5 Indian cut-offs for Indicators[25]

PARAMETER	INDIAN CUT-OFF MALE	INDIAN CUT-OFF FEMALE
Waist Circumference (WC)(cm)	>90	>80
Waist-Hip Ratio (WHR)	>0.9	>0.85
Wrist circumference (cm)	>16.5	>15.7
Neck circumference (NC) (cm)	>35.25	>34.25
Body Fat Percentage	>25%	>30%
Body Mass Index (kg/m^2)	>23 Overweight, >25 – Obesity	

The 5th National Family Health Survey (NFHS) conducted in India (2019–21) assessed abdominal obesity through waist circumference for the first time. The survey identified that the prevalence of abdominal obesity was high in India. Overall, 40% of women and 12% of men were abdominally obese in the country, but 49.3% of women in the age group of 30–39 and 56.7% of women in the age group of 40–49 crossed the cut-off mark. Measured on BMI, only 23% of the women crossed the cut-off mark for obesity. Thus, some women who have healthy BMI also happened to have abdominal obesity.[26]

Types of Body Fat Distribution[27,28]

The distribution of accumulating adipose tissue varies among individuals but can generally be classified as lower body, abdominal subcutaneous (underneath the skin), overall coverage, or visceral fat (Figure 2)

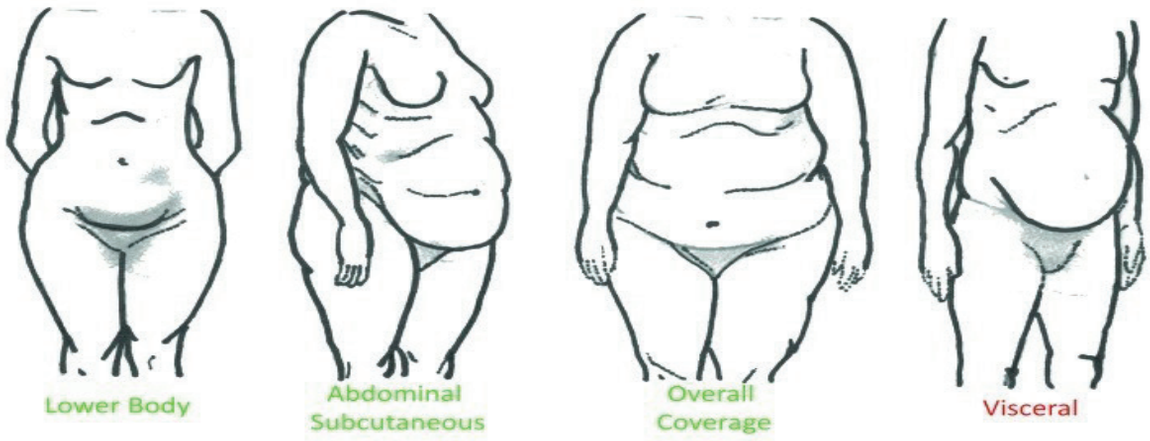


Figure – 2 Body fat distribution is characterized as **Lower body:** fat storage around the buttocks, hips, and thighs; **Abdominal subcutaneous:** subcutaneous fat storage around the stomach and chest; **Overall coverage:** fat accumulation in the arms, breast, thighs, buttocks, lower back, and breast, **Visceral:** Intra-abdominal fat deposition among organs such as the

intestines, stomach, liver, and pancreas. Fat distributed within the visceral cavity is highly associated with obesity-related health consequences whereas other fat distribution is not.

PRINCIPLES OF MANAGEMENT

The principles of management include assessment of signs and symptoms before initiating treatment and the need for management through conventional treatment for associated co-morbidities. If the patient is already under standard care, the physician may advice to continue the same along with add-on homoeopathy and can be assessed for the same in the follow ups for tapering or discontinue the treatment in consultation with the conventional physician.

Red Flags

- Unintentional weight gain
- Breathlessness
- Sleep Apnoea syndrome
- Rapid Onset of weight gain.
- Body Mass Index (BMI) greater than 40 kg/m^2 – Morbid obesity
- Weight gain associated with other systemic complications.
- Cardiac arrythmia and unstable cardiac conditions
- Malignancies associated with obesity

Preventive Management

Measures addressing dietary intake, home nutrition environment, diet knowledge, physical self-concept, and body perception, barriers for exercise are known to prevent obesity particularly in the younger age group[29,30]

- The primary goals of treatment are to improve obesity-related comorbid conditions, improve quality of life and reduce the risk of developing future obesity-related complications.
- Obesity in children and adolescents also requires an interprofessional team approach. Failure to adequately diagnose and treat overweight/ obesity results in comorbid medical conditions and the likelihood that a child will become an obese adult.[31]
- Patients who present with obesity-related comorbidities and who would benefit from weight-loss intervention should be managed proactively.

At Level 1- Solo physician clinic, health clinic, PHC (optimal standard of treatment where technology and resources are limited)

Clinical diagnosis: Based on anthropometry, clinical assessment of risk of co-morbidities and complications, the following investigations may be conducted:

- Complete Blood Count/ESR
- Fasting lipid profile
- Fasting plasma glucose
- HbA1C
- Serum uric acid
- Serum FT4 and TSH

Management

Management of obesity includes treatment of obesity and the underlying cause to reduce risk of co-morbidities and complications.

Patients approach homoeopathic physicians for treatment of overweight, obesity or for endocrinal or metabolic conditions responsible for obesity. The selection of medicine is based upon the individualization by using holistic approach and the homoeopathic remedy is selected to treat not only obesity but to address its underlying cause and individual susceptibility. Pre-clinical studies on obesity and Hyperlipidemia have indicated a positive effect of homoeopathy in managing energy imbalance.

A Study on Phytolacca Berry on rats revealed that the Phytolacca berry extract had significant anti-obesity activity by reducing excess body weight, and cholesterol and triglyceride concentrations[32]. A study with Fucus Vesiculosus on rats demonstrated that treatment with Fucus Vesiculosus prevented obesity in the rats, while maintaining biochemical and physical parameters at normal levels. In a short review on Dyslipidemia, four preclinical, three observational studies, and two case records were identified. The four preclinical studies conducted on chicken and diabetic rats demonstrated the maintenance of biochemical and physical parameters at normal levels. In a separate observational study on Lipoproteinemia, improvements were observed not only in pathological parameters but also in associated symptoms of the patients. In another instance, two case reports on Hyperlipidemia indicated the efficacy of homeopathic remedies[33].

Additionally, studies have reported benefit of homoeopathic treatment in management of obesity related endocrinal conditions especially when individualized constitutional homoeopathic medicine prescribed. A review found that among the RCTs included, one of the studies that used constitutional homoeopathic treatment reported that homoeopathy was superior to placebo.[34]

The two quasi experimental studies[35,36] reported improvement in patients receiving individualized homoeopathic treatment. A study revealed that the combined treatment of the homeopathic remedy Thyroidinum 3X and Levothyroxine yielded beneficial outcomes. Notably, significant weight loss and relief from symptoms were observed with Thyroidinum 3X[37] . A case series on PCOS indicated that homeopathic treatment effectively alleviated various symptoms associated with the condition. This treatment restored regular menstrual cycles, reduced excessive weight gain, and enhanced fertility, ultimately leading to an improved quality of life[38].

Although, no studies on obesity in children have been conducted so far, studies have reported benefit of homoeopathy in Subclinical Hypothyroidism in adolescent children. An exploratory randomized controlled trial demonstrated a statistically significant decrease in serum TSH values and antiTPO titres, suggesting that homeopathic intervention not only holds potential in treating subclinical hypothyroidism with or without antiTPO antibody but also in potentially preventing its progression to overt hypothyroidism[39].

Homoeopathic treatment includes constitutional medicines, specific remedies, and tissue remedies, which can be used for treatment of overweight and obese persons, based on symptom similarity.

- Constitutional medicines encompass the combined body type, physical attributes, mental state, and temperament of the patient.
- Specific medicines are those prescribed for particular conditions and are typically administered in lower potencies or as mother tinctures.

The flow-diagram for management is placed at Annexure II.

Some most frequently used medicines are given in Table – 6 (Indications of medicines is placed at Annexure III)[40,41,42,43]

Table - 6 Most commonly used homoeopathic medicines.

S. No.	Medicines*	Dose form*	Dose*	Time*	Duration*	Adjuvants*
1.	**Ammonium muriaticum**	*****Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.				Organ specific medicines (lower trituration): • Phytolacca berry in mother tincture or in tablets • Fucus vesiculosus • Viola odorata • Tussilago fragrans Other Schussler's biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.
2.	**Antimonium crudum**					
3.	**Arsenicum album**					
4.	**Baryta carbonica**					
5.	**Calcarea arsenica**					
6.	**Calcarea carbonica**					
7.	**Capsicum annum**					
8.	**Conium maculatum**					
9.	**Ferrum metallicum.**					
10.	**Graphites**					
11.	**Kalium carbonicum**					
12.	**Lachesis**					
13.	**Lycopodium clavatum**					
14.	**Mercurius**					
15.	**Nux vomica**					
16.	**Petroleum**					
17.	**Pulsatilla nigricans**					
18.	**Sabadilla**					
19.	**Silicea**					
20.	**Sulphur**					
21.	**Sepia**					
22.	**Thuja occidentalis**					

Do's and Don'ts while taking homoeopathic medicines

Patients taking homoeopathic medicine are advised not to eat, drink, smoke, or clean their teeth for at least 15 minutes to half an hour before or after taking medication and to avoid all products containing menthol and camphor. These recommendations are in line with standard British homoeopathic practice.[44]

Recommended Diet and Lifestyle[45,46]

Overweight and obesity care involves attention to three essential elements of lifestyle:

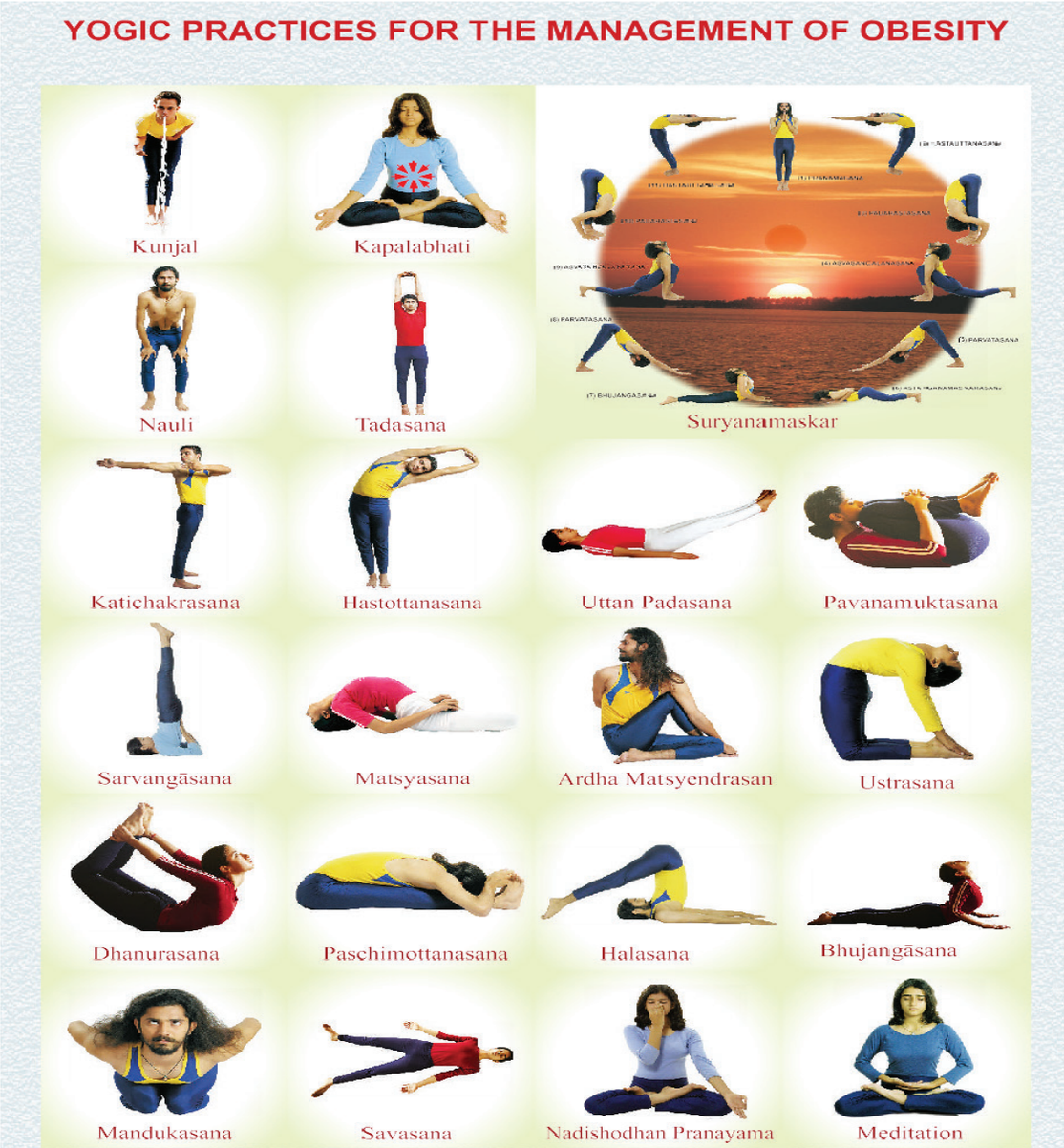
- Dietary habits,
- Physical activity, and
- Behaviour modification.

Because overweight is fundamentally a condition of energy imbalance, all patients need to learn how and when energy is consumed (diet), how and when energy is expended (physical activity), and how to incorporate this information into their daily lives (behavioural therapy).

1. **Diet Therapy**
    - The primary focus of diet therapy is to reduce overall calorie consumption.
    - A calorie deficit diet is advised, taking into consideration nutritional requirements.
    - The calorie deficit can be instituted through dietary substitutions or alternatives. Examples include choosing smaller portion sizes, eating more fruits and vegetables, consuming more whole-grain cereals, selecting leaner cuts of meat and skimmed dairy products.
    - Adequate intake of micronutrients and fibre-rich such as pulses, nuts, chia-seeds, flax seeds, whole grains including millets, vegetables and fruits helps to maintain levels of blood glucose, insulin, cholesterol as well as triglycerides. Use of healthy cooking methods like grilling, baking, steaming or sautéing with minimal oil instead of frying is recommended.
    - A daily calorie deficit of 500-1000 kcal is commonly recommended which typically results in a weight loss of 0.5-1kg per week. Total calorie intake is 1200-1500 kcal /day for women, 1500-1800 kcal/day for men .These values may vary and should be adjusted to individual needs to avoid nutritional deficiencies. A reduction of half a kilogram body weight per week is considered to be safe. Approaches of rapid weight loss should be avoided. Consuming higher amounts of protein (15% energy from protein) may be important during typical energy deficient weight loss diets (i.e. 500 to 750 kilo calorie per day deficit) to preserve muscle mass. Nevertheless, the protective effect of higher protein diets on muscle mass is compromised if the energy deficit is more than 40% of daily energy needs and the dietary proteins are oxidised for energy production. Weight reducing diet should be nutrient rich and nutritionally balanced, with adequate intake of micro-nutrients and fibre rich foods.
    - The Yogic diet, popularly known as Satvik diet is the most preferred diet in obese condition. Satvik diet contains more of fresh fruits and vegetables in its natural form, soup etc. Rajasik foods like fried food items, spicy foods, soft drinks and beverages, fast foods etc, should be limited.[45]
    - Shift to healthy snacking such as fruits, vegetables and sprouts instead of cakes, biscuits and fried snacks.
    - Have regular meals at fixed interval.

2. Physical Activity Therapy

- A combination of dietary modification and increased physical activity or exercise is the most effective behavioural approach for the treatment of obesity. The most important role of exercise appears to be in the maintenance of weight loss.[47]
- At least 150 minutes aerobic physical activity (e.g., brisk walking) per week (equivalent to 30 minutes per day for 5 days of the week) for initial weight loss, increasing to round 200 to 300 minutes per week to maintain body weight and prevent weight regain is recommended.[48] Exercise intensity and duration should be increased gradually over a period of time. [49]
- Exercise for weight reduction goes beyond being simply physically active during the day, both in term of type and duration of activity or exercise.
- However, initiating type and duration of exercise and gradual increase in physical activity needs to be undertaken with due consideration of the overall health condition, including systemic complications of the individual patient.
- Yoga practices can reduce weight and also improve stress, endocrinal imbalances and other factors associated with obesity. Yoga or physical exercises are suggested to be undertaken under supervision of a trained therapist.
- Yogic practices include[45]:
  - Om chanting and Prayer
  - Shodhana Kriyas: Kapalabhati, Kunjal, Agnisara, Nauli
  - Suryanamaskar
  - Sukshma Vyayama
  - Yogasanas: Tadasana, Katichakrasana, UrdhwaHastottanasana, Pawanamuktasana, Sarvangasana, Matsyasana, Halasana, Bhujangasana, Dhanurasana, UttanPadasana, Paschimottanasana, Ardha Matsyendrasana, Ushtrasana, Mandukasana, Shavasana
  - Pranayama: Nadishodhana, Suryabhedi Pranayama, Bhramari, Sitali, Bhastrika
  - Special Practice: Yoga Nidra
  - Dhyana (Meditation): Om Chanting, Om Meditation, and Anapana Meditation
  - Yama and Niyama: This will help to have a controlled behaviour and would help to pacify the wandering mind and in turn help to have control over the eating and other habits of a person.
- Physical activity can be in the form of moderate to vigorous intensity aerobic activity, resistance training and muscle strengthening exercises. [50.]



3. Behavioural therapy

- Cognitive behavioural therapy can change and reinforce new dietary and physical activity behaviours.
- Strategies include self-monitoring techniques (e.g., journaling, weighing, and measuring food and activity); stress management; stimulus control (e.g., using smaller plates, not eating in front of the television or in the car); social support; problem solving; and cognitive restructuring to help patients develop more positive and realistic thoughts about themselves.
- When recommending any behavioural lifestyle change, the patient should be asked to identify what, when, where, and how the behavioural change will be performed.[51]
- Encourage breast feeding as the child who gets proper breast feeding is less likely to develop obesity in the later age.

Restricted Diet and Lifestyle[45]

1. Alcoholic drinks may be avoided.
2. Reducing consumption of fried foods and other foods with added fats and oils and drinking water instead of sugar-sweetened beverages.
3. Avoid fatty meat
4. Avoid stress.
5. Do not read or watch television while eating.
6. Do not keep nibbling between meals; eat slowly and chew the food properly.
7. Avoid smoking.

Follow up (every 15 days or earlier as per need)

Review should include:

- Monitoring the person's symptoms and the ongoing impact of the condition on their activities of daily living and quality of life.
- Monitoring of signs and symptoms, diet, daily activity, change in weight, anthropometry
- Assessment of energy balance
- Assessment of motivation levels to continue with lifestyle modifications
- Monitoring the long-term course of the condition.
- Discussing the person's knowledge of the condition, any concerns they have, their personal preferences, and their ability to access services.
- Reviewing the effectiveness and tolerability of all treatments.
- Self-management support.

Referral criteria

- Non-response to treatment, no change in weight, anthropometry despite negative energy balance.
- Sudden loss or gain of more than 10% body weight.
- Uncontrolled endocrinal profile.
- Morbid obesity where it is difficult to insinuate lifestyle changes.
- Evidence of an increase in severity/complications
- Diagnostic uncertainty
- Co-morbidities, such as cardiac disease.
- Substantial impact on their quality of life and activities of daily living.

At level 2- CHC/ small hospitals (10-20 bedded hospitals with basic facilities of routine investigations).

Clinical Diagnosis: Same as level 1

- Clinical assessment of body fat percentage

Investigations:

- 24-hour urine free cortisol
- ECG and Chest X-ray
- Respiratory function tests
- Test For Insulin Resistance (Fasting plasma insulin)
- Serum Electrolytes
- USG whole abdomen and pelvis

Management: Same as Level 1. For the patients referred from Level-1, treatment given in Level-1 may be continued if appropriate for the presenting condition or the case may be reassessed for the totality of symptoms and treatment may be given accordingly. For new cases at this level, the medications mentioned for Level-1 may also be considered, however, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

- Assessment of risk of comorbidities
- Psychological support for behaviour modification
- Supervised regimen for physical activity
- Homoeopathic treatment for overweight/ obesity and its underlying cause and comorbidities

Recommended diet and lifestyle: Same as Level 1

Restricted diet and lifestyle: Same as Level 1

Follow up (every 15 days or earlier as per need)

Referral criteria

- Same as mentioned earlier at Level 1, plus
- Psychological imbalance
- Suspected life-threatening complications such as heart failure

At Level 3- Ayush hospital attached to teaching institute, district level/ integrated state Ayush hospital, tertiary care hospital, tertiary care allopathic hospital having Ayush facilities), multiple departments/ facilities for diagnosis and interventions. Must provide additional facilities like dieticians, counselling, exercise therapy).

Clinical Diagnosis: Same as levels 1 & 2. Confirm diagnosis and severity with the help of the following investigations:

- Treadmill Test or Exercise stress Test to evaluate the efficacy of functioning of heart during exercise

Management: Same as Levels 1 & 2. For the patients referred from Level 1 or 2, treatment given in Level-1 &/or 2 may be continued if appropriate for the presenting condition or the case may be reassessed for identification of causes of overweight / obesity and the totality of symptoms, and the treatment may be given accordingly. For new cases at this level, the totality of symptoms presented by the patient is the sole indicative and guide for treating each patient.

Integrated care

Homoeopathic treatment can be integrated with pharmacotherapy[51], directed towards the causation of obesity. For nutritional obesity adjuvant pharmacologic treatments can be considered for patients with a BMI ≥ 30 kg/m^2 or for patients with a BMI ≥ 27 kg/m^2 who have concomitant obesity-related diseases and for whom dietary and physical activity therapy has not been successful. Medications for obesity fall into two major categories: those that affect appetite and those that inhibit gastrointestinal fat absorption. Homoeopathic treatment can be integrated with post-surgical treatment to sustain weight loss.

In addition to the level 1 and level 2 management strategies, homoeopathy has a number of remedies that can ease pain and other symptoms in patients who have not responded to treatment due to a lack of symptoms, co-morbid conditions, or the use of other immune suppressive, oral hypoglycaemic agents, or antihypertensive. Medications can therefore be prescribed based on the sphere of action or keynote symptoms as a part of supportive management in these disorders as well as other advanced pathological states. A few homoeopathic medicines which can be considered as per indications are given below:

Table: 7

<table>
<tr><th>S. No.</th><th>Medicines*</th><th>Dose form*</th><th>Dose*</th><th>Time*</th><th>Duration*</th><th>Adjuvants*</th></tr>
<tr><td>1.</td><td>Ammonium bromatum</td><td colspan="4" rowspan="9">*Varies as per the need of the case depending upon various factors such as age, chronicity of complaints, severity (acute or chronic), stage and site of disease, nature of medicine, etc.</td><td rowspan="9">Organ specific medicines (lower trituration):
• Phytolacca Berry in mother tincture or in tablets
• Fucus Vesiculosus
• Viola Odorata
• Tussilago Fragrans

Other Schussler’s biochemic remedies (Calcarea sulphurica, Calcarea phosphoricum, Ferrum phosphoricum, Kalium muriaticum, Kalium phosphoricum, Kalium sulphuricum, Magnesia phosphorica, Natrum muriaticum, Natrum phosphoricum, Natrum sulphuricum, Silicea) may also be prescribed as per the need of the case.</td></tr>
<tr><td>2.</td><td>Agaricus muscarius</td></tr>
<tr><td>3.</td><td>Asafoetida</td></tr>
<tr><td>4.</td><td>Badiaga</td></tr>
<tr><td>5.</td><td>Clematis erecta</td></tr>
<tr><td>6.</td><td>Crocus sativus</td></tr>
<tr><td>7.</td><td>Guaiacum</td></tr>
<tr><td>8.</td><td>Senega</td></tr>
<tr><td>9.</td><td>Thyroidinum</td></tr>
</table>

Recommended diet and lifestyle: Same as Levels 1& 2

Restricted diet and lifestyle: Same as Levels 1& 2

Follow up (every 15 days or earlier as per need)

Referral Criteria

Same as mentioned earlier at Level 2, plus

- Morbid obesity not responding to treatment
- Uncontrolled hypertension
- Worsening Hypertriglyceridemia
- Worsening insulin resistance and hyperglycaemia
- Suspected Cardiac arrythmias
- Suspected Polycythemia
- Other modalities can be considered depending on the case and to rehabilitate properly.

RBSK_BMI for Age

WHO Simplified field tables– BMI for age 6 to18 years (z-scores)

Refer any child whose BMI for age and sex is ><3 SD.

BMI-for-age GIRLS 5 to 19 years (z-scores)							Age in		BMI-for-age BOYS 5 to 19 years (z-scores)						
-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD	Year: Month	Months	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
11.8	12.7	13.9	15.2	16.9	18.9	21.3	5:01	61	12.1	13	14.1	15.3	16.6	18.3	20.2
11.8	12.7	13.9	15.2	16.9	18.9	21.4	5:02	62	12.1	13	14.1	15.3	16.6	18.3	20.2
11.8	12.7	13.9	15.2	16.9	18.9	21.5	5:03	63	12.1	13	14.1	15.3	16.7	18.3	20.2
11.8	12.7	13.9	15.2	16.9	18.9	21.5	5:04	64	12.1	13	14.1	15.3	16.7	18.3	20.3
11.7	12.7	13.9	15.2	16.9	19	21.6	5:05	65	12.1	13	14.1	15.3	16.7	18.3	20.3
11.7	12.7	13.9	15.2	16.9	19	21.7	5:06	66	12.1	13	14.1	15.3	16.7	18.4	20.4
11.7	12.7	13.9	15.2	16.9	19	21.7	5:07	67	12.1	13	14.1	15.3	16.7	18.4	20.4
11.7	12.7	13.9	15.3	17	19.1	21.8	5:08	68	12.1	13	14.1	15.3	16.7	18.4	20.5
11.7	12.7	13.9	15.3	17	19.1	21.9	5:09	69	12.1	13	14.1	15.3	16.7	18.4	20.5
11.7	12.7	13.9	15.3	17	19.1	22	5:10	70	12.1	13	14.1	15.3	16.7	18.5	20.6
11.7	12.7	13.9	15.3	17	19.2	22.1	5:11	71	12.1	13	14.1	15.3	16.7	18.5	20.6
11.7	12.7	13.9	15.3	17	19.2	22.1	6:00	72	12.1	13	14.1	15.3	16.8	18.5	20.7
11.7	12.7	13.9	15.3	17	19.3	22.2	6:01	73	12.1	13	14.1	15.3	16.8	18.6	20.8
11.7	12.7	13.9	15.3	17	19.3	22.3	6:02	74	12.2	13.1	14.1	15.3	16.8	18.6	20.8
11.7	12.7	13.9	15.3	17.1	19.3	22.4	6:03	75	12.2	13.1	14.1	15.3	16.8	18.6	20.9
11.7	12.7	13.9	15.3	17.1	19.4	22.5	6:04	76	12.2	13.1	14.1	15.4	16.8	18.7	21
11.7	12.7	13.9	15.3	17.1	19.4	22.6	6:05	77	12.2	13.1	14.1	15.4	16.9	18.7	21
11.7	12.7	13.9	15.3	17.1	19.5	22.7	6:06	78	12.2	13.1	14.1	15.4	16.9	18.7	21.1
11.7	12.7	13.9	15.3	17.2	19.5	22.8	6:07	79	12.2	13.1	14.1	15.4	16.9	18.8	21.2
11.7	12.7	13.9	15.3	17.2	19.6	22.9	6:08	80	12.2	13.1	14.2	15.4	16.9	18.8	21.3
11.7	12.7	13.9	15.4	17.2	19.6	23	6:09	81	12.2	13.1	14.2	15.4	17	18.9	21.3
11.7	12.7	13.9	15.4	17.2	19.7	23.1	6:10	82	12.2	13.1	14.2	15.4	17	18.9	21.4
11.7	12.7	13.9	15.4	17.3	19.7	23.2	6:11	83	12.2	13.1	14.2	15.5	17	19	21.5
11.8	12.7	13.9	15.4	17.3	19.8	23.3	7:00	84	12.3	13.1	14.2	15.5	17	19	21.6
11.8	12.7	13.9	15.4	17.3	19.8	23.4	7:01	85	12.3	13.2	14.2	15.5	17.1	19.1	21.7
11.8	12.8	14	15.4	17.4	19.9	23.5	7:02	86	12.3	13.2	14.2	15.5	17.1	19.1	21.8
11.8	12.8	14	15.5	17.4	20	23.6	7:03	87	12.3	13.2	14.3	15.5	17.1	19.2	21.9
11.8	12.8	14	15.5	17.4	20	23.7	7:04	88	12.3	13.2	14.3	15.6	17.2	19.2	22
11.8	12.8	14	15.5	17.5	20.1	23.9	7:05	89	12.3	13.2	14.3	15.6	17.2	19.3	22
11.8	12.8	14	15.5	17.5	20.1	24	7:06	90	12.3	13.2	14.3	15.6	17.2	19.3	22.1
11.8	12.8	14	15.5	17.5	20.2	24.1	7:07	91	12.3	13.2	14.3	15.6	17.3	19.4	22.2
11.8	12.8	14	15.6	17.6	20.3	24.2	7:08	92	12.3	13.2	14.3	15.6	17.3	19.4	22.4
11.8	12.8	14.1	15.6	17.6	20.3	24.4	7:09	93	12.4	13.3	14.3	15.7	17.3	19.5	22.5
11.9	12.9	14.1	15.6	17.6	20.4	24.5	7:10	94	12.4	13.3	14.4	15.7	17.4	19.6	22.6
11.9	12.9	14.1	15.7	17.7	20.5	24.6	7:11	95	12.4	13.3	14.4	15.7	17.4	19.6	22.7
11.9	12.9	14.1	15.7	17.7	20.6	24.8	8:00	96	12.4	13.3	14.4	15.7	17.4	19.7	22.8
11.9	12.9	14.1	15.7	17.8	20.6	24.9	8:01	97	12.4	13.3	14.4	15.8	17.5	19.7	22.9
11.9	12.9	14.2	15.7	17.8	20.7	25.1	8:02	98	12.4	13.3	14.4	15.8	17.5	19.8	23
11.9	12.9	14.2	15.8	17.9	20.8	25.2	8:03	99	12.4	13.3	14.4	15.8	17.5	19.9	23.1
11.9	13	14.2	15.8	17.9	20.9	25.3	8:04	100	12.4	13.4	14.5	15.8	17.6	19.9	23.3
12	13	14.2	15.8	18	20.9	25.5	8:05	101	12.5	13.4	14.5	15.9	17.6	20	23.4
12	13	14.3	15.9	18	21	25.6	8:06	102	12.5	13.4	14.5	15.9	17.7	20.1	23.5
12	13	14.3	15.9	18.1	21.1	25.8	8:07	103	12.5	13.4	14.5	15.9	17.7	20.1	23.6
12	13	14.3	15.9	18.1	21.2	25.9	8:08	104	12.5	13.4	14.5	15.9	17.7	20.2	23.8
12	13.1	14.3	16	18.2	21.3	26.1	8:09	105	12.5	13.4	14.6	16	17.8	20.3	23.9
12.1	13.1	14.4	16	18.2	21.3	26.2	8:10	106	12.5	13.5	14.6	16	17.8	20.3	24
12.1	13.1	14.4	16.1	18.3	21.4	26.4	8:11	107	12.5	13.5	14.6	16	17.9	20.4	24.2
12.1	13.1	14.4	16.1	18.3	21.5	26.5	9:00	108	12.6	13.5	14.6	16	17.9	20.5	24.3
12.1	13.2	14.5	16.1	18.4	21.6	26.7	9:01	109	12.6	13.5	14.6	16.1	18	20.5	24.4
12.1	13.2	14.5	16.2	18.4	21.7	26.8	9:02	110	12.6	13.5	14.7	16.1	18	20.6	24.6
12.2	13.2	14.5	16.2	18.5	21.8	27	9:03	111	12.6	13.5	14.7	16.1	18	20.7	24.7
12.2	13.2	14.6	16.3	18.6	21.9	27.2	9:04	112	12.6	13.6	14.7	16.2	18.1	20.8	24.9
12.2	13.3	14.6	16.3	18.6	21.9	27.3	9:05	113	12.6	13.6	14.7	16.2	18.1	20.8	25

BMI-for-age GIRLS 5 to 19 years (z-scores)							Age in		BMI-for-age BOYS 5 to 19 years (z-scores)						
-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD	Year: Month	Months	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
12.2	13.3	14.6	16.3	18.7	22	27.5	9:06	114	12.7	13.6	14.8	16.2	18.2	20.9	25.1
12.3	13.3	14.7	16.4	18.7	22.1	27.6	9:07	115	12.7	13.6	14.8	16.3	18.2	21	25.3
12.3	13.4	14.7	16.4	18.8	22.2	27.8	9:08	116	12.7	13.6	14.8	16.3	18.3	21.1	25.5
12.3	13.4	14.7	16.5	18.8	22.3	27.9	9:09	117	12.7	13.7	14.8	16.3	18.3	21.2	25.6
12.3	13.4	14.8	16.5	18.9	22.4	28.1	9:10	118	12.7	13.7	14.9	16.4	18.4	21.2	25.8
12.4	13.4	14.8	16.6	19	22.5	28.2	9:11	119	12.8	13.7	14.9	16.4	18.4	21.3	25.9
12.4	13.5	14.8	16.6	19	22.6	28.4	10:00	120	12.8	13.7	14.9	16.4	18.5	21.4	26.1
12.4	13.5	14.9	16.7	19.1	22.7	28.5	10:01	121	12.8	13.8	15	16.5	18.5	21.5	26.2
12.4	13.5	14.9	16.7	19.2	22.8	28.7	10:02	122	12.8	13.8	15	16.5	18.6	21.6	26.4
12.5	13.6	15	16.8	19.2	22.8	28.8	10:03	123	12.8	13.8	15	16.6	18.6	21.7	26.6
12.5	13.6	15	16.8	19.3	22.9	29	10:04	124	12.9	13.8	15	16.6	18.7	21.7	26.7
12.5	13.6	15	16.9	19.4	23	29.1	10:05	125	12.9	13.9	15.1	16.6	18.8	21.8	26.9
12.5	13.7	15.1	16.9	19.4	23.1	29.3	10:06	126	12.9	13.9	15.1	16.7	18.8	21.9	27
12.6	13.7	15.1	17	19.5	23.2	29.4	10:07	127	12.9	13.9	15.1	16.7	18.9	22	27.2
12.6	13.7	15.2	17	19.6	23.3	29.6	10:08	128	13	13.9	15.2	16.8	18.9	22.1	27.4
12.6	13.8	15.2	17.1	19.6	23.4	29.7	10:09	129	13	14	15.2	16.8	19	22.2	27.5
12.7	13.8	15.3	17.1	19.7	23.5	29.9	10:10	130	13	14	15.2	16.9	19	22.3	27.7
12.7	13.8	15.3	17.2	19.8	23.6	30	10:11	131	13	14	15.3	16.9	19.1	22.4	27.9
12.7	13.9	15.3	17.2	19.9	23.7	30.2	11:00	132	13.1	14.1	15.3	16.9	19.2	22.5	28
12.8	13.9	15.4	17.3	19.9	23.8	30.3	11:01	133	13.1	14.1	15.3	17	19.2	22.5	28.2
12.8	14	15.4	17.4	20	23.9	30.5	11:02	134	13.1	14.1	15.4	17	19.3	22.6	28.4
12.8	14	15.5	17.4	20.1	24	30.6	11:03	135	13.1	14.1	15.4	17.1	19.3	22.7	28.5
12.9	14	15.5	17.5	20.2	24.1	30.8	11:04	136	13.2	14.2	15.5	17.1	19.4	22.8	28.7
12.9	14.1	15.6	17.5	20.2	24.2	30.9	11:05	137	13.2	14.2	15.5	17.2	19.5	22.9	28.8
12.9	14.1	15.6	17.6	20.3	24.3	31.1	11:06	138	13.2	14.2	15.5	17.2	19.5	23	29
13	14.2	15.7	17.7	20.4	24.4	31.2	11:07	139	13.2	14.3	15.6	17.3	19.6	23.1	29.2
13	14.2	15.7	17.7	20.5	24.5	31.4	11:08	140	13.3	14.3	15.6	17.3	19.7	23.2	29.3
13	14.3	15.8	17.8	20.6	24.7	31.5	11:09	141	13.3	14.3	15.7	17.4	19.7	23.3	29.5
13.1	14.3	15.8	17.9	20.6	24.8	31.6	11:10	142	13.3	14.4	15.7	17.4	19.8	23.4	29.6
13.1	14.3	15.9	17.9	20.7	24.9	31.8	11:11	143	13.4	14.4	15.7	17.5	19.9	23.5	29.8
13.2	14.4	16	18	20.8	25	31.9	12:00	144	13.4	14.5	15.8	17.5	19.9	23.6	30
13.2	14.4	16	18.1	20.9	25.1	32	12:01	145	13.4	14.5	15.8	17.6	20	23.7	30.1
13.2	14.5	16.1	18.1	21	25.2	32.2	12:02	146	13.5	14.5	15.9	17.6	20.1	23.8	30.3
13.3	14.5	16.1	18.2	21.1	25.3	32.3	12:03	147	13.5	14.6	15.9	17.7	20.2	23.9	30.4
13.3	14.6	16.2	18.3	21.1	25.4	32.4	12:04	148	13.5	14.6	16	17.8	20.2	24	30.6
13.3	14.6	16.2	18.3	21.2	25.5	32.6	12:05	149	13.6	14.6	16	17.8	20.3	24.1	30.7
13.4	14.7	16.3	18.4	21.3	25.6	32.7	12:06	150	13.6	14.7	16.1	17.9	20.4	24.2	30.9
13.4	14.7	16.3	18.5	21.4	25.7	32.8	12:07	151	13.6	14.7	16.1	17.9	20.4	24.3	31
13.5	14.8	16.4	18.5	21.5	25.8	33	12:08	152	13.7	14.8	16.2	18	20.5	24.4	31.1
13.5	14.8	16.4	18.6	21.6	25.9	33.1	12:09	153	13.7	14.8	16.2	18	20.6	24.5	31.3
13.5	14.8	16.5	18.7	21.6	26	33.2	12:10	154	13.7	14.8	16.3	18.1	20.7	24.6	31.4
13.6	14.9	16.6	18.7	21.7	26.1	33.3	12:11	155	13.8	14.9	16.3	18.2	20.8	24.7	31.6
13.6	14.9	16.6	18.8	21.8	26.2	33.4	13:00	156	13.8	14.9	16.4	18.2	20.8	24.8	31.7
13.6	15	16.7	18.9	21.9	26.3	33.6	13:01	157	13.8	15	16.4	18.3	20.9	24.9	31.8
13.7	15	16.7	18.9	22	26.4	33.7	13:02	158	13.9	15	16.5	18.4	21	25	31.9
13.7	15.1	16.8	19	22	26.5	33.8	13:03	159	13.9	15.1	16.5	18.4	21.1	25.1	32.1
13.8	15.1	16.8	19.1	22.1	26.6	33.9	13:04	160	14	15.1	16.6	18.5	21.1	25.2	32.2
13.8	15.2	16.9	19.1	22.2	26.7	34	13:05	161	14	15.2	16.6	18.6	21.2	25.2	32.3
13.8	15.2	16.9	19.2	22.3	26.8	34.1	13:06	162	14	15.2	16.7	18.6	21.3	25.3	32.4
13.9	15.2	17	19.3	22.4	26.9	34.2	13:07	163	14.1	15.2	16.7	18.7	21.4	25.4	32.6
13.9	15.3	17	19.3	22.4	27	34.3	13:08	164	14.1	15.3	16.8	18.7	21.5	25.5	32.7
13.9	15.3	17.1	19.4	22.5	27.1	34.4	13:09	165	14.1	15.3	16.8	18.8	21.5	25.6	32.8
14	15.4	17.1	19.4	22.6	27.1	34.5	13:10	166	14.2	15.4	16.9	18.9	21.6	25.7	32.9
14.1	15.5	17.3	19.7	22.9	27.5	34.8	14:02	170	14.3	15.6	17.1	19.1	21.9	26.1	33.3
14.1	15.6	17.4	19.7	22.9	27.6	34.9	14:03	171	14.4	15.6	17.2	19.2	22	26.2	33.4
14.1	15.6	17.4	19.8	23	27.7	35	14:04	172	14.4	15.7	17.2	19.3	22.1	26.3	33.5

BMI-for-age GIRLS 5 to 19 years (z-scores)							Age in		BMI-for-age BOYS 5 to 19 years (z-scores)						
-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD	Year: Month	Months	-3 SD	-2 SD	-1 SD	Median	1 SD	2 SD	3 SD
14.2	15.6	17.5	19.9	23.1	27.7	35.1	14:05	173	14.5	15.7	17.3	19.3	22.2	26.4	33.5
14.2	15.7	17.5	19.9	23.1	27.8	35.1	14:06	174	14.5	15.7	17.3	19.4	22.2	26.5	33.6
14.2	15.7	17.6	20	23.2	27.9	35.2	14:07	175	14.5	15.8	17.4	19.5	22.3	26.5	33.7
14.3	15.7	17.6	20	23.3	28	35.3	14:08	176	14.6	15.8	17.4	19.5	22.4	26.6	33.8
14.3	15.8	17.6	20.1	23.3	28	35.4	14:09	177	14.6	15.9	17.5	19.6	22.5	26.7	33.9
14.3	15.8	17.7	20.1	23.4	28.1	35.4	14:10	178	14.6	15.9	17.5	19.6	22.5	26.8	33.9
14.3	15.8	17.7	20.2	23.5	28.2	35.5	14:11	179	14.7	16	17.6	19.7	22.6	26.9	34
14.4	15.9	17.8	20.2	23.5	28.2	35.5	15:00	180	14.7	16	17.6	19.8	22.7	27	34.1
14.4	15.9	17.8	20.3	23.6	28.3	35.6	15:01	181	14.7	16.1	17.7	19.8	22.8	27.1	34.1
14.4	15.9	17.8	20.3	23.6	28.4	35.7	15:02	182	14.8	16.1	17.8	19.9	22.8	27.1	34.2
14.4	16	17.9	20.4	23.7	28.4	35.7	15:03	183	14.8	16.1	17.8	20	22.9	27.2	34.3
14.5	16	17.9	20.4	23.7	28.5	35.8	15:04	184	14.8	16.2	17.9	20	23	27.3	34.3
14.5	16	17.9	20.4	23.8	28.5	35.8	15:05	185	14.9	16.2	17.9	20.1	23	27.4	34.4
14.5	16	18	20.5	23.8	28.6	35.8	15:06	186	14.9	16.3	18	20.1	23.1	27.4	34.5
14.5	16.1	18	20.5	23.9	28.6	35.9	15:07	187	15	16.3	18	20.2	23.2	27.5	34.5
14.5	16.1	18	20.6	23.9	28.7	35.9	15:08	188	15	16.3	18.1	20.3	23.3	27.6	34.6
14.5	16.1	18.1	20.6	24	28.7	36	15:09	189	15	16.4	18.1	20.3	23.3	27.7	34.6
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14.6	16.2	18.1	20.7	24.1	28.8	36	15:11	191	15.1	16.5	18.2	20.4	23.5	27.8	34.7
14.6	16.2	18.2	20.7	24.1	28.9	36.1	16:00	192	15.1	16.5	18.2	20.5	23.5	27.9	34.8
14.6	16.2	18.2	20.7	24.1	28.9	36.1	16:01	193	15.1	16.5	18.3	20.6	23.6	27.9	34.8
14.6	16.2	18.2	20.8	24.2	29	36.1	16:02	194	15.2	16.6	18.3	20.6	23.7	28	34.8
14.6	16.2	18.2	20.8	24.2	29	36.1	16:03	195	15.2	16.6	18.4	20.7	23.7	28.1	34.9
14.6	16.2	18.3	20.8	24.3	29	36.2	16:04	196	15.2	16.7	18.4	20.7	23.8	28.1	34.9
14.6	16.3	18.3	20.9	24.3	29.1	36.2	16:05	197	15.3	16.7	18.5	20.8	23.8	28.2	35
14.7	16.3	18.3	20.9	24.3	29.1	36.2	16:06	198	15.3	16.7	18.5	20.8	23.9	28.3	35
14.7	16.3	18.3	20.9	24.4	29.1	36.2	16:07	199	15.3	16.8	18.6	20.9	24	28.3	35
14.7	16.3	18.3	20.9	24.4	29.2	36.2	16:08	200	15.3	16.8	18.6	20.9	24	28.4	35.1
14.7	16.3	18.4	21	24.4	29.2	36.3	16:09	201	15.4	16.8	18.7	21	24.1	28.5	35.1
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14.7	16.4	18.4	21	24.5	29.3	36.3	17:00	204	15.4	16.9	18.8	21.1	24.3	28.6	35.2
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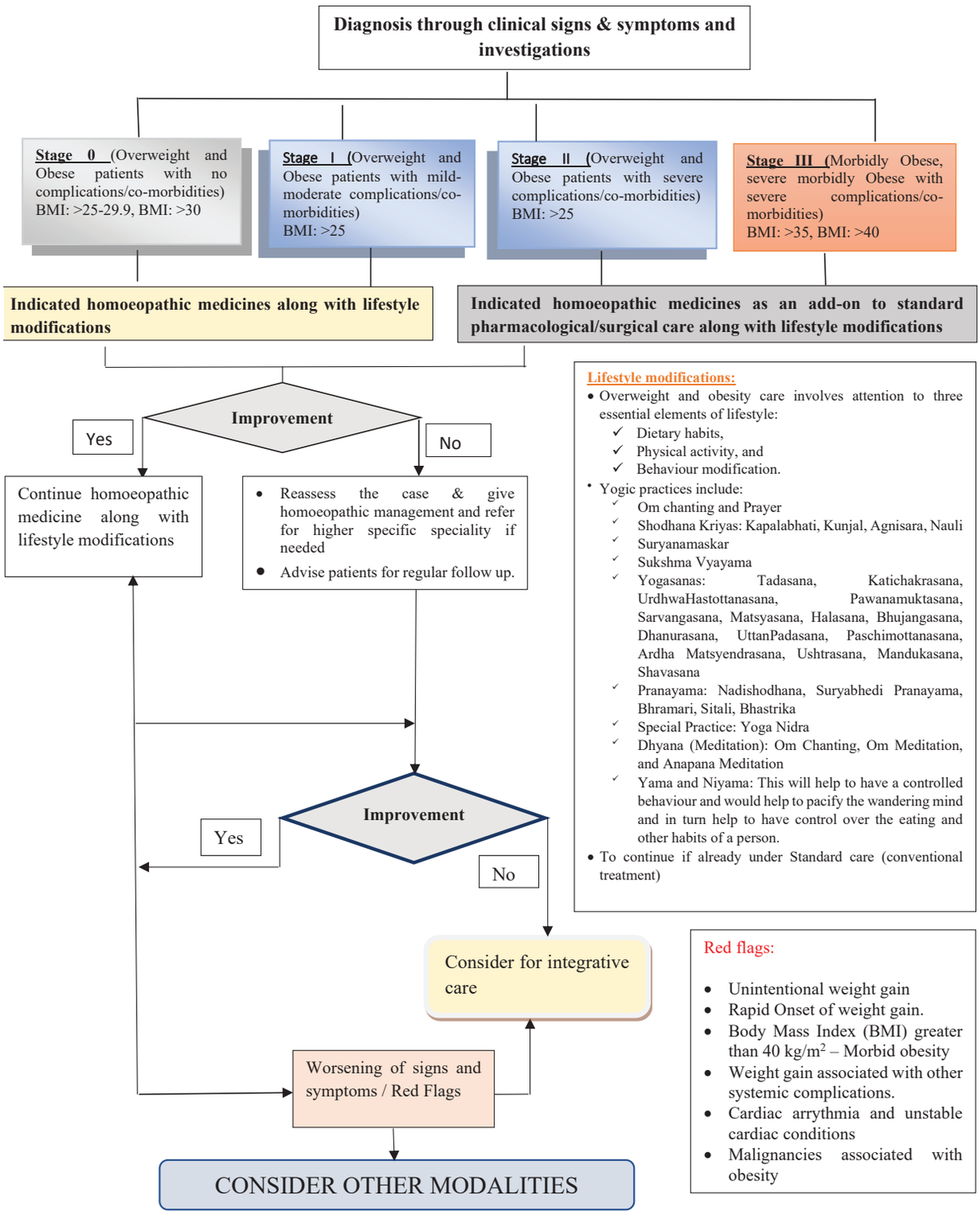
14.7	16.4	18.4	21.1	24.6	29.3	36.3	17:02	206	15.5	17	18.9	21.2	24.4	28.7	35.2
14.7	16.4	18.5	21.1	24.6	29.4	36.3	17:03	207	15.5	17	18.9	21.3	24.4	28.8	35.3
14.7	16.4	18.5	21.1	24.6	29.4	36.3	17:04	208	15.5	17.1	18.9	21.3	24.5	28.9	35.3
14.7	16.4	18.5	21.1	24.6	29.4	36.3	17:05	209	15.6	17.1	19	21.4	24.5	28.9	35.3
14.7	16.4	18.5	21.2	24.6	29.4	36.3	17:06	210	15.6	17.1	19	21.4	24.6	29	35.3
14.7	16.4	18.5	21.2	24.7	29.4	36.3	17:07	211	15.6	17.1	19.1	21.5	24.7	29	35.4
14.7	16.4	18.5	21.2	24.7	29.5	36.3	17:08	212	15.6	17.2	19.1	21.5	24.7	29.1	35.4
14.7	16.4	18.5	21.2	24.7	29.5	36.3	17:09	213	15.6	17.2	19.1	21.6	24.8	29.1	35.4
14.7	16.4	18.5	21.2	24.7	29.5	36.3	17:10	214	15.7	17.2	19.2	21.6	24.8	29.2	35.4
14.7	16.4	18.6	21.2	24.8	29.5	36.3	17:11	215	15.7	17.3	19.2	21.7	24.9	29.2	35.4
14.7	16.4	18.6	21.3	24.8	29.5	36.3	18:00	216	15.7	17.3	19.2	21.7	24.9	29.2	35.4
14.7	16.5	18.6	21.3	24.8	29.5	36.3	18:01	217	15.7	17.3	19.3	21.8	25	29.3	35.4
14.7	16.5	18.6	21.3	24.8	29.6	36.3	18:02	218	15.7	17.3	19.3	21.8	25	29.3	35.5
14.7	16.5	18.6	21.3	24.8	29.6	36.3	18:03	219	15.7	17.4	19.3	21.8	25.1	29.4	35.5
14.7	16.5	18.6	21.3	24.8	29.6	36.3	18:04	220	15.8	17.4	19.4	21.9	25.1	29.4	35.5
14.7	16.5	18.6	21.3	24.9	29.6	36.2	18:05	221	15.8	17.4	19.4	21.9	25.1	29.5	35.5
14.7	16.5	18.6	21.3	24.9	29.6	36.2	18:06	222	15.8	17.4	19.4	22	25.2	29.5	35.5
14.7	16.5	18.6	21.4	24.9	29.6	36.2	18:07	223	15.8	17.5	19.5	22	25.2	29.5	35.5
14.7	16.5	18.6	21.4	24.9	29.6	36.2	18:08	224	15.8	17.5	19.5	22	25.3	29.6	35.5

ALGORITHM OF TREATMENT PROCESS FOR OBESITY



Indications of medicines for Obesity:

S. No.	Medicines	General indications	Characteristic particulars
1.	**Ammonium bromatum**	*Indicated in chronic laryngeal and pharyngeal catarrh, neuralgic headaches, and obesity Malaise and fatigue* **<** lying down, **<** after emission of flatus while urinating. *Nervous restlessness. Pains in legs at intervals,* **<** after motion.	• Excessive accumulation of fat.
2.	**Ammonium muriaticum**	*It is especially adapted to fat and sluggish patients who have respiratory troubles. Large buttocks. Fatty tumours. Obesity. Body fat; legs thin*	• Excessive fatty deposit around abdomen.
3.	**Antimonium crudum**	*Excessive irritability and fretfulness, together with a thickly coated white tongue. Loss of appetite. Desire for acids, pickles.*	• Tendency to grow fat
4.	**Arsenicum album**	*It acts on every organ and tissue. Great exhaustion after the slightest exertion. Great thirst; drinks much, but little at a time. Great anguish and restlessness. Chilly patient.*	• Great exhaustion after the slightest exertion.
5.	**Agaricus muscarius**	*Light hair. Venous erethism. Much hunger, but no appetite; early in morning; stomach feels as if empty. Violent thirst*	• Old people with indolent circulation. skin and muscles lax
6.	**Asafoetida**	*Nervous women, subject to hysteria. Phlegmatic temperament. Venous, Haemorrhoidal constitutions. Great disgust for all food*	• Scrofulous, bloated, clumsy children
7.	**Badiaga**	*Scrofulous constitutions. Appetite diminished; costive. Mind generally clear, active in spite of headache. General soreness of the muscles and integuments of the whole body; flesh sore to touch, even of the clothes; sore as if beaten.*	• Fat children
8.	**Baryta carbonica**	*Chilly patient, mentally and physically dwarfish; timid, weary and lack self-confidence, avoid strangers and thinking of complaints makes them worse, better in open air.*	• Patient with swollen abdomen. Greatly sensitive to cold, have offensive foot-sweat
9.	**Calcarea arsenica**	*Suited to lymphatic, scrofulous, and tuberculous persons; fat women, approaching the climaxis; fat persons Slightest emotion causing palpitation.*	• Fleshy women at climacteric. stomach distended.
10.	**Calcarea carbonica**	*Persons of scrofulous type, who take cold easily. Patient is fat, fair, flabby and perspiring and cold, damp and sour. Emaciation more marked in other than adipose tissue; atrophy of muscles, soft bones, retarded teeth, with deceptive appearance of plumpness from excess of fat.*	• Children who grow fat; are large-bellied, with large heads, pale skin, chalky look, the so-called leuco-phlegmatic temperament. • Increase of fat in abdomen.
11.	**Capsicum annum**	*Seems to suit especially persons of lax fiber, weak, diminished vital heat. A relaxed plethoric sluggish, cold remedy. Such persons are. General uncleanliness of body*	• Fat, indolent, opposed to physical exertion, averse to go outside of their routine, get homesick easily

S. No.	Medicines	General indications	Characteristic particulars
12.	**Clematis erecta**	*Adapted to Scrofulous, rheumatic, gonorrhoeal, and syphilitic patients. Psoric Constitutions* *Better, in open air. Worse, at night, and warmth of bed (washing in cold water); new moon--(monthly aggravation).*	• Muscles relaxed or twitching. • After eating, weakness in all limbs and pulsation in arteries.
13.	**Conium maculatum**	*Acts on the glandular system, engorging and indurating it, altering its structure like scrofulous and cancerous conditions. Tremulous weakness after every stool. Perspiration of hands. Putting feet on chair relieves pain.* *Worse, lying down, turning* or rising in bed; *celibacy; before and during menses, from taking cold, bodily or mental exertion. Better, while fasting, in the dark, from letting limbs hang down, motion and pressure.*	• Weakness, languor, local congestion, and sluggishness. • Enlarged glands.
14.	**Crocus sativus**	*Crocus* is especially suited to women and hysterical men. The symptoms are **<** fasting; evening and night; during new and full moon; looking fixedly at an object; during pregnancy; in a hot room; in hot weather. **>** By yawning (desire to take a long breath, **>** by yawning); in open air (for which there is craving); after breakfast. Great thirst for cold drinks. *Epistaxis in children who develop too rapidly or slowly.*	• Drowsiness and lassitude, Abdomen swollen, feeling of something heavy.
15.	**Ferrum metallicum**	*Irritability. Slight noises unbearable. Excited from slightest opposition. Sanguine temperament. Voracious appetite, or absolute loss of appetite. Vomiting immediately after eating. Vomiting after midnight. Intolerance of eggs.* *Better, walking slowly about. Better after rising. Worse, while sweating, while sitting still. After cold washing and overheating. Midnight aggravation.*	• Adapted to Pseudo-plethora. Muscles flabby and relaxed. Attempts to eat bring on diarrhea. • Rheumatism of the shoulder. Dropsy after loss of vital fluids.
16.	**Graphites**	*Adapted to chilly, and costive, with delayed menstrual history, take cold easily. Graphites* is suited to persons who have a tendency to put on unhealthy fat. Defective animal heat from defective oxygenation; always cold, indoors or out. *Chlorotics. Affections of glands, skin, and mucous membranes, especially at orifices.*	• Tendency to obesity. • Indicated for fat large persons
17.	**Guaiacum**	*Obstinacy. Strong desire to criticise, and to despise everything Indolence and dread of movement. Weakness of memory, and excessive forgetfulness, esp. of names. Fixed look, and absence of ideas, esp. in the morning. It is especially adapted to the arthritic diathesis.*	• Action on Fibrous tissue • Frequent inclination to yawn, and to stretch the limbs, proceeding from a general sensation of uneasiness • The majority of symptoms show themselves, when sitting, as well as in the morning after rising, or in the evening before lying down.

S. No.	Medicines	General indications	Characteristic particulars
18.	**Kalium carbonicum**	*Despondent. Alternating moods. Very irritable. Full of fear and imaginations Chilly patient; puffiness, weakness; excessive flatulence; distended stomach as if it would burst. Drowsy after eating. Wakes about two o'clock and cannot sleep again.*	• Indicated in fleshy aged people, with dropsical and paretic tendencies • Jaundice and dropsy. Distention and coldness of abdomen.
19.	**Lachesis**	*Very important during the climacteric and for patients of a melancholic disposition. Worse, after sleep, sleeps into* aggravation; ailments that come on during sleep; left side, in the spring, warm bath, pressure or constriction, hot drinks, *closing eyes. Better, appearance of discharges, warm applications*	• Hungry, cannot wait for food. Gnawing pressure made better by eating but returning in a few hours. Cannot bear anything tight anywhere.
20.	**Lycopodium clavatum**	*Patient lacks vital heat; has poor circulation, cold extremities. Persons of keen intellect, but feeble muscular development. Worse, right side, from right to left, from above downward, 4 to 8 pm, from heat or warm room, hot air, bed. Warm applications, except throat and stomach which are better from warm drinks. Better, by motion, after midnight, from warm food and drink, on getting cold, from being uncovered.*	• Excessive accumulation of fat. The upper part of body wasted lower part semi-dropsical. • Symptoms characteristically run from right to left, acts especially on right side of body
21.	**Mercurius**	*Every organ and tissue of the body is more or less affected by this powerful drug. Often indicated with women and children. Worse, at night, wet, damp weather, lying on right side, perspiring; warm room and warm bed.*	• Light-haired, lax skin and muscles. Canine hunger even after eating
22.	**Nux vomica**	*long continued mental over- exertion; loss of sleep. Hypochondriac: literary person with gastric, abdominal complaints and costiveness Worse, morning, mental exertion, after eating, touch, spices, stimulants, narcotics, dry weather, cold. Better, from a nap, if allowed to finish it; in evening, while at rest, in damp, wet weather, strong pressure.*	• Indicated for persons who lead a sedentary lifestyle, sedentary habits, studious persons, who are too much at home, suffer from want of exercise
23.	**Petroleum**	*Marked aggravation from mental emotions. Thinks he is double, or someone else lying alongside. Feels that death is near and must hurry to settle affairs. Worse, dampness, before and during a thunderstorm, from riding in cars, passive motion; in winter, eating, from mental states. Better, warm air; lying with head high; dry weather.*	• Strong aversion to fat food, meat; worse, eating cabbage. • Hunger, immediately after stool. • Nausea, with accumulation of water in mouth.
24.	**Pulsatilla nigricans**	*It is pre-eminently a female remedy, especially for mild, gentle, yielding disposition. Abdomen is distended Entire loss of appetite. Thirstless with great dryness of mouth; tongue coated yellow or whitish*	• Women inclined to be fleshy, with scanty menstruation.

S. No.	Medicines	General indications	Characteristic particulars
25.	**Sabadilla**	*Action on mucous membrane of the nose and the lachrymal glands. Desire for hot things. No thirst Worse, cold and cold drinks, full moon. Better, warm food and drink, wrapped up.*	• Chilliness; sensitive to cold.
26.	**Silicea**	*Keloid growth. Scrofulous, rachitic children, with large head open fontanelles and sutures, distended abdomen, slow in walking. Ill effects of vaccination. Suppurative processes. Worse, new moon, in morning, from washing, during menses, uncovering, lying down, damp, lying on, left side, cold. Better, warmth, wrapping up head, summer; in wet or humid weather.*	• Disgust for meat and warm food. • Much rumbling in bowels. Inguinal glands swollen and painful. Hepatic abscess. • Stool comes down with difficulty; when partly expelled, recedes again. • Constipation always before and during menses.
27.	**Sulphur**	*Adapted to persons of scrofulous diathesis, subject to venous congestions, especially of portal system. Morbid hunger or loathing of food. Canine appetite, especially for sweets, farinaceous food, puddings, alternating with disgust for meat, wine or sour things.*	• Inertia and relaxation of fibre. Suited to persons of light hair, fair complexion, with a weakened, relaxed muscular system
28.	**Senega**	*Gnawing hunger with sensation of emptiness in stomach. Suddenly remembers unimportant regions which he saw long ago. Inclined to quarrel. Worse, walking in open air, during rest. Better, from sweat; bending head backwards.*	• Plethoric, phlegmatic persons
29.	**Sepia**	*Feeling of goneness; not relieved by eating. Pot-bellied mothers, yellow saddle across nose, irritable, faint from least exertion. Desire for sour food which aggravates Cheerful, active when well but indifferent and quarrelsome when sick self-absorbed, sad, weeping and indolent*	• Acts especially on the portal system, with venous congestion, leuco-phlegmatic constitutions.
30.	**Thuja occidentalis**	*Chilly patient; with illusions & fixed ideas. Unhealthy skin with tendency for warty growths; oily/ greasy sweat, face & stool; perspiration on uncovered parts. Complaints worse from cold, warm air & damp humid atmosphere and chronic complaints better during a cold*	• Excessive accumulation of fat. • Distended Abdomen.
31.	**Thyroidinum**	*Hypothyroidism after acute diseases, i.e, weakness. Easy fatigue, weak pulse, tendency to fainting, palpitation, cold hands and feet, low blood pressure, chilliness and sensitive to cold*	• Excessive obesity. Indicated for Hypothyroidism

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