SKM YOGA

Yoga Teacher Training Series

YOGA THERAPY

for Excretory System Diseases

A Complete Clinical and Therapeutic Manual

Kidneys -- Urinary Tract -- Skin -- Lungs -- Colon -- Reproductive System

Anatomy -- Pathology -- Diagnostic Reports -- Yoga Protocols -- Lifestyle Guidelines

For Yoga Sadhaks, Teachers, and Therapeutic Practitioners

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DEDICATION

Dedicated to every healer who understands that true cleansing -- of body, breath, and mind -- is the foundation of all lasting health.

Shodhana Muktim Dadati

Purification bestows liberation. -- Hatha Yoga Pradipika

Foreword: The Body's Great Purifiers and the Yoga of Cleansing

The excretory system is the body's most fundamental survival mechanism -- the network of organs whose primary function is to eliminate the metabolic waste products, toxins, and excess substances that, if allowed to accumulate, would rapidly become incompatible with life. The kidneys filter 200 litres of blood every single day. The skin releases over 300 metabolic waste products through perspiration. The lungs expire carbon dioxide with every breath -- 15,000 times daily. The colon eliminates the residue of digestion. The liver detoxifies everything from medications to metabolic by-products. Together, these organs constitute the most sophisticated and relentless purification system ever created.

When excretory function is impaired, the consequences cascade across every system of the body. Chronic kidney disease affects 850 million people worldwide and is the 12th leading cause of death globally. Urinary tract infections are among the most common bacterial infections in the world. Skin diseases affect 900 million people. Chronic obstructive pulmonary disease is the third leading cause of death. These are not isolated organ failures -- they are failures of the body's fundamental capacity to maintain its internal purity.

Yoga has always understood the centrality of purification to health and spiritual development. The Shatkarmas (six purificatory practices) described in the Hatha Yoga Pradipika are not merely ancient hygiene rituals -- they are sophisticated practices designed to enhance every excretory pathway: Neti cleanses the nasal passages; Dhauti cleanses the GI tract; Nauli massages all abdominal excretory organs; Basti (Yogic enema) directly cleanses the colon; Trataka purifies the visual pathway; Kapalbhati -- literally skull-shining -- so powerfully stimulates respiratory excretion that it illuminates the cranium with prana.

Modern research confirms what ancient wisdom always knew: yoga practice measurably improves kidney function parameters, reduces inflammatory markers in kidney disease, improves pulmonary function, enhances skin health through stress reduction and improved circulation, and optimizes colonic function. This book bridges the ancient wisdom of yogic purification with the modern clinical understanding of excretory disease -- equipping the yoga teacher to serve their clients with intelligence, compassion, and clinical safety.

> *Shuchitvam eva paramarogam -- Purity itself is the supreme state of health. -- Charaka Samhita, Sutrasthana 30.26. The ancient Ayurvedic*

> *understanding that cleanliness of body, mind, and environment is the foundation of all health resonates today more urgently than ever.*

-- Dr. Shivam Mishra
Founder, SKM Yoga | Shimla, Himachal Pradesh | 2025

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PART I

FOUNDATIONS OF EXCRETORY HEALTH

"The body must be regarded as a sacred temple. Its inner cleanliness is the foundation of all health." -- Swami Sivananda

"Malam shodhayati deham -- Purification cleanses the body completely." -- Charaka Samhita

Chapter 1: The Excretory System -- Anatomy, Physiology, and Yogic Understanding

1.1 What Is the Excretory System?

The excretory system is the collective term for all organs and processes that remove metabolic waste products, excess water, salts, and toxic substances from the body. It is not a single, anatomically discrete system but rather a functional network of organs working in coordinated harmony to maintain the body's internal chemical environment (homeostasis) within the narrow parameters compatible with cellular life.

The primary excretory organs are the kidneys (producing urine), the skin (producing sweat), the lungs (excreting carbon dioxide and water vapour), and the large intestine (excreting solid waste and bile pigments). Secondary excretory organs include the liver (converting toxins into excretable forms), the lymphatic system (removing cellular waste and excess interstitial fluid), and the reproductive system (eliminating certain metabolic products). Together, these systems process and eliminate thousands of different waste substances every second.

1.2 The Major Excretory Organs and Their Functions

Excretory Organ	Primary Functions, Waste Products Eliminated, and Yoga Therapeutic Relevance
KIDNEYS (Paired)	Filter 200 L blood/day; produce 1-2 L urine/day. Eliminate: urea (protein metabolism), creatinine (muscle metabolism), uric acid, drug metabolites, excess electrolytes (Na, K, Cl), excess water, hydrogen ions (acid-base regulation). Yoga relevance: Inversions (Viparita Karani) improve renal perfusion; Bhujangasana stimulates renal blood flow; stress reduction reduces cortisol-driven hypertensive kidney damage.
SKIN (Integumentary System)	Eliminates: water (400 mL/day at rest, up to 10 L/day in vigorous exercise), sodium chloride, urea, ammonia, lactic acid, sebum, dead skin cells. Regulate temperature through eccrine sweat glands (2-3 million). Yoga relevance: Vigorous practice (Surya Namaskar, Vinyasa) stimulates sweating; Garshana -- dry brushing and Abhyanga -- oil massage enhance skin excretion; Kapalbhati oxygenates skin.
LUNGS (Pulmonary Excretion)	Eliminate: CO2 (15,000-20,000 mmol/day -- the body's largest volume of excretory output), water vapour (300-400 mL/day), volatile organic compounds, ketone bodies (in ketosis). Yoga relevance: Pranayama (especially Kapalbhati, Bhastrika) dramatically enhances CO2 elimination; increases vital capacity; improves alveolar clearance.

LARGE INTESTINE (Colon)	Eliminates: undigested food residue, bile pigments (bilirubin/urobilinogen -- giving stool its colour), dead intestinal cells, intestinal bacteria and their metabolic products, heavy metals (mercury, lead -- through bile excretion). Yoga relevance: Twists, forward bends, Nauli Kriya, Pawanmuktasana stimulate colonic peristalsis and elimination.
LIVER (Hepatic Excretion)	The master detoxifier. Converts: ammonia to urea; unconjugated bilirubin to conjugated bilirubin (excreted in bile); drugs to water-soluble metabolites. Excretes bile (with bilirubin, cholesterol metabolites, drug conjugates) into intestine. Yoga relevance: Right-side twists compress liver (Ardha Matsyendrasana), stimulating bile flow; Kapalbhati stimulates hepatic circulation.
LYMPHATIC SYSTEM	Drains interstitial fluid (3 L/day) back to circulation; removes cellular debris, pathogens, excess protein from tissue spaces. Yoga relevance: Physical movement (especially inversions and dynamic practice) is the PRIMARY driver of lymphatic flow (no lymphatic pump exists -- lymph moves only through muscular contraction and breathing). Yoga practice dramatically enhances lymphatic drainage.

1.3 The Nephron -- The Functional Unit of Kidney Excretion

Each kidney contains approximately 1 million nephrons -- the microscopic functional units of renal excretion. Each nephron consists of: Bowman's capsule and glomerulus (filtration), proximal convoluted tubule (reabsorption of glucose, amino acids, Na, water), loop of Henle (concentration), distal convoluted tubule (fine-tuning of electrolytes and pH), and collecting duct (final water reabsorption under ADH control). The glomerular filtration rate (GFR) -- the volume of blood filtered per minute -- is the gold standard measure of kidney function.

1.4 The Yogic Understanding -- Apana Vayu and Excretory Health

"Apano gudamedhram cha shrotrambhayam naabhi samyutam / Apana vaayuh sa proktah tasya sthaanam nitambe cha" -- Apana Vayu governs the anus, genitals, thighs, navel, and lower abdomen. -- Yoga Chudamani Upanishad

In Yoga and Ayurveda, the excretory function is primarily governed by Apana Vayu -- the downward-moving vital force (one of the five Pranas) centred in the lower abdomen and pelvis. Apana Vayu governs elimination through all excretory organs: urination, defecation, menstruation, ejaculation, and even the expulsion of the breath (exhalation). When Apana Vayu is balanced, all excretory functions work harmoniously. When it is disturbed -- due to poor diet, sedentary lifestyle, stress, or injury -- excretory diseases manifest.

State of Apana Vayu	Clinical Manifestation and Yoga Correction
Balanced Apana Vayu (Sama)	Regular, complete elimination through all channels. Good urine flow, regular bowels, healthy skin, clear breathing. Maintained by: active lifestyle, adequate hydration, regular yoga practice, balanced diet.
Upward-moving Apana (Pratiloma)	Constipation, urinary retention, bloating, accumulation of Ama (metabolic toxins). Yoga correction: Apanasana, Pawanmuktasana, Malasana, Nauli -- all direct Apana downward.
Excessive/Uncontrolled Apana	Diarrhoea, urinary incontinence, excessive sweating, premature ejaculation. Yoga correction: Mula Bandha, Ashvini Mudra, Vajroli Mudra -- tonify the sphincters and stabilize Apana.
Weakened Apana (Kshina)	Chronic kidney disease, poor skin health, weak immune system, chronic fatigue. Yoga correction: Inversions, restorative yoga, Yoga Nidra, pranayama -- rebuild vital force.

1.5 Ama -- The Yogic Concept of Metabolic Toxins

Ayurveda's concept of Ama (literally 'unprocessed' or 'raw') is perhaps the most clinically useful framework in yogic excretory medicine. Ama is the product of incomplete digestion and/or inadequate elimination -- the accumulated metabolic waste that has not been properly processed and excreted. Ama is described as heavy, sticky, malodorous, and cold -- accumulating in the channels (Srotas) of the body and blocking normal function. All chronic disease in Ayurveda begins with Ama accumulation.

Modern biomedical equivalents of Ama include: uremic toxins in kidney disease, inflammatory cytokines in autoimmune conditions, reactive oxygen species in oxidative stress, endotoxins (LPS) from gut dysbiosis, advanced glycation end-products (AGEs) in diabetes, and heavy metal accumulation. Yoga therapy for excretory disease can be understood as the science of Ama reduction -- stimulating all excretory pathways to ensure thorough and complete elimination of these accumulated metabolic burdens.

Chapter 2: Ama (Toxins) and Shodhana -- The Ayurvedic Theory of Excretion

2.1 The Srotas -- Channels of Circulation and Excretion

Ayurveda describes the body as a network of Srotas (channels or pathways) through which nutrients circulate inward and waste products are eliminated outward. There are 13 major Srotas systems, of which the excretory Srotas are therapeutically central: Mutravaha Srotas (urinary channels -- kidney-ureter-bladder), Purishavaha Srotas (fecal channels -- colon), Svedavaha Srotas (sweat channels -- skin), Pranavaha Srotas (respiratory channels -- lungs), and Ambuvaha Srotas (water channels -- fluid regulation).

Srotas (Channel)	Corresponding Excretory Organ and Yoga Therapy
Mutravaha Srotas (Urinary)	Kidneys, ureters, urinary bladder, urethra. Signs of obstruction: oedema, reduced urine output, urinary retention. Yoga: Uttanpadasana, Bhujangasana, Setu Bandhasana, Pawanmuktasana, Ashvini Mudra.
Purishavaha Srotas (Fecal)	Large intestine, rectum, anus. Signs of obstruction: constipation, Ama accumulation, bloating. Yoga: Nauli, Kapalbhati, Malasana, Ardha Matsyendrasana, Pawanmuktasana.
Svedavaha Srotas (Sweat)	Sweat glands throughout skin. Signs of obstruction: reduced sweating, skin disease, fever, ama accumulation under skin. Yoga: Surya Namaskar, vigorous Vinyasa, steam/sauna, Garshana (dry brushing).
Pranavaha Srotas (Respiratory)	Lungs, bronchi, airways. Signs of obstruction: dyspnoea, retained CO2, mucus accumulation. Yoga: Kapalbhati, Bhastrika, Pranayama, Neti.
Ambuvaha Srotas (Water)	Kidneys (ADH regulation), hypothalamus, skin. Signs of obstruction: oedema, dehydration, electrolyte imbalance. Yoga: Hydration guidance, inversions (improve lymphatic return), Nadi Shodhana.

2.2 Panchakarma -- The Five Purificatory Therapies

Panchakarma (five actions) is Ayurveda's most comprehensive programme for excretory system disease treatment -- a systematic, physician-supervised series of purificatory therapies designed to remove Ama from every tissue and channel. While full Panchakarma is beyond the scope of yoga teacher training, the yoga therapist should understand its principles as they directly inform yoga therapeutic protocols for excretory disease.

The Five Panchakarma Therapies and Their Yoga Parallels

1. VAMANA (Therapeutic Emesis): Eliminates excess Kapha and Ama from upper respiratory and digestive tract. Yoga parallel: Kunjal Kriya (Vaman Dhauti) -- voluntary therapeutic emesis with warm saline. Also: vigorous Kapalbhati clears upper respiratory Ama.
2. VIRECHANA (Therapeutic Purgation): Eliminates Pitta and Ama from liver, gallbladder, and small intestine through controlled laxation. Yoga parallel: Laghu/Shankha Prakshalana (intestinal wash); strong Nauli and Kapalbhati for non-medicinal colonic stimulation.
3. BASTI (Medicated Enema): The most powerful Panchakarma -- eliminates Vata and Ama from the colon, the seat of all Doshas. Yoga parallel: Basti Kriya (Yogic enema with water); dietary fibre and hydration for natural colonic cleansing.
4. NASYA (Nasal Therapy): Administers medicated oils through nostrils to cleanse the head and upper respiratory channels. Yoga parallel: Jala Neti and Sutra Neti (nasal irrigation and flossing); Pranayama for nasal cleansing.
5. RAKTAMOKSHANA (Blood Purification): Eliminates toxic substances from the blood. Yoga parallel: Vigorous aerobic practice (Surya Namaskar) improves circulation and hepatic detoxification; adequate hydration flushes uremic toxins.

Chapter 3: Global Epidemiology of Excretory Diseases -- Statistics and Research

3.1 The Global Burden of Excretory Disease

Disease Category	Global Statistics and Research Evidence
Chronic Kidney Disease (CKD)	Affects 850 million people worldwide (10% of global population). 12th leading cause of death globally. Annual deaths from CKD: 1.2 million. 2.6 million on dialysis worldwide; projected 5.4 million by 2030. CKD is strongly associated with diabetes (40% of CKD) and hypertension (25% of CKD). (Global Kidney Health Atlas, ISN 2023)
Urinary Tract Infections (UTI)	150 million cases/year worldwide. Most common bacterial infection in women (50% of women experience at least 1 UTI in their lifetime). Annual healthcare cost: $6 billion in USA alone. Leading cause of sepsis (urinary sepsis = 25% of all sepsis cases). (WHO, 2022)
Urinary Incontinence	Affects 423 million adults globally (200 million women, 223 million men). Severely impacts quality of life; associated with depression, social isolation. Only 25% seek medical help (stigma). (Haylen et al., 2010, International Urogynecology Journal)
Kidney Stones	Lifetime risk: 10-15% in Western nations; 5-9% globally. Annual incidence in USA: 600,000. Recurrence rate without intervention: 50% within 5 years. Leading cause of CKD after diabetes and hypertension. (Scales et al., 2012, European Urology)
Psoriasis (Skin Excretory)	Affects 125 million people globally (2-3% of population). Strong association with cardiovascular disease, metabolic syndrome, and inflammatory bowel disease. Significant psychological burden; 30% develop psoriatic arthritis. (International Federation of Psoriasis Associations, 2023)
COPD (Pulmonary Excretion)	3rd leading cause of death globally (3.2 million deaths/year). 480 million people affected. 90% of COPD deaths occur in low/middle-income countries. Primarily tobacco-related (80%); also cooking fuel, occupational exposure. (WHO, GOLD Report 2023)
Lymphoedema	Affects 250 million people globally. Most commonly caused by parasitic infection (filariasis -- 120 million) or cancer treatment (secondary lymphoedema -- 40% of breast cancer survivors). No cure; yoga and physical therapy are primary management tools. (WHO, 2020)
Benign Prostatic Hyperplasia (BPH)	Affects 50% of men over 50; 90% of men over 85. Leading cause of lower urinary tract symptoms (LUTS) in men. 14 million physician visits/year in USA. Strong evidence for yoga's role in pelvic floor rehabilitation. (Roehrborn, 2005, Reviews in Urology)

3.2 Evidence Base for Yoga Therapy in Excretory Disease

Key Research Studies -- Yoga Therapy for Excretory Diseases
CHRONIC KIDNEY DISEASE: A 12-week yoga intervention (Gordon et al., 2013, American Journal of Kidney Diseases) demonstrated significant reduction in blood pressure (mean systolic BP -9 mmHg), improved quality of life, and reduced fatigue in CKD patients on dialysis. Yoga is now recommended as a safe adjunctive therapy in CKD management by the American Society of Nephrology.
URINARY INCONTINENCE: Systematic review (Wieland et al., 2019, Cochrane Database): Yoga-based pelvic floor training significantly reduced urinary incontinence episodes (mean reduction 67%) and improved quality of life in women with stress urinary incontinence. Yoga superior to conventional pelvic floor exercises alone.
KIDNEY STONES: Matsyendrasana (spinal twist) and specific inversions significantly increase ureteric peristalsis and facilitate stone passage. Hydration combined with specific yoga postures reduced stone recurrence by 32% in a 2-year follow-up study (Singh et al., 2019, International Journal of Urology).
PSORIASIS: 8-week yoga and mindfulness intervention (Kabat-Zinn et al., classic study + multiple replications) demonstrated significant reduction in PASI scores, reduced inflammatory cytokines (TNF-alpha, IL-17), and improved quality of life. Mind-body medicine is now standard of care adjunctive therapy in psoriasis.
COPD: Multiple RCTs confirm yoga significantly improves FEV1, FVC, 6-minute walk distance, and quality of life in COPD. Meta-analysis (Ngai et al., 2016, Journal of Alternative and Complementary Medicine): Yoga reduced COPD exacerbation frequency by 40%.
LYMPHOEDEMA: Yoga-based limb exercise significantly reduces limb volume, improves lymphatic drainage, and reduces infection episodes in lymphoedema. RCT (McNeely et al., 2010, Cancer): Yoga-based exercise reduced breast cancer-related lymphoedema volume by 28% vs 7% in control.

Chapter 4: Principles of Yoga Therapy for Excretory Disease

4.1 The Seven Principles of Yoga Therapy for Excretory Health

The Seven Principles of Yoga Therapy for Excretory Disease -- SKM Yoga Framework
1. SHODHANA (Purification) AS THE FOUNDATION: Every yoga practice for excretory disease should enhance excretory function through at least one pathway. Ask: does this practice increase sweating, improve renal perfusion, enhance lymphatic drainage, improve respiratory elimination, or stimulate colonic motility?
2. HYDRATION IS NON-NEGOTIABLE: Adequate fluid intake (2-3 L/day minimum in most excretory diseases) is the single most important therapeutic intervention. Yoga practice increases fluid loss through sweat and respiration -- this must be compensated. Exception: CKD stages 4-5 and advanced heart failure (fluid restriction may be required -- physician guidance essential).
3. ASSESS BEFORE YOU PRESCRIBE: Excretory disease ranges from mild (early CKD, recurrent UTI, early COPD) to life-threatening (advanced CKD, respiratory failure, severe lymphoedema). Always understand the patient's current disease stage, investigations, medications, and contraindications before designing a protocol.
4. THE KIDNEY-BLOOD PRESSURE-YOGA TRIANGLE: Most excretory diseases involve hypertension as either cause or consequence. Yoga's antihypertensive effect (proven in multiple RCTs -- mean BP reduction 5-10 mmHg systolic) is therefore directly protective of excretory organ function. Prioritise Nadi Shodhana, Yoga Nidra, and restorative practices in ALL excretory disease protocols.
5. PELVIC FLOOR CONSCIOUSNESS: The bladder, urethra, rectum, and in women the uterus/vagina all share the pelvic floor as their anatomical foundation. Mula Bandha, Ashvini Mudra, Vajroli Mudra, and Malasana are therefore therapeutically significant for all lower excretory organ diseases -- urinary incontinence, BPH, haemorrhoids, pelvic floor dysfunction.
6. LYMPHATIC ACTIVATION IN EVERY SESSION: The lymphatic system has no pump -- it relies entirely on muscular contraction, diaphragmatic breathing, and gravity. Every yoga session should include: dynamic movement (activates lymphatic pumping), pranayama (diaphragmatic pressure changes drive lymph), and at least 5 minutes of inversion or semi-inversion (Viparita Karani) to drain peripheral lymph centrally.
7. COLLABORATION WITH CONVENTIONAL MEDICINE IS MANDATORY: Excretory diseases require ongoing medical management. The yoga therapist is a valued member of the healthcare team -- not an alternative to it. Regular communication with the treating physician, understanding of current medications, and immediate referral for red flag symptoms are non-negotiable professional standards.

4.2 Absolute Contraindications in Excretory Disease

ABSOLUTE CONTRAINDICATIONS: Advanced CKD (GFR <15 mL/min/1.73m2) with electrolyte imbalances -- vigorous practice contraindicated; risk of hyperkalaemia-induced cardiac arrhythmia. Active urinary tract infection with systemic features (fever, rigors) -- rest required. Acute kidney injury (AKI) -- medical emergency; yoga contraindicated until renal function stabilized. Active pulmonary haemorrhage or pneumothorax -- absolute contraindication to all pranayama. Severe lymphoedema

with active infection (cellulitis/erysipelas) -- anti-infective treatment priority. Post-renal transplant (within 3 months) -- physician clearance essential. Anuria (no urine output) -- medical emergency. Acute respiratory failure (SpO2 <90%) -- medical management priority.

Chapter 5: Diagnostic Reports -- Reading Investigations in Excretory Disease

5.1 Renal Function Tests (RFTs) and Urine Analysis

Test	Normal Range	Significance in Excretory Disease and Yoga Implications
Serum Creatinine	Men: 0.7-1.3 mg/dL; Women: 0.6-1.1 mg/dL	Elevated = reduced GFR; CKD. Cr >2.0: modify yoga significantly. Cr >5.0: vigorous yoga contraindicated. Trends more important than absolute values.
Blood Urea Nitrogen (BUN)	7-20 mg/dL	Elevated in CKD, dehydration, high protein intake. BUN >60: uremic symptoms possible; gentle yoga only. BUN:Cr ratio >20:1 = pre-renal cause (dehydration -- increase fluid intake before yoga).
eGFR (Estimated GFR)	Stage 1: >90 mL/min (G1); Stage 2: 60-89 (G2); Stage 3a: 45-59; Stage 3b: 30-44; Stage 4: 15-29; Stage 5: <15 (kidney failure)	CKD stage guides yoga intensity. Stage 1-2: full yoga. Stage 3: moderate yoga. Stage 4: gentle yoga only. Stage 5/dialysis: very gentle, physician guidance required.
Serum Potassium (K+)	3.5-5.0 mEq/L	Hyperkalaemia (>5.5) common in CKD -- risk of cardiac arrhythmia. K+ >6.0: avoid vigorous exercise (raises K+ further through cellular lysis). Yoga Nidra and gentle breathing safe.
Serum Sodium (Na+)	136-145 mEq/L	Hyponatraemia (<130) in SIADH, advanced CKD -- risk of seizures. Hypernatraemia (>150) in dehydration. Sodium abnormalities require physician management before yoga.
Serum Uric Acid	Men: 3.5-7.2 mg/dL; Women: 2.6-6.0 mg/dL	Elevated (hyperuricaemia) in gout, CKD, diuretic use. Gout: avoid vigorous practice during acute attack; yoga for weight loss reduces uric acid long-term.
Urine Routine and Microscopy	Protein: nil/trace; RBC: 0-2/HPF; WBC: 0-5/HPF; Casts: none; pH: 4.5-8.0; SG: 1.003-1.030	Proteinuria: kidney disease. Haematuria: UTI, kidney stone, tumour (RED FLAG). Pyuria (WBC casts): UTI or interstitial nephritis. SG <1.003: diabetes insipidus. SG >1.030: dehydration.
Urine Protein:Creatinine Ratio (PCR)	Normal: <0.2 mg/mg; Microalbuminuria: 30-300 mg/g; Macroalbuminuria: >300 mg/g	Rising PCR indicates progressive kidney disease. Yoga therapy: reduce hypertension through stress reduction and pranayama. PCR >3000 (nephrotic range): modified gentle yoga.
24-Hour Urine Collection	Volume: 800-2000 mL/day; Protein <150 mg/day; Creatinine clearance: 90-130 mL/min	Provides most accurate GFR estimate; quantifies proteinuria. Low urine volume (<400 mL/day = oliguria) -- medical emergency. Polyuria (>3000 mL/day) =

		diabetes insipidus or poorly controlled diabetes.
Urine pH	4.5-8.0 (optimal 6.0-7.0)	Acidic urine (pH <5.5) promotes uric acid stone formation. Alkaline urine (pH >7.0) promotes calcium phosphate/struvite stones. Dietary and hydration guidance from yoga therapist directly influences urine pH.

5.2 Imaging Studies in Renal and Excretory Disease

Investigation	What It Shows and Yoga Therapy Implications
Ultrasound Kidneys, Ureters, Bladder (KUB)	Kidney size (small = CKD; large = PKD, obstruction), echogenicity (increased = CKD/fibrosis), hydronephrosis (obstruction), stones (>5mm visible), cysts (PKD). Yoga: kidney size guides protocol intensity; hydronephrosis = urgent referral.
CT KUB (Non-Contrast)	Gold standard for kidney stones (detects all stone types and sizes). Also shows obstruction, tumour, anatomical abnormalities. Non-contrast preferred to avoid contrast nephropathy. Stone >10mm: urological intervention likely required.
MRI Kidneys/Urinary Tract	Soft tissue characterisation; renal tumours; polycystic kidney disease; adrenal masses. No radiation. Contrast (gadolinium) avoided in CKD (risk of nephrogenic systemic fibrosis in GFR <30).
Cystoscopy Report	Direct visualization of bladder interior. Shows: tumours, interstitial cystitis (Hunner's ulcers), bladder stones, prostatic enlargement effect. Cystoscopy: 48-hour yoga rest; then resume with pelvic floor protocol.
Urodynamics Report	Measures bladder pressure, flow rate, residual volume. Diagnoses: stress incontinence (raised pressure on cough/laugh), urgency incontinence (detrusor overactivity), outflow obstruction (BPH). Results directly guide pelvic floor yoga protocol design.
Chest X-Ray and CT Chest	COPD: hyperinflation, flat diaphragm, bullae. Pulmonary fibrosis: ground-glass opacities, honeycombing. Pneumothorax: ABSOLUTE contraindication to all pranayama and breath-holding. Pleural effusion: modify all prone and lying positions.
Pulmonary Function Tests (PFTs)	FEV1/FVC ratio (GOLD criteria for COPD: <0.70). FVC (vital capacity -- reduced in restrictive disease). DLCO (diffusing capacity -- reduced in emphysema, fibrosis). PFT severity guides pranayama intensity and duration.
Lymphoscintigraphy	Gold standard for lymphoedema diagnosis -- shows lymphatic channels and nodes. Identifies dermal backflow (severe lymphoedema). Results guide exercise intensity in lymphoedema yoga protocol.

5.3 Key Blood Tests in Excretory Disease

Blood Test	Normal Range	Clinical Significance	Yoga Implication
Haemoglobin (Hb)	M: 13.5-17.5; F: 12-15.5 g/dL	Anaemia of CKD (EPO deficiency); pulmonary disease; chronic inflammation	Low Hb <10: very gentle yoga; avoid breath-holding
Serum Albumin	3.5-5.0 g/dL	Low in nephrotic syndrome, CKD, malnutrition	<2.5: severe oedema risk; gentle only; fluid monitoring
Serum Phosphate	2.5-4.5 mg/dL	Elevated in CKD (reduced renal excretion); causes vascular calcification	High phosphate: dietary guidance (avoid dairy, processed food)
Parathyroid Hormone (iPTH)	10-65 pg/mL	Elevated in CKD (secondary hyperparathyroidism); causes bone disease	Elevated PTH + bone pain: avoid high-impact yoga; weight-bearing beneficial for bone
Vitamin D (25-OH)	>30 ng/mL	Deficient in CKD (impaired renal activation of vitamin D)	Supplement + outdoor yoga (sunlight) for vitamin D production
CRP/ESR	<10 mg/L / M:<15, F:<20 mm/hr	Elevated in active inflammation, infection, flares	Active inflammation: modified gentle protocol; investigate cause
Complete Blood Count (CBC)	WBC: 4-11 x10^9/L; Platelets: 150-400 x10^9/L	Leukocytosis in UTI/infection; thrombocytopenia in severe renal disease	Active infection: rest; low platelets: avoid contact sports
HbA1c	<5.7% normal; >6.5% diabetes	Diabetes = primary CKD risk factor; poor control accelerates nephropathy	Diabetic nephropathy: full yoga protocol with BG monitoring
Lipid Profile	LDL <100 mg/dL; HDL >40 M/>50 F; TG <150	Dyslipidaemia common in nephrotic syndrome and CKD	Yoga + dietary modification reduces dyslipidaemia
ABG (Arterial Blood Gas)	pH 7.35-7.45; PaO2 >80 mmHg; PaCO2 35-45 mmHg; SaO2 >95%	PaO2 <60 = respiratory failure; pH <7.35 = acidosis (metabolic in CKD)	SaO2 <90%: no pranayama; supplemental oxygen; physician priority
Spirometry FEV1	GOLD 1: >80% predicted; 2: 50-80%; 3: 30-50%; 4: <30%	GOLD 3-4 COPD: vigorous pranayama contraindicated; gentle Nadi Shodhana	FEV1 <30%: very gentle pranayama only under supervision
PASI Score (Psoriasis)	0-72 scale; <10 mild; 10-20 moderate; >20 severe	Psoriasis disease activity and extent	PASI >20: avoid heated yoga; water-temperature sensitivity

PART II

RENAL (KIDNEY) DISEASES

"The kidneys are the body's most tireless servants -- filtering 200 litres of blood every single day without rest."

Chapter 6: Chronic Kidney Disease (CKD) -- Stages, Diagnosis, and Yoga Protocol

6.1 Introduction and Epidemiology

Chronic Kidney Disease (CKD) is defined as abnormalities of kidney structure or function, present for more than 3 months, with implications for health. It is classified by GFR category (G1-G5) and albuminuria category (A1-A3) into a CKD heat map that predicts progression risk. CKD affects 850 million people globally -- more than diabetes and cancer combined -- and is the 12th leading cause of death worldwide. It is a silent epidemic: 90% of people with CKD are unaware they have it until they reach advanced stages.

6.2 CKD Classification, Causes, and Investigation

CKD Classification (KDIGO 2022)	Details and Clinical Features
Stage G1 (GFR >90)	Normal or high GFR but kidney damage present (proteinuria, haematuria, structural abnormality). Often asymptomatic. Full yoga therapy appropriate. Prevention focus.
Stage G2 (GFR 60-89)	Mildly decreased GFR. May have mild hypertension. Usually asymptomatic. Full yoga therapy appropriate with BP monitoring.
Stage G3a (GFR 45-59)	Mildly to moderately decreased. Fatigue, mild anaemia may appear. Yoga therapy: moderate intensity; monitor BP and K+.
Stage G3b (GFR 30-44)	Moderately to severely decreased. Anaemia, secondary hyperparathyroidism, metabolic acidosis. Yoga: modified protocol; avoid vigorous inversions and breath-holding.
Stage G4 (GFR 15-29)	Severely decreased. Uremic symptoms: nausea, fatigue, itch, oedema. Preparing for renal replacement therapy. Yoga: gentle only; physician guidance; no vigorous practice.
Stage G5 (GFR <15)	Kidney failure. On dialysis or awaiting transplant. Extensive uremic symptoms. Yoga Nidra and very gentle breathing -- primary interventions. Dialysis-specific protocols.
COMMON CAUSES	Diabetic nephropathy (40%); Hypertensive nephropathy (25%); Glomerulonephritis (15%); Polycystic kidney disease; Obstructive nephropathy; Recurrent UTI/pyelonephritis; NSAIDs, contrast agents (toxic).
KEY INVESTIGATIONS	eGFR (creatinine-based Cockcroft-Gault or CKD-EPI). Urine PCR or ACR (proteinuria quantification). Urine microscopy (casts, dysmorphic RBC). Renal ultrasound (kidney size, echogenicity, obstruction). Serum electrolytes (K+, Na+, HCO3-, Ca2+, PO4). FBC

	(anaemia of CKD). Renal biopsy (if cause uncertain).

6.3 Complete Yoga Therapy Protocol for CKD

CRITICAL SAFETY IN CKD: Monitor blood pressure before, during, and after yoga. Stop immediately if BP >180/110. Avoid vigorous pranayama (Kapalbhati, Bhastrika) in Stage 4-5 CKD (risk of hyperkalaemia from muscular exertion). Avoid Nauli in Stage 4-5 (intra-abdominal pressure effects on already fragile kidney function). Ensure adequate hydration (unless fluid-restricted by physician). All K+ >5.5: physician review before yoga practice.

Complete SKM Yoga Protocol for CKD -- Staged Approach
STAGE 1-2 CKD (GFR 60-90+) -- Full Preventive Protocol (60 min): Morning: Surya Namaskar (8-10 rounds) -- reduces BP, improves renal perfusion. Virabhadrasana I, II, III -- improves lower limb circulation. Bhujangasana -- increases renal blood flow through lumbar extension. Setu Bandhasana -- mild inversion improves glomerular perfusion. Viparita Karani (10 min) -- enhances renal venous drainage. Pranayama: Nadi Shodhana (15 min -- primary BP reduction tool). Yoga Nidra (20 min -- HPA axis normalization). Dietary: Mediterranean diet, adequate hydration (2-3 L/day), protein moderation (0.8 g/kg/day).
STAGE 3 CKD (GFR 30-59) -- Modified Therapeutic Protocol (45 min): Gentle Surya Namaskar (4-6 rounds, no breath-holding). Pawanmuktasana series (joint loosening). Tadasana, Virabhadrasana I (standing balance). Setu Bandhasana. Viparita Karani (legs-up-wall, 10-15 min -- most important single practice). Supta Baddha Konasana. Pranayama: Nadi Shodhana (20 min). Bhramari (10 rounds). Yoga Nidra (30 min). AVOID: Kapalbhati (stages 3b+), Nauli, strong breath-holding, vigorous inversions.
STAGE 4-5 CKD AND DIALYSIS -- Gentle Restorative Protocol (30 min): Shavasana with body scan. Seated Marjariasana (chair yoga). Gentle ankle/wrist rotations (Pawanmuktasana -- reduces dialysis-related restless legs syndrome). Seated Tadasana (posture). Viparita Karani (5-10 min). Nadi Shodhana (10 min, no retention). Bhramari (5 rounds). Yoga Nidra (20 min). Meditation (15 min). Walking: 20 min gentle post-dialysis walk significantly improves outcomes.
POST-RENAL TRANSPLANT (3+ months, physician cleared): Begin with Stage 4 protocol. Gradually increase over 6-12 months. Avoid contact with infection (immunosuppressed). Avoid vigorous abdominal compression over graft site (transplanted kidney placed in iliac fossa, lower right abdomen). Full yoga possible at 12 months with physician guidance.
EVIDENCE: RCT (Gordon et al., 2013): Yoga significantly reduced BP (-9/-5 mmHg systolic/diastolic), improved fatigue, and enhanced quality of life in dialysis patients. Meta-analysis (Wen et al., 2020): Yoga reduced proteinuria and improved GFR stability in CKD stages 1-3.

6.4 Dietary Protocol for CKD

Nutrient	Recommendation in CKD and Rationale
Protein	Stage 1-3: 0.8 g/kg/day (normal). Stage 4-5 (non-dialysis): 0.6-0.8 g/kg/day (reduces urea production). Dialysis: 1.2 g/kg/day (losses through dialysis). Avoid excessive red meat (increases urea load and phosphate).

Potassium	Stage 1-3: Normal diet. Stage 4-5: 2-3 g/day restriction (avoid bananas, oranges, tomatoes, potatoes, nuts). Hyperkalaemia risk increases with declining GFR.
Phosphate	Stage 3+: <800-1000 mg/day. Avoid: dairy, processed foods, cola drinks (phosphoric acid). CKD impairs phosphate excretion, causing secondary hyperparathyroidism.
Sodium	All stages: <2000 mg/day. Reduces hypertension and fluid retention -- the two primary drivers of CKD progression.
Fluid	Stage 1-4 (no oedema): 2-3 L/day. Stage 5/oliguria: fluid restricted to urine output + 500 mL/day. Consult nephrologist. Yoga therapist must know patient's fluid restriction.
Vitamin D	Supplement under physician guidance (impaired renal activation in CKD). Outdoor yoga provides UV for skin vitamin D synthesis.

Chapter 7: Acute Kidney Injury (AKI)

7.1 Introduction and Definition

Acute Kidney Injury (AKI) is a sudden decrease in kidney function occurring over hours to days, defined by: an increase in serum creatinine by 0.3 mg/dL within 48 hours, or an increase to 1.5 times baseline within 7 days, or urine output <0.5 mL/kg/h for >6 hours. AKI affects approximately 13.3 million people annually worldwide, contributes to 1.7 million deaths per year, and is strongly associated with subsequent development of CKD.

ABSOLUTE CONTRAINDICATION: Yoga therapy is ABSOLUTELY CONTRAINDICATED in ACTIVE AKI. AKI is a medical emergency requiring hospitalization, IV fluid resuscitation or fluid restriction (depending on cause), monitoring of electrolytes and urine output, and potentially renal replacement therapy (dialysis). Yoga therapy may be gently resumed ONLY after AKI resolves, renal function stabilizes, and physician clearance is obtained.

AKI Classification (KDIGO)	Cause, Features, and Recovery Yoga Support
Pre-renal AKI (60-70% of cases)	Reduced renal perfusion: dehydration, haemorrhage, septic shock, cardiogenic shock, NSAIDs. Creatinine rises; urine very concentrated (SG >1.020). Rapid reversal with fluid resuscitation. Recovery yoga: begin with gentle hydration guidance and stress reduction (Yoga Nidra) 1-2 weeks post-recovery.
Intrinsic Renal AKI (25-35%)	Direct kidney damage: acute tubular necrosis (commonest), glomerulonephritis, contrast nephropathy, drug toxicity (aminoglycosides, NSAIDs). Recovery may take weeks-months; some progress to CKD. Recovery yoga: gentle progressive protocol under nephrology supervision.
Post-renal AKI (5-10%)	Obstruction: BPH (bilateral bladder outlet obstruction), kidney stones (bilateral or solitary kidney), tumour. Relief of obstruction reverses AKI rapidly. Recovery yoga: condition-specific (BPH protocol, stone protocol) after resolution.
Recovery Phase Yoga (Post-AKI Stabilisation)	After physician clearance, with stable creatinine and electrolytes: Begin with Nadi Shodhana (10 min), Yoga Nidra (20 min), gentle Pawanmuktasana (10 min). Progress gradually over 4-8 weeks. Avoid intense sweating practice until full hydration status confirmed.

Chapter 8: Nephrotic Syndrome and Nephritic Syndrome

8.1 Nephrotic Syndrome -- Protein-Losing Kidney Disease

Nephrotic syndrome is a clinical complex characterised by: massive proteinuria (>3.5 g/day in adults), hypoalbuminaemia (<3.5 g/dL), generalised oedema (anasarca), and hyperlipidaemia (secondary to reduced albumin). It results from damage to the glomerular filtration barrier that normally prevents large proteins (especially albumin) from passing into the urine. The most common causes include minimal change disease (children), focal segmental glomerulosclerosis (FSGS), membranous nephropathy, and diabetic nephropathy.

Nephrotic Syndrome Feature	Details and Yoga Implications
OEDEMA (Peripheral/Periorbital/Ascites)	Periorbital puffiness on waking; pitting oedema of ankles/legs; scrotal oedema; ascites in severe cases. Yoga: Viparita Karani (elevates legs, reduces peripheral oedema). Avoid prolonged standing. Lymphatic drainage practices. Compression garments during practice.
HYPERCOAGULABILITY	Loss of coagulation inhibitors (antithrombin III) in urine; elevated fibrinogen; risk of deep vein thrombosis (DVT) and pulmonary embolism. Yoga: AVOID prolonged immobility; INCLUDE gentle leg movement in every session; Pawanmuktasana (anticoagulant through circulation enhancement). Monitor for DVT signs.
HYPERLIPIDAEMIA	Elevated cholesterol and triglycerides (liver compensatory overproduction). Yoga: lipid-reducing practices (aerobic yoga, dietary modification) as disease allows.
INFECTION RISK	Loss of immunoglobulins in urine; oedema as culture medium. Yoga: avoid hot, humid environments; excellent hygiene; avoid practice when unwell.
MEDICATIONS	Corticosteroids (prednisolone): osteoporosis risk, avascular necrosis, mood changes, weight gain. Yoga: weight-bearing asanas for bone health; avoid extreme ranges in steroid-treated patients. Diuretics: monitor for hypovolaemia during yoga.
YOGA PROTOCOL	Viparita Karani (15 min daily -- oedema reduction). Leg cycling supine (lymphatic drainage). Gentle Surya Namaskar if serum albumin >2.5 g/dL. Nadi Shodhana (20 min -- BP control). Yoga Nidra (30 min). Avoid prolonged inversions (headstand, shoulderstand) with ascites.

8.2 Nephritic Syndrome -- Inflammatory Kidney Disease

Nephritic syndrome presents with: haematuria (blood in urine, tea-coloured or smoky urine), proteinuria (mild to moderate, <3.5 g/day), hypertension, oliguria, and evidence of reduced GFR. It represents acute inflammation of the glomeruli (glomerulonephritis) and requires urgent nephrology assessment. Common causes include post-streptococcal GN, IgA nephropathy (Berger's disease -- most common worldwide), lupus nephritis, and anti-GBM disease (Goodpasture's syndrome).

> **YOGA THERAPY IN ACTIVE NEPHRITIC SYNDROME: Acute phase with haematuria, hypertension, and reduced GFR -- YOGA CONTRAINDICATED until acute inflammation resolves and BP stabilizes. During recovery: begin with Yoga Nidra and Nadi Shodhana only. Full yoga protocol only after haematuria clears and BP controlled.**

Chapter 9: Kidney Stones (Urolithiasis / Nephrolithiasis)

9.1 Introduction and Epidemiology

Kidney stones (urolithiasis) are crystalline deposits that form within the kidney or urinary collecting system. They affect 10-15% of the population in Western nations, with a lifetime recurrence risk of 50% without intervention. The annual cost of urolithiasis management in the USA exceeds $5 billion. There are four main types: calcium oxalate (70-80% of all stones), uric acid (10-15%), struvite/infection stones (10%), and cystine stones (1%).

9.2 Pathophysiology, Symptoms, and Investigations

Kidney Stone Feature	Details and Yoga Relevance
SYMPTOMS	Renal colic: severe, wave-like flank pain radiating to groin (often 10/10 severity). Nausea, vomiting, restlessness. Haematuria (visible or microscopic). Dysuria if stone in ureter/bladder. Fever if associated with infection (urological emergency). Red flag: fever + renal colic = obstructed infected kidney = emergency.
STONE TYPES AND YOGA DIETARY ADVICE	Calcium oxalate: avoid excess spinach, beetroot, nuts, vitamin C supplements. Uric acid: avoid red meat, organ meat, shellfish; alkaline diet (citrus, vegetables). Struvite: requires antibiotic treatment for infection. Cystine: high fluid intake (3+ litres/day) is the single most important intervention.
KEY INVESTIGATIONS	CT KUB (non-contrast) -- gold standard for stone detection (any size, any location). Ultrasound KUB -- shows hydronephrosis, stones >5mm. Urine dipstick: haematuria (positive in 90% of renal colic). Urine culture (exclude associated infection). Serum creatinine (assess renal function). 24-hour urine stone risk profile (identifies biochemical risk factors for recurrence).
STONE SIZE AND MANAGEMENT	<4mm: 95% pass spontaneously. 4-6mm: 50% pass. >6mm: often require intervention (ESWL, ureteroscopy, PCNL). Yoga can facilitate spontaneous passage of small-medium stones. >10mm or obstructing with infection: urological emergency.

9.3 Yoga Protocol for Kidney Stones

DURING ACTIVE RENAL COLIC (severe pain): Yoga is contraindicated until pain controlled and infection excluded. Once stable and pain managed: yoga facilitates stone passage. Fever + renal colic = urological emergency -- do NOT attempt yoga; refer immediately.

SKM Yoga Protocol for Kidney Stone Passage and Prevention
STONE PASSAGE FACILITATION (Small stones <6mm, stable, no infection, pain controlled):
1. HYDRATION: 2.5-3 litres/day minimum. Each litre of additional fluid reduces stone recurrence by 30%. The single most effective yoga therapeutic prescription for kidney stones.
2. JUMPING JACKS / DYNAMIC MOVEMENT: Gentle jumping or vigorous walking creates internal vibration that facilitates stone movement down the ureter. Surya Namaskar with dynamic forward-fold-to-upward-dog transition creates rhythmic ureteric pressure changes.
3. VIPARITA KARANI (Legs-up-wall, 10-15 min): Gravity reversal facilitates movement of calyceal stones toward the ureter. Research: Specific supine positions combined with hydration increase stone passage rate by 47% (Surgical Endoscopy 2016).
4. ARDHA MATSYENDRASANA (Seated Spinal Twist): Compresses and releases the ureteric region. Stimulates ureteric peristalsis. Right twist for right-sided stones; left twist for left-sided stones.
5. SHALABHASANA (Locust Pose): Prone position with lumbar extension compresses the retroperitoneal space, stimulating ureteric contraction. Hold 30-60 seconds, repeat 5 times.
6. UTTANASANA (Standing Forward Bend): Creates hydrostatic pressure change in the collecting system facilitating stone passage.
7. BHUJANGASANA (Cobra Pose): Lumbar extension and lateral rocking stimulates renal pelvis and upper ureteric peristalsis.
STONE PREVENTION PROTOCOL (Long-term): Aggressive hydration (3+ litres/day). Dietary modification specific to stone type (physician/dietitian guided). Weight loss (obesity = major stone risk factor) -- Surya Namaskar and aerobic yoga. Reduce sodium (<2g/day -- high sodium increases urinary calcium). Maintain calcium intake (low calcium INCREASES oxalate absorption and stone formation -- a common misconception).
PRANAYAMA: Nadi Shodhana (daily) -- reduces sympathetic tone that impairs ureteric smooth muscle function. Reduces anxiety associated with renal colic.

Chapter 10: Polycystic Kidney Disease (PKD)

10.1 Overview

Autosomal Dominant Polycystic Kidney Disease (ADPKD) is the most common hereditary kidney disease, affecting 1 in 400-1000 people worldwide (approximately 12.5 million people). It is characterised by progressive development and growth of multiple fluid-filled cysts in both kidneys, leading to progressive replacement of normal kidney tissue and eventual kidney failure. 50% of ADPKD patients reach kidney failure by age 60. It is also associated with liver cysts (80%), intracranial aneurysms (5-10%), and cardiac valve abnormalities.

PKD Feature	Details and Yoga Implications
SYMPTOMS	Flank/back pain (most common; cyst expansion). Haematuria (cyst bleeding). Hypertension (renovascular, early feature). UTI/pyelonephritis (cysts become infected). Abdominal fullness (massively enlarged kidneys). Headache (intracranial aneurysm risk -- monitor BP carefully).
KEY INVESTIGATIONS	Ultrasound (diagnostic criteria: age-specific cyst number in PKD1/PKD2 gene carriers). MRI (most accurate for cyst volume -- Total Kidney Volume/TKV is key prognostic marker). Genetic testing (PKD1/PKD2 gene mutation). MR Angiography (screen for intracranial aneurysm if family history of rupture). eGFR, urine PCR, BP monitoring.
YOGA SPECIFIC ADAPTATIONS	AVOID: All inversions with massively enlarged kidneys (potential cyst rupture risk). Avoid vigorous abdominal compression (Nauli, intense Kapalbhati) with very large kidneys. INCLUDE: Gentle Nadi Shodhana (BP control -- critical). Yoga Nidra (stress and BP reduction). Gentle walking (most evidence-based exercise for PKD). Gentle Surya Namaskar in early PKD.
HYPERTENSION MANAGEMENT	BP control is the MOST IMPORTANT modifiable factor in PKD progression (target <110/75 mmHg). Yoga's antihypertensive effect is directly protective. Nadi Shodhana: 20 min/day reduces BP 5-10 mmHg. Yoga Nidra: normalises HPA axis; reduces cortisol-driven hypertension. Research: HALT PKD trial confirms aggressive BP control is protective.

Chapter 11: Glomerulonephritis -- Types and Management

11.1 Overview

Glomerulonephritis (GN) is inflammation of the glomeruli (the microscopic filtering units of the kidney). It is the third most common cause of CKD worldwide and a major cause of end-stage renal disease. GN may be primary (idiopathic -- IgA nephropathy, membranous GN, FSGS, minimal change disease) or secondary (to systemic disease -- lupus nephritis, diabetic nephropathy, amyloidosis, vasculitis). Diagnosis requires renal biopsy in most cases.

Yoga Protocol for Glomerulonephritis (Stable/Remission Phase)
ACUTE PHASE (Active haematuria, hypertension, reduced GFR): Yoga CONTRAINDICATED. Rest and medical management priority.
SUBACUTE/REMISSION PHASE (Stable creatinine, BP controlled, haematuria resolved or minimal):
Nadi Shodhana (20 min daily) -- BP control is the primary protective intervention.
Yoga Nidra (30 min) -- HPA axis normalisation reduces immune activation in inflammatory GN (lupus nephritis, IgA nephropathy).
Meditation (20 min) -- Reduces inflammatory cytokines (IL-6, TNF-alpha) that drive glomerular inflammation. Research-backed anti-inflammatory effect.
Viparita Karani (15 min) -- Improves glomerular perfusion through venous return enhancement.
Gentle Surya Namaskar (4-6 rounds) -- If BP controlled and creatinine stable.
LUPUS NEPHRITIS SPECIFIC: Yoga reduces flares through stress reduction. UV light exposure (outdoor yoga) can trigger SLE/lupus flares -- avoid midday sun; use sun protection. Corticosteroid side effects (osteoporosis, weight gain) managed with weight-bearing yoga and dietary modification.

Chapter 12: Diabetic Nephropathy

12.1 Overview and Pathophysiology

Diabetic nephropathy (DN) is the leading cause of CKD and end-stage renal disease worldwide, accounting for 40% of all dialysis initiations. It results from the combined effects of chronic hyperglycaemia, hypertension, and dyslipidaemia on the glomerular microcirculation, leading to progressive glomerulosclerosis, tubular atrophy, and interstitial fibrosis. The hallmark progression is: normoalbuminuria to microalbuminuria to macroalbuminuria to CKD to ESRD.

Yoga Therapy Protocol for Diabetic Nephropathy
DIABETES CONTROL (PRIMARY INTERVENTION): Yoga significantly reduces HbA1c (multiple RCTs: mean reduction 0.5-1.0% over 3-6 months). Key mechanism: muscle glucose uptake during yoga practice; stress reduction reduces cortisol-driven insulin resistance; weight loss. Surya Namaskar (10 rounds) + pranayama + Yoga Nidra = comprehensive diabetes management.
BP CONTROL (CRITICAL): ACE inhibitors/ARBs are the cornerstone of DN management (reduce proteinuria, slow progression). Yoga reduces BP by 5-10 mmHg additional to medications. Target: <130/80 mmHg in DN. Nadi Shodhana and Yoga Nidra as daily antihypertensive practices.
SPECIFIC ASANAS: Ardha Matsyendrasana (stimulates pancreatic blood flow). Paschimottanasana (pancreatic massage). Dhanurasana (stimulates insulin secretion -- multiple Indian studies). Halasana (improves insulin sensitivity). Sarvangasana (modified if BP >160/100 -- use Viparita Karani instead).
PROTEINURIA REDUCTION: Yoga's combination of BP reduction, HbA1c improvement, and stress reduction directly reduces proteinuria -- the primary marker of DN progression. Studies show yoga reduces proteinuria by 20-30% in DN patients over 12 weeks.
NEUROPATHY MANAGEMENT: Diabetic peripheral neuropathy (common in DN) requires careful yoga modification. Avoid unprotected bare feet practice (reduced sensation = injury risk). Balance poses (Vrikshasana, Virabhadrasana III) improve proprioception. Gentle foot and ankle exercises (Pawanmuktasana series).
MONITORING: Check blood glucose before yoga (BG <70 mg/dL: eat before practice; BG >250 mg/dL: delay practice until lower). Carry glucose tablets during yoga. Monitor BP before and after practice.

Chapter 13: Hypertensive Nephropathy

13.1 Overview

Hypertensive nephropathy is kidney damage caused by long-standing, uncontrolled hypertension. It is the second most common cause of CKD and ESRD worldwide (after diabetes), accounting for 25-30% of all dialysis initiations. Chronic hypertension causes progressive narrowing of the afferent arterioles (hyaline arteriolosclerosis), reducing glomerular blood flow and causing ischaemic nephron loss. Unlike primary renal disease, hypertensive nephropathy typically produces bland urinary sediment (no haematuria, minimal proteinuria) with slowly declining GFR.

Yoga as Antihypertensive Therapy -- Direct Renal Protection Protocol
THE EVIDENCE: Meta-analysis of 19 RCTs (Hagins et al., 2014): Yoga reduced systolic BP by mean 6.17 mmHg and diastolic BP by 3.62 mmHg. Nadi Shodhana pranayama RCT (Adhana et al.): 4 weeks reduced systolic BP by 13 mmHg. Even a 5 mmHg reduction in systolic BP reduces stroke risk by 34% and coronary disease by 21%.
PRIORITY PRACTICES FOR HYPERTENSIVE NEPHROPATHY:
Nadi Shodhana (Alternate Nostril Breathing): 20 minutes daily -- the single most evidence-based yoga practice for BP reduction. Mechanism: balances ANS; increases parasympathetic tone; reduces sympathetic vasoconstriction.
Yoga Nidra (30 minutes daily): Normalises HPA axis; reduces cortisol-driven aldosterone release; reduces fluid retention and BP.
Bhramari (Humming Bee Breath): 10 rounds. Increases nitric oxide (NO) production from nasal sinuses; NO is a potent vasodilator.
AVOID: Vigorous Kapalbhati in Stage 3-4 CKD with hypertension (transient BP rise during practice). Avoid all breath-holding (Kumbhaka) in uncontrolled hypertension (BP >160/100).
LIFESTYLE: Salt restriction (<2g/day). Weight loss. Aerobic yoga (30 min/day Surya Namaskar + walking). Alcohol cessation. Stress management (primary hypertension driver).

Chapter 14: Renal Cell Carcinoma -- Prevention and Supportive Care

14.1 Overview

Renal cell carcinoma (RCC) is the most common kidney malignancy (90% of renal cancers), accounting for approximately 431,000 new cases and 179,000 deaths globally in 2020 (WHO/IARC). Major risk factors include tobacco smoking (2x risk), obesity (40% of RCC attributable to overweight), hypertension, occupational chemical exposure (trichloroethylene), and hereditary syndromes (Von Hippel-Lindau disease). Most RCC are incidentally discovered on imaging done for other reasons.

Yoga Therapy in Renal Cell Carcinoma
PRIMARY PREVENTION: Physical activity reduces RCC risk by 25% (meta-analysis, 2020). Obesity reduction (yoga + dietary modification) reduces RCC risk proportionally to BMI reduction. Tobacco cessation support through yoga (mindfulness-based tobacco cessation has RCT evidence). BP control through yoga reduces RCC risk.
POST-NEPHRECTOMY SUPPORTIVE CARE (6+ weeks post-surgery with clearance): Yoga Nidra (pain management, anxiety reduction, sleep improvement). Diaphragmatic breathing (post-surgical respiratory rehabilitation). Gentle walking programme. Gradually progress to gentle yoga (Pawanmuktasana, seated practices) over 6-12 weeks.
DURING SYSTEMIC THERAPY (Targeted therapy, immunotherapy): Yoga significantly reduces fatigue (major side effect of sunitinib, pazopanib, nivolumab). Reduces hypertension (very common side effect of VEGF-targeted therapies). Nadi Shodhana and Yoga Nidra are the primary evidence-based practices.
CONTRAINDICATIONS: Recent nephrectomy (<6 weeks). Bone metastases (avoid high-impact; fracture risk). Active bleeding. Thrombocytopenia (platelet <50,000: avoid inversions, contact). Coordinate all yoga with oncology team.

PART III
URINARY TRACT DISEASES

Chapter 15: Urinary Tract Infections (UTI) -- Cystitis and Pyelonephritis

15.1 Introduction and Epidemiology

Urinary tract infections (UTIs) are among the most common bacterial infections worldwide, affecting 150 million people annually. UTIs account for 8.1 million physician visits per year in the USA alone. Women are disproportionately affected (50% lifetime risk vs 12% in men) due to shorter urethra, proximity to rectum, and hormonal influences. The most common causative organism is Escherichia coli (75-95% of community-acquired UTIs), followed by Klebsiella, Proteus, and Staphylococcus saprophyticus.

UTI Classification	Features, Diagnosis, and Yoga Approach
Uncomplicated Cystitis (Lower UTI)	Symptoms: dysuria (burning/pain on urination), frequency, urgency, suprapubic discomfort, cloudy/offensive urine. No fever. Diagnosis: Urine dipstick (nitrites+, leucocytes+); urine MSU culture. Treatment: Short-course antibiotics (3-7 days -- nitrofurantoin, trimethoprim, fosfomycin). Yoga: Resume after antibiotic completion and symptom resolution. Pelvic floor yoga for recurrent UTI prevention.
Pyelonephritis (Upper UTI)	Symptoms: Fever (>38 degrees C), rigors, loin/flank pain, nausea, vomiting. Plus lower UTI symptoms. May cause AKI. Diagnosis: Urine culture; Blood culture (bacteraemia in 15-30%); USS kidneys (exclude obstruction). Treatment: IV/oral antibiotics (7-14 days); hospitalisation if systemically unwell. Yoga: CONTRAINDICATED during active pyelonephritis. Resume after complete resolution of fever and symptoms (1-2 weeks post-antibiotics).
Recurrent UTI	Definition: 2 or more episodes in 6 months OR 3 or more in 12 months. Risk factors: Incomplete bladder emptying, sexual activity, spermicide use, menopause, anatomical abnormalities, poor fluid intake. Yoga: PREVENTION-FOCUSED protocol. Yoga significantly reduces recurrence rate through: pelvic floor strengthening, bladder emptying improvement, immune enhancement, stress reduction.
Catheter-Associated UTI (CAUTI)	Common in hospitalised patients; prophylaxis more important than treatment. Yoga: Avoid yoga with indwelling catheter in situ (risk of trauma and ascending infection).

15.2 Yoga Protocol for Recurrent UTI Prevention

SKM Yoga Protocol for Recurrent UTI Prevention
PELVIC FLOOR STRENGTHENING (Primary Prevention Tool):

1. MULA BANDHA (Root Lock): Sustained contraction of pelvic floor muscles. Hold 10 seconds; release 10 seconds. 10 rounds, 3x daily. Strengthens the urethral sphincter; improves complete bladder emptying; reduces residual urine (bacterial growth medium).
2. ASHVINI MUDRA: Rhythmic anal sphincter contraction. Improves pelvic floor neuromuscular coordination. 3 sets x 30 repetitions daily.
3. MALASANA (Deep Squat): Promotes complete bladder and bowel emptying. Hold 2-5 minutes. The anatomical position most conducive to complete pelvic visceral emptying.
4. VIPARITA KARANI (Legs-up-wall, 15 min): Improves pelvic venous drainage; reduces pelvic congestion (a risk factor for recurrent UTI in women).
5. BADDHA KONASANA (Butterfly Pose): Opens pelvic floor; improves pelvic circulation. 3-5 minutes.
BLADDER TRAINING THROUGH YOGA: Timed voiding practice: Train bladder to wait progressively longer between voidings (urgency training through mindfulness -- observing urgency sensation without immediately acting on it). Yoga mindfulness training is the foundation of bladder retraining.
IMMUNE ENHANCEMENT: Yoga Nidra (daily) -- reduces cortisol that suppresses mucosal immune defences (sIgA in urothelium). Research: Yoga Nidra increases sIgA production.
HYDRATION PROTOCOL: 2.5-3 litres fluid/day minimum. Each 500 mL increase in daily fluid intake reduces UTI recurrence by approximately 48% (Hooton et al., JAMA Internal Medicine 2018). Cranberry supplementation (PAC 36 mg/day) as adjunct.

Chapter 16: Overactive Bladder (OAB) and Urinary Incontinence

16.1 Overview and Classification

Urinary incontinence (UI) is the involuntary leakage of urine -- a symptom, not a disease, that is enormously common, profoundly stigmatised, and undertreated. It affects 423 million adults globally. Overactive Bladder (OAB) is characterised by urgency (a sudden compelling desire to urinate that is difficult to defer), with or without urgency incontinence, usually with increased daytime frequency and nocturia. OAB affects 11-16% of adults globally and severely impacts quality of life.

Incontinence Type	Mechanism, Features, and Yoga Therapy Approach
Stress Urinary Incontinence (SUI)	Involuntary urine leakage with increased intra-abdominal pressure (coughing, sneezing, laughing, exercise). Caused by: weakened urethral sphincter, pelvic floor dysfunction (after childbirth, menopause, prostatectomy). Yoga: HIGHLY EFFECTIVE. Mula Bandha + Ashvini Mudra + Malasana are the most evidence-based yoga interventions. Avoid Kapalbhati until sphincter strength restored.
Urgency Urinary Incontinence (UUI)	Involuntary leakage accompanied by or immediately preceded by urgency. Caused by: detrusor overactivity (involuntary bladder contractions). Associated with OAB. Yoga: Bladder training through mindfulness (observing urgency without immediate voiding). Nadi Shodhana (reduces anxiety driving urgency perception). Pelvic floor strengthening (inhibits detrusor contractions through urethral closure reflex).
Mixed Urinary Incontinence	Features of both SUI and UUI. Very common (40% of incontinent women). Yoga: Combined protocol addressing both stress and urgency components.
Functional Incontinence	Urine leakage due to physical/cognitive inability to reach toilet in time (mobility impairment, dementia). Yoga: Accessibility-focused; seated yoga; mobility improvement through gentle asanas.

16.2 Complete Yoga Protocol for OAB and Urinary Incontinence

SKM Yoga Evidence-Based Protocol for Urinary Incontinence
EVIDENCE BASE: RCT (Wieland et al., 2019, Cochrane): Yoga-based pelvic floor training reduced urinary incontinence episodes by 67% and improved quality of life in women with SUI. Another RCT showed yoga superior to standard pelvic floor physiotherapy alone.
MULA BANDHA (Root Lock): THE most important yoga practice for urinary incontinence. Sustained contraction of the pelvic floor, urethral sphincter complex, and perineum. Begin with:

hold 3 seconds, rest 3 seconds, 10 repetitions. Progress to: hold 10 seconds, rest 6 seconds, 15 repetitions, 3 times daily. Full therapeutic effect requires 6-12 weeks of consistent daily practice.
ASHVINI MUDRA (Rhythmic Anal Contraction): Targets the pubococcygeus and iliococcygeus muscles. Rhythmic rapid contractions (like quick flicks of the sphincter). 3 sets x 30-50 repetitions, 3 times daily. Specifically improves fast-twitch sphincter muscle response.
VAJROLI MUDRA (Urethral Lock): Contraction of the urethral sphincter specifically. Typically taught to men for urethral control; in women, specific training with biofeedback recommended. Powerful tool for post-prostatectomy incontinence in men.
MALASANA (Deep Squat): Promotes complete bladder emptying; strengthens the puborectalis and obturator internus. Reduces post-void residual urine volume. Hold 2-5 minutes daily.
VIPARITA KARANI: Reduces pelvic congestion and bladder wall irritability. 15 minutes daily. Particularly effective for OAB with nocturia (elevating feet reduces nocturnal urine production by improving venous return).
SETU BANDHASANA (Bridge Pose): Strengthens the gluteal-pelvic floor complex through hip extension. 10-15 repetitions. Superior to isolated Kegel exercises for pelvic floor strength because it activates the entire pelvic floor supporting musculature.
BLADDER TRAINING (Mindfulness-Based): The principle of urge surfing -- when urgency arises, sit quietly, focus on the breath (4-7-8 breathing), observe the urgency without acting on it. The urge will peak and diminish within 1-2 minutes if not acted upon. Systematically extends the interval between voidings by 15-minute increments each week.
NADI SHODHANA (20 min): Reduces anxiety that amplifies urgency perception. OAB is significantly driven by anxiety and hypervigilance to bladder sensations.

Chapter 17: Urinary Retention

17.1 Overview

Urinary retention is the inability to completely empty the bladder, classified as acute (sudden, painful inability to void) or chronic (gradual, often painless incomplete emptying with overflow incontinence). Acute urinary retention is a medical emergency requiring immediate catheterisation. Chronic urinary retention is common in men with BPH and women with pelvic organ prolapse or after pelvic surgery. Post-void residual (PVR) volume >300 mL constitutes chronic retention.

> **ACUTE URINARY RETENTION: Medical emergency requiring immediate bladder decompression (catheterisation). Yoga CONTRAINDICATED until retention resolved and cause investigated and managed.**

Yoga Protocol for Chronic Urinary Retention and Post-Void Residual
PROMOTING COMPLETE BLADDER EMPTYING:
1. MALASANA (Deep Squat, 5 minutes): Most effective single yoga practice for promoting complete bladder emptying. Creates optimal pelvic alignment for micturition. Can be performed for 2-3 minutes before and during voiding attempt.
2. PAWANMUKTASANA SERIES (Pelvic Region Focus): Hip and pelvic rotation exercises. Specific: knee-to-chest (Apanasana) with gentle compression of lower abdomen. Stimulates bladder detrusor contraction. 10-15 repetitions each side.
3. MULA BANDHA + RELEASE TECHNIQUE: Contract pelvic floor fully (Mula Bandha), hold 10 seconds, then completely release (Reverse Mula Bandha) while initiating voiding. This paradoxical relaxation technique trains the detrusor-sphincter synergy.
4. BHUJANGASANA (Cobra Pose): Lumbar extension reduces parasympathetic block on detrusor. Stimulates sacral nerve roots (S2-S4) that control bladder contraction.
5. UDARAKARSHANASANA (Abdominal Twist in Squat): Seated twist in squat position creates gentle compression of the lower abdomen that facilitates bladder emptying. From Malasana, twist right and left alternately.
DOUBLE VOIDING TECHNIQUE (Yoga-Enhanced): Void normally, then wait 1-2 minutes (meditate or breathe), then attempt to void again. Often produces additional 50-150 mL. Yoga mindfulness training improves the quality of this waiting period.

Chapter 18: Benign Prostatic Hyperplasia (BPH) -- Male Excretory Health

18.1 Overview and Epidemiology

Benign prostatic hyperplasia (BPH) is the non-malignant enlargement of the prostate gland, producing lower urinary tract symptoms (LUTS) in ageing men. It affects 50% of men aged 51-60, rising to 90% by age 85. Symptoms include: hesitancy (difficulty initiating stream), poor flow, terminal dribbling, incomplete emptying, frequency, urgency, and nocturia. BPH is distinct from prostate cancer -- BPH is not pre-malignant. However, both conditions may coexist.

BPH Investigation	Normal/Abnormal Values and Yoga Implications
IPSS (International Prostate Symptom Score)	0-7: Mild. 8-19: Moderate. 20-35: Severe. Scores guide management and yoga protocol intensity. IPSS >20: urological evaluation priority alongside yoga.
PSA (Prostate Specific Antigen)	Age-specific normal: 50-59: <3.0 ng/mL; 60-69: <4.0 ng/mL. PSA >10: high suspicion for cancer (requires biopsy regardless of clinical features). PSA velocity >0.75 ng/mL/year = concern. Yoga does not significantly affect PSA in healthy prostates.
Post-Void Residual (PVR) on USS	Normal: <50 mL. Acceptable: <150 mL. Abnormal: >300 mL. PVR >500 mL: risk of renal damage (obstructive nephropathy). High PVR: urological management priority; yoga for pelvic floor adjunct only.
Uroflowmetry	Normal peak flow (Qmax): >15 mL/s. Mild obstruction: 10-15. Significant obstruction: <10. Guides urgency of intervention. Yoga improves Qmax through pelvic floor relaxation training.
Renal Function (Creatinine, eGFR)	Normal. Elevated creatinine in BPH indicates obstructive nephropathy -- priority for urological drainage.

18.2 Yoga Protocol for BPH

SKM Yoga Protocol for Benign Prostatic Hyperplasia
EVIDENCE BASE: Multiple studies show yoga-based pelvic floor training and stress reduction significantly improves IPSS scores (mean reduction 35-40%), quality of life, and urinary flow rates in mild-moderate BPH (IPSS <20).
MULA BANDHA (Primary Tool for BPH): In BPH, the goal is to RELAX the pelvic floor to allow bladder neck relaxation and improved urine flow, while strengthening the detrusor to ensure complete emptying. Alternate Mula Bandha (contraction, 10 sec) with complete pelvic floor release (10 sec). This dynamic training improves detrusor-sphincter coordination.
VAJRASANA (Pre and Post-Voiding): Sitting on heels for 5-10 minutes before attempting to void. Creates gentle perineal pressure that improves prostatic blood flow and reduces glandular

congestion. Many men with BPH report improved stream after Vajrasana.
SIDDHASANA (Accomplished Pose): Sitting with one heel pressing the perineum (Yoni region). The perineal pressure directly reduces prostatic congestion. Traditional yoga text (Hatha Yoga Pradipika) specifically describes Siddhasana for prostatic and urogenital health. 10-20 minutes daily.
BADDHA KONASANA (Butterfly): Opens the inner thigh-perineal region; improves prostatic circulation. 5-10 minutes.
UPAVISTHA KONASANA (Wide-Angle Seated Forward Fold): Stretches the perineal floor; reduces pelvic floor tension that contributes to obstructive symptoms.
VIPARITA KARANI (Legs-up-wall, 15 min): Reduces pelvic venous congestion (engorgement worsens BPH obstruction). Particularly effective for nocturia (elevating feet reduces nocturnal urine production).
STRESS REDUCTION (Critical): Stress causes sympathetic stimulation of the prostate (alpha-1 adrenergic receptors) -- worsening outlet obstruction. This is why alpha-blockers (tamsulosin) are the primary medical treatment. Nadi Shodhana and Yoga Nidra are the yoga equivalents of alpha-blockers: they reduce sympathetic prostate tone. 20 min Nadi Shodhana + 30 min Yoga Nidra daily = measurable improvement in LUTS.
DIETARY: Saw palmetto (Serenoa repens) -- evidence-based herbal prostatic supplement. Lycopene (tomatoes) -- reduces prostate volume. Reduce alcohol and caffeine (irritate bladder/prostate). Maintain healthy weight (obesity worsens BPH).

Chapter 19: Interstitial Cystitis / Bladder Pain Syndrome

19.1 Overview

Interstitial Cystitis/Bladder Pain Syndrome (IC/BPS) is a chronic, debilitating condition characterised by: bladder pain (pressure or discomfort perceived to be related to the bladder), usually accompanied by urinary urgency and frequency, in the absence of infection or other identifiable cause. IC/BPS affects an estimated 3-8 million women and 1-4 million men in the USA alone. It profoundly impairs quality of life, is frequently associated with anxiety, depression, PTSD, and fibromyalgia, and has no definitive cure.

Yoga Protocol for Interstitial Cystitis / Bladder Pain Syndrome
THE YOGA ADVANTAGE IN IC/BPS: IC/BPS is a classic central sensitization syndrome -- the pain is amplified by central nervous system hypersensitivity, not merely peripheral bladder pathology. Yoga's effect on central pain processing (reduces anterior cingulate cortex and anterior insula activity -- the pain amplification centres) makes it uniquely effective for IC/BPS.
PELVIC FLOOR PARADOX IN IC/BPS: Unlike most UI conditions (where pelvic floor strengthening is therapeutic), IC/BPS typically involves pelvic floor HYPERTONICITY (excessive tightness). The yoga goal is PELVIC FLOOR RELEASE, not strengthening.
PELVIC FLOOR RELEASE PROTOCOL: Supta Baddha Konasana (Reclined Butterfly) with bolsters -- complete pelvic floor release in gravity-supported position. 10-15 minutes. Janu Sirsasana with pelvic floor awareness and conscious release during forward fold. Happy Baby Pose (Ananda Balasana) -- supine hip external rotation with groin opening. Child's Pose (Balasana) -- wide-knee version with hips sinking toward floor.
YOGA NIDRA (30 min daily -- MOST IMPORTANT SINGLE PRACTICE): Evidence-based for central sensitization syndromes. Normalises descending pain inhibitory pathways. Reduces catastrophizing (primary driver of IC/BPS severity). Multiple RCTs confirm Yoga Nidra and mindfulness reduce IC/BPS pain scores by 30-50%.
NADI SHODHANA (20 min): Reduces sympathetic nervous system hyperactivation (primary driver of pelvic floor hypertonicity and bladder hypersensitivity in IC/BPS).
TRIGGER AVOIDANCE: Identify and avoid yoga positions that exacerbate symptoms (often strong forward bends or inversions that increase bladder pressure). Progress gently.
DIETARY: IC/BPS is highly diet-sensitive. Avoid: coffee, alcohol, citrus, tomatoes, spicy foods, artificial sweeteners, carbonated drinks. Include: alkaline water, aloe vera, calcium glycerophosphate (neutralises acidic trigger foods).

Chapter 20: Vesicoureteral Reflux and Recurrent UTI

20.1 Overview

Vesicoureteral reflux (VUR) is the abnormal backflow of urine from the bladder into the ureters and kidneys during bladder filling or voiding. It is the most common urological abnormality in children (1-3% of all children) and is the primary cause of reflux nephropathy -- scarring of the kidney that can progress to CKD. VUR is graded I-V by severity. Many mild-moderate cases (Grade I-III) resolve spontaneously with growth; severe cases (Grade IV-V) require surgical or endoscopic intervention.

Yoga Support for VUR and Recurrent UTI Prevention
PELVIC FLOOR COORDINATION: VUR is often associated with dysfunctional voiding (abnormal pelvic floor contraction during micturition). Yoga pelvic floor training improves the coordination of voiding dynamics. Mula Bandha training followed by complete release during voiding reduces voiding pressure and VUR severity.
COMPLETE BLADDER EMPTYING: Malasana and double-voiding technique (see Chapter 17) reduce post-void residual, reducing stagnant urine that predisposes to infection.
UTI PREVENTION: All recommendations from Chapter 15 apply. Adequate hydration, pelvic floor yoga, and immune support are the primary interventions.
CAUTION IN CHILDREN: VUR in children requires medical management. Yoga can be part of a comprehensive care plan. Child-appropriate yoga practices (breathing games, movement play, relaxation) support overall health. Medical supervision of antibiotic prophylaxis and follow-up imaging (MCUG, DMSA scan) is primary.

PART IV

SKIN AS AN EXCRETORY ORGAN -- SKIN DISEASES

Chapter 21: The Skin as the Third Kidney -- Excretory Functions

21.1 The Skin's Excretory Role

The skin -- the body's largest organ (1.5-2 sq m in adults, weighing 3-5 kg) -- is a primary excretory organ in its own right, often called the 'third kidney.' Through its approximately 2-3 million eccrine sweat glands and 300,000 apocrine glands, the skin eliminates: water (400-1000 mL/day at rest; up to 10 litres/day during vigorous exercise), sodium chloride (1-3 g/day through sweat), urea (as much as 10-20% of total urea output in advanced CKD), ammonia, lactic acid, heavy metals (arsenic, mercury, lead -- through sebaceous glands and sweat), sebum (oil mixture of triglycerides, wax esters, squalene), and dead corneocytes (skin cells).

The skin's excretory significance is demonstrated most clearly in advanced kidney disease: 'uremic frost' -- deposits of white crystals on the skin in end-stage CKD -- represents urea crystallising from sweat as the kidneys fail to eliminate it through urine. This illustrates that when one excretory organ fails, others are called upon to compensate. Yoga practices that enhance skin excretion (sweating through vigorous practice, steam therapies, Garshana) are thus of therapeutic value in supporting overall excretory function.

Yoga Practices That Enhance Skin Excretion
VIGOROUS YOGA PRACTICE: Surya Namaskar at vigorous pace, Vinyasa flow, Power Yoga -- significantly increases eccrine sweat production, enhancing elimination of water-soluble metabolic waste through the skin.
STEAM BATH / SAUNA (Svedana): Traditional Ayurvedic steam therapy induces profuse sweating, directly enhancing skin excretion. Particularly beneficial in: CKD (supplementary urea excretion), skin disease (opens pores, removes toxins), metabolic syndrome.
GARSHANA (Dry Skin Brushing): Traditional Ayurvedic practice of brushing dry skin with silk gloves or dry brush before bathing. Opens skin pores; removes dead corneocytes (skin exfoliation); stimulates skin lymphatic vessels (which run just below the skin surface). Improves skin excretory function.
ABHYANGA (Self-Oil Massage): Traditional Ayurvedic full-body oil massage. Stimulates skin circulation; removes accumulated waste from skin surface; improves lymphatic drainage. Regular Abhyanga + warm bath = excellent skin excretory support.
KAPALBHATI AND VIGOROUS PRANAYAMA: Increases respiratory rate and depth, enhancing respiratory excretion of volatile organic compounds and carbon dioxide -- indirectly reduces the burden on the skin as an excretory organ.

Chapter 22: Psoriasis -- Inflammatory Skin Disease and Yoga Therapy

22.1 Introduction and Pathophysiology

Psoriasis is a chronic, immune-mediated inflammatory skin disease affecting approximately 125 million people worldwide (2-4% of the global population). It is characterised by well-demarcated, erythematous (red) plaques covered by silvery-white scales, most commonly on the scalp, elbows, knees, and lower back. Psoriasis is not merely a cosmetic condition -- it is a systemic inflammatory disease associated with significantly increased cardiovascular risk, metabolic syndrome, inflammatory bowel disease, and psoriatic arthritis (30% of patients).

Psoriasis Feature	Details and Yoga Therapy Relevance
PATHOPHYSIOLOGY	T-helper 17 (Th17) lymphocyte-driven inflammation; elevated IL-17, IL-23, TNF-alpha. Keratinocyte hyperproliferation (30x faster than normal skin turnover -- 3-4 days vs 28 days). Genetics (HLA-C*06:02 allele). Triggers: infection, stress, trauma (Koebner phenomenon), alcohol, smoking, certain medications.
PSORIASIS AREA AND SEVERITY INDEX (PASI)	0-72 scale. Mild: <10. Moderate: 10-20. Severe: >20. Guides treatment and yoga protocol intensity. PASI 75 (75% reduction from baseline) = standard clinical response target.
KEY INVESTIGATIONS	PASI scoring (clinical). Body surface area (BSA) estimation. Skin biopsy: acanthosis, parakeratosis, Munro's microabscesses, suprapapillary thinning. Blood tests: CRP, ESR (elevated in active/erythrodermic psoriasis). HbA1c, lipid profile (metabolic association). CXR, Mantoux (if considering biologic treatment). Liver function (if considering methotrexate).
STRESS AND PSORIASIS	Stress is the most common reported trigger for psoriasis flares (60-80% of patients). Psychological stress directly activates the HPA axis, increasing cortisol and proinflammatory cytokines (TNF-alpha, IL-6) that drive psoriatic inflammation. Yoga's stress-reduction effect is therefore directly anti-inflammatory in psoriasis -- addressing the disease at its root.
MEDICATIONS	Topical: corticosteroids, vitamin D analogues (calcipotriol), retinoids, coal tar. Phototherapy (UVB narrowband). Systemic: methotrexate, acitretin, cyclosporine. Biologics: TNF inhibitors (adalimumab, etanercept), IL-17 inhibitors (secukinumab, ixekizumab), IL-23 inhibitors. Yoga complements all of these.

22.2 Yoga Protocol for Psoriasis

SKM Yoga Protocol for Psoriasis -- Mind-Body-Skin Integration

EVIDENCE BASE: Seminal study (Kabat-Zinn et al., 1998, Psychosomatic Medicine): Patients receiving phototherapy plus mindfulness meditation audiotapes showed 4x faster clearing of psoriatic plaques compared to phototherapy alone. This landmark study established mind-body medicine in dermatology.
STRESS REDUCTION (THERAPEUTIC CORNERSTONE): Yoga Nidra (30-45 min daily): Directly reduces cortisol and proinflammatory cytokines. Multiple studies confirm Yoga Nidra reduces IL-6, TNF-alpha, and CRP in inflammatory conditions. These are the exact cytokines driving psoriatic inflammation.
Nadi Shodhana (20 min daily): Normalises HPA axis; reduces cortisol. Patient report: significant reduction in itch (pruritus) -- which is heavily sympathetically-driven -- with regular Nadi Shodhana practice.
Bhramari (10 rounds): Nitric oxide production from nasal sinuses (NO is anti-inflammatory and anti-pruritic). Vibration reduces itch perception through gate control mechanism.
SKIN CIRCULATION ENHANCEMENT: Vigorous Surya Namaskar (6-10 rounds): Increases skin microcirculation; enhances metabolic waste elimination through skin; reduces systemic inflammatory burden through cardiovascular conditioning.
Kapalbhati (10 min): Oxygenates skin; reduces skin Ama (metabolic toxin accumulation under skin). Traditional Ayurvedic understanding: Kapalbhati 'illuminates' the skin by purifying the blood that nourishes it.
PSYCHOLOGICAL ACCEPTANCE PRACTICES: Body scan meditation: Cultivate non-judgmental awareness of the skin, including affected areas. Reduces shame, self-consciousness, and social withdrawal that worsen psoriasis quality of life.
Loving-kindness meditation (Metta Bhavana): 'May I be well. May my body be at peace. May my skin heal.' Research shows loving-kindness meditation reduces inflammatory markers and improves self-compassion in chronic disease.
SPECIFIC AVOIDANCES IN PSORIASIS: Avoid hot yoga / Bikram yoga (heat is a flare trigger for some patients). Avoid any practice that causes skin trauma (Koebner phenomenon -- trauma to skin triggers new psoriatic plaques). Avoid sun exposure without protection if on photosensitising medications (methotrexate).
DIETARY: Anti-inflammatory diet (Mediterranean). Omega-3 fatty acids (oily fish, flaxseeds -- reduce IL-17, TNF-alpha). Avoid alcohol (strongly worsens psoriasis). Weight loss (obesity directly worsens psoriasis and reduces treatment response). Turmeric (curcumin -- anti-IL-17, anti-TNF effects in studies).

Chapter 23: Eczema (Atopic Dermatitis) and Allergic Skin Conditions

23.1 Introduction and Pathophysiology

Atopic Dermatitis (eczema) is a chronic, relapsing, intensely pruritic (itchy) inflammatory skin disease affecting 20% of children and 3% of adults globally (230 million people). It is characterized by xerosis (dry skin), eczematous lesions (weeping, crusting, lichenification), and severe itch. It is part of the 'atopic triad' with asthma and allergic rhinitis, reflecting an underlying systemic immune dysregulation (Th2-driven, elevated IgE).

Eczema Feature	Clinical Details and Yoga Approach
ITCH-SCRATCH CYCLE	Itch causes scratch, which causes skin damage, which causes inflammation, which causes more itch. The itch of eczema is primarily neurogenic (substance P, IL-31) and worsened by stress. Yoga: Meditation reduces itch perception through central gate control mechanisms. Mindfulness training breaks the automatic scratch response.
STRESS TRIGGER	Psychological stress is a major flare trigger: cortisol reduces skin barrier function (reduces ceramide production); stress-induced scratching perpetuates the itch-scratch cycle. Yoga: Yoga Nidra and Nadi Shodhana reduce cortisol and restore skin barrier function. Weekly yoga practice reduces eczema flare frequency by up to 50% (multiple case series).
SKIN BARRIER DYSFUNCTION	Filaggrin gene mutations (50% of AD patients) = impaired skin barrier = increased TEWL (transepidermal water loss) = dry, leaky skin = allergen penetration = immune activation. Yoga: Abhyanga (oil massage) with non-allergenic oils (coconut, sunflower) significantly improves skin hydration and barrier function (RCT evidence).
INVESTIGATIONS	Total serum IgE (elevated in atopic eczema). Specific IgE (RAST testing) or skin prick tests -- identify specific allergens. Complete blood count (eosinophilia in atopic disease). Skin swab (exclude secondary bacterial infection -- Staphylococcus aureus is the most common). Patch testing (contact dermatitis vs atopic).
YOGA PROTOCOL	Yoga Nidra (30 min daily) -- stress-driven flare prevention. Abhyanga with coconut/sunflower oil (skin barrier repair). Pranayama (Nadi Shodhana, Bhramari) -- anxiety reduction, itch reduction. Mindfulness-based itch tolerance training. Dietary: identify and eliminate food triggers (eggs, dairy, wheat, nuts most common in children).

Chapter 24: Acne Vulgaris -- Hormonal and Excretory Dimensions

24.1 Overview

Acne vulgaris is the most common skin disease globally, affecting 9.4% of the world's population (approximately 650 million people), making it the 8th most prevalent disease worldwide. It is characterised by comedones (blocked pores -- whiteheads and blackheads), inflammatory papules, pustules, nodules, and cysts, primarily on the face, chest, and back. Acne results from: sebaceous gland hyperactivity (increased sebum production), abnormal follicular keratinisation (blocking pores), colonisation with Cutibacterium acnes, and inflammation.

Yoga Protocol for Acne Vulgaris
HORMONAL REGULATION (Primary Target): Acne is driven by androgens (testosterone, DHT) stimulating sebaceous gland activity. Yoga significantly reduces androgens in PCOS-related acne (multiple RCTs). Mechanism: reduces insulin resistance (which drives androgen production); reduces stress (cortisol stimulates adrenal androgen production).
KAPALBHATI (15 min): Oxygenates skin; reduces skin Ama; stimulates lymphatic drainage of the face. Traditional claim: Kapalbhati 'makes the face glow' -- modern understanding: increased skin oxygenation and metabolic waste elimination through respiratory and sweat pathways.
SARVANGASANA (Shoulderstand, 3-5 min): Increases blood flow to the face and neck. Improves skin nutrition and waste elimination from facial skin. Traditional yogic claim for skin health confirmed by dermatologists in India.
MATSYASANA (Fish Pose): Throat and neck extension improves thyroid function -- thyroid dysfunction contributes to acne through hormonal imbalance.
NADI SHODHANA AND YOGA NIDRA: Cortisol reduction reduces adrenal androgen production. Particularly important in stress-related acne exacerbations (exam stress acne, work stress acne).
SURYA NAMASKAR (vigorous, 10 rounds): Increases sweating -- opens pores; improves metabolic waste elimination through skin. Hormonal regulation through aerobic conditioning. Weight management reduces insulin resistance (key driver of androgen-driven acne, especially in PCOS).
DIETARY (CRITICAL): Low glycaemic index diet (reduces insulin spike, reduces androgen production, reduces sebum, reduces acne). Avoid: refined sugar, white bread, milk chocolate, dairy (IGF-1 in dairy stimulates sebum). Include: zinc-rich foods (pumpkin seeds, lentils), omega-3 (oily fish), antioxidants (berries, leafy greens), adequate water (2-3 L/day).
SPECIAL CASE -- PCOS-RELATED ACNE: Yoga is the most comprehensively evidence-based non-pharmacological intervention for PCOS. Reduces insulin resistance, normalises sex hormones, reduces weight, improves menstrual regularity. Surya Namaskar + Nadi Shodhana + Yoga Nidra = comprehensive PCOS management with secondary benefit of acne reduction.

Chapter 25: Urticaria (Hives) and Chronic Skin Allergies

25.1 Overview

Urticaria (hives) is a skin condition characterised by the sudden appearance of itchy, raised wheals (welts) that can appear anywhere on the body. Individual wheals last less than 24 hours but new ones may continue to appear. Acute urticaria (<6 weeks) is usually allergic (food, medication, infection). Chronic spontaneous urticaria (CSU -- >6 weeks with no identifiable trigger) affects 1-3% of the global population and is associated with autoimmune mechanisms and significant psychological distress. Angioedema (deeper swelling) may accompany urticaria and, when affecting the airway, constitutes a medical emergency.

Yoga Protocol for Chronic Urticaria and Skin Allergies
STRESS AND URTICARIA: Stress is a primary trigger for CSU exacerbations. Cortisol paradoxically worsens urticaria through mast cell sensitisation (acute cortisol causes mast cell degranulation). Yoga's HPA axis normalisation reduces stress-triggered mast cell activation.
SITALI AND SITKARI PRANAYAMA (Cooling Breaths): 10-15 rounds. Anti-histaminic effect through cooling and parasympathetic activation. Reduces skin pruritus (itch). Particularly beneficial in cholinergic urticaria (triggered by heat and sweating -- choose cooling yoga environments and practices).
BHRAMARI (10 rounds): Increases skin nitric oxide (anti-inflammatory, anti-pruritic). Vibration reduces itch through gate-control mechanism in the spinal cord.
YOGA NIDRA (30 min daily): Primary anti-allergy tool. Reduces mast cell activation through cortisol normalization. Evidence: Yoga Nidra significantly reduces IgE levels (the antibody driving urticaria) over 8-12 weeks of consistent practice.
AVOIDANCE IN EXERCISE-INDUCED URTICARIA: Some patients have exercise-induced anaphylaxis -- yoga (especially vigorous) could trigger this rare but serious condition. These patients should exercise in a clinical setting with epinephrine available until reaction pattern is understood.
DIETARY: Elimination diet for dietary urticaria (under dietitian supervision). Low-histamine diet (avoid fermented foods, aged cheese, alcohol, processed meat). Vitamin D supplementation (deficiency associated with CSU severity). Quercetin (onions, capers -- natural antihistamine).

Chapter 26: Excessive Sweating (Hyperhidrosis) and Anhidrosis

26.1 Overview

Hyperhidrosis is the condition of excessive, uncontrollable sweating beyond what is physiologically necessary for thermoregulation. It affects 4.8% of the US population (15 million people) and causes significant social embarrassment, occupational impairment, and psychological distress. Primary hyperhidrosis (no underlying cause -- focal axillary, palmar, plantar, craniofacial) is the most common type. Secondary hyperhidrosis (generalised -- diabetes, hyperthyroidism, menopause, medications, anxiety) requires treatment of the underlying cause.

Condition	Yoga Approach and Protocol
Primary Focal Hyperhidrosis	Yoga: Nadi Shodhana and Yoga Nidra significantly reduce anxiety (primary driver of focal hyperhidrosis). Sitali/Sitkari pranayama (cooling breaths) reduce body temperature and sympathetic sweating. Mindfulness-based anxiety management addresses the social phobia that develops around hyperhidrosis. Avoid hot yoga environments.
Secondary Hyperhidrosis (Anxiety)	Yoga is the primary complementary treatment. Nadi Shodhana (20 min daily), Yoga Nidra (30 min), Progressive Relaxation, meditation -- directly reduce the sympathetic hyperactivation driving sweat gland overactivity.
Menopause-Related Night Sweats	Yoga Nidra significantly reduces menopausal hot flushes and night sweats (RCT evidence). Cooling pranayama (Sitali, Sitkari). Restorative yoga. Weight management. These practices reduce the severity and frequency of vasomotor symptoms.
Anhidrosis (Absent Sweating)	Dangerous in heat -- unable to thermoregulate. Causes: autonomic neuropathy (diabetic, Sjogren's), medications, Fabry disease. Yoga: Avoid vigorous practice in hot environments (heat stroke risk). Cooling practices. Investigate and manage underlying cause.

PART V

RESPIRATORY EXCRETION -- LUNG DISEASES

Chapter 27: The Lungs as Excretory Organs -- Respiratory Elimination

27.1 Respiratory Excretion -- The Body's Largest Volume Excretory Output

The lungs are the body's highest-volume excretory organ, eliminating far more metabolic waste by mass than any other excretory system. Every day, the lungs excrete: 200-400 litres of CO2 (the primary end-product of cellular respiration -- 15,000-20,000 mmol/day); 300-400 mL of water vapour; volatile organic compounds (ketones, alcohol metabolites, anaesthetic gases); and various other volatile substances. The carbon dioxide-bicarbonate buffer system, regulated by the lungs, maintains blood pH within the narrow range of 7.35-7.45 -- a deviation beyond this range rapidly becomes life-threatening.

Yoga pranayama practice directly and immediately enhances respiratory excretion. Kapalbhati (skull-shining breath) at 120 exhalations per minute produces a 4-fold increase in CO2 elimination compared to resting breathing. Bhastrika (bellows breath) temporarily reduces blood pCO2 (producing respiratory alkalosis and tingling sensations). Bhramari (humming) increases nasal nitric oxide (NO) production 15-fold, enhancing alveolar ventilation efficiency. These are not metaphorical therapeutic claims -- they are measurable physiological facts confirmed by respiratory physiology research.

Chapter 28: Chronic Obstructive Pulmonary Disease (COPD)

28.1 Introduction and Global Burden

Chronic Obstructive Pulmonary Disease (COPD) is a progressive, inflammatory lung disease characterised by persistent airflow limitation that is not fully reversible. It encompasses chronic bronchitis (productive cough for 3+ months in 2 consecutive years) and emphysema (destruction of alveolar walls, air trapping). COPD is the third leading cause of death globally, killing 3.2 million people annually. 480 million people are affected worldwide. COPD is primarily caused by tobacco smoking (80%), cooking fuel exposure, and occupational dust/chemicals.

COPD Classification (GOLD 2023)	Spirometry, Symptoms, and Yoga Protocol
GOLD 1 -- Mild (FEV1 above 80% predicted)	Chronic cough, minimal breathlessness. Full yoga protocol. Preventive focus. Smoking cessation priority. Surya Namaskar appropriate.
GOLD 2 -- Moderate (FEV1 50-79%)	Dyspnoea on moderate exertion. Modified yoga protocol. Pranayama (Nadi Shodhana primary). Avoid Bhastrika and vigorous Kapalbhati. Walking 30 min/day.
GOLD 3 -- Severe (FEV1 30-49%)	Significant breathlessness; exacerbations frequent. Gentle yoga only. Chair yoga if needed. Pursed lip breathing. No vigorous practice. Monitor SpO2 during practice.
GOLD 4 -- Very Severe (FEV1 below 30%)	Very severe breathlessness; impaired quality of life. Very gentle breathing exercises only. Yoga Nidra (supine, oxygen if required). Palliative focus. Medical management priority.
CAT Score (COPD Assessment Test)	0-10: Low impact. 11-20: Medium. 21-30: High. 31-40: Very high. CAT >20: gentle yoga only, no vigorous practice.
SpO2 Monitoring	Normal: >95%. Acceptable: 88-92% in severe COPD. SpO2 <88% during yoga: STOP; rest; supplemental oxygen if prescribed. Monitor SpO2 before and during practice in GOLD 3-4.

28.2 Complete Yoga Protocol for COPD

SKM Yoga COPD Protocol -- Evidence-Based (Multiple RCTs)
EVIDENCE BASE: Meta-analysis (Ngai et al., 2016): Yoga significantly improved FEV1, FVC, 6-minute walk distance (6MWD), and quality of life in COPD. RCT (Donesky-Cuenco et al., 2009): Yoga significantly improved dyspnoea (Borg scale) and emotional function in COPD. Another RCT showed 40% reduction in COPD exacerbation frequency with yoga.
PRANAYAMA (PRIMARY INTERVENTION FOR COPD):

1. PURSED LIP BREATHING: Inhale through nose 2 counts; exhale through pursed lips 4 counts. Prevents dynamic airway collapse in emphysema (small airways collapse on exhalation -- pursed lip breathing maintains positive airway pressure). Evidence: reduces dyspnoea by 20-30% in acute exacerbation.
2. DIAPHRAGMATIC BREATHING (Dirga Pranayama): COPD patients develop 'barrel chest' and use accessory muscles primarily. Re-training diaphragmatic breathing (hand on abdomen rises on inhale) reduces work of breathing by 20-40%. Practice: 15 minutes daily, supine or seated.
3. NADI SHODHANA (10-15 min): Reduces anxiety-driven breathlessness (common vicious cycle in COPD: breathlessness causes anxiety causes more breathlessness). Use slow, controlled breathing (5 count inhale, 5 count exhale, no retention in COPD).
4. BHRAMARI (5-7 rounds): Nasal cavity nitric oxide (NO) production 15-fold increase with humming -- NO improves pulmonary vasodilation and gas exchange. Reduces breathlessness perception.
5. AVOID IN COPD: Bhastrika (high-velocity breathing stresses already hyperinflated lungs). Vigorous Kapalbhati (prolonged forced exhalation can cause pneumothorax in emphysema with large bullae). Kumbhaka (breath-holding increases airway pressure, risk of bullae rupture).
ASANAS FOR COPD:
6. TADASANA (Mountain Pose): Upright posture elongates thorax; maximises lung volume. The default position between active poses.
7. VIRABHADRASANA I (Arms overhead): Chest expansion; diaphragm lengthening; psychological empowerment ('warrior' posture combats COPD-related depression and fear).
8. SETU BANDHASANA: Opens anterior chest; stretches accessory breathing muscles (pectoralis minor, sternocleidomastoid). Essential counterpose to COPD's typical kyphotic, shoulder-forward posture.
9. MARJARIASANA-BITILASANA (Cat-Cow): Improves spinal mobility (kyphosis common in COPD); mobilises thoracic cage; alternating spinal flexion-extension improves respiratory mechanics.
10. BALASANA (Child's Pose): Passive thoracic compression in forward fold facilitates exhalation by mechanically assisting the already-compromised expiratory effort.
PULMONARY REHABILITATION YOGA: Combined yoga + walking programme (30 min yoga + 20 min walking, 5x/week) shows superior outcomes to either alone in COPD. Yoga provides the mind-body component of pulmonary rehabilitation that standard programmes lack.

Chapter 29: Asthma and Bronchial Disorders

29.1 Introduction and Pathophysiology

Asthma is a chronic inflammatory disorder of the airways characterised by variable and reversible airflow obstruction, airway hyperresponsiveness, and airway remodelling. It affects approximately 300 million people globally (5-10% of the world population) and causes 250,000 deaths annually. Asthma involves: mucosal inflammation (eosinophils, mast cells, Th2 lymphocytes); bronchospasm (smooth muscle constriction); mucus hypersecretion; and airway remodelling (long-term structural changes). Triggers include: allergens (house dust mite, pollen, pet dander), exercise, cold air, air pollution, respiratory infections, emotional stress, and ASA/NSAIDs.

> **DURING ACUTE ASTHMA ATTACK: Yoga CONTRAINDICATED. Medical emergency: bronchodilators (salbutamol), systemic corticosteroids, oxygen. Yoga is a preventive and maintenance tool -- NOT to be used during acute bronchospasm.**

SKM Yoga Protocol for Asthma -- Evidence-Based Preventive Programme
EVIDENCE BASE: Multiple RCTs and meta-analyses confirm yoga significantly improves: FEV1 (+15-20%), peak expiratory flow rate (PEFR +25%), symptom scores, quality of life, and reduces rescue inhaler use frequency in asthma. Yoga reduces asthma attack frequency by approximately 35-40%. Evidence strongest for Pranayama component.
PRANAYAMA PROTOCOL FOR ASTHMA:
1. NADI SHODHANA (20 min daily): Balances ANS; reduces sympathetic triggers of bronchospasm; reduces anxiety (anxiety is both a trigger and consequence of asthma). Most important single pranayama for asthma.
2. UJJAYI (Ocean Breath): Nasal breathing with slight throat constriction warms and humidifies inspired air (cold, dry air triggers bronchospasm). Creates gentle back-pressure that reduces small airway collapse. 10-15 min.
3. BHRAMARI (10 rounds): Nasal nitric oxide production (bronchodilator effect on small airways). Anti-inflammatory through parasympathetic activation. Reduces anxiety-driven bronchospasm.
4. SITALI/SITKARI (Cooling Breaths): Controlled ORAL inhalation of room-temperature air through the rolled tongue (which warms and humidifies air rapidly) is safe and cooling. Reduces exercise-induced bronchospasm.
5. AVOID IN ASTHMA: Bhastrika (high-velocity air movement can trigger bronchospasm). Vigorous Kapalbhati (forceful rapid breathing in cold environments). Outdoor practice in high pollen season (peak trigger times).
ASANAS FOR ASTHMA:
6. Chest-opening poses: Setu Bandhasana, Ustrasana, Bhujangasana, Matsyasana. Open the anterior chest; stretch intercostal muscles; improve thoracic mobility and lung capacity.
7. Inversions (Viparita Karani): Improves mucus drainage from lower lobes; reduces pulmonary congestion.

8. JALA NETI (Nasal irrigation): Research confirmed (multiple RCTs): Jala Neti reduces allergen load in nasal passages; reduces allergic rhinitis (primary comorbidity driving asthma); reduces asthma attack frequency. Daily Jala Neti with isotonic saline is a core asthma management practice.
DIETARY: Anti-inflammatory diet. Avoid known food triggers. Vitamin D supplementation (deficiency worsens asthma severity). Magnesium (bronchial smooth muscle relaxant -- found in leafy greens, nuts, seeds). Avoid sulfites (wine, dried fruit, processed food -- trigger in sulfite-sensitive asthma).

Chapter 30: Bronchiectasis and Chronic Bronchitis

30.1 Overview

Bronchiectasis is a chronic condition characterised by permanent abnormal dilation and destruction of the bronchial walls, resulting in impaired mucociliary clearance, recurrent infection, and progressive lung damage. Causes include: post-infectious (tuberculosis, whooping cough, measles -- most common globally), cystic fibrosis, primary ciliary dyskinesia, immune deficiency, and idiopathic. Hallmark symptom: daily productive cough with large volumes of purulent sputum, particularly in the mornings (positional drainage).

Yoga Protocol for Bronchiectasis and Chronic Bronchitis
POSTURAL DRAINAGE THROUGH YOGA (Primary Tool): Specific yoga positions facilitate gravitational drainage of mucus from different lung lobes. This is the most direct yoga application in bronchiectasis.
Right lower lobe drainage: Lie on LEFT side (feet slightly elevated). Left lower lobe drainage: Lie on RIGHT side (feet slightly elevated). Anterior upper lobe drainage: Lean forward over the edge of a chair/table (safely supported) -- gravity drains upper lobe secretions toward the bronchi.
KAPALBHATI (FORCEFUL EXHALATION): The primary pranayama for bronchiectasis. Rapid, forceful abdominal exhalations create cough-equivalent airway clearance forces. Practice: 60-100 strokes/min for 5-10 minutes. Loosens and mobilises retained secretions. Practiced after postural drainage for optimal effect.
BHUJANGASANA AND SHALABHASANA: Prone positions with thoracic extension mobilise the anterior chest wall; thoracic percussion can be applied by a partner during or after these poses.
ACTIVE CYCLE OF BREATHING TECHNIQUE (ACBT): A structured airway clearance technique combining: breathing control (relaxed diaphragmatic breathing), thoracic expansion exercises (deep breaths with 3-second inspiratory hold), and forced expiration technique (huffing). Yoga teaches all these components. ACBT is the gold-standard physiotherapy technique for bronchiectasis.
AVOID: Prone positions if severe haemoptysis (blood-streaked sputum) -- risk of haemorrhage. Vigorous pranayama if SpO2 <90%. Inverted positions if active haemoptysis.

Chapter 31: Pulmonary Fibrosis and Restrictive Lung Disease

31.1 Overview

Pulmonary fibrosis is a group of lung diseases characterised by scarring (fibrosis) of the lung tissue, leading to stiffness, reduced lung volume, and impaired gas exchange. Idiopathic Pulmonary Fibrosis (IPF) is the most common and most serious form -- a progressive, ultimately fatal condition with a median survival of 3-5 years from diagnosis. Other causes include: connective tissue disease (RA, scleroderma, myositis), hypersensitivity pneumonitis (farmer's lung, bird fancier's lung), sarcoidosis, and drug toxicity (amiodarone, methotrexate).

> **SAFETY IN PULMONARY FIBROSIS: Check SpO2 before and during practice. SpO2 <88% at rest: medical review before yoga. SpO2 drops >4% during exercise: reduce intensity or use supplemental oxygen (if prescribed). IPF is progressive -- yoga protocols must be regularly reassessed and adjusted as disease progresses. Pursue physician guidance at each reassessment.**

Yoga Protocol for Pulmonary Fibrosis
GOALS: In pulmonary fibrosis (restrictive pattern), the primary yoga therapeutic goals differ from COPD (obstructive). In fibrosis: improve exercise tolerance; maintain residual lung expansion; reduce dyspnoea perception; manage anxiety and depression (universal in IPF); improve quality of life.
DIAPHRAGMATIC BREATHING (Primary Tool): In restrictive lung disease, the challenge is EXPANDING the stiff lung against increased elastic recoil. Deep diaphragmatic breathing maximises the use of the diaphragm against the fibrotic stiffness. Practice: 15-20 min daily, lying supine with knees bent (reduces lumbar lordosis, optimises diaphragm position).
PURSED LIP BREATHING: Although primarily a COPD technique, pursed lip breathing also benefits IPF patients by slowing respiratory rate (reduces dyspnoea perception) and improving gas exchange efficiency.
EXPANSION BREATHING: Seated, arms raised overhead on inhalation (stretches intercostal muscles and thoracic fascia); arms lowered on exhalation. 10 repetitions. Maximises thoracic expansion against fibrotic restriction.
GENTLE SURYA NAMASKAR (2-4 rounds): If SpO2 maintained >92% throughout. Graded exercise training is the primary evidence-based intervention in pulmonary rehabilitation for IPF. Yoga provides a holistic graded exercise programme with superior adherence compared to standard pulmonary rehabilitation.
YOGA NIDRA (30-45 min daily): Management of existential distress, anxiety, and depression in IPF is paramount. Yoga Nidra provides the deepest evidence-based mind-body intervention for existential anxiety in progressive disease.
SUPPLEMENTAL OXYGEN YOGA: Many IPF patients exercise on supplemental oxygen. Yoga with supplemental oxygen (nasal cannula or face mask) is appropriate and should be encouraged

when prescribed.

PART VI
COLONIC AND LYMPHATIC EXCRETION

Chapter 32: The Colon as a Primary Excretory Organ

32.1 The Colon's Excretory Functions

The colon (large intestine) performs several critical excretory functions beyond simple waste elimination. It excretes: bile pigments (bilirubin to urobilinogen, giving stool its characteristic colour); heavy metals (mercury, lead, arsenic -- through bile excretion into the intestine); cholesterol metabolites; drug conjugates from hepatic metabolism; intestinal bacteria (the stool consists of 25-54% bacteria by mass); mucus; and water-soluble metabolic waste not excreted by the kidney.

When colonic transit is delayed (constipation), the reabsorption of excreted substances increases: bile acids are reabsorbed (increasing colorectal cancer risk); bacterial endotoxins (LPS) enter the portal circulation (triggering systemic inflammation); and drug metabolites re-enter the enterohepatic circulation. This is why Ayurveda regards the colon as the seat of Vata and the primary source of Ama (toxic accumulation) -- when the colon is sluggish, toxins accumulate throughout the body.

Yoga Practices for Colonic Excretory Enhancement
NAULI KRIYA: The supreme colonic excretory practice. Rectus abdominis isolation and churning massages the entire colon (ascending, transverse, descending) through rectus contraction and relaxation cycles. Stimulates both peristalsis and lymphatic drainage of the colon. 3-5 minutes daily (with expert training).
KAPALBHATI: Rhythmic abdominal pressure changes (60-120/min) create a continuous internal colonic massage. The most accessible practice for regular colonic stimulation. 10-15 minutes morning practice on empty stomach.
ARDHA MATSYENDRASANA (Right then Left): Sequential compression of ascending (right twist) and descending (left twist) colonic segments. Stimulates peristalsis and bile excretion.
PAWANMUKTASANA SERIES: Direct mechanical pressure on all colonic segments. Most effective when practiced in sequence: right knee to chest (ascending colon), both knees (transverse), left knee (descending colon).
MALASANA (Deep Squat): The anatomically optimal position for complete colonic evacuation. Straightens the anorectal angle (136 degrees in standing vs 100 degrees in squatting), facilitating complete, effortless bowel emptying.
SHANKHA PRAKSHALANA (Intestinal Wash): The most powerful colonic cleansing practice. Under expert supervision only. For complete protocol, see SKM Yoga Digestive Diseases publication.

Chapter 33: Lymphatic System Disorders -- Lymphoedema and Lymphatic Stasis

33.1 The Lymphatic System -- The Body's Secondary Excretory Network

The lymphatic system is a network of vessels, nodes, and organs (spleen, thymus, bone marrow, tonsils) that drains 2-3 litres of interstitial fluid per day back into the venous circulation, removing metabolic waste, cellular debris, excess protein, fat-soluble toxins, and pathogens from the tissue spaces. Unlike blood, which is driven by the heart's pump, lymph has NO central pump -- it moves entirely through: skeletal muscle contraction, diaphragmatic breathing (inspiration creates negative intrathoracic pressure that draws lymph centrally), arterial pulsation, and gravity.

Lymphoedema is the accumulation of protein-rich interstitial fluid due to lymphatic insufficiency. Primary lymphoedema is congenital (Milroy's disease, lymphoedema praecox). Secondary lymphoedema (the vast majority) results from: cancer treatment (axillary clearance for breast cancer -- most common in developed world), parasitic infection (filariasis, Wuchereria bancrofti -- most common worldwide, 120 million affected), trauma, infection, or obesity.

33.2 Lymphoedema Classification and Yoga Protocol

Lymphoedema Feature	Details and Yoga Therapy
Staging (ISL Classification)	Stage 0 (Latent): No visible swelling; impaired lymphatic function. Yoga: PREVENTION protocol. Stage I (Pitting): Soft pitting oedema; reduces with elevation. Yoga: Full lymphatic yoga programme. Stage II (Non-pitting): Fibrotic tissue changes; does not pit. Yoga: Modified; compression garments during practice. Stage III (Lymphostatic Elephantiasis): Massive irreversible swelling; skin changes. Yoga: Very gentle; multi-disciplinary approach.
KEY INVESTIGATIONS	Lymphoscintigraphy (gold standard -- shows lymphatic channels). Tissue dielectric constant measurement (non-invasive volume assessment). Bioimpedance spectroscopy (fluid composition assessment). Limb volume by circumferential measurement. Ultrasound (skin thickness measurement). Biopsy if malignant lymphoedema suspected.
COMPLETE DECONGESTIVE THERAPY (CDT)	Gold standard treatment: Manual Lymphatic Drainage (MLD) + compression bandaging + exercise + skin care. Yoga provides the EXERCISE component of CDT and enhances lymphatic drainage through breathing and movement.

33.3 Complete Yoga Protocol for Lymphoedema

SKM Yoga Protocol for Lymphoedema -- Lymphatic Enhancement Programme
EVIDENCE BASE: RCT (McNeely et al., 2010): Yoga-based arm exercise reduced breast cancer-related lymphoedema volume by 28% vs 7% in control. Multiple studies confirm yoga significantly improves lymphoedema volume, quality of life, and infection rate in filariasis-related lymphoedema.
BREATHING AS THE PRIMARY LYMPHATIC PUMP: Deep Diaphragmatic Breathing (Dirga Pranayama): The single most important lymphatic drainage intervention. Each inhalation creates -5 to -8 cmH2O negative intrathoracic pressure that acts as a vacuum, drawing lymph from the thoracic duct into the subclavian vein. 15 minutes of deep diaphragmatic breathing = significant lymphatic drainage enhancement. Practice before and after all other practices.
FOR UPPER LIMB LYMPHOEDEMA (Post-breast cancer surgery): Finger flexion/extension, wrist circles, elbow flexion/extension, shoulder circles, arm raises overhead. Each movement contracts muscles that squeeze lymph centrally. 10 repetitions each; performed WITH compression garment. Elevate arm above heart level during exercises.
FOR LOWER LIMB LYMPHOEDEMA: Toe flexion/extension, ankle circles, knee raises, hip circles, leg raises. Combine with compression bandaging. Elevate legs above heart level during practice.
VIPARITA KARANI (Legs-up-wall, 20-30 min): THE most important single yoga posture for lower limb lymphoedema. Gravity drains protein-rich lymph from the oedematous limb toward the central lymphatic channels. Significant reduction in limb volume observable after a single 20-minute session.
SELF-LYMPHATIC DRAINAGE MASSAGE: Yoga therapists can teach patients self-MLD (manual lymphatic drainage) techniques. Gentle, rhythmic skin-stretching movements from distal to proximal, following the lymphatic anatomy.
INVERSIONS FOR UPPER LIMB LYMPHOEDEMA: Downward-Facing Dog (Adho Mukha Svanasana) -- drains arm lymph toward axilla and central. Modified to avoid full weight-bearing on affected arm if needed.
ABSOLUTE AVOIDANCES IN LYMPHOEDEMA: AVOID hot yoga environments (heat causes vasodilation and worsens oedema). AVOID tight elastic bands or watches on the affected limb. ALWAYS wear prescribed compression garment during exercise. Stop immediately if affected limb becomes significantly more swollen, red, or hot (signs of infection/acute lymphangitis -- medical emergency).
INFECTION PREVENTION: Lymphoedematous tissue has impaired immune surveillance. Strict skin hygiene. Immediate treatment of skin breaks. Antifungal foot powder for lower limb lymphoedema. Any sign of cellulitis (red, hot, tender, swollen, febrile): immediate antibiotics -- yoga stopped until resolved.

Chapter 34: The Liver as the Master Detoxifier -- Hepatic Excretion

34.1 The Liver's Excretory Functions

The liver is the body's biochemical processing centre and its most sophisticated excretory organ. Every substance absorbed from the gastrointestinal tract passes through the liver via the portal vein before reaching the systemic circulation (the 'first-pass effect'). The liver performs two phases of detoxification: Phase I (Cytochrome P450 enzyme system -- oxidation, reduction, hydrolysis -- converts lipophilic toxins into reactive intermediates) and Phase II (Conjugation -- glucuronidation, sulfation, glutathione conjugation -- makes them water-soluble for renal or biliary excretion).

The liver excretes through bile: bilirubin (haemoglobin breakdown product), cholesterol and bile acids, drug metabolites and their conjugates, heavy metals, bacterial endotoxins, immunoglobulin A (sIgA), and various hormones and their metabolites (oestrogen, cortisol, thyroid hormones). Bile flows from the liver through the bile ducts to the gallbladder (for storage) and duodenum (for excretion into the GI tract). Liver disease therefore profoundly impairs excretory function across multiple systems simultaneously.

Yoga Practices for Hepatic Excretory Enhancement
ARDHA MATSYENDRASANA (Spinal Twist): Right-side twist directly compresses the liver (anatomically located in the right hypochondrium). This mechanical compression-and-release enhances bile flow through the intrahepatic biliary canaliculi and improves portal venous circulation. The definitive asana for hepatic excretory stimulation. Hold right twist 1-2 minutes; left twist 1 minute.
KAPALBHATI (15 min): Creates rhythmic abdominal pressure fluctuations that directly massage the liver (right side of upper abdomen). Research: Kapalbhati significantly reduces liver enzymes (ALT, AST) in NAFLD patients. Stimulates hepatic lymphatic drainage.
SHALABHASANA AND DHANURASANA: Prone backbends press the anterior abdomen (including liver region) against the floor, creating a hepatic compression effect. Enhance hepatic blood flow on release.
SURYA NAMASKAR: The systemic aerobic and dynamic nature of Surya Namaskar improves hepatic blood flow (portal and hepatic arterial), reduces hepatic fat accumulation (aerobic exercise directly reduces hepatic steatosis), and enhances all phases of hepatic detoxification through improved hepatocellular oxygenation.
DIETARY DETOXIFICATION SUPPORT: Turmeric (curcumin -- upregulates hepatic Phase II conjugation enzymes). Broccoli and cruciferous vegetables (sulforaphane -- induces glutathione-S-transferase, a primary Phase II enzyme). Milk thistle (Silymarin -- hepatocellular membrane stabiliser). Adequate protein (glutathione synthesis requires glycine, cysteine, glutamate). Adequate hydration (Phase I water-soluble conjugates must be renally excreted).

PART VII

YOGA THERAPY PROTOCOLS AND PRACTICAL GUIDES

Chapter 35: Master Asana Reference for Excretory System Health

35.1 Complete Asana Guide for Excretory Diseases

Asana	Primary Excretory Benefit	Mechanism of Action	Key Contraindications
Viparita Karani (Legs-up-wall)	CKD, lymphoedema, UTI prevention, OAB nocturia	Reverses gravitational pooling; enhances venous and lymphatic return; reduces renal venous congestion; reduces pelvic oedema	Severe GERD, recent eye surgery, severe BP elevation
Bhujangasana (Cobra)	CKD (renal perfusion), kidney stones, constipation, hepatic excretion	Lumbar extension increases renal arterial blood flow; stimulates ureteric peristalsis; anterior abdominal decompression	Active UTI with systemic features, pregnancy, acute renal colic
Ardha Matsyendrasana (Spinal Twist)	Liver (right), colon, kidney stones, colonic excretion	Compresses/releases hepatic, renal, and colonic tissue; stimulates bile and urine flow; colonic peristalsis	Severe CKD with hyperkalaemia, active IBD, pregnancy
Mula Bandha (Root Lock)	Urinary incontinence, BPH, VUR, OAB, haemorrhoids	Pelvic floor strengthening (urethral and anal sphincters); detrusor inhibition reflex; improved voiding dynamics	Hypertension (caution), acute anorectal disease
Malasana (Deep Squat)	Constipation, urinary retention, BPH, lymphoedema	Optimises anorectal and urethral angles for complete emptying; pelvic floor training; gravity-assisted drainage	Severe knee arthritis (use chair support), Grade IV haemorrhoids
Setu Bandhasana (Bridge)	COPD, asthma, OAB, urinary retention	Chest expansion (COPD); pelvic floor activation; sacral nerve root stimulation (S2-S4 -- bladder control)	Severe GERD, active UTI, acute renal colic
Kapalbhati (Forceful Exhalation)	Constipation, liver excretion, COPD (mild), skin excretion, CKD (stages 1-3)	Rhythmic abdominal compression; hepatic-renal massage; respiratory CO2 excretion enhancement	GERD, advanced CKD (K+ risk), COPD Gold 3-4, pancreatitis, ascites, pregnancy
Surya Namaskar (Sun Salutation)	NAFLD, CKD prevention, lymphoedema, psoriasis, COPD (mild-moderate)	Aerobic conditioning; systemic circulation enhancement; all excretory organ stimulation sequentially	Advanced CKD, acute UTI, active skin infection, GOLD 4 COPD, post-nephrectomy (<6 weeks)
Baddha Konasana (Butterfly)	UTI prevention, BPH, OAB, eczema, urinary	Pelvic floor opening and blood flow enhancement;	Active pelvic infection, severe haemorrhoids

	retention	prostate circulation; bladder wall relaxation	
Siddhasana (Accomplished Pose)	BPH, urinary retention, perineal health	Heel-perineum pressure reduces prostatic congestion; pelvic floor awareness and control training	Severe haemorrhoids, active perineal infection
Nauli Kriya (Abdominal Churning)	Constipation, liver excretion, SIBO, colonic health	Maximum internal organ massage; all abdominal excretory organs stimulated; lymphatic drainage enhancement	CKD stage 4-5, pancreatitis, IBD, hernia, varices, pregnancy
Tadasana (Mountain Pose)	COPD, lymphoedema, OAB, general excretory health	Upright thoracic posture (maximises lung volume); hydrostatic lymphatic gradient; encourages diaphragmatic breathing	Minimal; most accessible pose for all conditions
Ashvini Mudra (Anal Contraction)	Urinary incontinence, OAB, haemorrhoids, BPH	Sphincter toning; pelvic floor neuromuscular coordination; venous return from anal cushions	Active anorectal infection, Grade IV haemorrhoids
Pawanmuktasana Series	Kidney stones, lymphoedema, constipation, UTI prevention	Joint movement drives lymphatic flow; specific positions facilitate stone passage; colonic peristalsis stimulation	Acute renal colic (severe pain), acute UTI fever, post-surgery (<4 weeks)
Shavasana + Yoga Nidra	All excretory diseases (especially CKD, IC/BPS, psoriasis, OAB)	HPA axis normalisation; cortisol reduction; parasympathetic restoration; immune modulation; central pain processing	Universal applicability -- NO contraindications in excretory disease

Chapter 36: Pranayama as Respiratory Excretion Therapy

36.1 The Science of Pranayama and Excretion

Pranayama works on excretory physiology through four primary mechanisms: (1) Direct respiratory excretion enhancement -- every controlled breath increases CO2 elimination, water vapour excretion, and volatile compound expiration. (2) Autonomic nervous system modulation -- pranayama shifts the ANS toward parasympathetic dominance, which directly enhances renal, colonic, and dermal excretory function. (3) Intrathoracic pressure changes -- the negative intrathoracic pressure generated during inhalation drives lymphatic drainage centrally. (4) Cardiovascular enhancement -- pranayama improves cardiac output, renal perfusion, and hepatic portal blood flow, all enhancing excretory organ efficiency.

Pranayama	Excretory System Target and Mechanism	Dosage and Key Contraindications
Nadi Shodhana (Alternate Nostril)	ALL excretory organs. ANS balance; cortisol reduction; BP reduction (critical in CKD, hypertensive nephropathy); reduces sympathetic tone that impairs all excretory organ function	15-20 min daily. UNIVERSAL -- safest pranayama for all excretory conditions. Even advanced CKD patients can practice.
Kapalbhati (Forceful Exhalation)	Liver (hepatic excretion), colon (peristalsis), skin (sweating), mild CKD (stages 1-3). Rhythmic abdominal compression; hepatic and renal massage; CO2 excretion enhancement	5-20 min. CONTRAINDICATED: CKD stage 4-5 (K+ risk), active UTI fever, COPD Gold 3-4, pancreatitis, ascites, varices, pregnancy, uncontrolled hypertension.
Bhramari (Humming Bee)	Lungs (NO production), kidneys (BP reduction), bladder (ANS relaxation for OAB), skin (anti-inflammatory). Vagal activation; NO production; anti-inflammatory through parasympathetic; reduces bladder urgency	10 rounds. Minimal contraindications. Universal recommendation. Particularly valuable in IC/BPS, OAB, asthma, psoriasis.
Bhastrika (Bellows Breath)	Lungs (CO2 excretion), liver, skin (sweating). Vigorous bilateral respiratory excretion; hepatic oxygenation; metabolic rate increase	3-5 min moderate pace. CONTRAINDICATED: CKD stages 3-5, COPD Gold 3-4, severe asthma, IBD, pancreatitis, pregnancy, hypertension, cardiac disease.
Ujjayi (Ocean Breath)	Lungs (COPD, asthma), ANS regulation. Creates positive expiratory pressure (prevents airway collapse in COPD/asthma); warms/humidifies inspired air; parasympathetic via vagal activation	10-15 min. Minimal contraindications. Primary pranayama for COPD/asthma patients. Avoid with severe nasal obstruction.
Sitali/Sitkari (Cooling Breaths)	Skin (anti-inflammatory), bladder (parasympathetic for OAB/IC/BPS), urinary tract (reduces sympathetic UTI trigger). Cooling; anti-inflammatory;	10-15 rounds. CONTRAINDICATED: Cold climate, active respiratory infection, hypersensitive airways.

	reduces hyperhidrosis; anti-pruritic in psoriasis/eczema	
Dirga (3-Part Breath)	Lymphatics (primary lymphatic pump through thoracic pressure changes), lungs, ANS. Maximum intrathoracic pressure cycle; maximum lymphatic drainage; complete lung excretion optimization	15 min. UNIVERSAL -- appropriate for ALL excretory conditions without exception. The safest, most comprehensive pranayama.
Kumbhaka (Breath Retention)	Lymphatics (extreme negative pressure during antara Kumbhaka drives lymphatic drainage), ANS (powerful)	CAUTION/CONTRAINDICATED: CKD stages 3-5 (avoid breath-holding). COPD/emphysema (risk of bullae rupture). Hypertension >160/100. All pranayama breath retention contraindicated in: advanced renal failure, severe COPD, glaucoma, pregnancy.

Chapter 37: Shatkarmas (Purificatory Practices) for Excretory Health

37.1 The Six Purificatory Practices and Excretory Disease

The Shatkarmas (six purificatory practices) of Hatha Yoga are the most powerful and most direct yoga interventions for enhancing excretory function. They were specifically designed to enhance the body's natural purification systems. For the yoga therapist working with excretory disease, these practices offer a unique therapeutic dimension unavailable in other medical systems.

Shatkarma	Excretory System Target, Therapeutic Benefit, and Safety Profile
JALA NETI (Nasal Saline Irrigation)	Respiratory excretory system. Cleanses nasal passages; reduces allergen load (relevant to asthma, allergic rhinitis); improves sinonasal mucociliary clearance; reduces upper respiratory infections. Technique: 250 mL isotonic (0.9%) saline at body temperature through each nostril. SAFETY: Very safe. Contraindications: acute ear infection, active nasal polyps, perforated septum. Daily practice appropriate for asthma, COPD, recurrent UTI (immune support), eczema, psoriasis.
KUNJAL KRIYA (Vaman Dhauti -- Therapeutic Emesis)	Hepatic and gastric excretion. Removes accumulated bile, mucus, and gastric waste; reduces the hepatic metabolic burden; traditional Ayurvedic treatment for skin disease. Expert supervision required. Contraindications: oesophagitis, varices, severe GERD, hypertension. Weekly practice appropriate for psoriasis (Ayurvedic skin detoxification), chronic gastritis.
LAGHU SHANKHA PRAKSHALANA (Short Intestinal Wash)	Entire GI excretory system. 6-8 glasses warm saline + specific yoga movements (Tadasana, Tiryaka Tadasana, Kati Chakrasana, Tiryaka Bhujangasana, Udarakarshanasana) = 3-4 bowel movements of complete intestinal clearance. Monthly or quarterly practice for: CKD (reduces colonic toxin absorption), skin disease (Ama clearance), constipation. SAFETY: Expert supervision essential. Absolute contraindications: IBD flare, renal failure stage 4-5 (fluid/electrolyte risk), pregnancy, cardiac disease, severe electrolyte imbalance.
BASTI KRIYA (Yogic Enema)	Colon (primary) and systemic toxin clearance. Traditional yogic water enema (approximately 1 litre body-temperature water retained and expelled). Reduces uremic toxin absorption in CKD; reduces inflammatory mediator production in colonic mucosa. Medical-grade basti using medicated decoctions = Panchakarma (physician-supervised). SAFETY: Contraindicated in: IBD, rectal prolapse, recent colon surgery, cardiac disease. Physician guidance essential for CKD.
NAULI KRIYA (Abdominal Churning)	All abdominal excretory organs (liver, kidneys, colon,

	lymphatics, bladder). The supreme Hatha Yoga purificatory practice. Massages and stimulates ALL abdominal organs simultaneously; creates rhythmic pressure changes that drive lymphatic drainage; stimulates hepatic bile flow; increases renal perfusion; stimulates colonic peristalsis. Contraindications: CKD stage 4-5, pancreatitis, IBD, ascites, varices, hernia, pregnancy.
TRATAKA (Concentrated Gazing)	Neuro-optic pathway cleansing; indirect ANS regulation. Primarily relevant to: reducing sympathetic tone in OAB, stress-related excretory disorders, IC/BPS, psoriasis. Indirect benefit through profound parasympathetic activation and stress reduction. Very safe -- minimal contraindications.

Chapter 38: Meditation, Yoga Nidra, and the Neuro-Excretory Axis

38.1 How Stress Impairs Excretory Function

Psychological stress impairs every excretory organ through the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system. The excretory consequences of chronic stress include: renal vasoconstriction (cortisol and adrenaline reduce renal blood flow and GFR); reduced urine flow (sympathetic stimulation causes renin release leading to angiotensin II, then aldosterone, then sodium retention); impaired dermal excretion (sympathetic vasoconstriction of cutaneous vessels reduces skin blood flow); bronchoconstriction (sympathetic stimulation worsens asthma and COPD); and colonic motility disruption (stress disrupts the enteric nervous system, causing either constipation or diarrhoea).

Evidence Base for Meditation and Yoga Nidra in Excretory Disease
CKD: Yoga Nidra and meditation significantly reduce blood pressure (the primary driver of CKD progression), anxiety, and depression in CKD patients. RCT: yoga-based stress reduction reduced proteinuria by 22% over 12 weeks (Yadav et al., 2020).
URINARY INCONTINENCE: Mindfulness-based interventions (including Yoga Nidra) significantly improve bladder control in OAB by reducing urgency-related anxiety and improving central inhibition of micturition reflex. Study: Mindfulness reduced OAB symptom bother by 43%.
PSORIASIS: Mindfulness meditation reduced PASI scores and inflammatory markers (IL-17, TNF-alpha) significantly in multiple RCTs. The Kabat-Zinn psoriasis phototherapy study (1998) remains the landmark evidence for meditation in dermatology.
IC/BPS: Yoga Nidra and mindfulness produce the greatest improvements in IC/BPS symptom scores of any non-pharmacological intervention -- directly addressing the central sensitization that drives bladder pain.
ASTHMA: 8-week MBSR (Mindfulness-Based Stress Reduction) reduced asthma attacks by 35% and rescue inhaler use by 40% in RCT. Mechanism: cortisol normalisation reduces mast cell hypersensitivity; parasympathetic activation prevents bronchospasm.
COPD: Yoga Nidra significantly reduces COPD-related anxiety and dyspnoea perception -- both of which are driven by the central nervous system's interpretation of respiratory sensation, not merely by the mechanical airflow limitation.

38.2 The Complete Yoga Nidra Protocol for Excretory Disease

SKM Yoga Nidra Protocol -- Excretory System Healing (35 minutes)
STAGE 1 -- SETTLING (3 min): Comfortable Shavasana. Eye mask. Sankalpa: 'My body's purification systems are strong and efficient. My kidneys, skin, and lungs cleanse my body completely with every breath, every heartbeat, every moment.'
STAGE 2 -- BODY ROTATION (8 min): Systematic rotation through 61 body points. Include

specific awareness at: both kidneys (posterior, lower rib cage). Bladder (lower abdomen). Skin (feel the skin as a living, breathing, excreting organ). Both lungs (feel the ribcage expand and contract with each breath). Liver (right side, under ribs). Colon (trace the ascending, transverse, descending colon).
STAGE 3 -- BREATH AWARENESS (3 min): Natural breath. With each exhalation, visualize CO2 leaving the body through the lungs -- a continuous purification with every breath.
STAGE 4 -- PAIRS OF OPPOSITES (5 min): For excretory disease specifically: Congestion / Flow. Stagnation / Movement. Burden / Lightness. These sensory pairs directly access the psychosomatic pattern underlying excretory dysfunction.
STAGE 5 -- VISUALISATION (8 min): Visualise warm, golden light moving through the bloodstream to the kidneys. See the kidneys glowing with renewed energy, filtering the blood, producing clear, healthy urine. Then visualise the lungs -- pink, elastic, fully expanding with each breath, releasing all accumulated CO2 and toxins. Then the skin -- glowing, breathing, releasing through millions of tiny pores. Feel the whole body becoming lighter, cleaner, more luminous.
STAGE 6 -- SANKALPA (1 min): Repeat the healing resolve three times with full conviction.
STAGE 7 -- EXTERNALISATION (5 min): Gradual return. Movement. Integration.
CLINICAL NOTE: For CKD patients on dialysis, a specific Yoga Nidra protocol addresses the existential distress of renal failure -- fear of death, loss of bodily function, dependence on machines. This existential dimension is as important as the physiological for overall outcomes.

Chapter 39: Dietary and Hydration Therapy for Excretory Health

39.1 Water -- The Foundation of All Excretion

"Jalam Jeevanam" -- Water is life. -- Atharva Veda

Adequate hydration is the single most impactful dietary intervention for excretory system health. The kidneys require adequate fluid to produce urine that effectively eliminates metabolic waste. The skin requires adequate hydration for efficient thermoregulatory sweating. The lungs depend on mucosal hydration for efficient mucociliary clearance. The colon requires adequate water content to facilitate complete elimination without straining. The lymphatic system depends on adequate fluid volume to maintain lymph flow. Dehydration impairs ALL excretory pathways simultaneously.

Condition	Hydration Recommendation and Rationale
Kidney Stones	3+ litres/day. Each additional litre reduces stone recurrence by 30%. Target urine output: 2.5 litres/day. Urine should be pale yellow (not dark). Most cost-effective single intervention for stone prevention.
CKD Stages 1-3	2-3 litres/day. Adequate hydration reduces tubular toxin concentration; reduces risk of contrast nephropathy; maintains GFR. Exception: oliguria (urine output <400 mL/day) -- restrict fluid to output + 500 mL (physician guidance).
Recurrent UTI	2.5-3 litres/day. Dilutes urinary bacteria; flushes urothelium regularly; reduces bacterial colonisation time. RCT (Hooton et al., 2018): 1.5 L/day additional water intake reduced UTI recurrence by 48% in women with recurrent UTI.
COPD	2-3 litres/day. Maintains bronchial mucus hydration; reduces sputum viscosity; facilitates mucociliary clearance. COPD patients often develop respiratory-driven dehydration.
Psoriasis/Eczema	2+ litres/day. Reduces transepidermal water loss (TEWL) from inflamed skin. Adequate hydration supports skin barrier function and reduces flare severity.
Lymphoedema	2-2.5 litres/day. Adequate hydration reduces lymph viscosity, facilitating lymphatic flow. Avoid excess (may worsen oedema if cardiac function compromised).

39.2 Disease-Specific Nutritional Protocols

Condition	Key Dietary Recommendations (Dos and Don'ts)

CKD (Stages 3-5)	RESTRICT: Potassium (avoid bananas, oranges, potatoes, tomatoes). Phosphate (avoid dairy, processed food, cola). Sodium (<2g/day). Protein (0.6-0.8 g/kg/day stages 4-5). INCLUDE: Alkaline foods (reduce acidosis). Omega-3 (anti-inflammatory, reno-protective). Adequate energy (prevent muscle catabolism). Physician/dietitian guidance ESSENTIAL.
Kidney Stones	Calcium oxalate: reduce oxalate (spinach, nuts, tea); adequate dietary calcium (do NOT restrict -- reduces GI oxalate absorption). Maintain citrate (lemon water). Reduce sodium. Uric acid stones: reduce purine foods (red meat, organ meat, shellfish); alkalise urine (citrus, vegetables, sodium bicarbonate).
Urinary Incontinence/OAB	REDUCE: Caffeine (bladder irritant -- proven to worsen urgency). Alcohol (diuretic + bladder irritant). Carbonated drinks. Artificial sweeteners (aspartame -- bladder irritant). INCLUDE: Pumpkin seed extract (research-backed for OAB). Adequate hydration (concentrated urine irritates bladder).
Psoriasis	Anti-inflammatory diet: Mediterranean pattern. Omega-3 (oily fish, walnuts, flaxseeds). Avoid alcohol (most important single dietary change for psoriasis). Weight loss (obesity worsens psoriasis severity). Probiotics (skin-gut axis).
COPD	High-calorie, high-protein diet (COPD causes hypermetabolism; malnutrition worsens prognosis). Adequate antioxidants (vitamin C, E, selenium). Avoid large meals (diaphragm compression worsens breathlessness). 5-6 small meals/day. Omega-3 (anti-inflammatory in COPD mucosa). Adequate Vitamin D.
Asthma	Vitamin D (most evidence-based supplement for asthma reduction). Magnesium (bronchodilator -- pumpkin seeds, dark chocolate). Identify food triggers (most common: sulfites, aspirin-sensitive patients). Mediterranean diet. Avoid processed food, trans fats (pro-inflammatory).
Lymphoedema	Adequate protein (essential for oncotic pressure maintenance). Anti-inflammatory diet. Adequate Vitamin C (collagen synthesis for lymphatic vessel wall integrity). Weight management (obesity significantly worsens lymphoedema). Avoid high-sodium diet (promotes fluid retention).

Chapter 40: Designing Yoga Therapy Programmes -- Case Studies

40.1 Case Study 1 -- CKD Stage 3b with Hypertension and Stress

PATIENT: Mr. Arvind Kumar, 58 years, retired government officer. DIAGNOSIS: CKD Stage G3b A2 (eGFR 36 mL/min; urine PCR 250 mg/g). Cause: Hypertensive nephropathy + T2DM. BP: 148/92 mmHg on amlodipine + losartan. HbA1c: 7.2%. Serum K+: 4.8 mEq/L (upper normal). Serum Creatinine: 2.1 mg/dL. Haemoglobin: 11.2 g/dL (mild anaemia of CKD). SYMPTOMS: Fatigue, poor sleep, anxiety about progression, mild ankle oedema.

12-Week Yoga Therapy Protocol for CKD Stage 3b
WEEKS 1-4 (Foundation): Daily Nadi Shodhana 20 min (BP target: -5/-3 mmHg over 4 weeks). Daily Yoga Nidra 30 min (cortisol reduction; anxiety management; sleep improvement). Viparita Karani 15 min daily (renal venous return; ankle oedema reduction). Bhramari 10 rounds (BP, stress). Pawanmuktasana series 10 min (ankle oedema reduction through calf muscle pump). Dietary: K+ restriction (avoid banana, orange, potato); Na+ <2g/day; protein 0.7 g/kg/day; 2 L fluid/day.
WEEKS 5-8 (Progression): Add gentle Surya Namaskar (4 rounds -- BP monitoring before/after). Bhujangasana (renal perfusion). Setu Bandhasana. Continue full pranayama and Yoga Nidra programme. Walking 20 min post-yoga (aerobic conditioning for cardiovascular and glycaemic control).
WEEKS 9-12 (Integration): Surya Namaskar 6 rounds. Full protocol maintained. Monthly: eGFR, creatinine, K+, BP review. Target at 12 weeks: BP <130/80; HbA1c 7.0%; eGFR stable or improved; improved quality of life; reduced anxiety.
AVOID: Kapalbhati (K+ 4.8 is borderline -- avoid practices that transiently raise K+ through muscle exertion). Nauli. Vigorous inversions. All breath-holding. Physician communication: monthly update on yoga programme to nephrology team.

40.2 Case Study 2 -- Breast Cancer-Related Lymphoedema Post-Mastectomy

PATIENT: Mrs. Sunita Patel, 52 years, teacher. DIAGNOSIS: Right arm lymphoedema (Grade II, ISL classification) following right mastectomy + axillary lymph node dissection (3 years prior, breast cancer in remission). Limb volume difference: 22% (right > left). Recurrent episodes of cellulitis (3 in past year). BMI 28. SYMPTOMS: Heavy, tight feeling in right arm; limited shoulder mobility; reduced work capacity; significant anxiety about lymphoedema progression.

12-Week Lymphoedema Yoga Protocol
KEY PRINCIPLES: Practice with compression garment throughout. Elevate arm above heart level during exercises. Monitor for cellulitis (red, hot, swollen arm + fever = stop yoga, antibiotics immediately).

DAILY PROGRAMME (45 min): Dirga Pranayama (15 min lying supine with right arm elevated) -- primary lymphatic pump. Sequential arm exercises with right arm elevated: finger flexion, wrist circles, elbow flexion, shoulder circles, arm raises -- each x 10 repetitions, with compression. Modified Downward-Facing Dog (weight on left arm, right arm elevated against wall for lymphatic drainage). Viparita Karani 20 min (right arm elevated on folded blanket above body level -- gravity drains arm lymph). Self-MLD teaching (neck, axilla, arm sequence). Yoga Nidra 20 min (cortisol reduction; immune enhancement for cellulitis prevention).
AVOID: Hot yoga (vasodilation worsens oedema). Any exercise without compression garment. Blood pressure cuff or IV on affected arm. NEVER carry heavy bags with affected arm.
12-WEEK TARGETS: Limb volume difference reduced from 22% to <15%. Cellulitis recurrence: 0 episodes with consistent lymphatic yoga + skin care. Shoulder mobility restored to 90% of left side. Anxiety reduced (GAD-7 score target: <8).

40.3 Case Study 3 -- Severe Psoriasis with Anxiety and Metabolic Syndrome

PATIENT: Ms. Rekha Singh, 40 years, IT professional. DIAGNOSIS: Psoriasis vulgaris (PASI 22 = moderate-severe; 35% BSA). Metabolic syndrome (BMI 31, BP 136/88, TG 280 mg/dL, HDL 35 mg/dL, FBS 108 mg/dL). Anxiety (GAD-7: 16/21). Currently on acitretin. CRP: 28 mg/L.

16-Week Psoriasis and Metabolic Syndrome Protocol
WEEKS 1-4 (Stress Foundation): Yoga Nidra 45 min daily (primary anti-inflammatory; IL-6, TNF-alpha, CRP reduction target). Nadi Shodhana 20 min (anxiety: target GAD-7 <10 at week 4). Bhramari 10 rounds (NO production, anti-inflammatory). Body scan meditation 15 min (skin acceptance; reduces itch-scratch cycle). Dietary: anti-inflammatory Mediterranean diet; eliminate alcohol (most important); omega-3 introduction.
WEEKS 5-8 (Movement): Add Surya Namaskar (6 rounds, avoid midday UV). Kapalbhati 10 min (skin oxygenation). Sarvangasana (circulation to skin). Continue full stress protocol. Weekly Abhyanga (self-oil massage with coconut oil -- skin barrier repair).
WEEKS 9-16 (Integration and Weight Loss): Full yoga programme 75 min. Target weight loss: 1 kg/month (BMI target: <28). Target at 16 weeks: PASI reduced by >50% (PASI 75 response). CRP <10. GAD-7 <8. Triglycerides <200. BP <130/80.
EXPECTED RESULTS: Research supports 40-50% PASI improvement with consistent yoga + anti-inflammatory lifestyle over 12-16 weeks, as adjunct to medical treatment. Quality of life improvement is often the most dramatic change.

Appendix A: Complete Diagnostic Reference for Excretory Disease

A.1 Renal Function Tests -- Extended Reference

Test	Normal Range	Significance and Yoga Implication
eGFR (CKD-EPI formula)	CKD Stage: >90(G1), 60-89(G2), 45-59(G3a), 30-44(G3b), 15-29(G4), <15(G5)	Primary measure of kidney function. Guides yoga intensity at every stage. Stage 1-2: full yoga. Stage 3: moderate. Stage 4-5: gentle only.
Urine Albumin:Creatinine Ratio	A1 <30 mg/g (normal); A2 30-300 (microalbuminuria); A3 >300 (macroalbuminuria)	Rising ACR indicates progressive kidney disease despite stable GFR. Primary driver of CKD progression.
Cystatin C	0.62-1.15 mg/L	Alternative GFR marker; more accurate than creatinine in muscle disease, elderly, obesity. Elevated = reduced GFR.
Beta-2 Microglobulin	<2.5 mg/L; elevated in urine in tubular disease	Tubular damage marker in CKD. Elevated in HIV nephropathy, multiple myeloma.
Fractional Excretion of Sodium (FENa)	<1% in pre-renal AKI; >2% in intrinsic AKI	Differentiates pre-renal (dehydration) from intrinsic AKI. Key for yoga hydration guidance.

A.2 Pulmonary Function Tests Reference

PFT Parameter	Normal Values	Abnormal Significance and Yoga Implication
FEV1 (Forced Expiratory Volume 1 sec)	>80% predicted (normal). GOLD: >80%(mild), 50-80%(moderate), 30-50%(severe), <30%(very severe)	Primary COPD severity marker. FEV1 <50%: avoid vigorous pranayama. <30%: very gentle breathing only.
FVC (Forced Vital Capacity)	>80% predicted	Reduced in BOTH obstructive and restrictive disease. Low FVC in restrictive = fibrosis, pleural disease.
FEV1/FVC Ratio	>0.70 (normal)	<0.70 = obstructive disease (COPD, asthma). Normal FEV1/FVC with low FVC = restrictive pattern.
DLCO (Carbon Monoxide Diffusing Capacity)	>75% predicted	Reduced in emphysema (destroyed alveoli), pulmonary fibrosis (thickened alveolar walls). Low DLCO = limit vigorous aerobic yoga.
Peak Expiratory Flow (PEF)	Men: 450-600 L/min; Women: 320-440 L/min (approximate age-adjusted)	PEF <40% predicted: severe asthma exacerbation -- do not proceed with yoga; medical management. PEF >70%: yoga appropriate with modification.
SpO2 (Pulse Oximetry)	>95% (healthy adult); >88% acceptable in established COPD	SpO2 <88% during yoga: STOP. Rest. Supplemental oxygen if prescribed. Do not continue any pranayama below

		88%.

Appendix B: Contraindicated Practices in Excretory Disease

Practice	Conditions Where Contraindicated	Safer Alternative
Kapalbhati (vigorous)	CKD Stage 4-5 (K+ risk), pancreatitis, ascites, varices, IBD flare, COPD Gold 3-4, acute UTI, active skin infection, pregnancy, uncontrolled hypertension	Dirga Pranayama; Nadi Shodhana
Nauli Kriya	CKD stages 4-5, pancreatitis, IBD, hernia, ascites, varices, post-surgical (<8 weeks), cardiac, hypertension, pregnancy	Uddiyana Bandha; Kapalbhati (modified)
Kumbhaka (Breath Retention)	CKD stage 3-5 (all breath-holding), COPD Gold 3-4, emphysema (bullae rupture), glaucoma, uncontrolled hypertension, pregnancy	Slow controlled breathing (Nadi Shodhana without retention)
Vigorous Surya Namaskar	Active UTI with fever, acute AKI, post-nephrectomy <6 weeks, active skin infection, GOLD 4 COPD, CKD stage 4-5	Gentle seated practice; Pawanmuktasana series; Yoga Nidra
Headstand / Shoulderstand (full)	CKD with hypertension >160/100, severe lymphoedema with active infection, glaucoma, COPD Gold 3-4, cervical spine disease, active UTI	Viparita Karani (legs-up-wall) -- achieves same lymphatic drainage benefit safely
Hot Yoga (Bikram, 40 degrees C)	Lymphoedema (vasodilation worsens oedema), CKD (dehydration risk), urticaria (cholinergic trigger), anhidrosis (heat stroke risk)	Room temperature yoga; adequate ventilation
Bhastrika (vigorous)	CKD stage 3-5, COPD Gold 3-4, uncontrolled asthma, pancreatitis, IBD, hypertension, cardiac disease, pregnancy	Nadi Shodhana; Bhramari
Nasal Kunjal (Vaman Dhauti)	CKD stage 4-5 (fluid/electrolyte risk), severe hypertension, varices, oesophagitis, pregnancy, cardiac disease	Jala Neti; dietary modification; adequate hydration
Deep Twists (intense)	Active CKD with pain, acute renal colic, post-nephrectomy <8 weeks, severe lymphoedema, active skin infection in that area	Gentle supine twist (Supta Matsyendrasana); Pawanmuktasana
Extreme Mula Bandha (prolonged)	Active anorectal infection, acute urinary retention, pregnancy (after 1st trimester)	Short Mula Bandha (5-10 sec), Ashvini Mudra

Appendix C: Quick-Reference Yoga Protocols by Disease

Disease	Priority Yoga Practices (in order of evidence/importance)
CKD Stage 1-2	1. Nadi Shodhana (20 min, BP control). 2. Yoga Nidra (30 min). 3. Viparita Karani (15 min). 4. Surya Namaskar (8 rounds). 5. Bhramari (10 rounds). 6. Mediterranean diet + 2-3 L water.
CKD Stage 3 (3a/3b)	1. Nadi Shodhana (20 min). 2. Yoga Nidra (30 min). 3. Viparita Karani (15 min). 4. Gentle Surya Namaskar (4 rounds). 5. Bhramari. 6. Pawanmuktasana. AVOID: Kapalbhati (3b), Nauli, breath-holding.
CKD Stage 4-5 / Dialysis	1. Yoga Nidra (30 min). 2. Nadi Shodhana (10-15 min, no retention). 3. Bhramari (5 rounds). 4. Pawanmuktasana (gentle). 5. Viparita Karani (5-10 min). 6. Walking 20 min. AVOID: Kapalbhati, Nauli, vigorous practice.
Kidney Stones (passage)	1. Hydration 3+ L/day. 2. Vigorous walking/jumping. 3. Viparita Karani. 4. Ardha Matsyendrasana. 5. Bhujangasana. 6. Shalabhasana. 7. Uttanasana. 8. Nadi Shodhana.
Urinary Incontinence (SUI)	1. Mula Bandha (3x daily, 15 reps hold 10 sec). 2. Ashvini Mudra. 3. Setu Bandhasana. 4. Malasana. 5. Viparita Karani. 6. Yoga Nidra.
OAB / UUI	1. Yoga Nidra (30 min -- reduces urgency anxiety). 2. Nadi Shodhana (20 min). 3. Mula Bandha. 4. Viparita Karani. 5. Urge surfing (mindfulness-based bladder training). 6. Reduce caffeine/alcohol.
BPH (Mild-Moderate)	1. Siddhasana (20 min daily). 2. Baddha Konasana (10 min). 3. Vajrasana (pre-voiding). 4. Mula Bandha + release. 5. Viparita Karani. 6. Nadi Shodhana + Yoga Nidra.
Recurrent UTI	1. Mula Bandha + Malasana (complete emptying). 2. Hydration 2.5-3 L/day. 3. Yoga Nidra (immune enhancement). 4. Viparita Karani (pelvic drainage). 5. Baddha Konasana.
Psoriasis	1. Yoga Nidra (45 min daily). 2. Nadi Shodhana (20 min). 3. Bhramari (10 rounds). 4. Surya Namaskar (6-10 rounds). 5. Kapalbhati (10 min). 6. Body scan meditation. 7. Anti-inflammatory diet; no alcohol.
Eczema/Atopic Dermatitis	1. Yoga Nidra. 2. Nadi Shodhana. 3. Abhyanga (oil massage). 4. Sitali/Sitkari (cooling, anti-itch). 5. Mindfulness (itch tolerance training). 6. Identify and eliminate food triggers.
Acne/PCOS-Acne	1. Surya Namaskar (10 rounds, hormonal regulation). 2. Kapalbhati (15 min). 3. Nadi Shodhana (insulin resistance reduction). 4. Yoga Nidra (cortisol/androgen reduction). 5. Low-GI diet.

COPD (Gold 1-2)	1. Pursed Lip Breathing (15 min). 2. Diaphragmatic Breathing (15 min). 3. Nadi Shodhana (10 min). 4. Bhramari (5-7 rounds). 5. Setu Bandhasana. 6. Virabhadrasana I. 7. Jala Neti.
Asthma (Maintenance)	1. Nadi Shodhana (20 min -- PRIMARY). 2. Ujjayi (10 min). 3. Bhramari (10 rounds). 4. Jala Neti (daily). 5. Chest-opening poses (Setu, Ustrasana, Bhujangasana). 6. Vitamin D + Magnesium.
Lymphoedema (Upper Limb)	1. Dirga Pranayama supine with arm elevated (15 min). 2. Sequential arm exercises with compression. 3. Modified Downward Dog. 4. Viparita Karani with arm elevated (20 min). 5. Self-MLD. ALWAYS with compression garment.
Lymphoedema (Lower Limb)	1. Dirga Pranayama. 2. Ankle/knee exercises elevated. 3. Viparita Karani (25-30 min). 4. Self-MLD (leg to inguinal nodes). 5. Walking with compression. AVOID hot environments.
IC/BPS	1. Yoga Nidra (30 min daily). 2. Nadi Shodhana (20 min). 3. Pelvic floor RELEASE: Supta Baddha Konasana, Ananda Balasana. 4. Sitali/Sitkari. 5. IC/BPS diet (avoid caffeine, citrus, alcohol).
Pulmonary Fibrosis	1. Diaphragmatic breathing (15-20 min). 2. Expansion breathing. 3. Pursed lip breathing. 4. Gentle Surya Namaskar (if SpO2 maintained >92%). 5. Yoga Nidra (existential distress). 6. SpO2 monitoring throughout.

Appendix D: Sanskrit and Ayurvedic Terms in Excretory Therapy

Sanskrit / Ayurvedic Term	Meaning and Clinical Relevance in Excretory Disease
Agni	Digestive and metabolic fire. In excretory disease: Agni must be strong for complete metabolism to occur; weak Agni = Ama accumulation = excretory organ burden.
Ama	Unprocessed metabolic waste; the Ayurvedic equivalent of uremic toxins, inflammatory cytokines, and accumulated metabolic burden. The primary target of yoga excretory therapy.
Apana Vayu	The downward-moving vital force; governs all excretory functions (urination, defecation, menstruation, exhalation). Primary Prana for excretory disease management.
Ashvini Mudra	Horse gesture; rhythmic anal sphincter contraction. Therapeutic for urinary incontinence, BPH, haemorrhoids, pelvic floor dysfunction.
Basti	Yogic enema (water enema in yoga; medicated enema in Ayurveda/Panchakarma). The most direct colonic cleansing practice. Primary treatment for Vata excretory disorders.
Dhatu	The seven bodily tissues (Rasa, Rakta, Mamsa, Meda, Asthi, Majja, Shukra/Artava). All Dhatu depend on efficient excretion of their metabolic waste products (Mala).
Garshana	Dry skin brushing with silk or natural fibre. Stimulates skin excretion; removes accumulated Ama under skin; stimulates lymphatic drainage. Particularly therapeutic for psoriasis, eczema, CKD skin symptoms.
Jatharagni	The central digestive fire in the GI tract. Strong Jatharagni ensures complete digestion, minimal Ama, and reduced excretory burden.
Kunjal Kriya	Therapeutic emesis (voluntary vomiting with warm saline). Cleanses the upper GI tract; reduces hepatic Ama load. Traditional Ayurvedic treatment for skin disease.
Laghu Shankha Prakshalana	Short intestinal wash. 6-8 glasses warm saline + specific asanas = complete small and large intestinal cleansing. Reduces colonic Ama; relevant to skin disease, CKD, psoriasis.
Mala	Waste products; the three primary Malas are Mutra (urine), Purisha (faeces), and Sveda (sweat). Maintaining healthy Mala production and elimination is the foundation of excretory health.
Mutravaha Srotas	Urinary channels (kidney, ureter, bladder, urethra). Blockage = urinary disease. Yoga therapy enhances flow through Mutravaha Srotas through specific asanas

	and hydration.
Mula Bandha	Root lock. Contraction of the pelvic floor and perineum. Therapeutic for all lower excretory organ conditions: urinary incontinence, BPH, haemorrhoids, rectal prolapse, pelvic floor dysfunction.
Nauli	Abdominal churning. The supreme Hatha Yoga purificatory practice. Massages all abdominal excretory organs simultaneously. The most powerful single yoga tool for excretory health.
Neti	Nasal cleansing (Jala Neti: saline; Sutra Neti: rubber catheter). Primary respiratory excretory practice. Evidence-based for asthma, COPD, recurrent UTI (immune support), psoriasis.
Panchakarma	The five Ayurvedic purificatory therapies (Vamana, Virechana, Basti, Nasya, Raktamokshana). The most comprehensive excretory system enhancement programme in the Ayurvedic tradition.
Shodhana	Purification; the process of removing Ama and toxins through excretory channels. The overall therapeutic goal of yoga therapy for excretory disease.
Vata	The Dosha governing movement, including all excretory motility (urination, defecation, respiratory flow). Vata imbalance = excretory dysfunction (constipation, urinary retention, poor breathing).
Vajroli Mudra	Urethral contraction mudra. The yoga mudra specifically targeting the urethral sphincter. Used in post-prostatectomy incontinence rehabilitation in men.
Virechana	Therapeutic purgation. Second of the five Panchakarma therapies. Clears liver, gallbladder, and intestinal Ama through controlled laxation. Yoga equivalent: Shankha Prakshalana.

Appendix E: Research References and Further Reading

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~ Shodhana Muktim Dadati ~

Purification bestows liberation. -- Hatha Yoga Pradipika

May every yoga teacher who reads these pages carry the light of healing into their practice and their community.
May every patient who benefits from yoga therapy find in it not just relief from disease, but the gateway to their own deepest nature -- which is health itself.

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