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Ministry of Health and Family Welfare, Government of India

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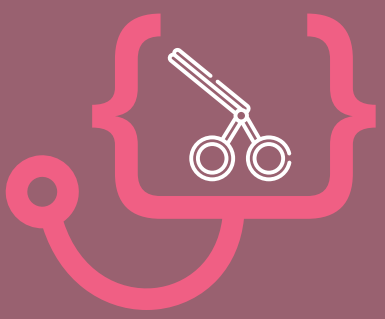


2019 Edition, Vol. I

STANDARD TREATMENT WORKFLOWS

of India

PARTNERS

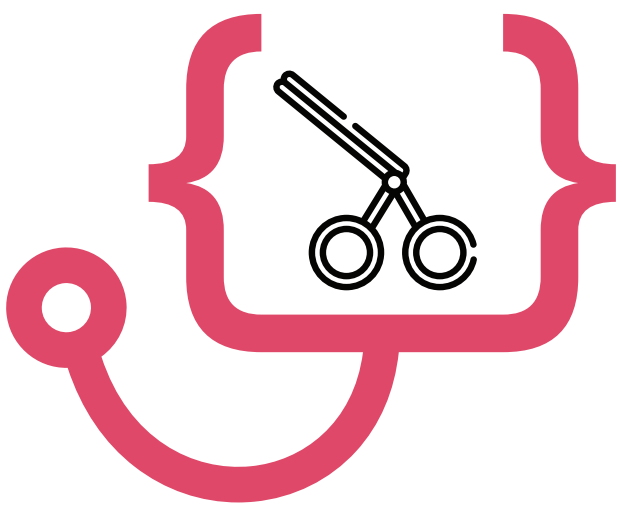
national health authority

World Health Organization

Suggested Citation: Standard Treatment Workflows of India, 2019 Edition, Vol. 1, New Delhi, Indian Council of Medical Research, Department of Health Research, Ministry of Health and Family Welfare, Government of India

Diary No. 17206/2019-CO/L

Printed in India



STANDARD TREATMENT WORKFLOWS of India

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These STWs have been prepared by national experts of India with feasibility considerations for various levels of healthcare system in the country. These broad guidelines are advisory, and are based on expert opinions and available scientific evidence. There may be variations in the management of an individual patient based on his/her specific condition, as decided by the treating physician. There will be no indemnity for direct or indirect consequences. Kindly visit our web portal (**stw.icmr.org.in**) for more information.

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INTRODUCTION

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GOAL

To empower the primary, secondary and tertiary care physicians/surgeons towards achieving the overall goal of Universal Health Coverage with disease management protocols and pre-defined referral mechanisms by decoding complex guidelines

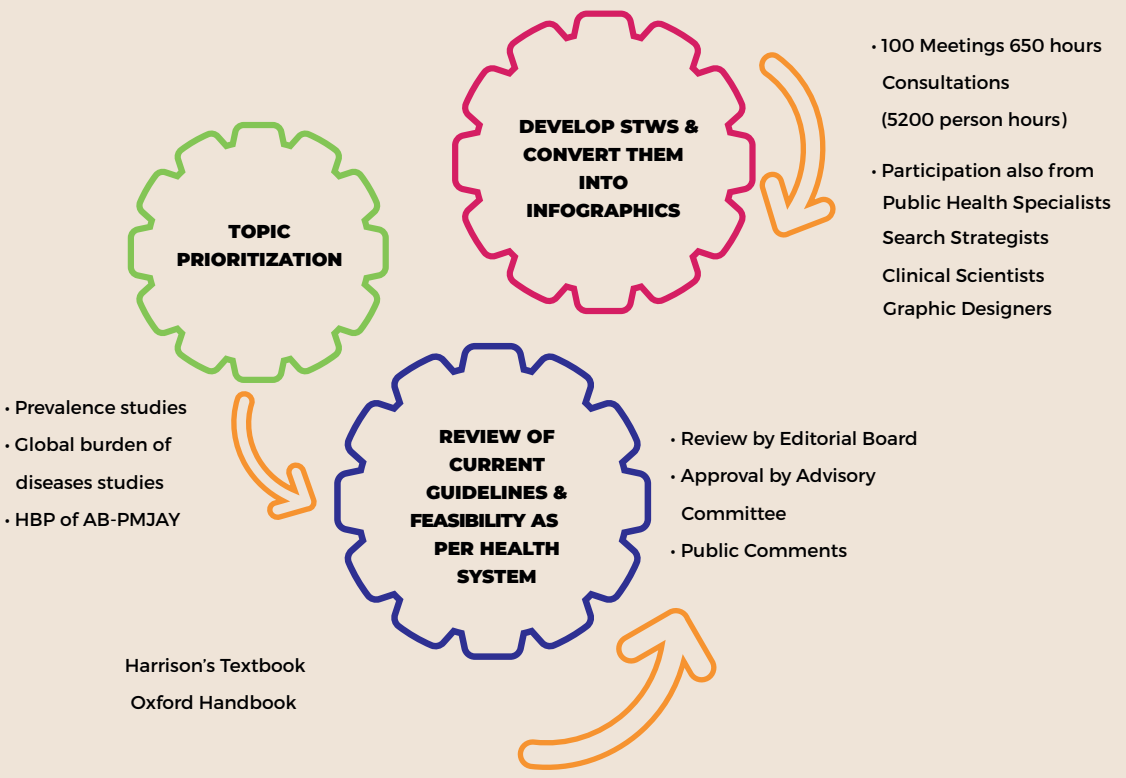
OBJECTIVES

Primary Objective:
To formulate clinical decision making protocols for common and serious medical/ surgical conditions for both OPD and IPD management at primary, secondary and tertiary levels of healthcare system for equitable access and delivery of health services which are locally contextual

Secondary Objective:
To facilitate PMJAY arm of Ayushman Bharat with secondary and tertiary level management of all surgical and medical conditions covered under the scheme.

METHODOLOGY

PROCESS OVERVIEW



UROLOGY

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Standard Treatment Workflow (STW)

ACUTE URINARY RETENTION IN MEN (AUR)

ICD-11-MF50.3

DEFINITION: Emergency condition characterized by a sudden and painful inability to void voluntarily despite having a full bladder

HISTORY

- Nature and duration of urinary symptoms prior to AUR
- Associated symptoms like fever, weight loss, sensory loss or weakness of lower limbs
- Past history of retentions
- Rule out precipitating causes like diabetes mellitus, alcohol consumption, recent surgery, UTI, constipation, cold exposure, prolonged travel and neurological conditions
- Medication history
- Look for risk factors

EXAMINATION

- Fever
- Enlarged tender palpable bladder dull on percussion
- Phimosis, meatal stenosis, urethral induration, stone, urethral discharge
- DRE for estimating prostatic size, consistency, tenderness ; exclude fecal impaction
- Focused neurological examination-anal tone, perianal sensation and bulbocavernous reflex

RISK FACTORS OF SPONTANEOUS AUR

- Old age
- Severe lower urinary tract symptoms (LUTS)
- Low peak flow rate
- High postvoid residual urine (PVR)
- Enlarged prostate or large median lobe
- High serum PSA
- Symptom worsening
- Increasing PVR during medical therapy

RISK FACTORS OF PRECIPITATED AUR

- Surgical procedure with general or loco-regional anaesthesia
- Bladder over-distension (eg prolonged journey)
- Exposure to cold
- Medications with sympathomimetic or anticholinergic effects, diuretics, alcohol intake
- Feacal impaction

CAUSES

THAT BLOCK THE PASSAGE: BPH · Urethral Calculus · Urethral Stricture · Acute Prostatitis · Ca Prostate · Vesical Calculus · Faecal impaction

THAT PARALYSE DETRUSOR: Neurological diseases e.g. spinal cord compression, transverse myelitis, stroke, head injury · Drug induced eg. opiods, anticholinergics, anti-histaminics, anti-diarrhoeals, flavoxate

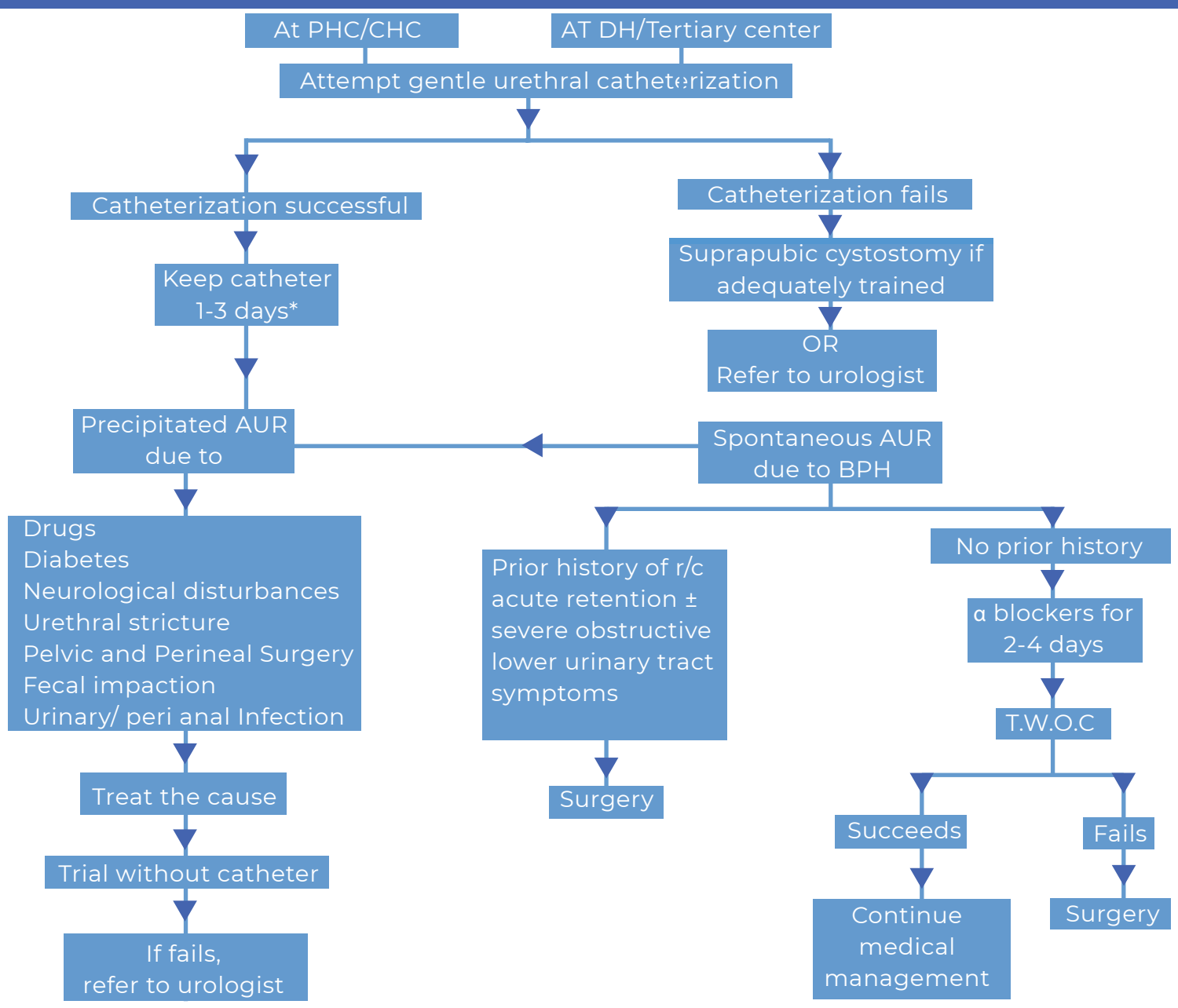
INVESTIGATIONS

As AUR is an acute emergency, no investigation is required before catheterization to relieve symptoms. The volume of urine drained should be documented.

DESIRABLE
CBC, S. Glucose,S. Creatinine and Electrolytes, USG KUB Urine analysis& Urine culture of the drained urine

OPTIONAL (ONLY BY SPECIALISTS)
NOT TO BE DONE ROUTINELY
- Cystoscopy,CT / MRI,RGU + MCU,Urodynamic studies

MANAGEMENT ALGORITHM



FOR CATHETERIZATION

- Use a aseptic technique with proper cleaning
- Use adequate lubrication
- Use a 14 or 12 Fr Foley urethral catheter
- Do not remove catheter earlier than a day

COMPLICATIONS DUE TO AUR

- Urinary tract infection
- Acute kidney injury

BLADDER SPASM

- Suprapubic pain with pericatheteric leak
- Council and analgesics
- Check that bladder is empty
- Don't change catheter unless blocked

COMPLICATIONS DUE TO CATHETERIZATION

- Post obstructive diuresis with dys-electrolytemia
- Transient decompression hematuria
- Urethral injury during catheterization

INDICATIONS FOR HOSPITALIZATION

- Patients of AUR with significant comorbidities
- Patient of AUR with complications listed above

ABBREVIATIONS

BPH: Benign Prostatic Hyperplas
IPSS: International Prostate Symptom Score
TWOC: Trial Without Catheter
WW: Watchful waiting

REFERENCES

1. Rosenstein D, McAninch JW. Urologic emergencies. Med Clin North Am. 2004;88(2):495-518
2. Billet M, Windsor TA. Urinary Retention. Emerg Med Clin North Am. 2019 Nov;37(4):649-660

☛ ASEPTIC AND ATRAUMATIC CATHETERIZATION TO PREVENT LIFE LONG MISERY OF STRICTURE

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Standard Treatment Workflow (STW)

GROSS HAEMATURIA

ICD-11-MF50.40

PERFORM THOROUGH CLINICAL EVALUATION

SYMPTOMS

- Blood in urine - red coloured or dark coloured
- May be associated with pain:
  - Pain during voiding (urethra)
  - Pain in suprapubic region (bladder)
  - Pain in flank (kidney)
- Acute retention of urine due to clots

RISK FACTORS

- Age > 40 years and male gender
- Smoking
- Occupational exposure (Textile, Chemicals, Rubber, Dye, Printing)
- Family History of Genitourinary malignancy
- Personal history of contact with tuberculosis
- History of stone disease
- Recurrent UTI

EXAMINATION

- Pulse, blood pressure
- Check for pallor
- Check for anasarca
- Per abdomen examination: Palpable bladder, flank mass
- Digital rectal examination: Enlarged prostate, hard nodular/ smooth surfaced prostate
- Rule out vaginal causes of bleeding

RED URINE BUT NOT HAEMATURIA

- Foods: beetroot, blackberry, rhubarb
- Medicines: rifampicin, pyridium

Even single episode of haematuria (irrespective of severity) warrants complete evaluation

MAKE A CLINICAL DIAGNOSIS

INITIAL

- Urethra: stone, urethritis, stricture
- Prostate: inflammation, benign hyperplasia, malignancy

TOTAL

- Kidney: stone, malignancy (renal parenchyma, pelvis/ureter, genito-urinary tuberculosis
- Ureter: stone, malignancy, genito- urinary tuberculosis
- Bladder: infection, genitourinary tuberculosis, stone, malignancy)

TERMINAL

- Bladder: stone, tumor at bladder neck
- Prostate: inflammation, benign hyperplasia, malignancy

HOW TO INVESTIGATE

ESSENTIAL

- Urine examination - routine, microscopy
- Complete Hemogram
- Kidney function tests (KFT)
- Ultrasonography of kidney urinary bladder and prostate region

DESIRABLE

- Contrast enhanced computed tomography of kidney urinary bladder region/ intravenous pyelography (if KFT normal)
- Magnetic resonance imaging of Kidney urinary bladder region (if KFT deranged)
- Urine cytology if > 40yrs or smoker
- Cystoscopy if > 40 years or smoker

OPTIONAL

- Urine culture
- Urine for active sediments(if nephrotic/ nephritic syndrome suspected)
- PT/INR (if bleeding disorder suspected)
- Serum prostate specific antigen (if required)
- Urine for acid fast bacilli - 3 samples (if tuberculosis suspected)

WHEN TO REFER (WARNING SIGNS)

- Deranged kidney functions
- Suspecting malignancy
- Haematuria with hypertension / albuminuria
- Persistent severe haematuria

HOW TO TREAT

PHC/DH (GENERAL)

- Start intravenous fluids if required
- If Anaemia - may transfuse blood as required
- Manage clot colic /flank pain with analgesics
- If Acute urinary retention - catheterise with 20/22Fr 3 way Foley and may start continuous irrigation with normal saline

SPECIFIC

- Suspect urinary tract infection : presents with dysuria, increased frequency of voiding and other irritative lower urinary tract symptoms with/ without fever- treat with broad spectrum oral antibiotics

TERTIARY CENTER (GENERAL)

- Cystoscopic clot evacuation may be performed if feasible
- If basic evaluation and management facilities are unavailable

SPECIFIC

- **Haematuria should be considered as a symptom of genitourinary malignancy in patients >40years old until proven otherwise**
- Suspected nephrotic/nephritic syndrome: cola coloured urine, proteinuria, anasarca, hypertension - Refer to nephrologist

DIFFERENTIAL DIAGNOSIS FOR CHRONIC CONDITIONS LEADING TO HAEMATURIA

	Stones	Renal cell cancer	Bladder tumor	Genito-urinary tuberculosis
Symptoms	Flank pain Ureteric colic Recurrent urinary tract infection Haemturia	Flank mass Flank pain Haematuria	Haematuria Urinary retention	Dysuria Frequency Nocturia Haematuria
Investiga-tions	Ultrasonography Xray KUB Intravenous pyelography or Computed tomography	Ultrasonography Computed tomography/MRI	Ultrasonography Computed tomography/MRI Urine cytology	Urine analysis Urine acid fast bacilli Urine tuberculosis culture CBNAAT (optional) Intravenous pyelography or Computed tomography
Treatment	>5mm or symptomatic - refer to urologist	Mostly surgical treatment - refer to urologist	Mostly surgical treatment - refer to urologist	Oral Antitubercular treat-ment - 6months, refer to a urologist, close follow up

ABBREVIATIONS

CBNAAT: Catridge based Nucleic Acid Amplification test

REFERENCES

1. Barocas DA, Lotan Y, Matulewicz RS, Raman JD, Westerman ME, Kirkby E, Pak L, Souter L. Updates to Microhematuria: AUA/SUFU Guideline (2025). J Urol. 0(0). doi:10.10 JU.0000000000004490.
2. Kapoor, Rakesh; Ansari, M. S.; Mandhani, Anil; Gulia, Anil. Clinical presentation and diagnostic approach in cases of genitourinary tuberculosis. Indian Journal of Urology 24(3):p 401-405, Jul–Sep 2008.
3. Skelton WP, Leslie SW, Guzman N. Renal Mass. [Updated 2025 Apr 12]. In: StatPearls [Internet].Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from:
4. https://www.ncbi.nlm.nih.gov/books/NBK567761/
5. Leslie SW, Hamawy K, Saleem MO. Gross and Microscopic Hematuria. [Updated 2024 Feb 29]. In:StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK534213/

DON'T DELAY, GET EVALUATED FOR GROSS HEMATURIA TODAY

November/ 2025

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Standard Treatment Workflow (STW)
MALE INFERTILITY
ICD-11-GB04

WHEN TO SUSPECT?

Inability to conceive even after one year of regular unprotected intercourse.

Evaluation earlier than one year if female age is >35yrs, family history of infertility or very anxious couples.
Infertility incidence is 10-15%.

Prevalence - 180 million couples worldwide and 15% of all couples

*Both have contributory factors in 30-40% cases

Male factor solely responsible in 20% and contributory in 30%

CAUSES

Pretesticular	Testicular	Post testicular
• Hypogonadotrophic hypogonadism, sexual disorders	• Primary testicular failure, cryptorchidism, atrophic testes, testicular tumors, varicocele	• CABVD, EDO, post vasectomy

HOW TO PROCEED?

Both partners examined simultaneously*

Ensure marriage is consummated, couple has frequent timed intercourse with the knowledge of ovulatary cycle

*Male factor is an under recognised problem and the failure to recognise often leads to social and psychological adverse effects. Often the male is evaluated once the female has been examined thoroughly and this delays the treatment . Greater the duration of infertility lesser the chance of success

AIM
- To ascertain contributory male factor
- Identify potentially correctable conditions
- Identify incorrectable condtions that may or may not be amenable to Assisted Reproductive Technique (ART)
- Identify serious underlying medical conditions like pituitary tumors, adrenal tumors, testicular cancer, GUTB, CKD, hypogonadism and other hormonal disorder

PHYSICAL EXAMINATION
- Body habitus (obesity, Klinefelter's). Secondary sexual characters, gynecomastia
- Penis: hypospadias, epispadias chordee
- **Testes:** volume, consistency, masses, contours
- Epididymis: flat, turgid, nodularity. Vas deferens – present/absent thickened or beaded
- Cords-presence of varicocele. Inguinal or scrotal scar
- Rectal examination: cyst, dilated seminal vesicles

HISTORY
- Age of partners and duration of infertility.
- Use of contraception and lubricants.
- Knowledge of ovulation cycle
- Sexual and ejaculatory dysfunction, volume of ejaculate
- Medical illness: STD, diabetes, any febrile illness within last 3 months chronic bronchitis and any debilitating medical condition
- H/o Chemotherapy, Radiotherapy
- Congenital anomalies, cryptorchidism, hypospadias, Chordee
- Testicular torsion, drug history, trauma and swelling
- H/o past surgeries(hernia repair, orchiopexy, retroperitoneal surgery)
- Family history (infertility,consanguinity,genetic disorders)
- Personal history-smoking, tobacco, alcohol, caffeine, drug abuse, anabolic steroids
- Exposure to environmental toxins (pesticides,herbicides, chronic heat and radiation, sauna bath, tight non cotton undergarments, laptops & mobile phone)
- Partner history: Any menstrual abnormality, infertility evaluation till date

INVESTIGATIONS

SEMEN ANALYSIS (ESSENTIAL)
- At least 2 samples 2-4 weeks apart; Abstinence of 1-3 days.; Collected in a sterile, medical grade plastic wide mouth container
- Provided within the lab or transported within an hour at room temperature and examined immediately
- WHO Semen criteria (2021, 6th edition), Volume 1.4 (1.3 - 1.5 mL), Total count 39 (35-40), Total motility 42 % (40-43), Progressive motility 30 % (29-31), Immotile sperms 20% (19-20), Vitality 54% (50-56), Morphology 4% (3.9-4)

DIAGNOSTIC CATEGORIES ACCORDING TO SEMEN ANALYSIS REPORT

Normal Semen Analysis: Rule out sexual dysfunctions, Anatomic abnormalities, Female factor and unexplained

Low volume semen: Incomplete Collection, Retrograde ejaculation, Ejac. duct obstruction, Cong. Absence of VasDeferens, Hypogonadism

- **Azoospermia:** Complete absence of sperm to be confirmed by centrifugation of semen and examining pellet

Obstructive (Epididymal,vasal)
- **Nonobstructive:** (Genetic, Chromosomal, Hormonal, CT/RT, Post torsion testes, orchitis, Cryptorchidism, Idiopathic)
- **Oligo-astheno-teratospermia: Isolated** Asthenospermia: Antisperm antibodies, Sperm structural defect, Hypogonadism
- **Multiple defects:** Varicocele, Cryptorchidism, Genital tract infection, Systemic illness, Prolonged abstinence, Drugs (Sulfasalazine, NFT, Colchicine, Chemotherapy, GnRh analogs, Spironolactone, Ketokonazole, Anabolic steroids, cocaine, alcohol. Chemicals: heavy metals, herbicides, organic solvents, fungicides, pesticides)

Note: If a patient is unable to produce semen consider retrograde ejaculation and anejaculation. Further evaluation may require electro ejaculation or vibrator induced ejaculation

OTHER INVESTIGATIONS
- Extended testing - SDF (sperm DNA fragmentation) test, ROS (reactive oxygen species), Genetic (karyotyping, Y chromosome micro deletion, CFTR mutation in Congenital absence of Vasdeferens)
- Hormonal assay: Serum FSH, LH, Prolactin, Testosterone, Estradiol, T/E ratio
- Culture: Urine, Semen, Prostatic fluid, Antisperm antibodies, Viability assay, Sperm function tests, Scrotal USG & doppler, TRUS, Genetic studies,
- Testicular biopsy (Multiple bilateral biopsies preferably in a center with facility for cryopreservation)

MANAGEMENT

PHC/CHC
- History and Physical examination

Normal Semen report:
(Rule out unconsummation, sexual dysfunction, anatomic abnormailities)
Female partner to be evaluated by gynecologist

Abnormal Semen report:
- Management of reversible nonsurgical causes (Infections etc.) and surgical cause i.e. varicocoele if surgeon available
- Preventive measures: Avoid gonadotoxins, gonadotoxic drugs, smoking, tobacco, chronic heat , excess use of mobiles; Encouraging healthy life style: Nutritious diet, regular physical exercise, avoid stress, use of antioxidants and vitamins(Vit. C, Vit E , Zinc)
- For further evaluation refer to district/ tertiary hospital

DISTRICT HOSPITAL
- Hormonal assay and Testicular biopsy
- Management of sexual and ejaculatory dysfunction
- Management of Varicocele and Hypogonadotropic hypogonadism
- ART: AIH/AID and counselling for adoption

TERTIARY LEVEL
- **Additional testing:** TRUS, Genetic, ASA, SDF, ROS
- **Advanced surgery:** Microsurgical VVA,VEA, Varicocelectomy, TURED, Sperm retreival techniques, Cryopreservation and sperm banking
- **Advanced ART:** IVF-ET/IVF ICSI

TREATMENT ALGORITHM

AZOOSPERMIA
(Low volume, ↓pH, Fructose -ve)

Retrograde ejaculation ruled out

Examine Vas

- Not palpable → CABVD
  - CFTR Gene Mutation → ICSI
  - DI/ Adoption → Counselling
- Palpable → E.D.O. → TRUS
  - Cystic SV & ED → TURED
  - Fibrous → Non-operable → PESA + ICSI

AZOOSPERMIA
(Normal volume, Fructose +ve)

Clinical Examination & FSH

- Obstructive (FSH-N, Epid, turgid) → Normal testes → Exploration, check vasal patency → Needle biopsy (if required) → Microsurgical VEA
- Equivocal (N-FSH, N-testes) → B/L Multiple testicular biopsy
  - Normal → VEA/ ICSI
  - No Sperms → DI/ Adoption
  - Focal Sperms → TESE-ICSI
- P.T.F. (Testes small, FSH>2N) → Discuss options
  - DI/ Adoption
  - Considering ICSI → Genetic study → Multiple testicular biopsy
    - Sperms absent
    - Sperms present → Cryo preservation → ICSI

OLIGO-ASTHENO-TERATOSPERMIA
(↓ count, ↓ motility, poor morphology)

- ↑ FSH, Severe Germ epith damage
- ↑ASA (Role of steroids debatable)
- Varicocele → Varicocelectomy
- Establish Infection → Antibiotics
- Idiopathic → Empirical Medical Rx (Clomiphene, Tamoxifen, HCG, aromatase inhibitors, antioxidants)

→ Refer for Assisted Reproductive Technique (IUI/IVF/ICSI)

NEVER MISS EXAMINING THE MALE PARTNER IN A CASE OF INFERTILE COUPLE

ABBREVIATIONS

AID: Artificial Insemination Donor
AIH: Artificial Insemination Husband
ART: Assited Reproductive Technique
ASA: Anti Sperm Antibodies
CABVD: Congenital Absence of Bilateral Vas deferens
DI: Donor Insemination
EDO: Ejaculatory Duct Obstruction
FSH: Follicle Stimulating Hormone
GUTB: Genito Urinary Tuberculosis
ICSI: Intra Cytoplasmic Sperm Injection
IVF-ET: Invitro Fertiliztion - Embryo Transfer
PESA: Percutaneous Epididymal Sperm Aspiration
PTF: Primary Testicular Failure
SV & ED: Seminal Vesicle & Ejaculatory Duct
TESE: Testicular Sperm Extraction
TRUS: Trans Rectal Ultrasonography
TURED: Trans Urethral Resection of Ejaculatory Duct
VEA: Vasoepididymal Anastomosis
VVA: Vaso Vasostomy

REFERENCES

1. Aua/asrm guideline amendment (2024). Majzoub a, et al. "updates to male infertility: aua/asrm guideline (2024)." J urol. 2024
2. Eau guidelines (2024 edition). Eau guidelines on sexual and reproductive health (male infertility chapter). European association of urology, 2024
3. Who semen manual (6th ed., 2021). Who laboratory manual for the examination and processing of human semen. Geneva: who, 2021
4. Global andrology forum sdf clinical guidelines (2025). Esteves sc, et al. World j men's health. 2025
5. Cochrane review (2021). "surgery or radiological treatment for varicoceles in subfertile men." Cochrane database syst rev. 2021

LINKS

1. https://pmc.ncbi.nlm.nih.gov/articles/PMC9942225/
2. https://my.clevelandclinic.org/health/diseases/17201-male-infertility
3. https://www.asrm.org/
4. https://www.auanet.org/meetings-and-education/for-medical-students/medical-students-curriculum/male-infertility

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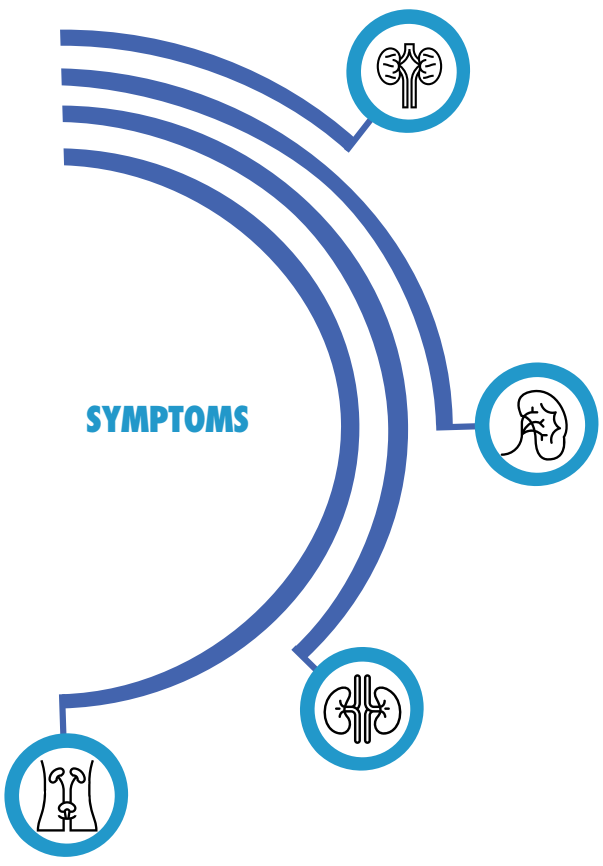
Standard Treatment Workflow (STW)

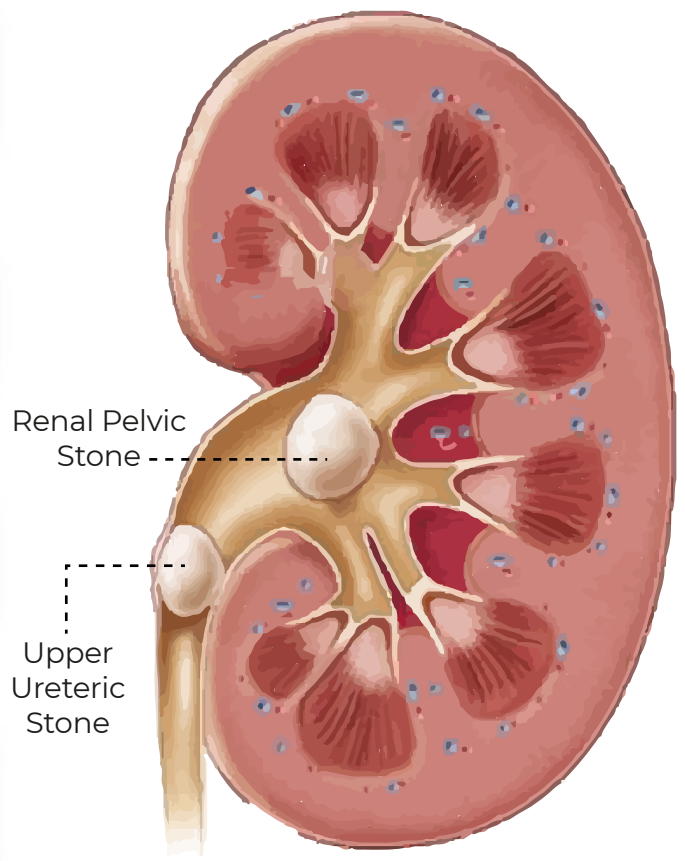
RENAL AND URETERIC STONES

ICD-11-GB70

HOW WILL YOUR PATIENT PRESENT AND WHAT TO SUSPECT



CLINICAL SCENARIO	SUSPECT
Flank pain	Renal Stone
Colicky pain starting from back and radiating to front	Upper ureteric stone
Colicky pain starting from back & radiating upto groin	Mid ureteric stone
Colicky pain starting from back & radiating to upper thigh & scrotum/ vulva	Lower ureteric stone



- Haematuria may be present with stone at any location
- Lower ureteric stones may also present with difficulty in passing urine

- Colics may be associated with nausea and vomiting
- Can present as anuria in bilateral ureteric stones, ureteric stone in a solitary kidney

History of site & type of pain, associated symptoms hint towards possible site of stones. Remember to take past history of stone diseases, medications, family history etc

INVESTIGATION

RADIOLOGY

NAME	ADVANTAGES AND DISADVANTAGES
X-KUB	Readily available, inexpensive, minimal radiation but needs preparation hence may not be the preferred test in emergency settings
USG	Readily available, no radiation, **safe test in pregnancy**, detects radiolucent stones, high sensitivity for hydronephrosis. Can miss a ureteric calulus
IVP	Anatomical and functional imaging, aids in planning surgery but high radiation and needs preparation. Not useful in poor renal function
CT Scan	No contrast required, highly sensitive and specific, detect radiolucent stones, detect other causes of flank pain, but risks higher radiation and cost

TIPS FOR ORDERING INVESTIGATIONS

- Order X-KUB and Ultrasound in all patients of suspected renal stones (90% of renal stones are radio-opaque).
- In acute colic NCCT should be preferred if available
- Once the stone is detected, get Intravenous pyelography if stone is seen on X-ray
- CT urography if stone is radiolucent to aid further treatment

METABOLIC EVALUATION

Initial biochemical evaluation in all stone formers

Urine analysis, serum creatinine, electrolytes namely calcium, phosphorous and uric acid. Intact parathyroid hormone and stone analysis are preferrable.

Extended Evaluation

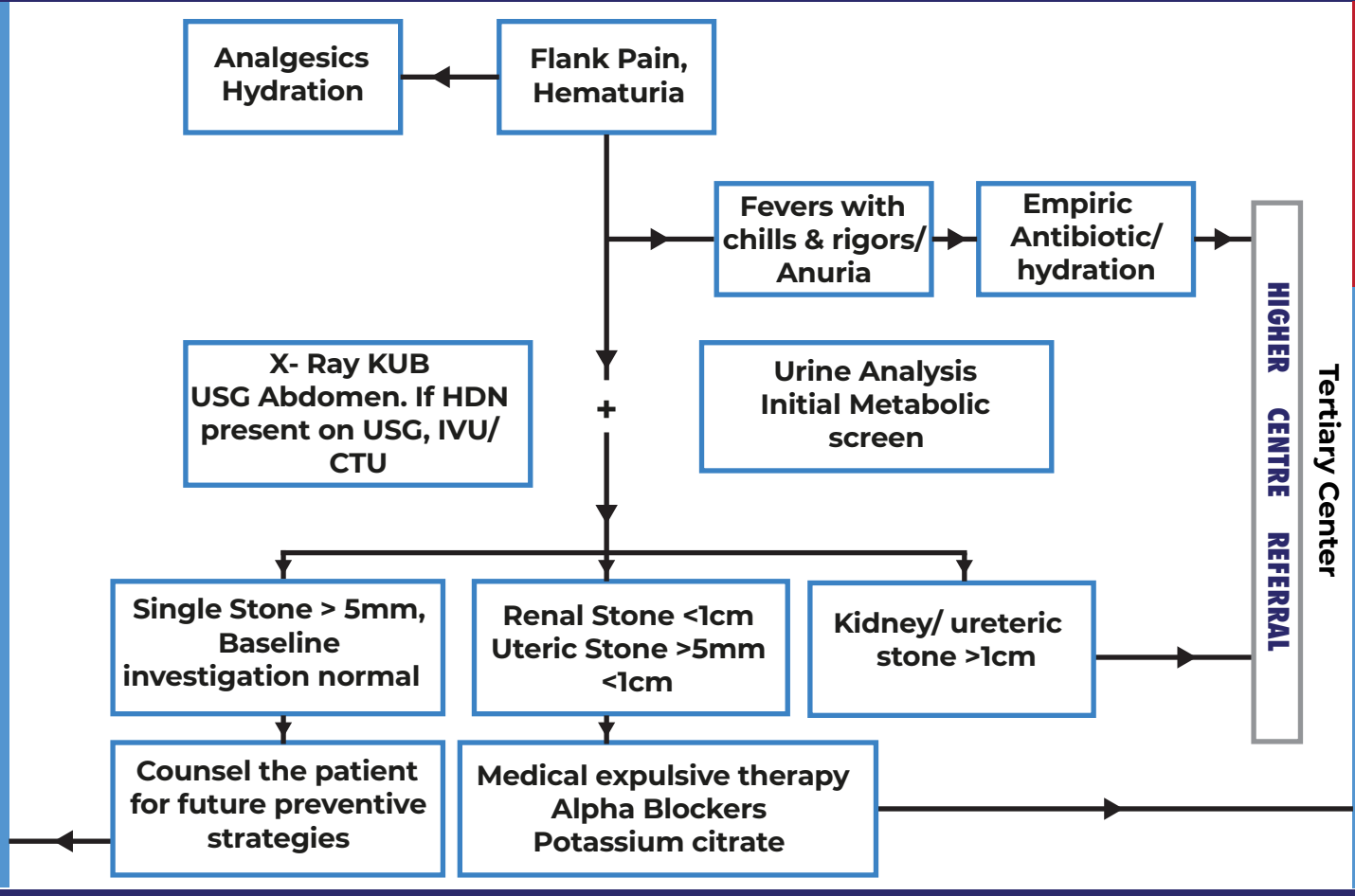
To be done in recurrent stone former, stone in children, bilateral stones, family history of stone, history of gut surgery, solitary kidney and cysteine stones. Typically to be done at 3-4 weeks after stone clearance

Should include initial metabolic evaluation plus 24-hour urinary levels of calcium, uric acid, and creatinine. Preferable to do intact parathyroid hormone (if not done earlier)and urinary oxalate and citrate levels

MANAGEMENT ALGORITHM

PHC/CHC level

- Increase daily fluid intake to ensure a urine output >2 lit/day
- Restrict extra salt intake and increase dietary fibre.
- Do not restrict calcium intake.
- Increase citrate rich food such as lemon, orange juice etc.
- Decrease consumption of food rich in oxalates like spinach, nuts, beet root, potato chips, French fries.
- Avoid purine rich foods like animal protein, alcoholic drinks like beer



Warning signs for immediate referral

- Anuria
- Fever with chills and rigors
- Suspected renal failure
- Persistent haematuria

Medical Expulsive Therapy (MET)

- Alpha blockers such as Tamsulosin(0.4mg/day) Alfuzosin (10mg/day); Silodosin(8mg/day)
- MET should be offered
  - In Ureteric stones <10mm
  - In the absence of infection, obstruction or deranged renal function.
- MET can be tried for upto 4 weeks

REFERENCES

1. Vilapurathu, Jobin Kunjumona,*; Carlmana, Camila A.a; Francisa, Dilnaa; Varghesea, Siballaa. A comprehensive investigation of the prevalence and risk factors associated with renal calculi in Southern India: A prospective study. Urological Science 36(1):p 20-24, March 2025. | DOI: 10.1097/us9.0000000000000054.
2. Leslie SW, Sajjad H, Murphy PB. Renal Calculi, Nephrolithiasis. [Updated 2024 Apr 20]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK442014

A STONE REOCCURENCE IS COMMON FOLLOW PREVENTIVE STRATEGIES

January/ 2026

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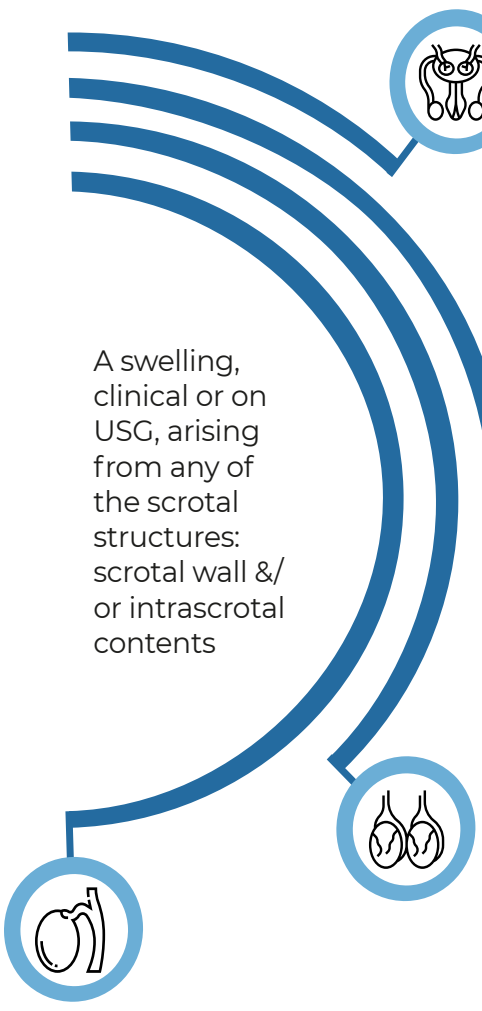
Standard Treatment Workflow (STW)

SCROTAL SWELLING

ICD-11-N50.89

A swelling, clinical or on USG, arising from any of the scrotal structures: scrotal wall &/ or intrascrotal contents



MAKE A CLINICAL DIAGNOSIS

DIAGNOSE THE SITE OF SWELLING?

Are you able to reach above the swelling?

- Yes → SCROTAL SWELLING
  - Scrotal wall involved in swelling → Parietal Swelling
  - Scrotal wall normal & can be pinched off the swelling → Intrascrotal Swelling
    - Normal Testis palpated separately; Swelling located well above testis → Spermatic Cord Swelling
    - Testis not palpable normally; Swelling located just above &/or behind testis → Epididymal Swelling
    - Testis itself appears enlarged → Testicular Swelling
- No → INGUINOSCROTAL SWELLING

DIAGNOSE THE NATURE OF SWELLING?

- PAINFUL
  - Cystic → Fluid accumulation, (e.g. Hydrocele, epididymal cyst)
  - Solid → • Ch. inflammatory, (e.g. Filariasis, TB) • Tumors
- PAINFUL
  - Fever Present → Acute infection
  - Fever Absent → • Traumatic • Ischaemic (e.g. torsion)

MAKE A CINICAL DIAGNOSIS

PARIETAL (SCROTAL WALL) SWELLINGS

	BILATERAL	UNILATERAL
Ac. Inflammation	• Cellulitis • Fournier gangrene	• Reactionary to epididymo- orchitis • Furuncle, Abscess
Traumatic	Contusional	Blunt trauma
Ch. Inflammation	Filarial Elephantiasis	
Fluid Accumulation	• Edema in anasarca, IVC thrombosis • Urinary extravasation	Scrotal wall cysts
Neoplasm		Melanoma, Scrotal Carcinoma Dermatofibroma;

INTRASCROTAL SWELLINGS

	Testicular	Epididymal	Spermatic cord
Cystic	Hydrocele	• Epididymal cyst • Spermatocele	Varicocele
Solid	**Painless** • Testicular tumor **Painful** • Torsion testis • Orchitis	**Painless** • Ch. Filarial epididymitis • Ch. Tuberculous Epididymitis • Adenomatoid tumor **Painful** • Ac. Epididymitis	**Painless** • Lipoma cord **Painful** • Funiculitis

RED FLAG SIGNS

PAINFUL SWELLING
- Sudden onset-Severe pain, Vomiting
- O/E tender enlarged testis, pain increases on elevating testis
- No fever

▶ **TORSION TESTIS** (More common in adolescents) ▶ **CONFIRM BY**
- Scrotal doppler
- To save testis, surgery should be done within six hours

▶ **REFER URGENTLY FOR EXPERT CONSULTATION**

PAINLESS SWELLING
- Solid testicular swelling is felt

▶ **TESTICULAR TUMOR** ▶ **CONFIRM BY**
- Scrotal USG
- Serum tumor markers

▶ **REFER ALL CASES FOR EXPERT CONSULTATION**

INVESTIGATIONS

SUSPECTING AC. INFLAM DISEASE

Essential
- TLC/DLC
- Blood sugar

Desirable
- Anti filarial antibody

SUSPECTING CH. INFLAMMATORY DIS.

Essential
- TLC/DLC
- ESR
- Scortal USG

Desirable
- Anti filarial Ab

SUSPECTING TESTICULAR TUMOR

Essential
- Beta hCG
- Alfa feto protein
- Serum LDH

Desirable
- Scrotal USG
- Abdomino - Pelvic CECT Scan

SUSPECTING TORSION

Essential
- TLC/DLC

Desirable
- Scrotal doppler

SUSPECTING VARICOCELE

Essential
- TLC/DLC

Desirable
- Scrotal doppler

HOW TO TREAT COMMON CONDITIONS?

PARIETAL SWELLINGS

FURUNCLE/ABSCESS
PHC/CHC level
- Broad Spectrum Antibiotic Amoxy + Clavulinic acid
- Consider drainage if fluctuations+ or impending rupture

District Hospital
- If abscess appears part of underlying disease
- Nonresponders
- Immunocompromised patient

FILARIAL ELEPHANTIASIS
PHC/CHC level
- DEC 100 mg TDS x 20 days
- Doxycycline 100 mg BD x 20 days
- Scrotal Elevation/support

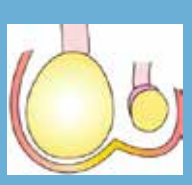
District Hospital
- Non responders
- Huge size

INTRASCROTAL SWELLINGS

AC. EPIDIDYMO-ORCHITIS
PHC/CHC level
- If patient had a urinary tract instrumentation or dysuria - suspect bacterial type, treat by - antibiotic and support If no response in 48 hrs
- Treat all other cases as filarial by - DEC 100 mg x TDS x20 days and doxycycline 100 mg x BD x 20 days
- Give anti inflammatory drugs to all

District Hospital
- Non responders

HYDROCELE
PHC/CHC level
- Small size - no treatment
- Aspiration can be performed under aseptic precautions in select cases

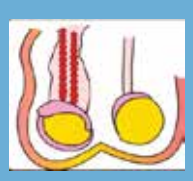


District Hospital
- Moderate to large -Do hydrocelectomy

Tertiary Center
- If not trained to do the surgery

CHRONIC EPIDIDYMO-ORCHITIS
PHC/CHC level
- Mostly filarial in origin but if -
- Patient has had H/O UTI or urethral catheterization, suspect bacterial
- Patient has H/O TB, suspect tuberculosis
- Treat by DEC 100 mg TDS + Doxycycline 100 mg BD for 20 days

District Hospital
- No response to treatment
- Epididymal abscess or local sinus discharging syrup like pus



VARICOCELE
PHC/CHC level
- Counsel for semen analysis (2-3 times)

District Hospital
- If 'discrepancy in size of testis' and/or 'abnormal semen parameters present' and /or persistent pain & swelling
- Rest all cases be given symptomatic treatment

REFERENCES

1. O'Connell P R, McCaskie A W, Sayers R D (eds). Bailey & Love's Short Practice of Surgery. 28th ed. Boca Raton: CRC Press (Taylor & Francis Group); 2023. ISBN: 978-0-367-54811-7.
2. Gossage J.A., Bultitude M.F., Corbett S.A. (Eds). Browse's Introduction to the Symptoms & Signs of Surgical Disease. 6th ed. London / New York: CRC Press (Taylor & Francis); 2021. ISBN

ABBREVIATIONS

DEC: Diethyl Carbamazine Citrate

KEEP A HIGH THRESHOLD FOR INVASIVE TESTS AND PROCEDURES

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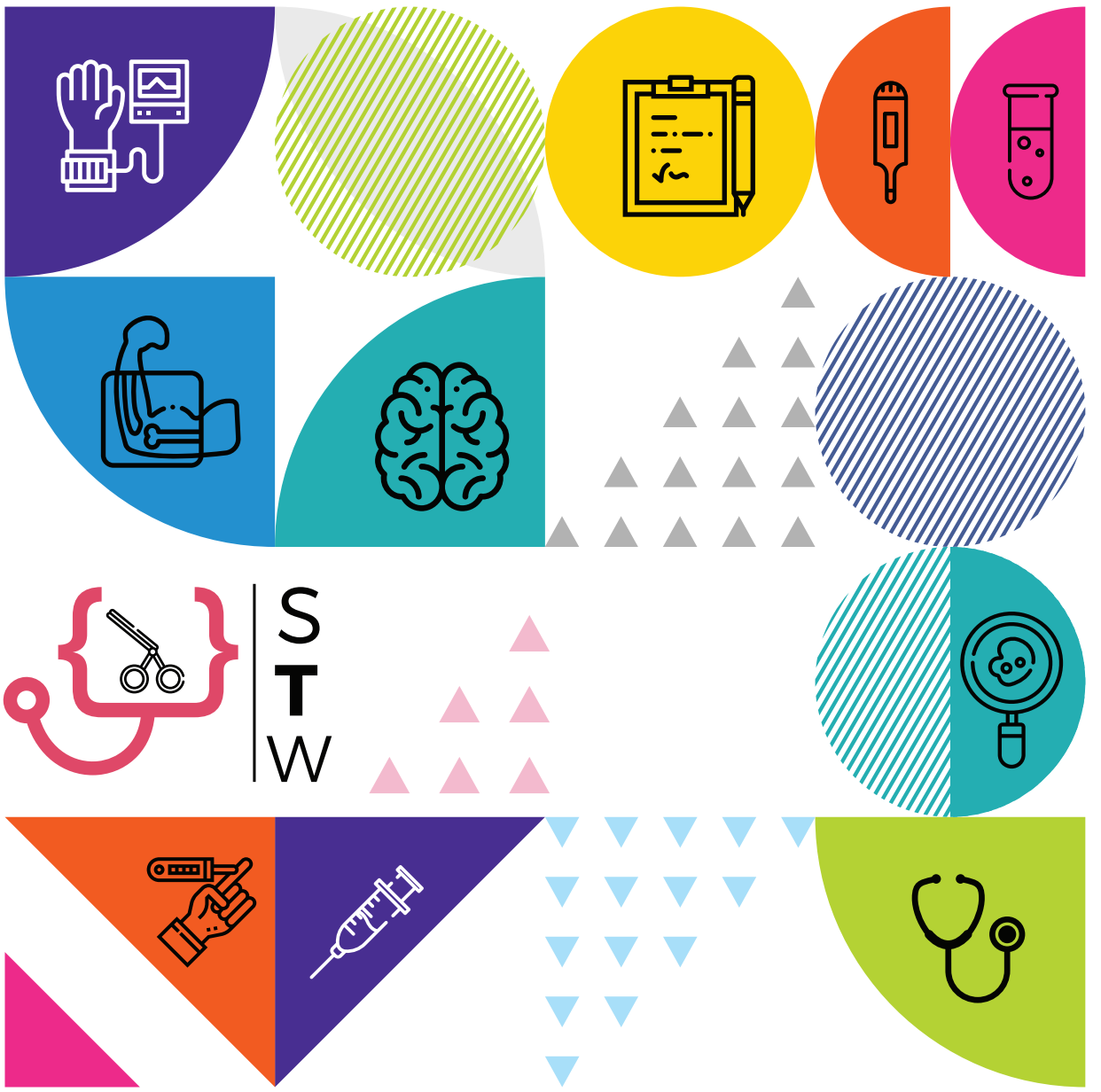
STANDARD TREATMENT WORKFLOWS *of India*



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2019 EDITION

VOLUME I