

### Kidney stones

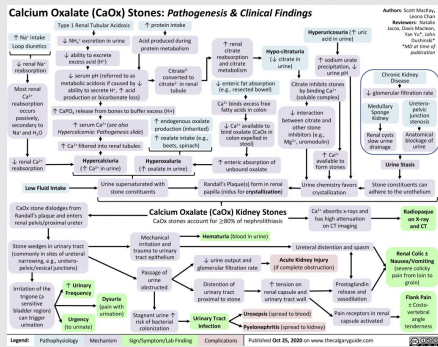
**Definition:** Hard deposits of minerals & salts forming within the urinary tract

**Signs & symptoms:**

- Severe, sharp pain in the side & back, below the ribs
  - Pain that radiates to the lower abdomen & groin
  - Pain that comes in waves & fluctuates in intensity (due to stones moving)
  - Pain or burning sensation while urinating
  - Pink, red or brown urine
  - Cloudy or foul-smelling urine
  - Persistent need to urinate, urinating more often than usual or urinating in small amounts
  - Nausea & vomiting
  - Fever & chills if an infection is present
- => Pain may change [e.g. shifting to a different location or increasing in intensity - as the stone moves through the urinary tract]

**Pathophysiology & mechanism:** Diet, excessive body weight, medical conditions, supplements, medications (& genetics) = urine becomes concentrated, forming stones (in any part of the urinary tract)

### Kidney stones



### Benign Prostatic Hyperplasia (males)

**Definition:**

- Enlarged prostate gland due to ↑ in cell number (noncancerous)
- More frequent in West
- More common in black people

**Signs & symptoms:**

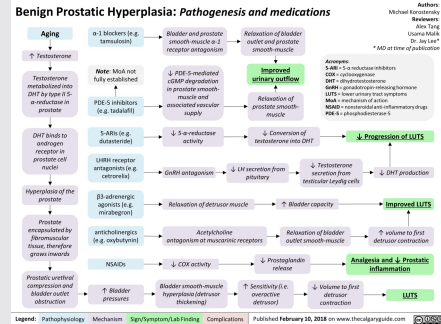
- Frequent/urgent urination
- ↑ urination at night
- Trouble starting to pee
- Weak urine stream (or stop-starts)
- Dripping at end of urination
- Not able to empty bladder fully
- Less common: UTI, not able to urinate, blood in urine

**Pathophysiology & mechanism:** Aging, various hormonal, bladder/kidney stones, problem with nerves that control bladder, prostate/bladder cancer

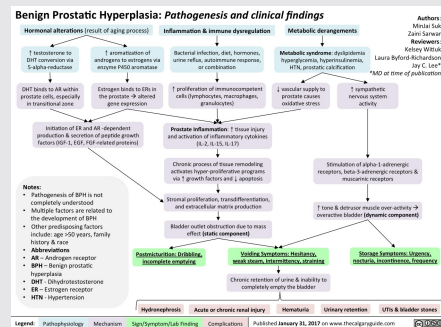
**Risk factors:** Aging, family Hx, diabetes, heart disease, lifestyle

**Treatment:** Medication, therapy, surgery

### Benign Prostatic Hyperplasia



### Benign Prostatic Hyperplasia (contnd)



### Female Reproductive Disorders

<b>Pelvic Inflammatory Disease</b>	<b>Endometriosis</b>	<b>Abnormal Uterine Bleeding</b>	<b>Female Infertility</b>
<b>Definition:</b> Infection of the female upper genital tract, including the womb, fallopian tubes & ovaries	<b>Definition:</b> Endometrium (womb lining tissue) implants & grows in places other than the uterine cavity (ovaries, fallopian tubes); women of any age; long term condition	<b>Definition:</b> Bleeding between monthly periods, prolonged bleeding, extremely heavy periods Umbrella term for 2 different conditions (★)	<b>Definition:</b> Couple cannot conceive (both can be the issue)

### Female Reproductive Disorders (cont)

<b>Signs &amp; symptoms:</b>	<b>Signs &amp; symptoms:</b>	<b>Signs &amp; symptoms:</b>	<b>Causes:</b>
- May be asymptomatic - Pain around pelvis or lower abdomen - Discomfort or pain during sex that is felt deep inside the pelvis (+/- bleeding) - Bleeding between periods or after sex - Unusual vaginal discharge - Fever & vomiting - Pain in the rectum	- Sharp, deep pain during ovulation, sex, bowel movements, &/or urination - Heavy, painful periods or bleeding in between periods - Indigestion, diarrhoea, constipation, & nausea - Fatigue - Sciatica during menstruation	- Heavy periods - Irregular bleeding - Prolonged periods - Inconsistent menstrual cycles - Spotting	- Infection - Fibroids - Polyps - Septations (congenital malformations) - Polycystic ovaries (produce eggs not ready to be fertilised) - Uterine tube blockage (eggs don't reach uterine cavity) - Adhesions (due to past bleedings)



### Female Reproductive Disorders (cont)

Pathophysiology & mechanism:	Pathophysiology & mechanism:	Pathophysiology & mechanism:	Pathophysiology & mechanism:
Infection (sexually transmitted bacteria) in the vagina or the neck of the cervix => spreads higher up into the reproductive organs	Retrograde flow endometrial cells => flow through reproductive organs = growth of endometrium in wrong places	<i>Local causes:</i> Polyp, Adenomyosis, Leiomyoma, Malignancy <i>Systemic causes:</i> Coagulopathy, Ovulatory, Endometrial, Iatrogenic, Not otherwise classified (Ishmocele) => Changes in prostaglandin concentration, increased endometrial responsiveness to vasodilating prostaglandins, and changes in endometrial vascular structure	Any of above causes => oocyte not released due to ↓ release of oestrogen by ovaries/↓ follicles available to ovulate/gentic damage/↓ transport of oocyte through fallopian tubes/ ↓ egg/sperm mobility due to local inflammation/inability of cervix to produce normal mucus, &/or sperm unable to enter the cervix/uterine lining disruption/↓ vascularisation & endometrial regrowth

### Female Reproductive Disorders (cont)

Complications:	Complications:	Treatment:	Risk factors:
- Can result in infertility or an ectopic pregnancy - Chronic pelvic pain ( ⚡ ) => Especially when asymptomatic as it's left untreated	- Subfertility or infertility - Significant physical, emotional & social impact	Medication, hormonal contraception & surgery	Age; smoking; weight; Hx of STIs (chlamydia & gonorrhoea); alcohol
<b>Treatment:</b> Antibiotics & in worst cases surgery	<b>Treatment:</b> Hormone therapy; hormonal contraception; conservative surgery; hysterectomy (last resort)	★ <b>Menorrhagia:</b> excessive &/or prolonged menstruation <b>Metrorrhagia:</b> excessive, prolonged &/or irregular bleeding unrelated to menstruation	<b>Treatment:</b> Fertility drugs

⚡ **Chronic Pelvic Pain:** Any pain in the lower abdomen or pelvis lasting longer than 6 months; common (1/6 women); often without obvious cause (multiple conditions can cause it); physical, psychological & social factors

### Urinary Incontinence

#### Definition:

- Loss of bladder control
- 4 types of incontinence: *Stress* incontinence [Urine leak after coughing, laughing, sneezing, or exercising]; *Urge* incontinence [Urine leak after a strong, sudden urge to urinate]; *Mixed* incontinence [mix of stress & urge, may leak urine with laugh or sneeze]; *Temporary* incontinence [Illness e.g. UTI]

#### Signs & symptoms:

- Failure to void
- Failure to store
- Urodynamic studies

#### Pathophysiology & mechanism:

- Overflow incontinence => overfilling of the bladder from obstruction; Bladder Outlet Obstruction (tumour, stone, BPH, urethral or bladder neck stricture)
- Detrusor overactivity => overactive bladder (idiopathic), CNS lesion (neurogenic), inflammation/infection (cystitis, UTI), diabetes mellitus
- ↓ bladder wall compliance => progressive ↑ in intravesicle pressure during bladder filling pushing urine from the bladder
- Urethral hyper mobility, intrinsic sphincter deficiency, or a poorly coating urethra => ↓ pelvic floor muscle & ligament strength causing ↓ tone of vesicoureteral sphincter unit; ↓ urethral strength & associated strained & smooth muscle (iatrogenic)

**Treatment:** Exercises; therapies; medication & surgery

### Urinary Infection

#### Definition:

- Infection in any part of the urinary system
- Women at greater risk (shorter urethra, increasing likelihood of infection ascension)

**Causes:** Bacteria (most commonly *faecal bacteria*)

#### Signs & symptoms:

- Strong urge to urinate that doesn't go away
- Burning feeling when urinating
- Urinating often & small amounts
- Cloudy & strong-smelling urine
- Red, bright pink or cola-coloured urine (signs of blood)
- Pelvic pain (centre of pelvis & around pubic bone)
- Fever &/or chills
- Pain in lower back &/or side

#### Pathophysiology & mechanism:

1. Colonisation (pathogen colonises the periurethral area & ascends through the urethra upwards to the bladder)
2. Uroepithelium penetration (Cumbria allow bladder epithelial cell attachment & penetration → bacteria continue to replicate & may form biofilms)
3. Ascension (once sufficient bacteria colonise, they may ascend on the ureter towards the kidneys)
4. Pyelonephritis (inflammatory response to the infection of renal parenchyma)
5. Acute kidney injury (if inflammatory cascade continues, tubular obstruction & damage occurs → interstitial edema, may → interstitial nephritis → AKI)

#### Complications:

- Repeated infections
- Permanent kidney damage (untreated UTI)
- Delivering a low birth weight or premature infant (UTI during pregnancy)
- Narrowed urethra (males)
- Sepsis (life threatening; infection that travelled up to the kidneys)

**Treatment:** Antibiotic or vaginal oestrogen therapy (after menopause)

### Urinary Incontinence

