LESSON PLAN – GENITO-URINARY SYSTEM

(let's make pathology fun!!!)

DEFINE THE FOLLOWING TERMS: (some will be revision from previous worksheet)

- Albuminuria
- Anuria
- Incontinence
- Renal colic
- Calculi
- Hydronephrosis
- Haematuria
- Retention
- Oliguria
- Urinary stasis
- NephropathY
- Cystitis
- Dysuria
- Pyuria
- Polyuria
- Bacteriuria
- Pyelonephritis

TASK – Create a CROSSWORD puzzle, using the following terms. Click on this link: Free Puzzlemaker and select a criss – cross puzzle. Once puzzle is generated, save it as a file and upload into the online classroom. (GROUP 1):

PREFIXES/SUFFIXES: (some will be revision from previous worksheet)

- Reno-
- Pyelo-
- Nephro-
- Vesico-
- Cysto-
- Hyper-
- Hypo-

Please add new terminologies to list as discovered…

At the end of this learning area, you should be able to:

- *DESCRIBE the anatomic components of the GU system and their functions.*
- *IDENTIFY the tubes and catheters related to the GU system by type and briefly EXPLAIN their use.*
- *DISCUSS the role of other modalities in imaging the GU system, particularly ultrasound and CT.*
- *DISCUSS common congenital anomalies of this system*
- *CHARACTERISE a given condition as congenital, inflammatory, metabolic or neoplastic.*
- *IDENTIFY and EXPLAIN/DESCRIBE the pathogenesis of GU system and the typical treatments for them.*
- *DESCRIBE , in general, the radiographic appearances of each of the given pathologies.*
- *RECOGNISE and EXPLAIN the patterns/steps required to evaluate normal and abnormal images (viewing practicals)*

TASK – ALL to review before lesson.	***ANATOMY & PHYSIOLOGY OF THE GU SYSTEM:*** *Please REVIEW the anatomy and physiology of the GU system. This is essential to fully appreciate the pathologies that may present in this system. Some guidelines:* • *Kidneys, ureters, bladder and urethra (male & female) – position & structure* • *Renal vasculature* • *Glomerular structure and function* • *Role of other systems on GU system – CVS, etc.*
TASK – SELECT an image/s that demonstrate the value of each modality for urinary conditions/diseases (GROUP 2 & 3).	***EVALUATE the role of imaging in the GU system****, with respect to the following:* • *Plain film/image radiography – ABDOMEN* • *Contrast radiography – IVU/EU, VCU, Retrograde Urography,* • *Ultrasound – significant for imaging abdominal contents* • *Computed Tomography (CT)* • *Renal Angiography* • *MRI* • *Interventional Procedures/Techniques*

TASK - IDENTIFY and DESCRIBE the keys tubes, lines and catheters and their importance (GROUP 4).

Chest tubes, vascular access lines and Catheters – *(Mace & Kowalczyk, 2004, Radiographic Pathology for Technologists, pg 176.)*

" when certain types of pathology… inhibit the normal flow of urinary system, several types of tubes may be used to allow drainage"

***Categories of GU system diseases**: guidelines when making own notes*	
○ *Congenital and Hereditary Dx* ○ *Inflammatory and Infective Dx* ○ *Renal Failure* ○ *Kidney and Hypertension*	○ *Degenerative and Metabolic Dx* ○ *Neoplastic Dx* ○ *Traumatic Disorders* ○ *Idiopathic Dx*

When working through each of these diseases, ***DESCRIBE/EXPLAIN each, in terms of:***

- ***Aetiology***
- ***Incidence/prevalence***
- ***Clinical presentations***
- ***Pathological manifestations***
- ***Image characteristics appearances***

USE clearly labelled diagrams where necessary.

TASK – Use the GoogleDocs to complete this task. Answer what each condition is briefly, using the broad guidelines given above.

N.B. Save the document and upload into Bb for class reviews.

GROUPS 13 – 14.

Congenital and Hereditary Dx: (very important for US students)

https://docs.google.com/document/d/12O2zNgiSwEcgzwVeMnuvt-RqNKqL41El3FMPJ0lPEKk/edit?hl=en_US

A large number of developmental abnormalities may occur in the KUB. Many are minor in nature and those more marked are less common. They include the following:

Number and size anomalies • *renal agenesis* • *supernumerary kidney* • *hypoplasia/hyperplasia* *Fusion anomalies* • *horseshoe kidney* • *crossed ectopy* *Medullary Sponge kidney*	*Position anomalies* • *malrotation* • *ectopic kidney* • *nephroptosis* *Renal Pelvis and Ureter anomalies* • *duplex kidney* *Lower tract anomalies* • *ureterocoele* • *diverticula – ureter and bladder* • *urethral valves*

TASK – go to this wikispace and JOIN the wiki. Select the appropriate topic/page. Create an entry for each of the following conditions/diseases. As a team, peer – review each entry, ensuring

Inflammatory and Infective Dx:

http://radpath2.wikispaces.com/UrinaryDx_Inflammatory_and_Infective

Pathogens may reach the kidneys via the blood or by ascending the ureter from the lower urinary tract. Urinary tract infections (UTIs) are the most common of all infections. Important consequences include obstruction and/or vesicoureteric reflux.

• *Urinary tract infections* • *Pyelonephritis – acute and chronic* • *Glomerulonephritis – acute and chronic*	• *Cystitis* • *Papillary necrosis* • *Perinephric abscess* • *Renal TB*

DESCRIBE/EXPLAIN these infective conditions.

reliability of information. Once complete, integrate the final entry into Bb. GROUPS 15 & 16	***Kidney and Hypertension:*** *2 aspects to this relationship. Many renal diseases (chronic pyelonephritis, glomerulonephritis and renal artery stenosis) cause hypertension (high blood pressure). But hypertension leads to renal damage and a "vicious" circle is set up.* **DESCRIBE/EXPLAIN hypertension of renal origin.**
TASK – Create a CROSSWORD puzzle, using the following terms. Click on this link: Free Puzzlemaker and select a criss – cross puzzle. Once puzzle is generated, save it as a file and upload into the online classroom. Groups 5, 6 & 7	***Degenerative and Metabolic Dx:*** *There are several diseases caused by degeneration and metabolic changes, which result in structural and functional alterations in the KUB. They are:* • *Nephrosclerosis* • *Nephrocalcinosis* • *Renal calculi* • *Hydronephrosis* • *Renal Failure* *Vascular:* • *Renal artery stenosis* • *Renal vein Thrombosis* • *Renal infarcts* ***DESCRIBE/EXPLAIN each of these conditions.***
TASK – go to this wikispace and JOIN the wiki. Select the appropriate topic/page. Create an entry for each of the following conditions/diseases. As a team, peer – review each entry, ensuring reliability of information. Once complete, integrate the final entry into Bb. Group 12	***Neoplastic Dx:*** *http://radpath2.wikispaces.com/UrinaryDx_Neoplasms* *Neoplasms may arise out of the solid part of the kidney, renal pelvis, ureter or bladder. They show up as masses, which can cause filling defects, and become visible when they stretch or displace the collecting system. Almost all solitary masses are either malignant tumours or simple cyst. Most common masses are:* • *Renal cysts* • *Polycystic kidneys* • *Nephroblastoma (Wilm's tumour)* • *Renal adenocarcinoma (hypernephroma)* • *Carcinoma of the bladder* ***DESCRIBE/EXPLAIN these neoplastic growths.***
TASK – go to the blog on these topics. Create an entry for each of the following conditions/diseases. As a team, peer – review each entry, ensuring reliability of information. Once complete, integrate the final entry into Bb. Groups 8, 9, 10, 11	***Intercurrent Renal Conditions:*** *Renal complications are common in* ***diabetes*** *→ develop proteinuria after many years, with kidney changes evident.* *Renal function during pregnancy can be affected – 4 ways. NAME them.* ***DESCRIBE/EXPLAIN both these intercurrent conditions.***
	Traumatic Disorders: *Injuries to the abdomen may result in contusion, rupture or total avulsion of the kidney/s, with haematuria. Pelvic injuries can lead to bladder and/or urethral rupture in males.* ***DESCRIBE/EXPLAIN these traumatic disorders.***
	Other Female Disorders: *Bladder/genital prolapse and stress incontinence occur in females.* ***DESCRIBE/EXPLAIN these disorders.***
EVERYONE	***GLOSSARY: Don't forget to enter 3 new terms in the glossary!!!***

N.B. Each task must demonstrate the outcomes for each condition/disease using the guidelines provided.