

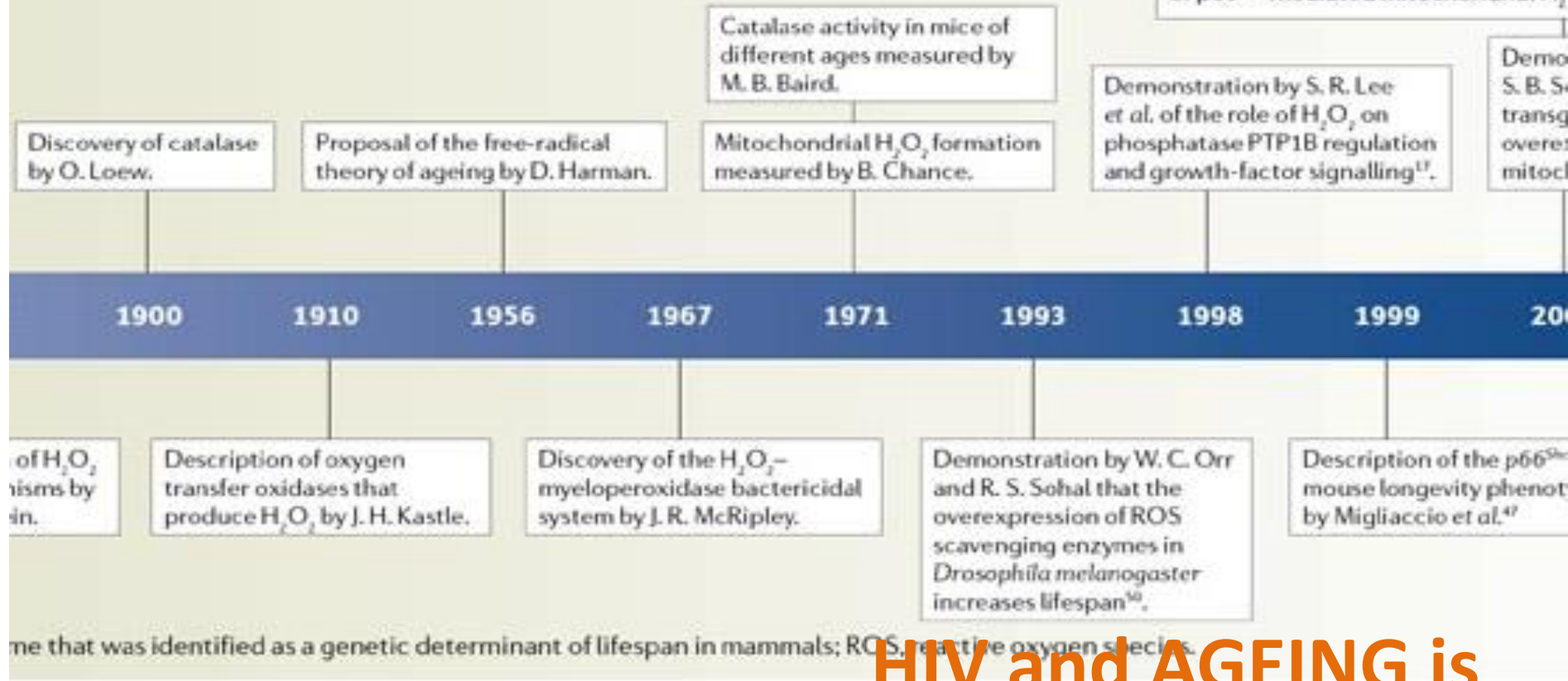


Ageing and HIV

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Ageing is not a new concept

events in the H₂O₂ theory of ageing



HIV and AGEING is

Four Decades of HIV

- ***First decade*** – Activism, energy and understanding. Awareness raising of HIV/AIDS and warnings / education and death
- ***Second decade*** Intervention and medication. Biological advances started to control the disease.
- ***Third decade*** Simpler drug regimes and stabilization of HIV. Understanding of HIV progression and advances in research and drug developments.



Fourth Decade

- Living and AGEING with HIV
- How do we care for patients?
- HIV is now under control –
 - So what about ageing?



Ageing with HIV

- But what really counts as “Ageing” with HIV?



Ageing

- Decline of physical ability
- Appearance
- Mental functions
- Medically quantified by measuring things such as the heart, brain, liver, and bone functions



When does it start?

- The 1st “ageing” process starts at birth
- By teenage years the thymus gland has aged
- Bones have formed, but not developed fully
- By 25 years of age the body systems will decline by 1% every year
- HIV does contribute to the ageing process but by how much?
 - Genetic / environmental

The body's systems affected by HIV and Ageing

- Integumentary system ✓
- Skeletal system ✓
- Muscular system ✓
- Lymphatic system ✓
- Respiratory system ✓
- Digestive system ✓
- Nervous system ✓
- Endocrine system ✓
- Cardiovascular system ✓
- Urinary system ✓
- Reproductive system ✓

Integumentary system

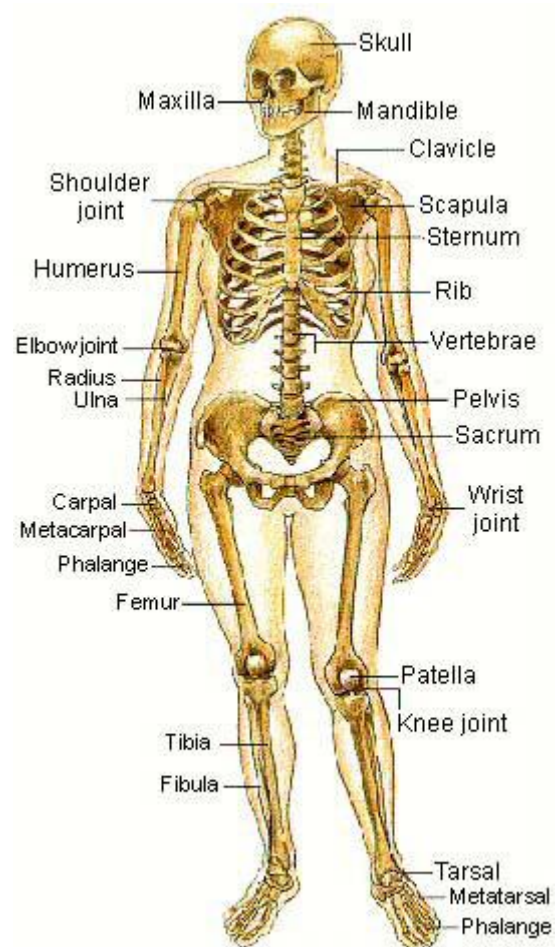
- Skin
 - epidermis - stratified squamous epithelial tissue
 - dermis – blood vessels and nerve fibers – receptor for touch, pressure, heat, cold and pain
 - Subcutis – (hypodermis) – fat storage
- Hair
- Nails
- Sweat Glands
 - Eccrine glands - forehead, lips, palms and sole of feet – formed in the dermis and produce sweat
 - Apocrine glands – armpits nipples and groin – activated by nerve fibers during pain and or stress

Integumentary system and HIV

- Dermatitis – Seborrheic dermatitis affects approx. 3 – 5% of general population, but 85 – 95% of HIV + people
- Psoriasis - autoimmune disease
- Melanoma – a form of skin cancer
- Peripheral neuropathy – often drug induced, particularly early ARV's
- Lipodystrophy – caused by the bodies' use, production and storage of fat. Commonly seen with early ARV's



Skeletal system



Bones Age & HIV

- HIV and Age both cause bones to weaken
- Osteoporosis (bones with holes)
 - HIV infection causes this
 - Age causes this
 - ARV's cause this
 - Hormone levels cause this

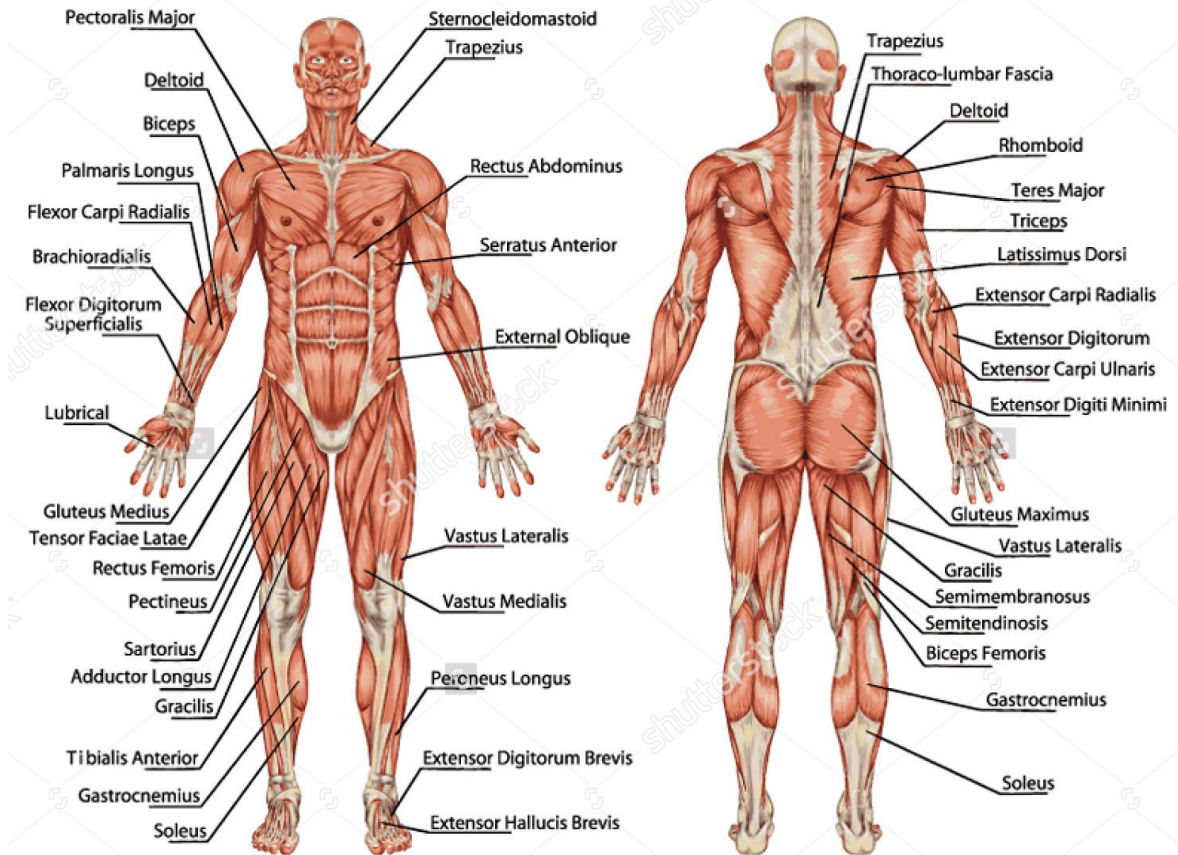
Pain in the back hip pelvis. Fractures in the vertebrae and loss of height

Falls are very common in older people and in those with HIV infection due to nerve damage

Bone density at its best at age 20 after which it declines

Known association of ARV use

Muscular system



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Training Academy

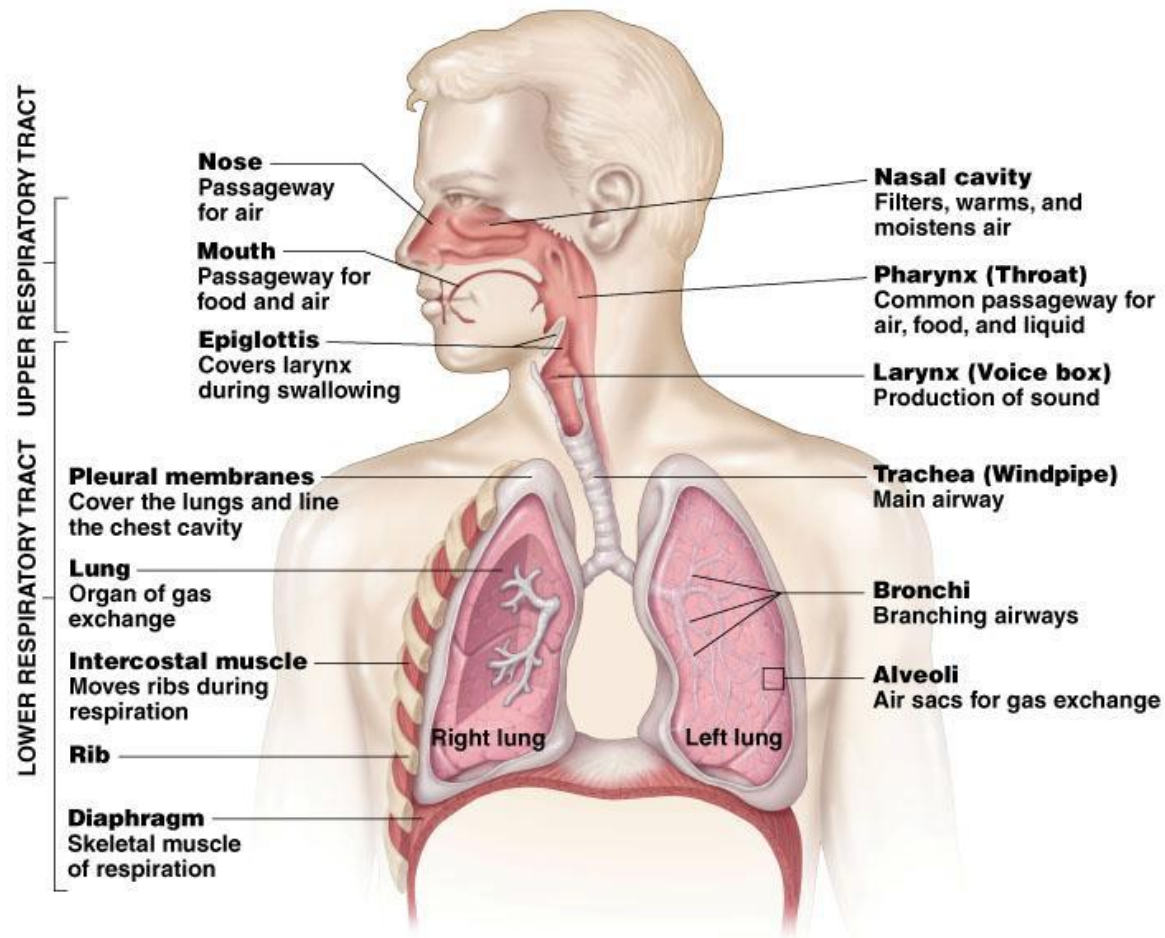
STEP-UP: Skills Training to Empower Patients

Muscular

- Within HIV context fairly common, from mild to more severe
 - Myopathies – muscle weakness
 - rheumatic
 - Body fat changes
 - Seen with ARV and old age
 - Wasting syndrome
 - ARV and old age combination
- In old age very common



Respiratory system



Chest and Lungs with Age and HIV

- +ve ^COPD rates – HIV harboring in the lung walls
- Influenza can be fatal in +VE people AND in older people – low CD4
 - Vaccine is recommended for all people taking ARV's regardless of the CD4 count and recommended for all "old" people
 - Not always recommended for people not on ARV'S
- Not always recommended for people not on ARV'S
- Pneumonia (*Streptococcus pneumoniae*)
 - Higher risk of infection for HIV +low CD4 counts
 - Septicemia and meningitis especially in older age
 - Vaccinations should be given to everyone with HIV

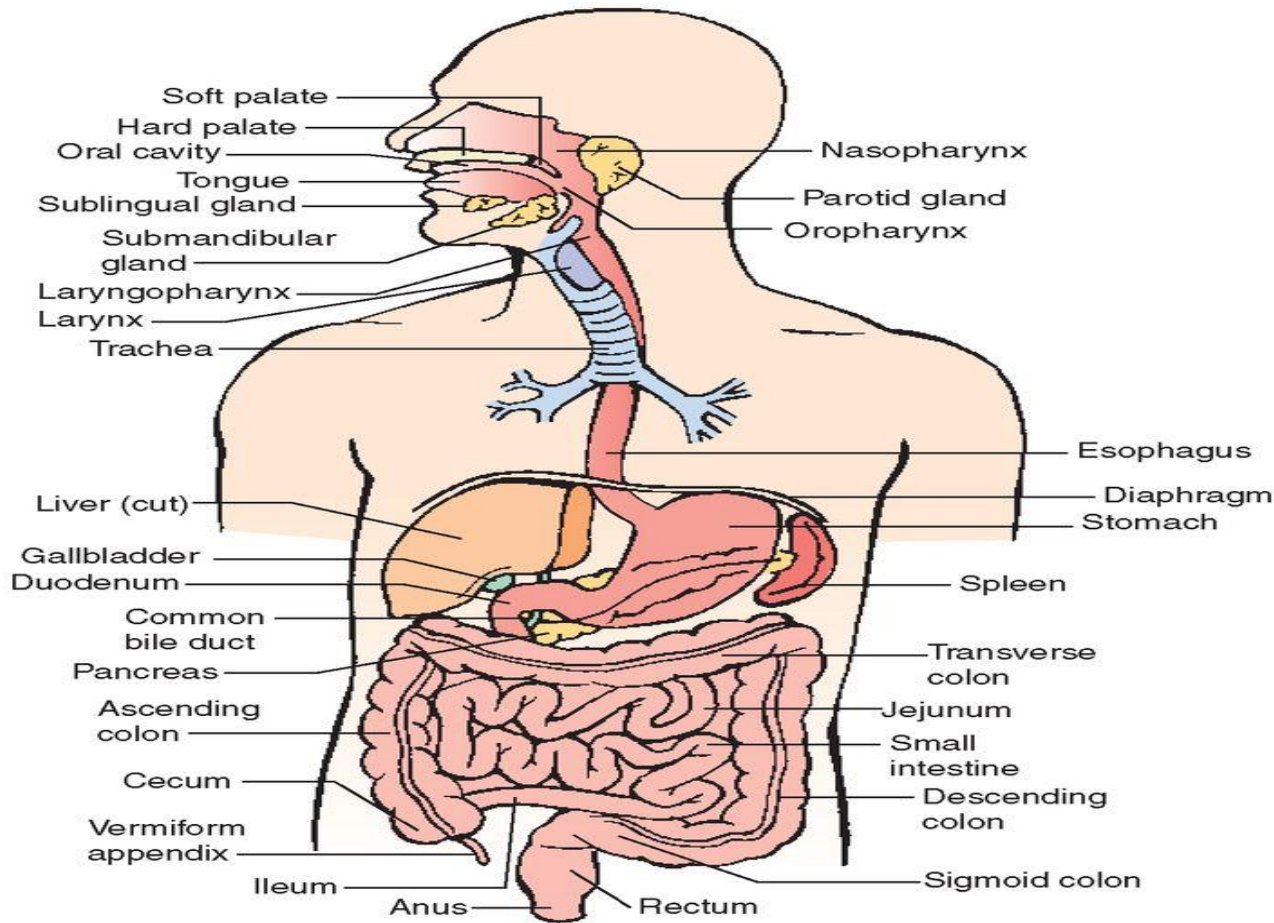
Lung Cancer

- Biggest killer in men and women
 - 2-3 times higher rates than the general population
 - Advances much quicker and in younger people who are HIV+
 - No known associated link to ARV's
 - But many unanswered questions



Digestive system

Probably the system with the most effects of HIV and ageing!



Oral health

- Age affects teeth and gums
- HIV affects teeth and gums
 - Oral cancer gum disease - known HIV effect
 - Possible bone loss due to some ARV's
 - Oral hygiene can pick up early signs of other infections or illnesses



Diabetes

- Type 1 and 2 are increasing
 - Ageing - fat increase, muscle mass reduces = indicator
 - Obesity
 - ARV's predispose the development of T2 diabetes
 - Family history
 - Smoking
- Age HIV ARV's are the big concern with diabetes especially T2

Lipids

- Lipids (or fats) absorbed by the digestive system stored and used as energy
 - Essential for healthy function and maintenance (muscle and bone)
 - Brain function
- Good forms and bad forms
 - Low density lipoprotein (LDL) (bad ones)
 - High density lipoprotein (HDL) (good ones)
- Triglycerides (TG) found in the blood stream
 - ^results in heart inflammation of the pancreas and T2 diabetes

- Total cholesterol
- HDL levels (-)
- TG levels = LDL level
 - This should be done fasted for 12 hrs
- Normal ageing process is to see an \wedge in cholesterol
- Statins and Fibrates used to to reduce cholesterol
 - Caution when using with ARVS due to interaction

It is know that ARV's do increase LDL and TG levels

Cardiology

- Increased risk of heart disease – and at an earlier age
inflammation in early infection may be the cause
ARV's
Male gender risk at any age
Women increased risk post menopause
Diabetes
Ethnicity (South Asian greater risk factors)
High lipid levels increases risk

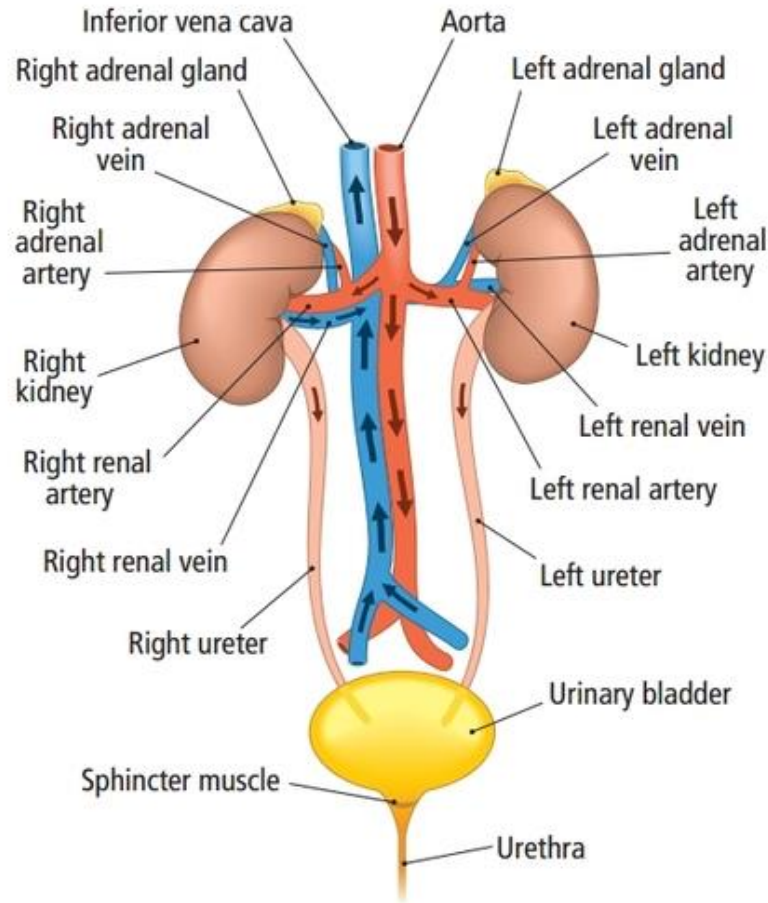
Framingham scorer and Q risk assessment tools useful

Neurology

- Ageing and HIV results in nerve damage (and or deterioration), muscles spinal chord and brain tissues damage
- Cognitive function decreases
 - In children cognitive development problems due to HIV
- Peripheral neuropathy – common in old age also in HIV and some ARV association are known
- Dementia – HIV related, AGE related



Urinary or Renal tract



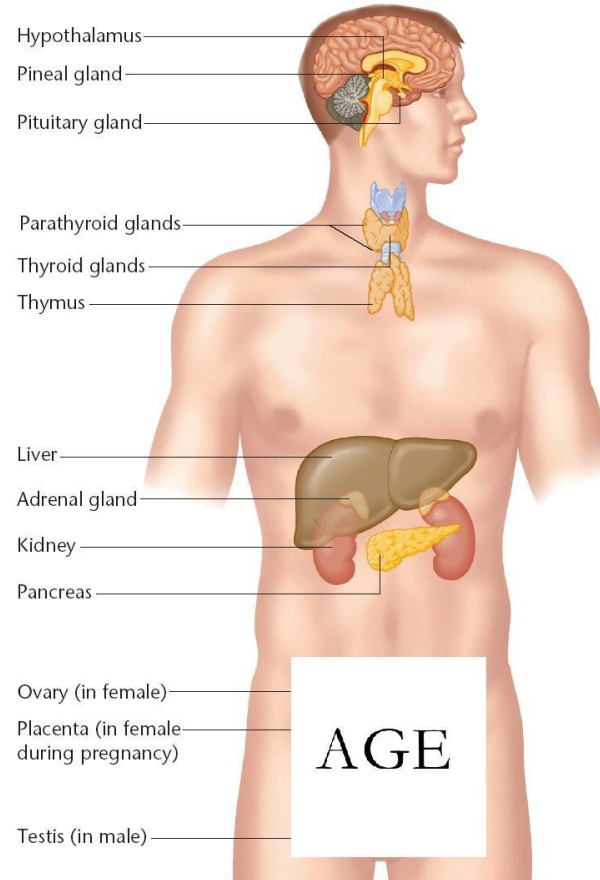
Kidney disease in ageing

- Decrease function with age – blood pressure, urine, vitamin D production (made in the skin but converted through the kidney)
- Common factors that damage the kidneys are drugs ageing diabetes and HIV (especially for black African descent)
 - ARV's do have an association with kidney disease
 - Regular urea and creatinine tests should be done. High levels indicate kidney damage
 - Abnormal levels of protein, blood, bilirubin, white blood cells, glucose and ketones indicate potential damage



Endocrine system

Endocrine System



Sex and Hormones

- Andropause and menopause – both due to hormone changes
- Andropause – males over 30 lose 10% testosterone/ decade. HIV infection causes this to happen much earlier. Decrease in testosterone is matched by increase in globulin
 - Reduces bodies uptake of testosterone
 - Osteoporosis, heart disease, cognitive impairment and depression
- Menopause – Oestrogen production stops normally at 45 – 55
 - HIV may lead to early menopause
 - Osteoporosis, fatigue, skin changes, insomnia and urinary tract infections
 - all linked to both age and HIV

Immune System and Ageing

- Low CD4
- High rates of immune activation
- Reduced thymus activity
- Shorter telomeres (protection caps at the end of DNA strands protect chromosomes)
- Oxidative stress (excess of chemical production) compromises the immune system and allows HIV to multiply easier
- HIV infection intensifies the ageing process
 - Or the ageing process intensifies HIV?

Cancers

- 3 main cancers affecting HIV+
 - Kaposi's sarcoma (KS), Non Hodgkin's Lymphoma (NHL) and Invasive Cervical Cancer
- Over 200 cancers and many HIV+ people are now experiencing these
 - Lung, Anal, Liver, Kidney and Skin cancers
- Affect all ages but increased risk with age

Frailty

- Weakness
 - Vulnerability
 - Disability
 - OLD AGE
-
- More common in women than men
 - Caused by underlying inflammation within the body
-
- Frailty syndrome – slowing of physical and mental ability, height reduction
 - Low CD4 count associated but no ART combination association known

Psychological ageing

- Illness
- Disability
- Social circle
- Loss of loved one
- Lifestyle
- Occupation
- Depression
- Isolation
- Stigma
 - Known associated link with ARV's and psychiatric illness

Drugs and ageing

- Cannabis use does have medical uses
 - Peripheral neuropathy, reduces insomnia, anxiety
- Long term use concerns
 - Heart disease
 - Bronchitis
 - Asthma
 - Depression
 - Mental illness

Other drugs such as class A's impact on adherence and may have interactions

There is very little research on drug use and HIV



**Training
Academy**

STEP-UP: Skills Training to Empower Patients



Exercise ageing and HIV

- From pilates to stretching
 - walking to running
 - Swimming to cycling
 - And even having a sex life
- They all improve health age HIV and body function
 - Heart lung brain bone muscle mood
 - ART use may lead to become more susceptible to injury and repair much slower



Treatments

- Polypharmacy - an early experience, and an ageing body
 - Standard 3 drug therapy plus x y or z
- Treatment experiences – the early days of toxicities vs the modern day experience
 - Damage caused with eART, long term use of ART – what have we learned? Can we prevent?
- Low levels of inflammation – what does this really mean?
 - Does this trigger morbidities? Can drug choice prevent?
- Co and or multi-morbidities
 - It's a fact. We are getting older. DDI's and prevention
- Diagnostics and early screening
 - Prevention and or early screening saves life's.
- New treatment methods / administration routes
 - L/A's may give the GI a break

Social aspects of ageing with HIV

- Addressing stigma
 - Healthcare settings
 - Care and nursing homes
 - Community settings
- Isolation in the ageing HIV positive community
 - Where are the “ageing” HIV positive people in your own community?
- Sexual health in the ageing population
 - Ageing does not mean no loving!
 - But where are these services?



Summary

- Ageing is inevitable
- HIV is not a death sentence and people are living into “old” age
- Specialist care is still needed – both for HIV and old age
- Service delivery needs to focus on the “what is needed” and adapt to this
- There still needs to be innovation in the treatment landscape
- The battle with stigma is clearly not over
- No person should be living with HIV and isolation
- The HIV community needs to pull together, support, advocate and define the services



Thank you

