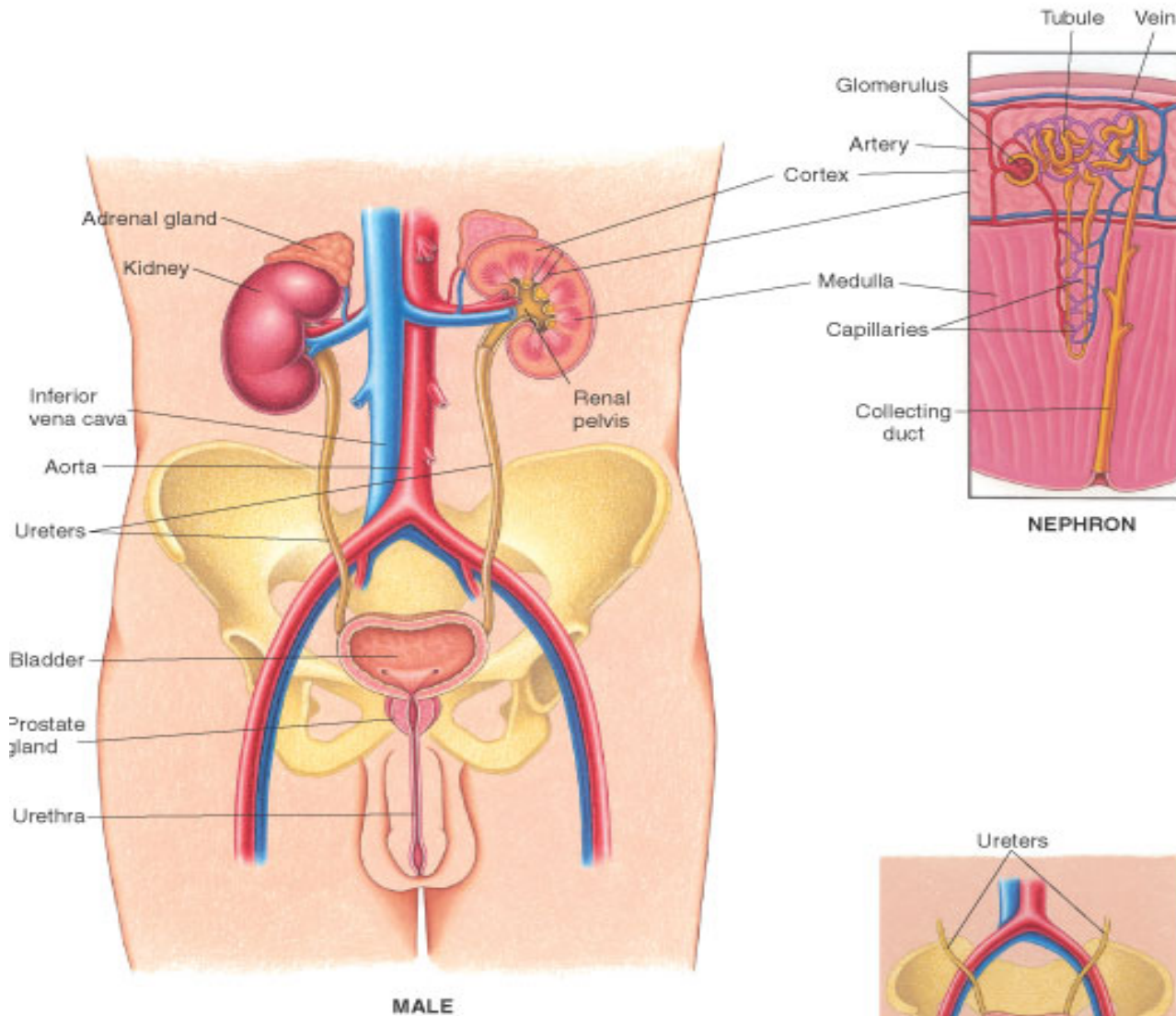


**HMM 4401–
Genito-urinary tract
diseases**

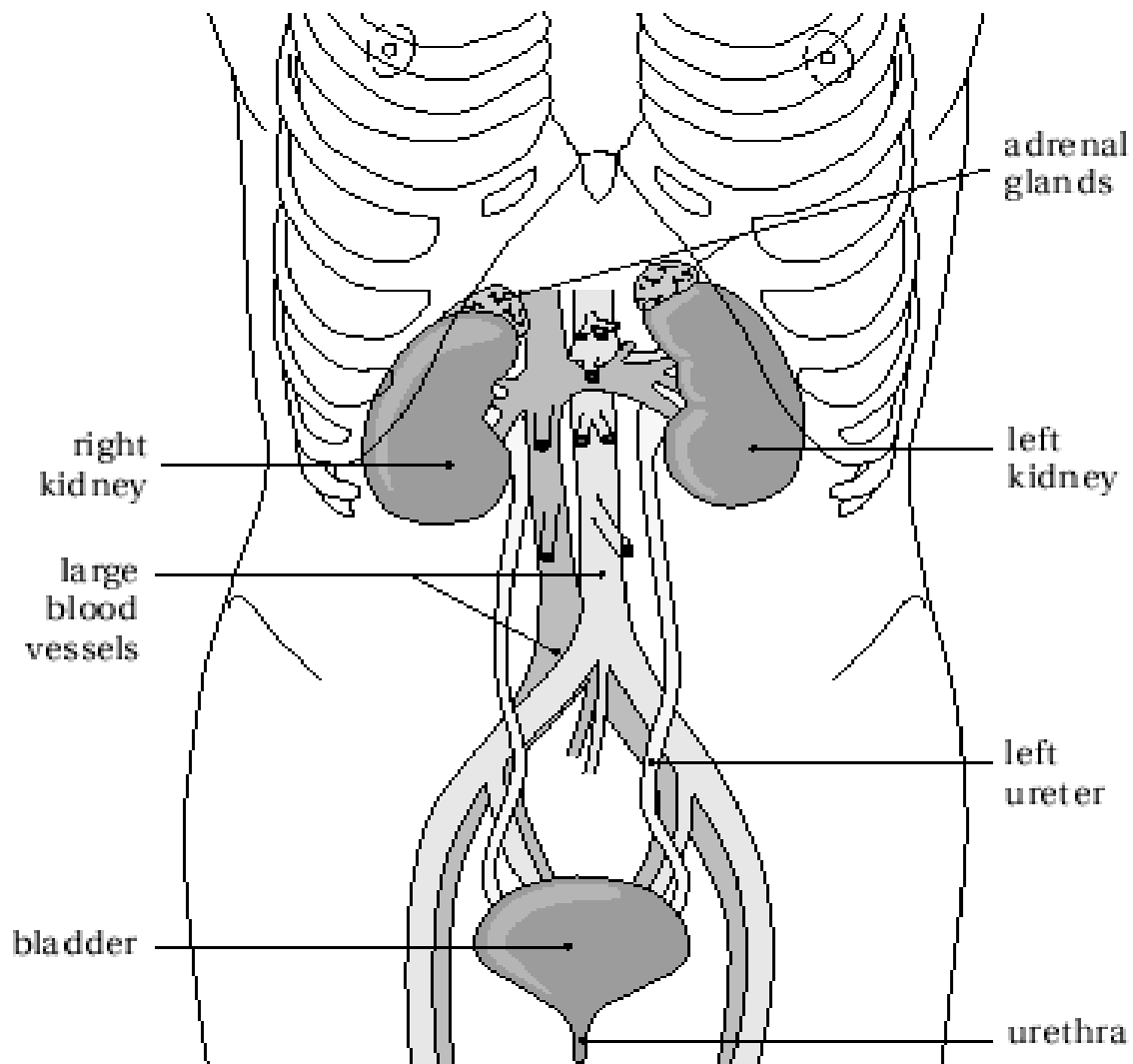


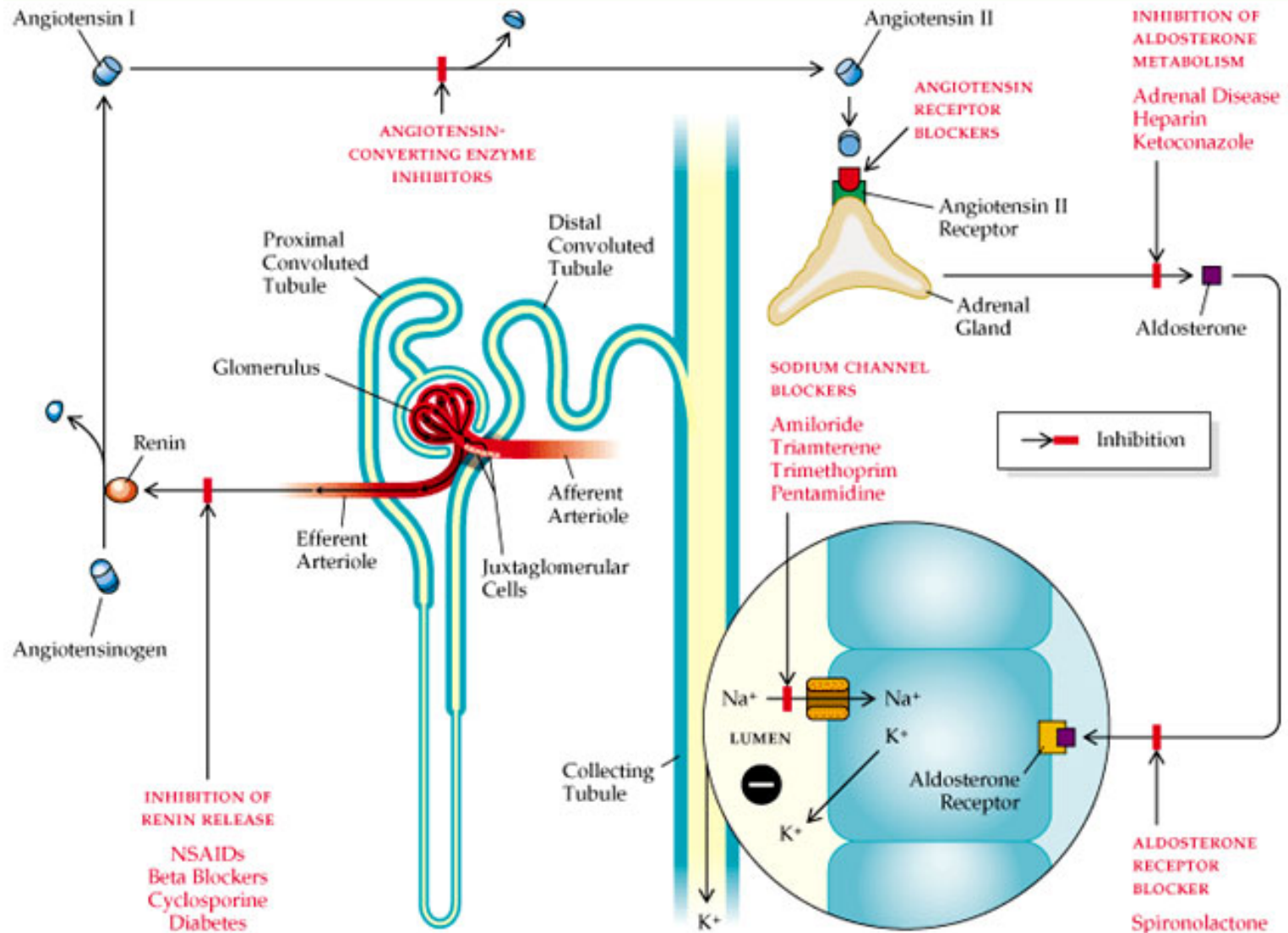
MALE

NEPHRON

FEMALE

Structure of the urinary system





Urine production

- Core elements: Glomerulus, proximal and distal convoluted tube, loop of Henle, collecting tubules, ureters, bladder, sphincter, uretra, and out.....
- Urine: ***Filtration*** of 150-180 litres per day (as plasma, but without blood cells and proteins), ***reabsorption*** (water, glucose, salts) and ***excretion***
- Vital functions: excrete waste products, maintain water and acid/base balance,

Urinary symptoms

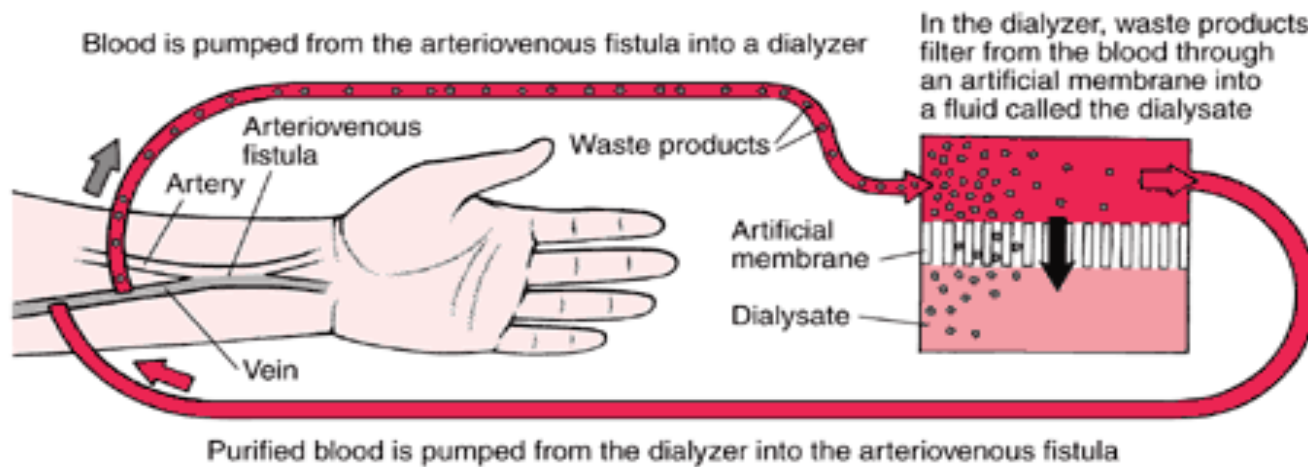
- Infection: fever, sick feeling, back pain, frequent urination
- Stone: hematuria, pain
- Frequent urination (at night nocturia): two mechanisms
- Enuresis
- Hesitation
- Hematuria: two types; macroscopic, microscopic
- Bloody semen

Diagnositics

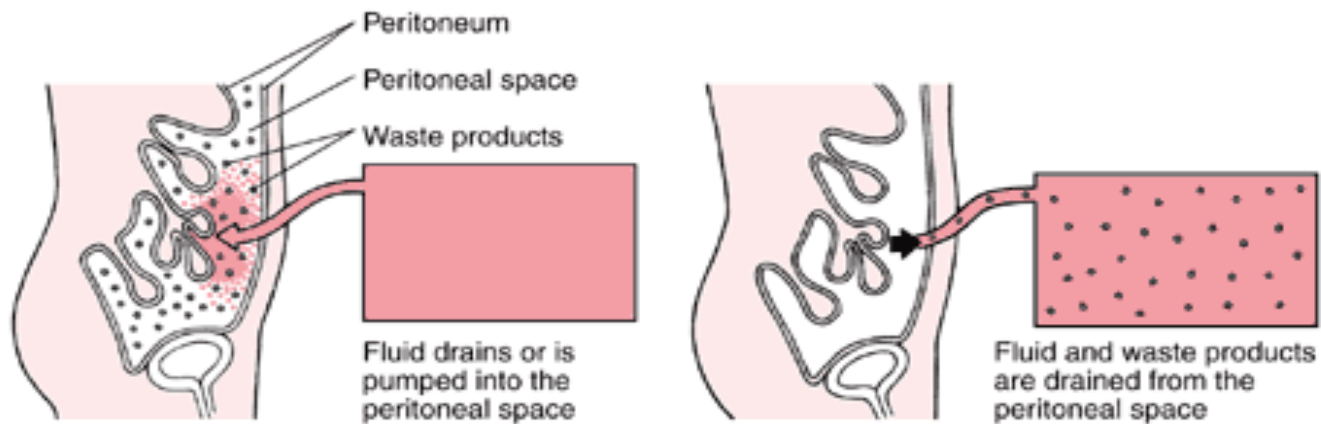
- History, symptoms
- Palpation (kidneys, bladder)
- Rectal or rectovaginal examination
- Urine analysis: pH, protein, glucose, ketones, blood, nitrites, leucocyte esterase, specific gravity, microscopy, bacteriological tests (culture)
- Blood tests: urea, creatinine
- Intravenous urography
- Retrograde cystography/urography
- Renal angiography
- Ultrasound
- Computed tomography (CT)
- Magnetic resonance imaging (MRI)
- Kidney biopsy

Renal/kidney failure

- Definition: Abnormal kidney function in which kidneys fail to adequately excrete toxic substances
- Acute: trauma, toxins, injuries
- Chronic: glomerulonephritis, diabetes
- Diagnosis: history, thirst, fatigue, itching, nocturia, bad breath, edema, elevated serum creatinine, anemia, other tests
- Treatment: low-protein diet, peritoneal dialysis, hemodialysis, transplantation



Hemodialysis



Peritoneal Dialysis



Nephritis

- Definition: Inflammation of the kidneys caused by infection or immune reactions (autoimmunity)
- Glomerulopathies: post-infections, nephrotic syndrome
- Pyelonephritis: chronic infection of the kidneys

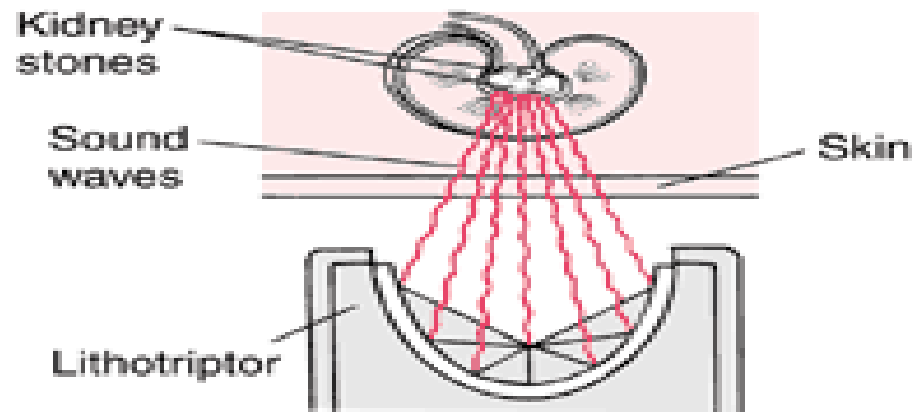
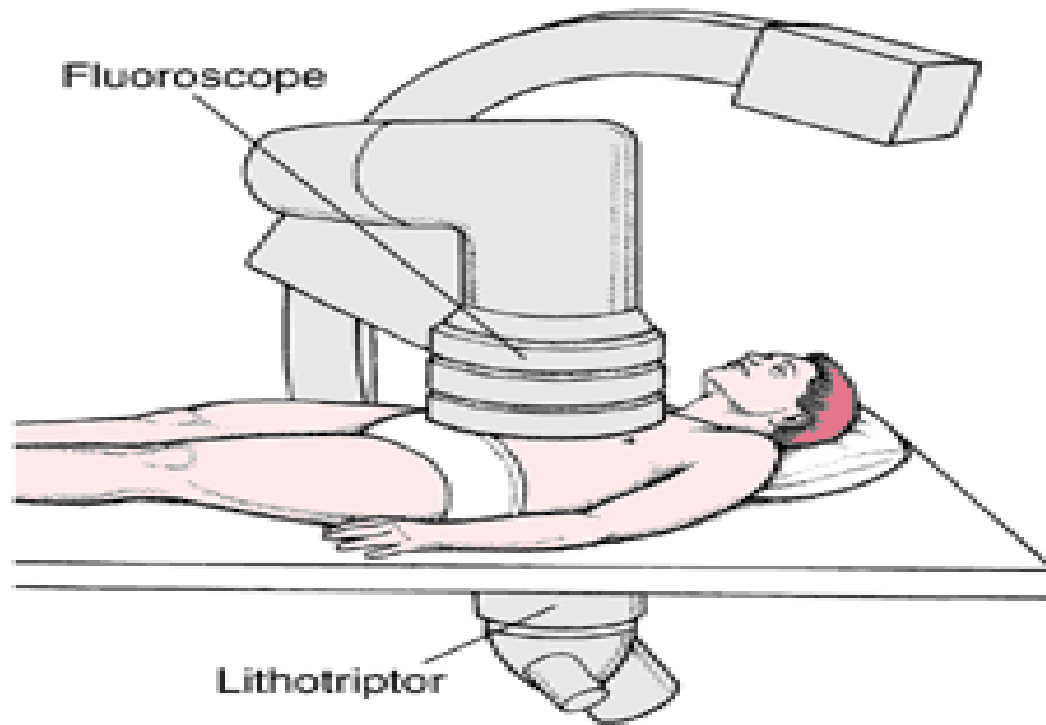
Urinary tract infection

- Definition: Bacteria (from the urethra (or blood)) that cause infection in otherwise sterile urine
- Occurrence: more frequent in females at all ages
- Urethritis: infection of the urethra. Most "famous": neisseria gonorrhoea, most common: chlamydia.
- Cystitis: infection of the bladder
- Pyelonephritis: infection of the kidneys
- Symptoms: discharge from urethra, frequent urination, urgent urination, pain, cloudy urine, chills, fever, back pain
- Treatment: antibiotics

Kidney stones

- Urinary stones (urolithiasis) contain calcium, uric acid, cystine and struvite.
- Symptoms: intermittent pain ("renal colic"), nausea, vomiting, hematuria
- Diagnosis: history, urinalysis, intravenous urography
- Therapy: NSAIDs intravenously, extra-corporal shock wave lithotripsy, surgery
- Prevention: drugs that interfere with the formation of stones, avoid food rich in oxalate(rhubarb, spinach, etc)





Shattering Kidney Stones

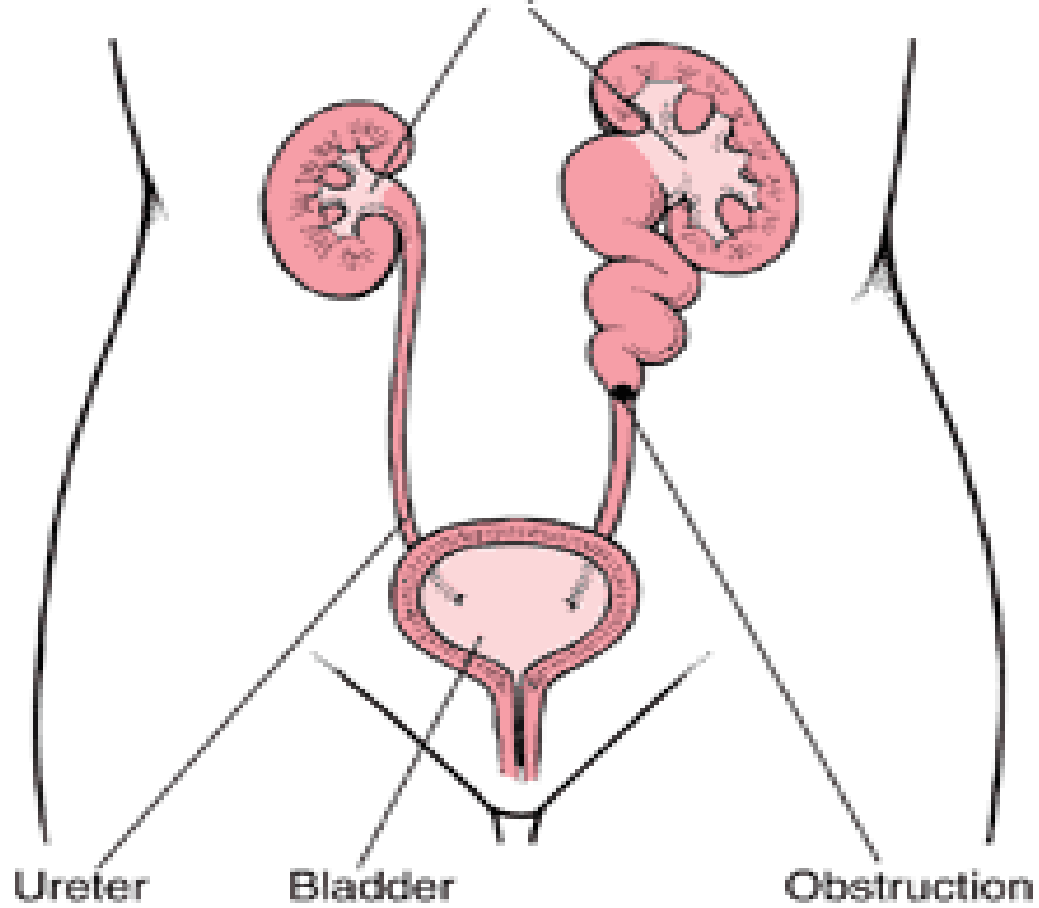
Hydronephrosis

- Definition: A distention/dilation of the kidneys caused by backward pressure from obstructed flow
- Causes: structural abnormalities (kinks), stones, tumor, pregnancy, ureterocele
- Diagnosis: dull and aching pain, palpable mass, urinary tract infection, hematuria, intravenous urography
- Treatment: surgery, treat underlying cause

Normal Kidney

Distended Kidney

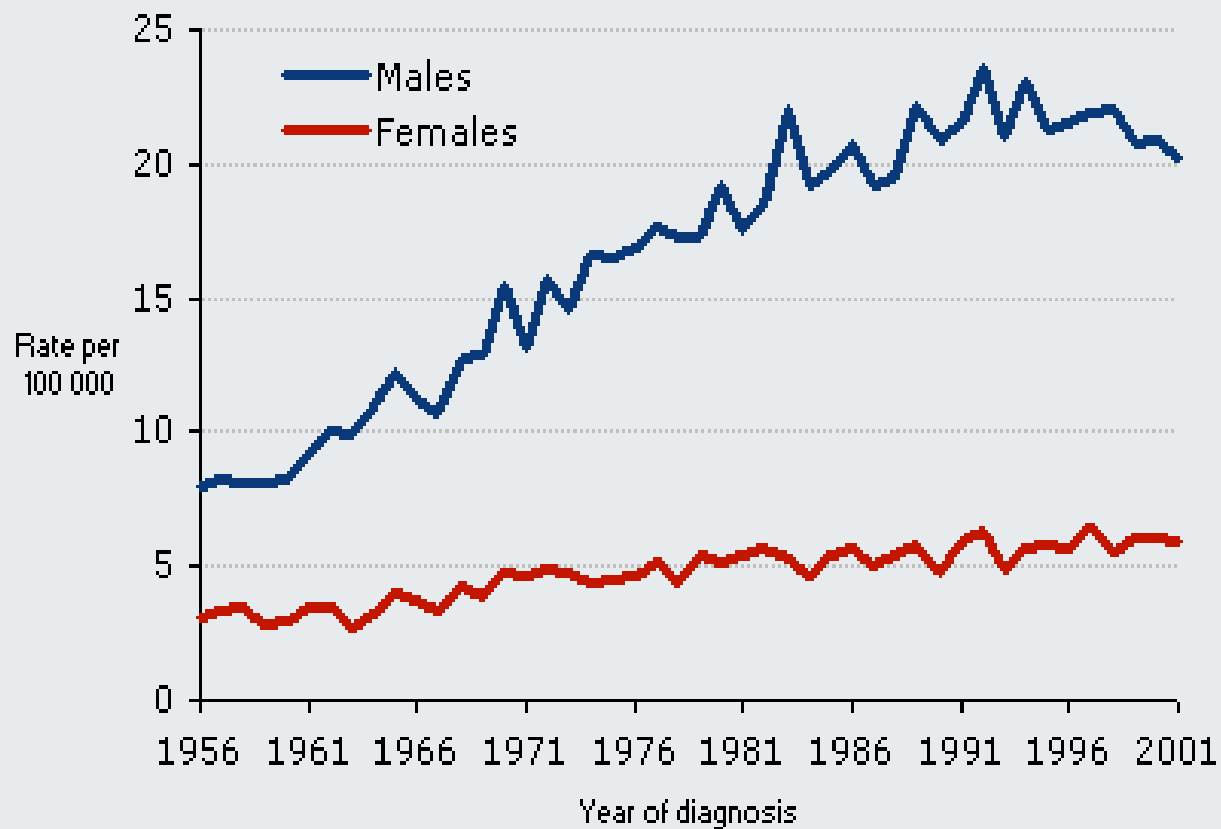
Renal pelvis



Urinary incontinence

- Definition: uncontrollable loss of urine
- Frequency: 1 of 3 elderly
- Types: urge, stress, overflow, total
- Complications: pressure sores, urinary tract infections, depression
- Therapy: regular urination, avoid coffee, discontinue certain pharmaceuticals, pelvic muscle exercise, estrogen therapy, other pharmaceuticals, surgery,

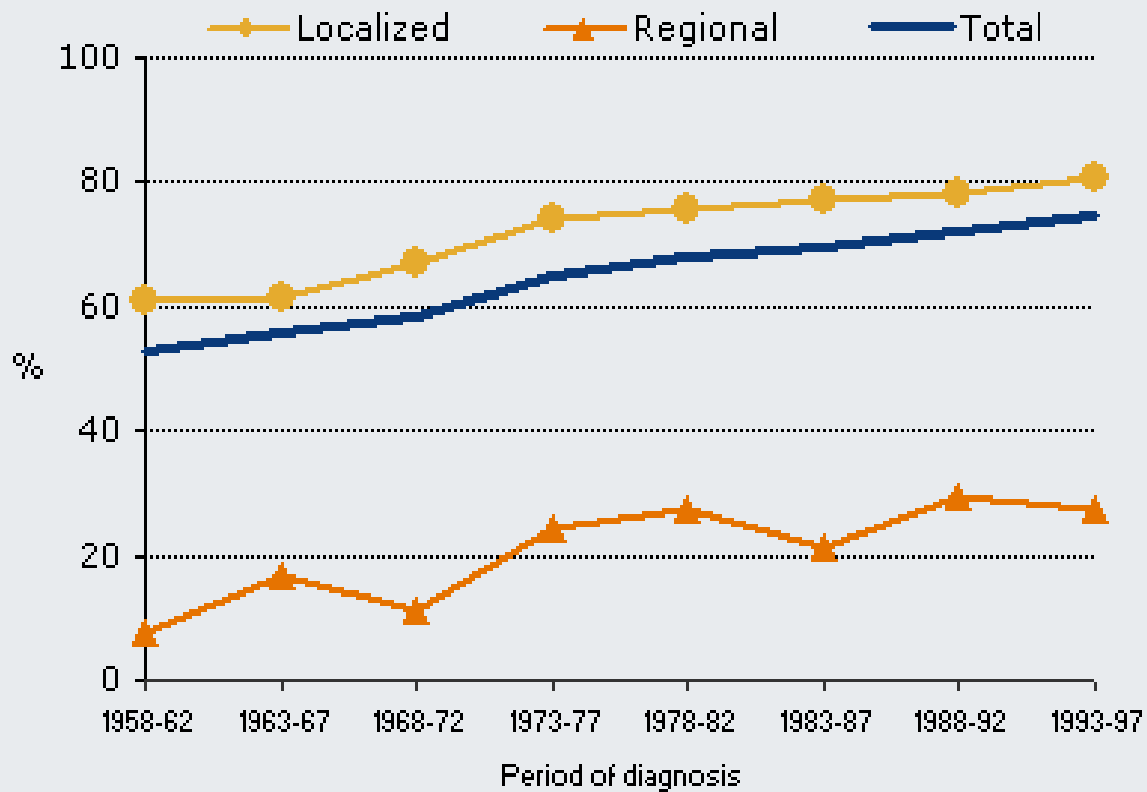
Age-adjusted incidence rate 1956-2001 (world std.) Bladder and other urinary organs

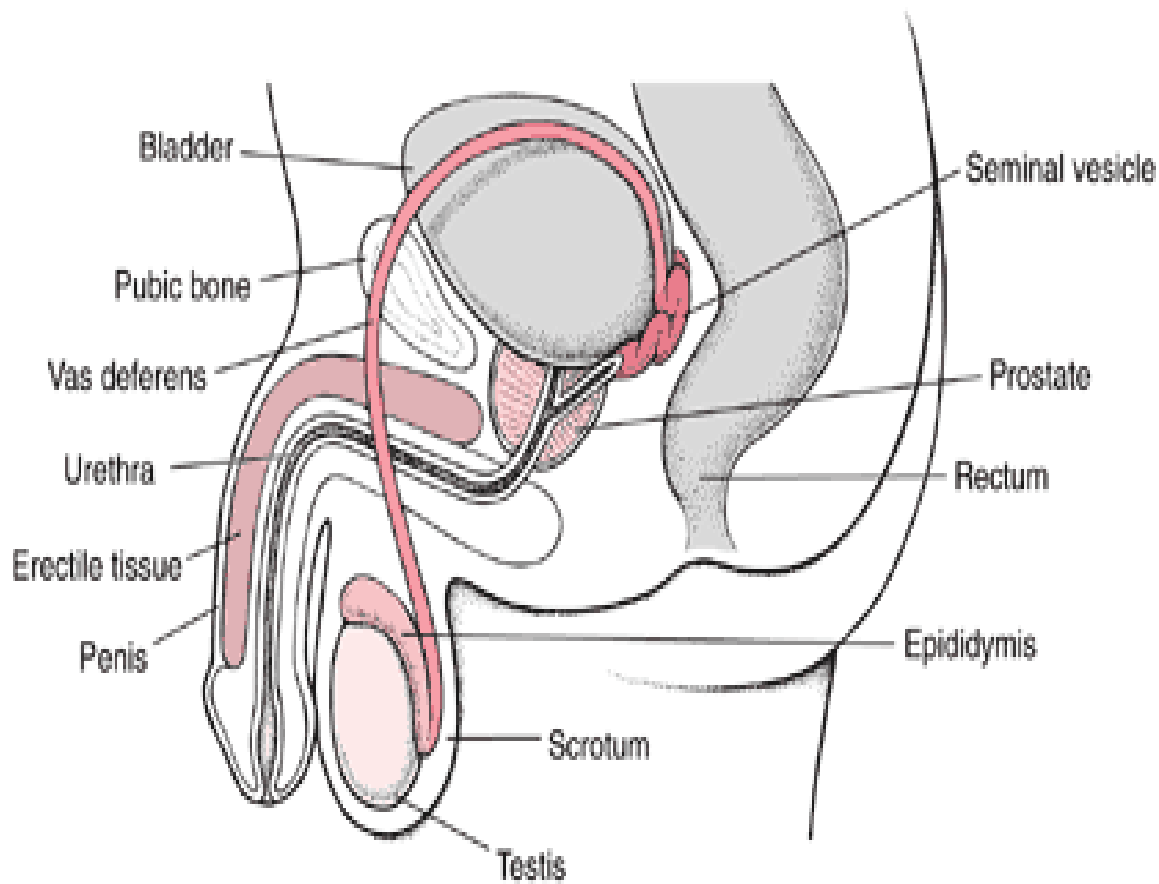


Urinary tract cancer

- Definition: tumor of kidney or lower urinary tract. Hypernephroma. 2% of all cancers, more often in men
- Causes: smoking
- Symptoms: (microscopic) hematuria, pain in the side, fever,
- Diagnosis: CT, MR, biopsy, cytology, cystoscopy, ultrasound, intravenous urography
- Treatment: surgery, chemotherapy, radiation
- Prognosis: kidney – not so good; bladder:

5-year relative survival by period and stage Bladder and other urinary organs, males





Male reproductive system

- Penis, three erectile tissue/bodies
- Testes: two functions: producing sperm/semen and testosterone
- Priapism – what is it

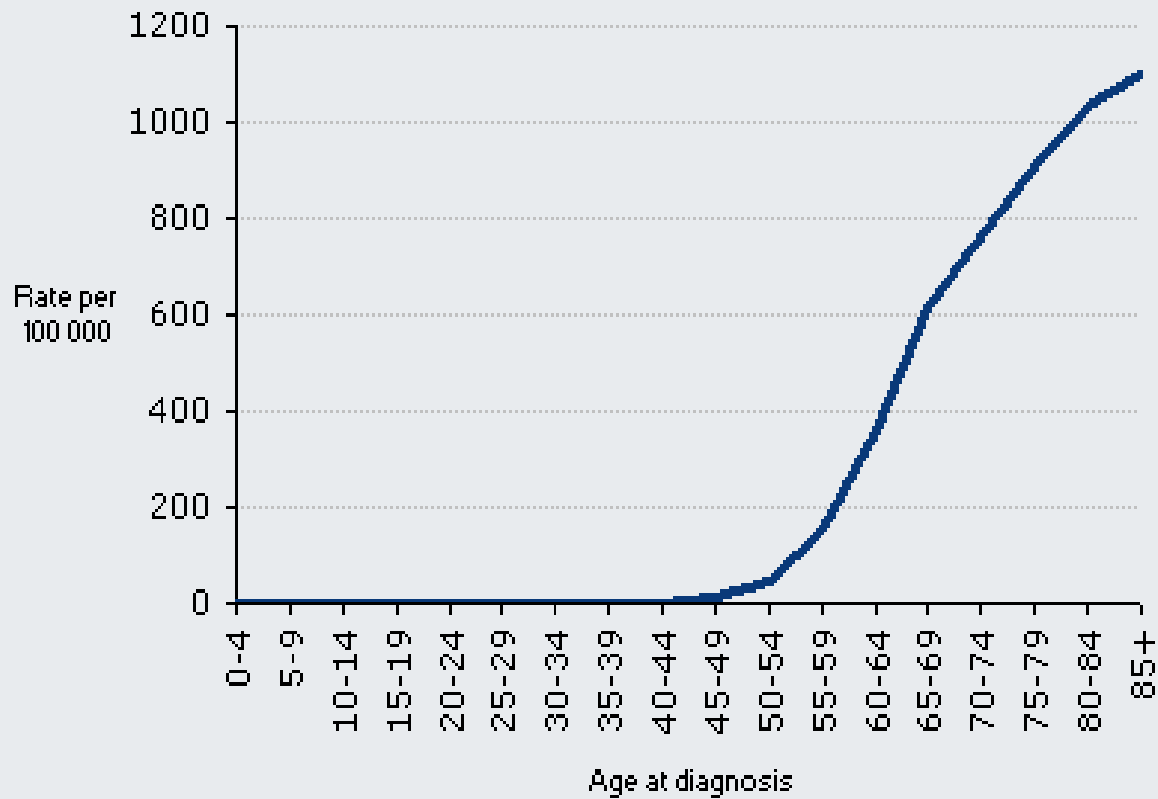
Benign Prostatic Hyperplasia

- Definition: Benign growth of the prostate gland
- Cause: age, unknown
- Diagnosis: hesitation, frequent urination, nocturia, less urination force, dribble at end of urination, infections, rectal examination, cystoscopy, biopsy
- Treatment: expectation, drugs, transurethral surgery, abdominal surgery

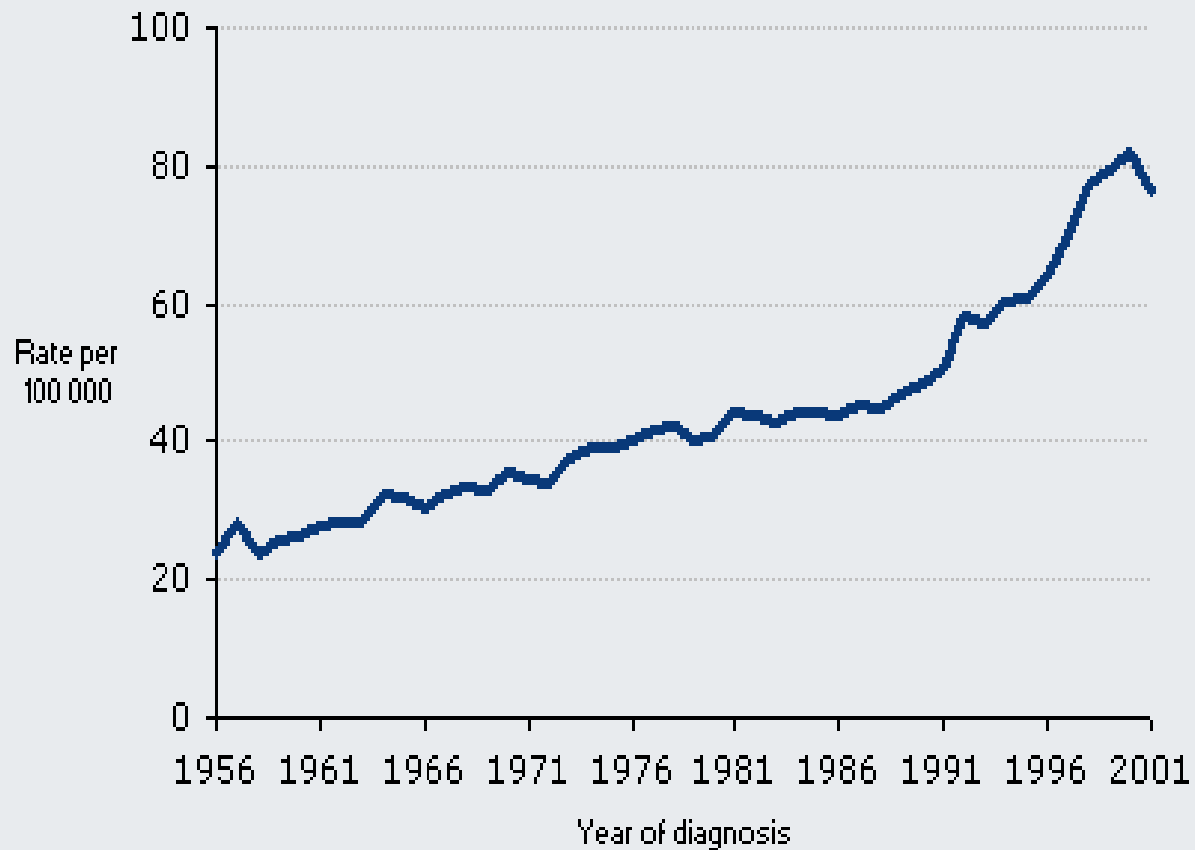
Prostatic Cancer

- Definition: malignant tumor of the prostate gland (found in 50% of men aged 70 and all men aged 90)
- Diagnosis: symptoms largely as for BPH, back pain (metastases), rectal examination, urinary retention, cystoscopy, biopsy, PSA
- Treatment: watchful waiting, brachytherapy, external beam radiation, radical surgery, orchidectomy, estrogen, other drugs
- Prognosis: fewer than 3% die *from* it

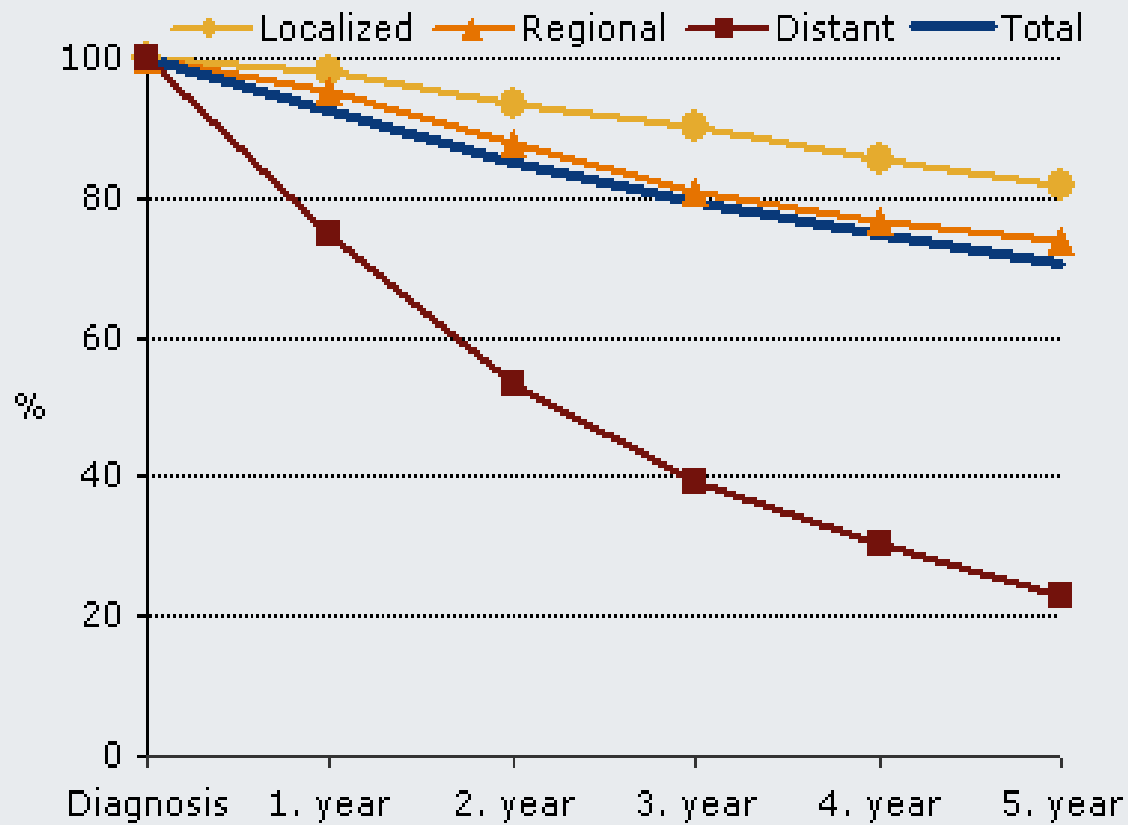
Age-specific incidence rate 1997-2001 Prostate



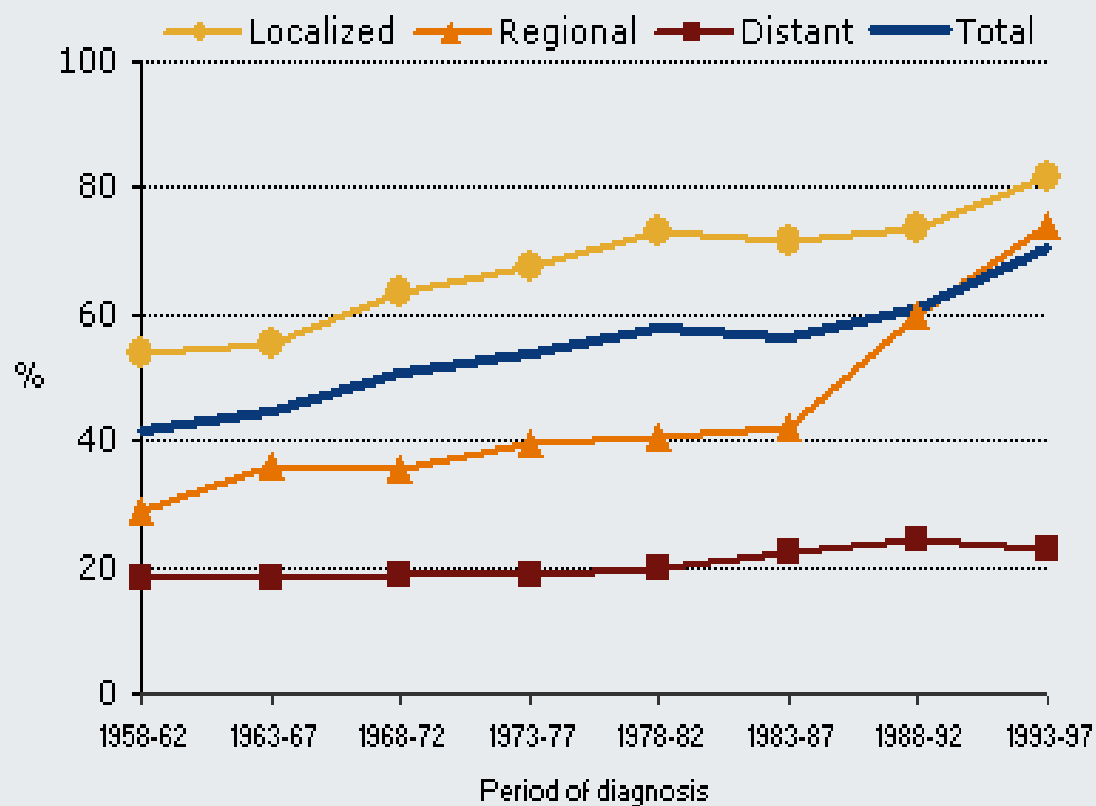
Age-adjusted incidence rate 1956-2001 (world std.) Prostate



**1-5-year relative survival by stage 1993-97
Prostate**

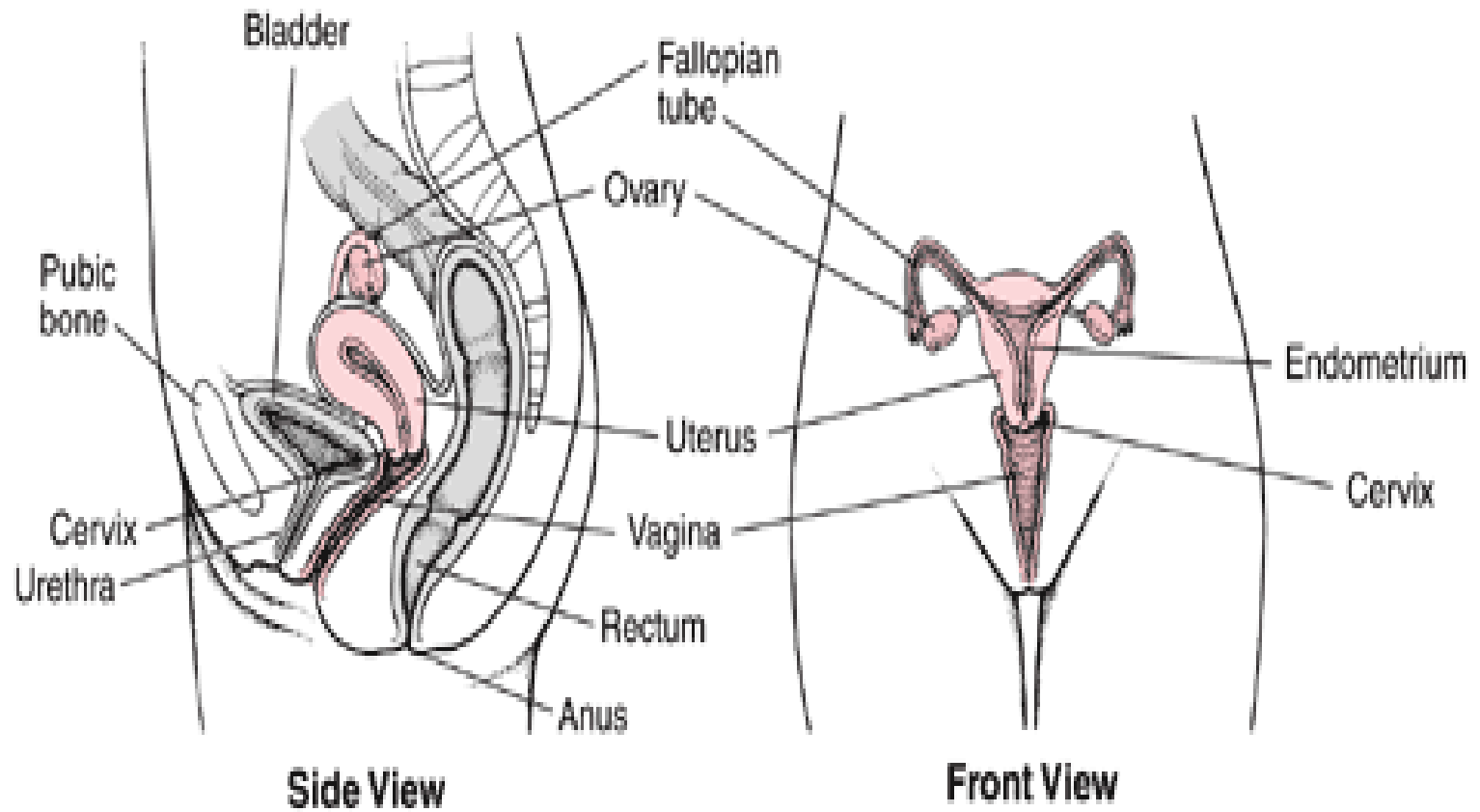


5-year relative survival by period and stage Prostate



Symptoms of the female genital organ

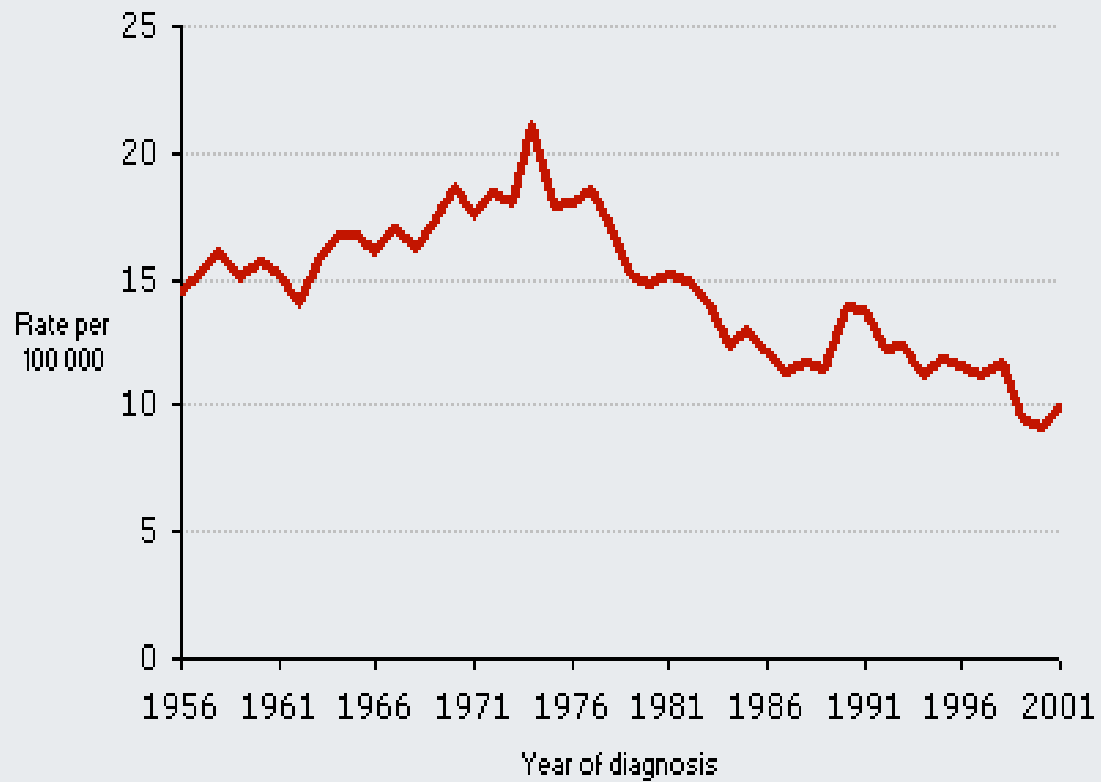
- Discharge/smell
- Abnormal bleeding
- Pain
- Infertility
- Undesired pregnancy
- Diagnostics: gynecological examination, cytologic test (Papanicolaou), colposcopy, biopsy curettage, ultrasound,



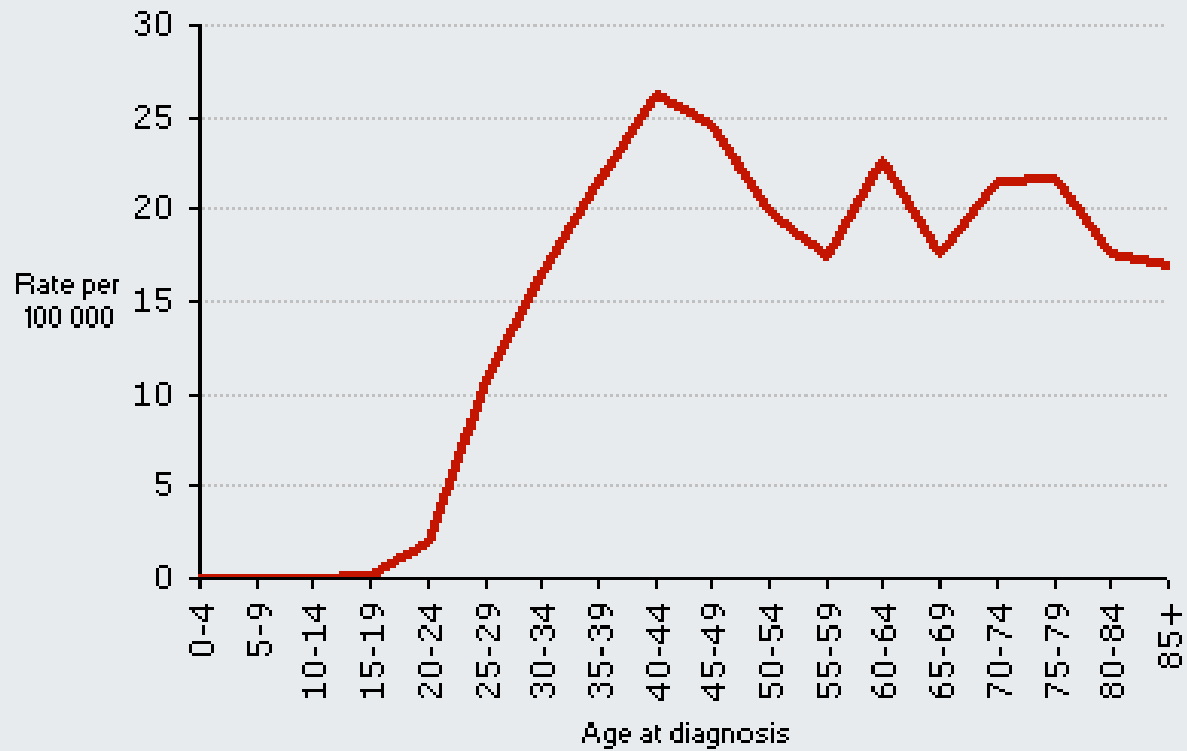
Cancer of the female genital organs

- Uterus: age 50+, abnormal bleeding
- Cervix: caused by sexual activity/virus, abnormal bleeding
- Ovaries: 40+, no symptoms, abdominal swell,
- Diagnostics: colposcopy, curettage, ultrasound
- Treatment: conization, surgery, chemotherapy, radiation

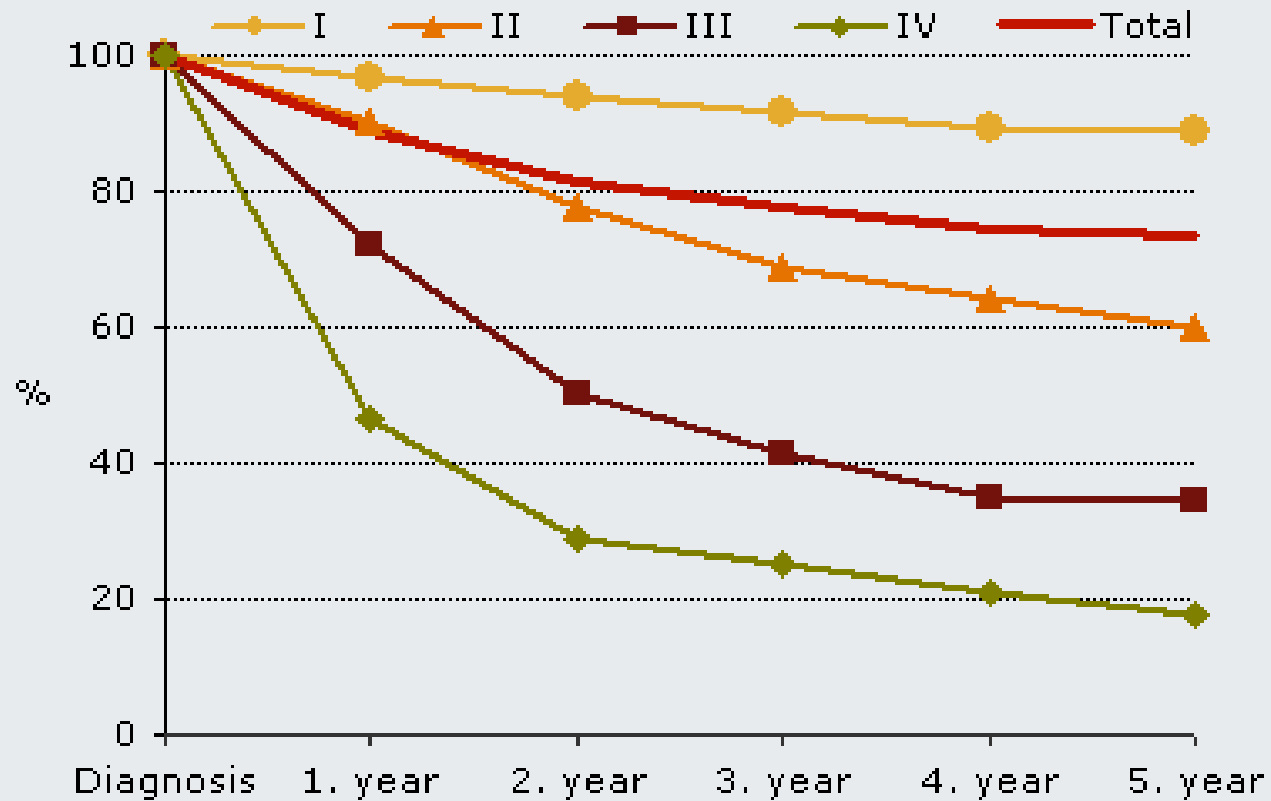
Age-adjusted incidence rate 1956–2001 (world std.) Uterine cervix



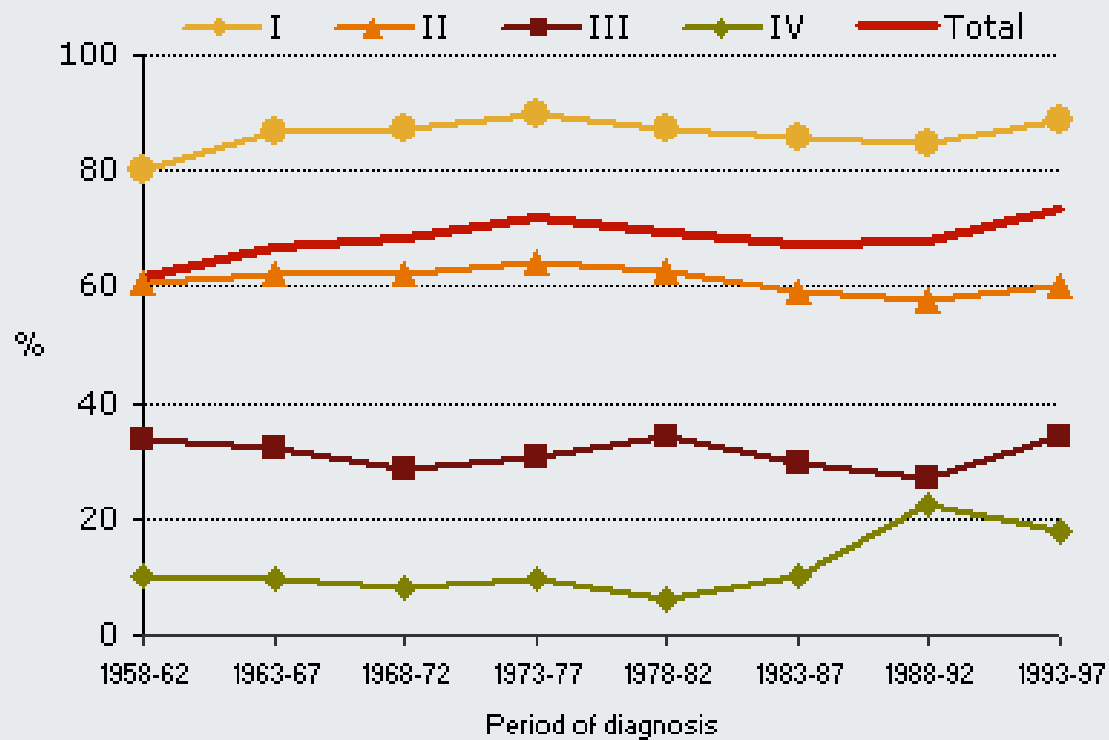
Age-specific incidence rate 1997-2001
Uterine cervix



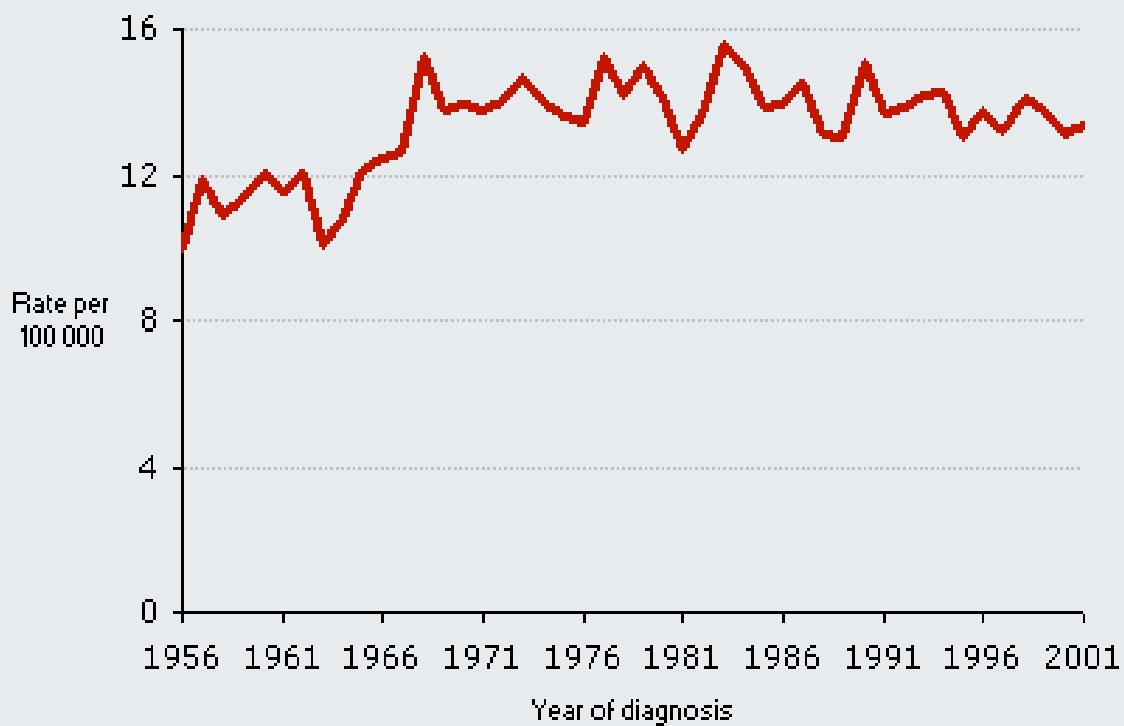
1-5-year relative survival by stage 1993-97
Uterine cervix



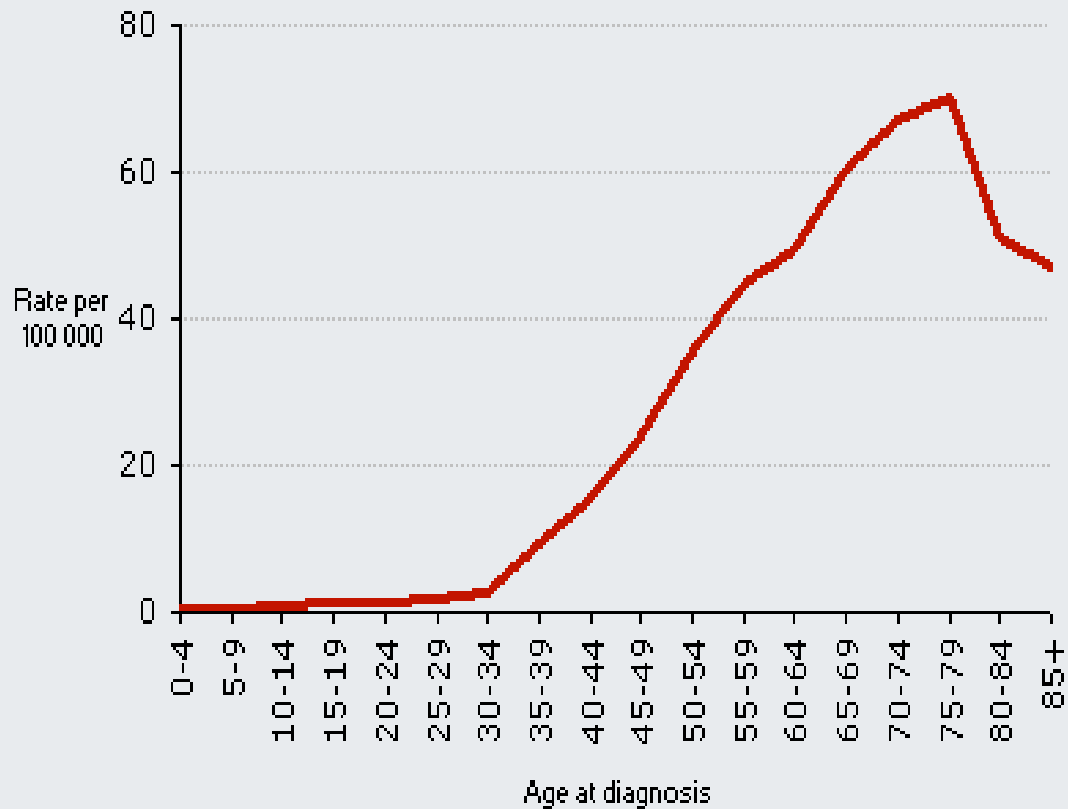
5-year relative survival by period and stage Uterine cervix



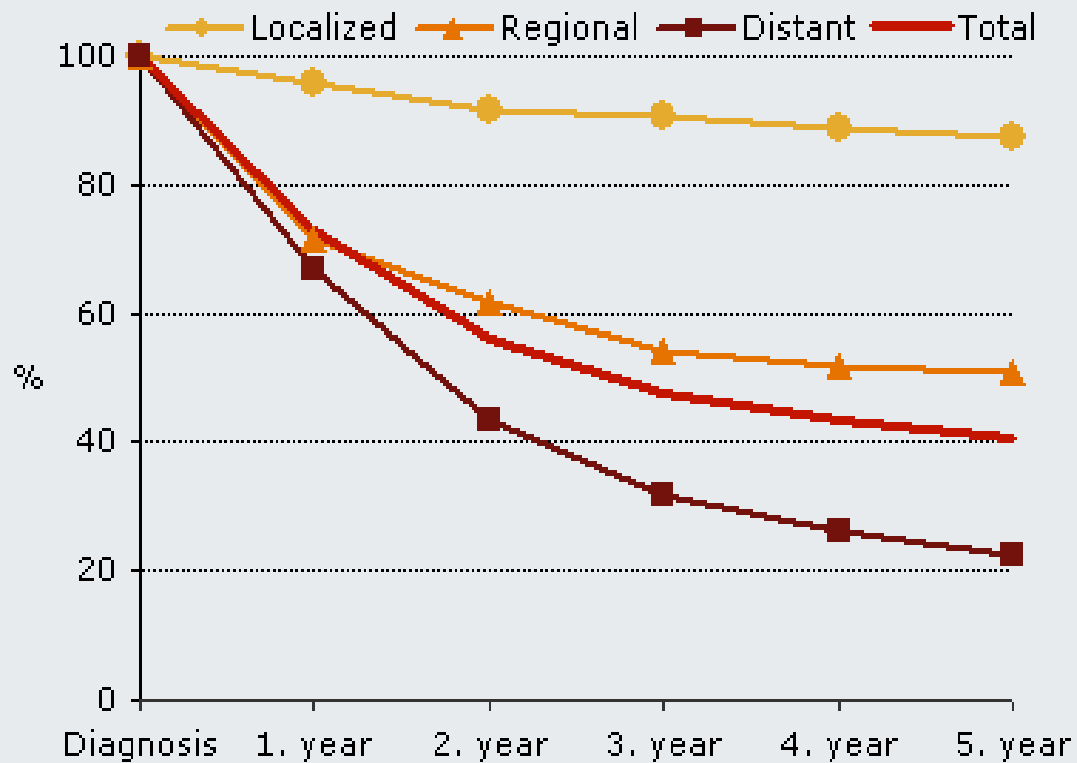
**Age-adjusted incidence rate 1956–2001 (world std.)
Ovary**



Age-specific incidence rate 1997-2001 Ovary



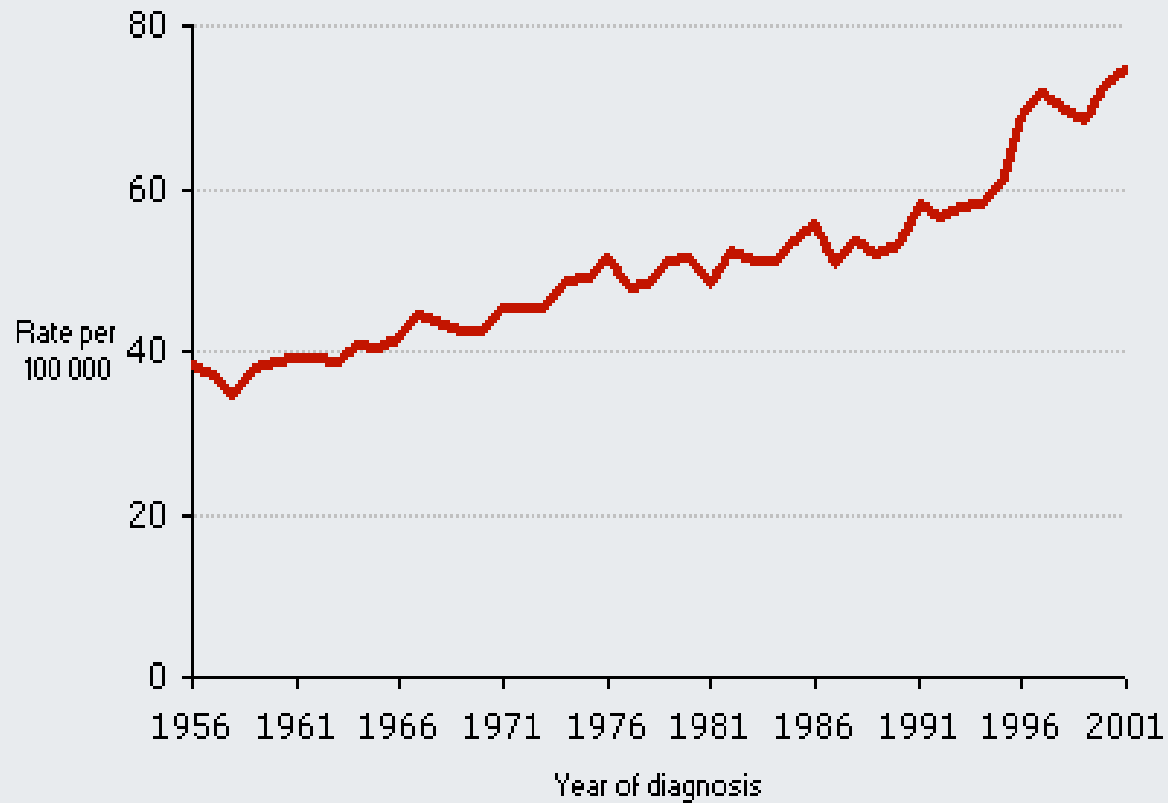
**1-5-year relative survival by stage 1993-97
Ovary**



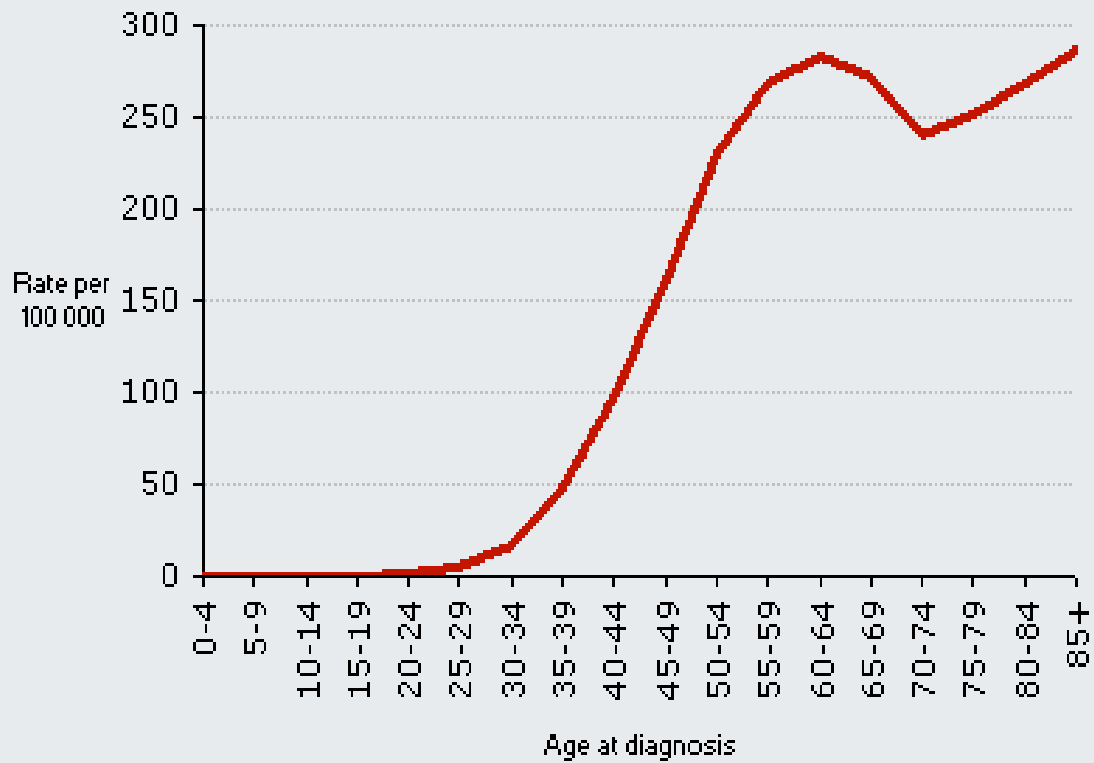
Breast cancer

- Symptoms/occurrence: lump, 1/10,
- Risk factor: age, genetics (BCA1-2), nullipareous, amenorrhea, long menstruating period, late pregnancies, use of estrogens (but hardly p-pills), lack of physical activity
- Screening: mammography
- Diagnosis: palpation, mammography, biopsy, ultrasound, CT, chest X-ray, isotope examination
- Therapy: surgery, radiation, chemotherapy, adjuvant therapy

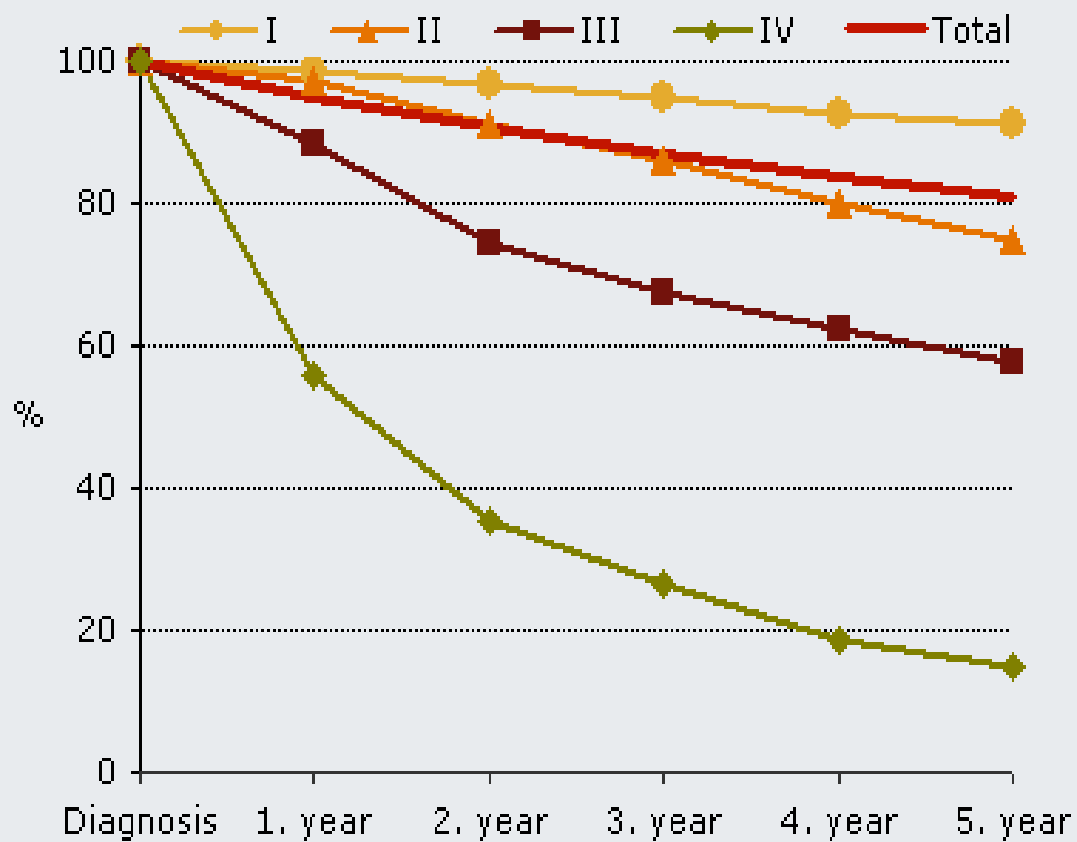
Age-adjusted incidence rate 1956–2001 (world std.) Breast, females



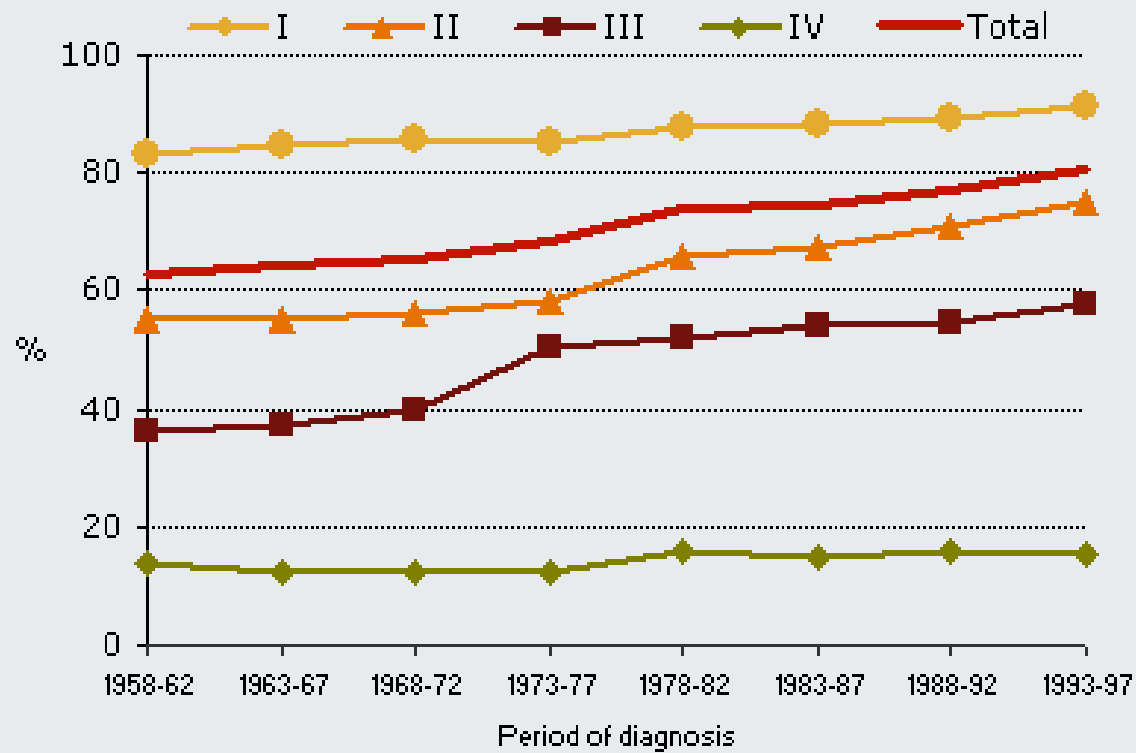
Age-specific incidence rate 1997-2001
Breast, females



**1-5-year relative survival by stage 1993-97
Breast, females**



5-year relative survival by period and stage Breast, females



**5-year relative survival by period and stage
Ovary**

