PSA

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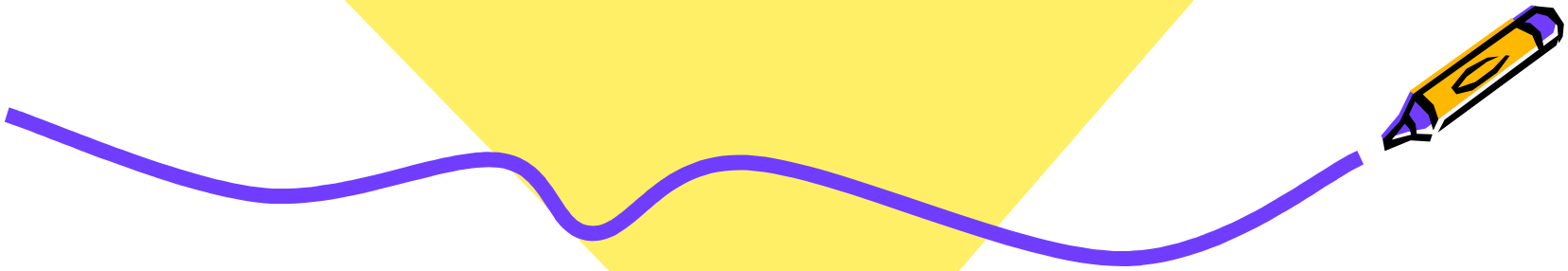
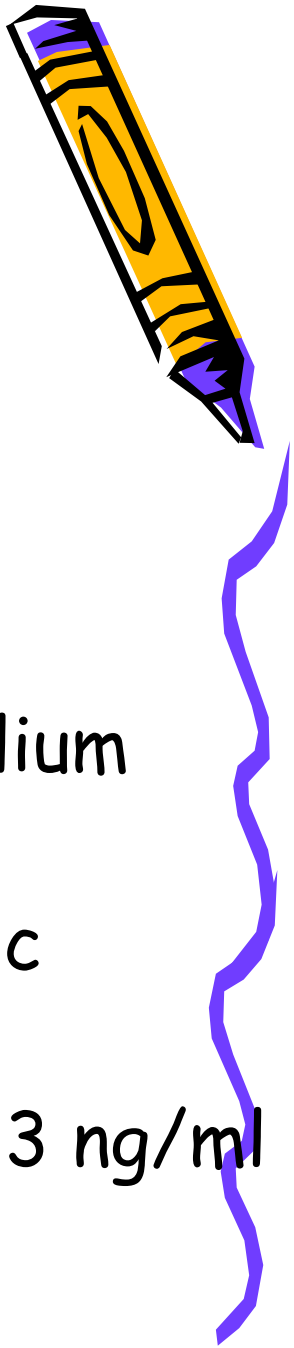


Introduction

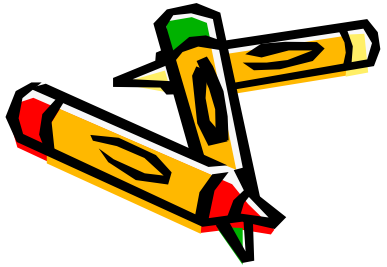


- PSA is a 28 Kd Protein of kallikerin family
- Abundant in seminal fluid
- Normal range0-4ng/ml
- Synthesized in the ductal and acinar epithelium
- PSA is organ specific and not cancer specific
- Each gram of prostate cancer rises PSA by 3 ng/ml
- BPH contributes only 0.3ng/ml

PSA density (PSAD)

- Ratio of PSA to gland volume
- ng/ ml/cu mm of prostate tissue
- Results variable
- Replaced by free/total PSA ratio

Ohori et al

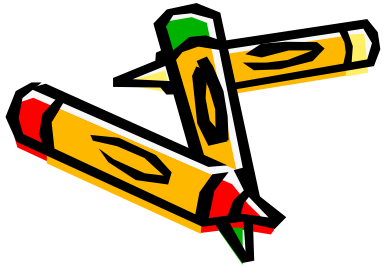


PSA velocity

- Men with prostate CA have rapid rise in PSA than non cancerous conditions

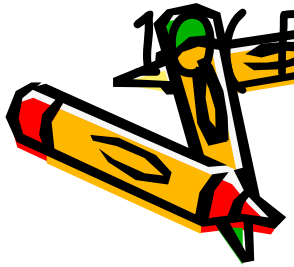
- Annual rate of change in PSA levels (Carter et al)
  - 0.12 for BPH
  - 0.88 for prostate

- Three measurements over a period of 18 months a change of > .75ng /ml is comparable to PSA > 4 ng /ml (Smith et al)



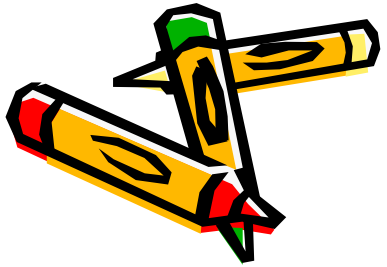
Free to total PSA ratio

- PSA is complexed covalently with protease inhibitors
- The free form is more abundant in BPH
- % free PSA values < 10% are more indicative of cancer in patients with value 4-10 (Partin et al)



Probability of cancer based on PSA and free PSA

PSA	Probability%	FPSA	probability
0-2	1	0-10	56
2-4	15	10-15	28
4-10	25	15-20	20
>10	>50	20-25	16
		>25	8



Screening

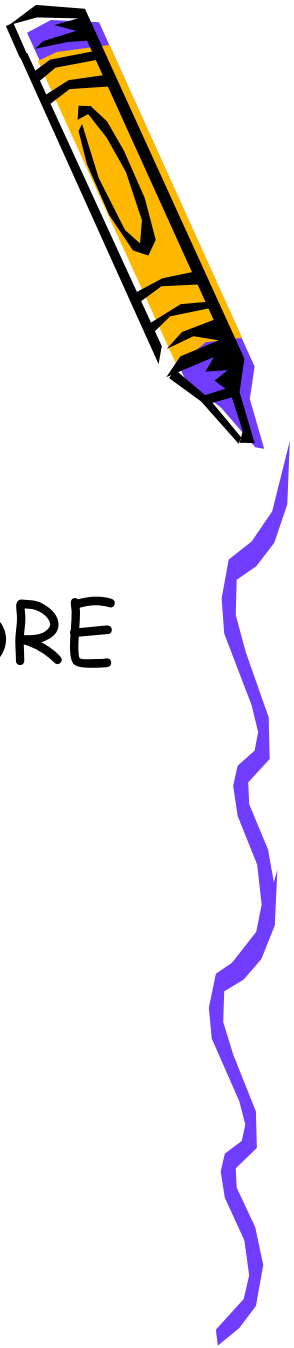
No data definitely demonstrate whether prostate cancer screening saves lives

PSA and DRE are used

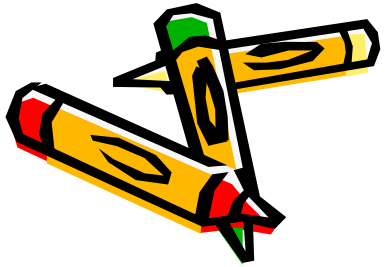
It will detect early stage cancers

There is a risk of over diagnosing a disease that is unlikely to pose threat to morbidity and mortality

Screening



PSA is an important tool along with DRE for screening

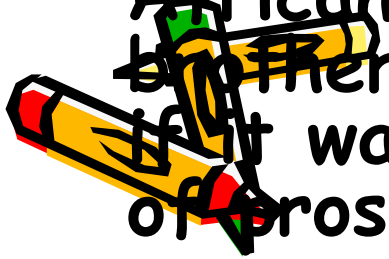


Positive pre d value of DRE and PSA (catalona et al)

DRE	PSA	PPV(%)
abnormal	any	21.4
normal	>4	24.4
abnormal	<4 4-10 >10	10 41 70

Screening

- Prostate cancer is the most common cancer found in older men, other than skin cancer. Men who have regular PSA tests have a higher chance of finding out they haveprostate cancer; men who do not have PSA tests have a lower chance but a higher probability of having more advanced cancer when ultimately diagnosed. The PSA test can detect the majority of prostate cancers earlier than a digital rectal examination when a man has no symptoms.



- African-American men and men with a father, brother, or son with prostate cancer (especially if it was found a younger age) have a higherrisk of prostate cancer.

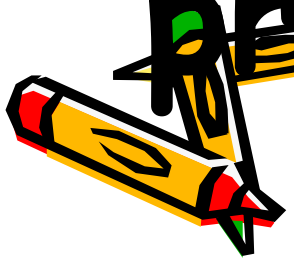
- Native American and Asian-American men have a substantially lower risk.

- American men also have about 1 chance in 30 of eventually dying from prostate cancer. However this would be higher, if no men opted for early detection and treatment.

- About 30,000 men die from prostate cancer each year in the United States. Only about 1 in 100 prostate cancer deaths occur in men under age 55. About 1 in 20 prostate cancer deaths occur in men age 55-64, 2 in 10in men age 65-74, and 7 in 10 in men age 75 and older. However, these deaths usually occur after some period of suffering from metastatic disease.

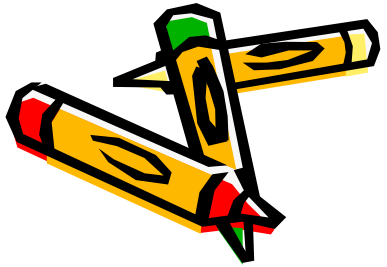
SCREENING

- Doctors disagree about what level of PSA is high enough to do further testing, such as a prostate biopsy, to look for prostate cancer

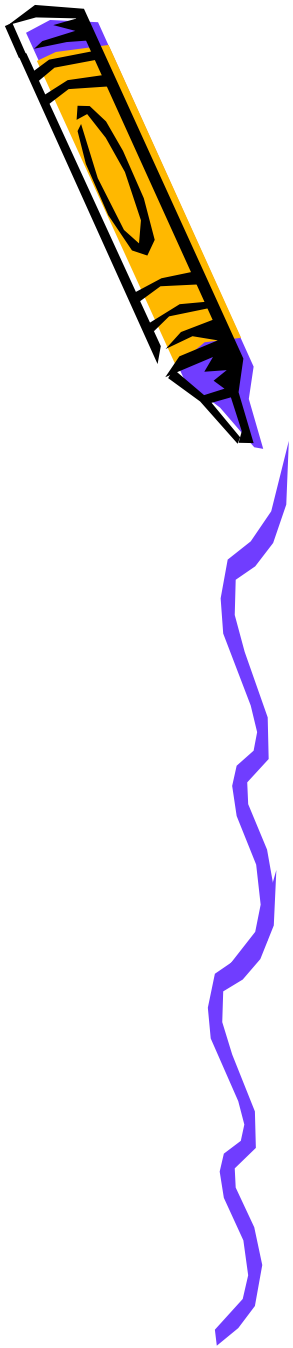


Screening

Most doctors feel men with PSA levels greater than 4 should have a biopsy, while others feel men with levels greater than 2.5 should have a biopsy. There is an increasing tendency to focus less on absolute PSA values and to consider changes in PSA over time.



Age specific PSA



Age adjusted PSA

- 40 – 49 YRS < 2.5
- 50-59 < 3.5
- 60-69 < 4.5
- 70-79 <6.5

Oesterling et al JAMA 1993;270:860

- Many prostate cancers grow very slowly. Consequently, many men with prostate cancer may die of something else before their prostatecancer causes any symptoms. However prostate cancers that grow more rapidly can potentially impact overall survival and quality of life.

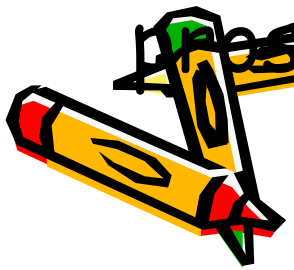
- Whether a man will die of something else or prostate cancer depends on how aggressive the cancer is, how early it is detected, how effectively it is treated, as well as a man's age and his other medical problems. Most experts believe that in general men over age 75, or even younger men with serious medical problems, have little to gain from a PSA test.

Screening

There is accumulating evidence that men who have a steady rise in their PSA level are more likely to have cancer, and if the rise is rapid, the cancer is more likely to be life threatening. Other factors such as patient age and prostate volume (how large the gland is) are also important to consider when deciding who needs a prostate biopsy

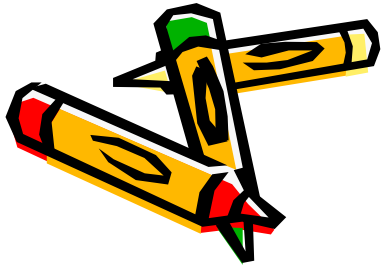
Screening

- PSA >4ng/ml- sensitivity -80 % for detecting prostate CA (Catalona et al, Mettlin et al)
- 20% of men with normal DRE and PSA values between 2.5 and 4 have prostate ca
- Between 4-10 USG guided biopsy detect ca in 25% of cases
- > 10 - 60% have cancer and of this only 40-50% are organ confined (Ohori et al)
- PSA 2-3 - 5.5x more chance to have prostate cancer in the next 5 years than wit PSA < 1(Gann et al)

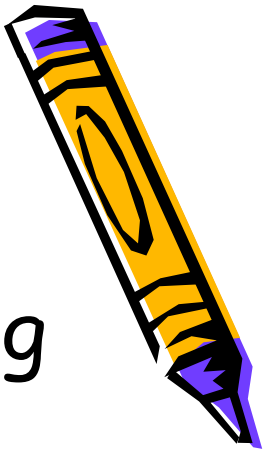


Nomograms

- PSA is used in many nomograms
  - Predict pathologic features of cancer
  - Probability of recurrence after radical protatectomy



Monitoring



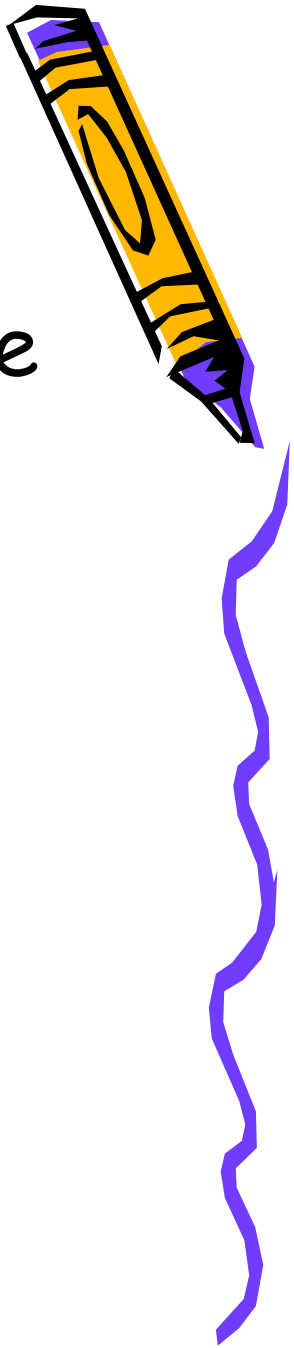
- Important tool for monitoring following
  - Radical prostatectomy
  - Local RT
- Useful tool in monitoring reponse to therapy in metastatic disease androgen dependent as well as independent state
- HR PC is defined based on rising PSA levels

Monotoring

- Following local therapy PSA levels should be undectable

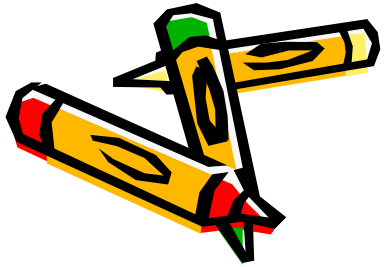
- If PSA still remains high
  - r/o metastatic disease
  - If no metastatic disease consider additional local therapy like local RT
  - If local options are exhausted then androgen ablation has to be considered

Initial assessment

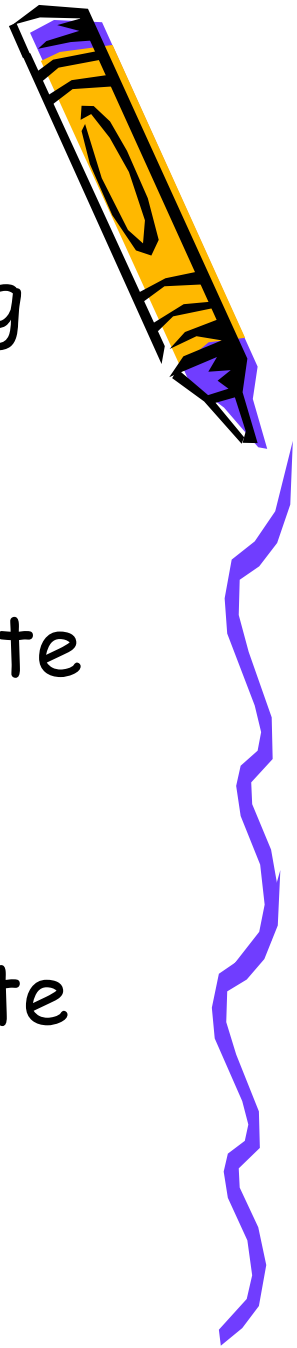


- PSA is a Very important tool in the initial assessment along with other parameters
  - STAGE
  - Gleasons grade

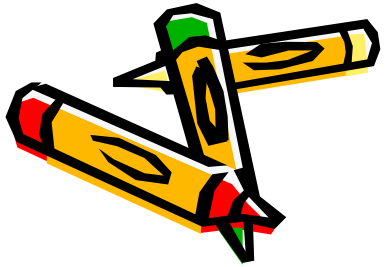
- NCCN guidelines



PSA -HRPC

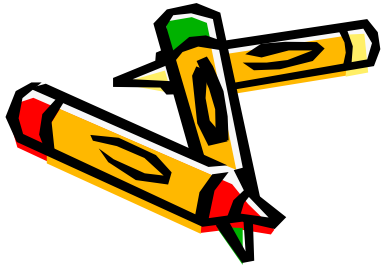


- PSA is an important tool in diagnosing HRPC
- Usually defined as a rising PSA despite total androgen blockade.
- Can indicate hormone refractory state much before clinical symptoms



conclusion

- PSA has important role in
  - Screening
  - Diagnosis
  - Follow up



THANK YOU