

POINT OF CARE TESTING

improving health outcomes

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Point of Care Testing

what is it?

“the provision of a test (result) at the point in time at which the result will be used to make a decision and take appropriate action which will result in an improved health outcome”

Point of Care Testing
has also been known as....

near patient

bed-side

physicians office

extra-laboratory

decentralised

ancillary

alternate site.....testing

Point of Care Testing

changes in healthcare: stimulus for change

quality concerns

cost concerns

patients expectations

new delivery models

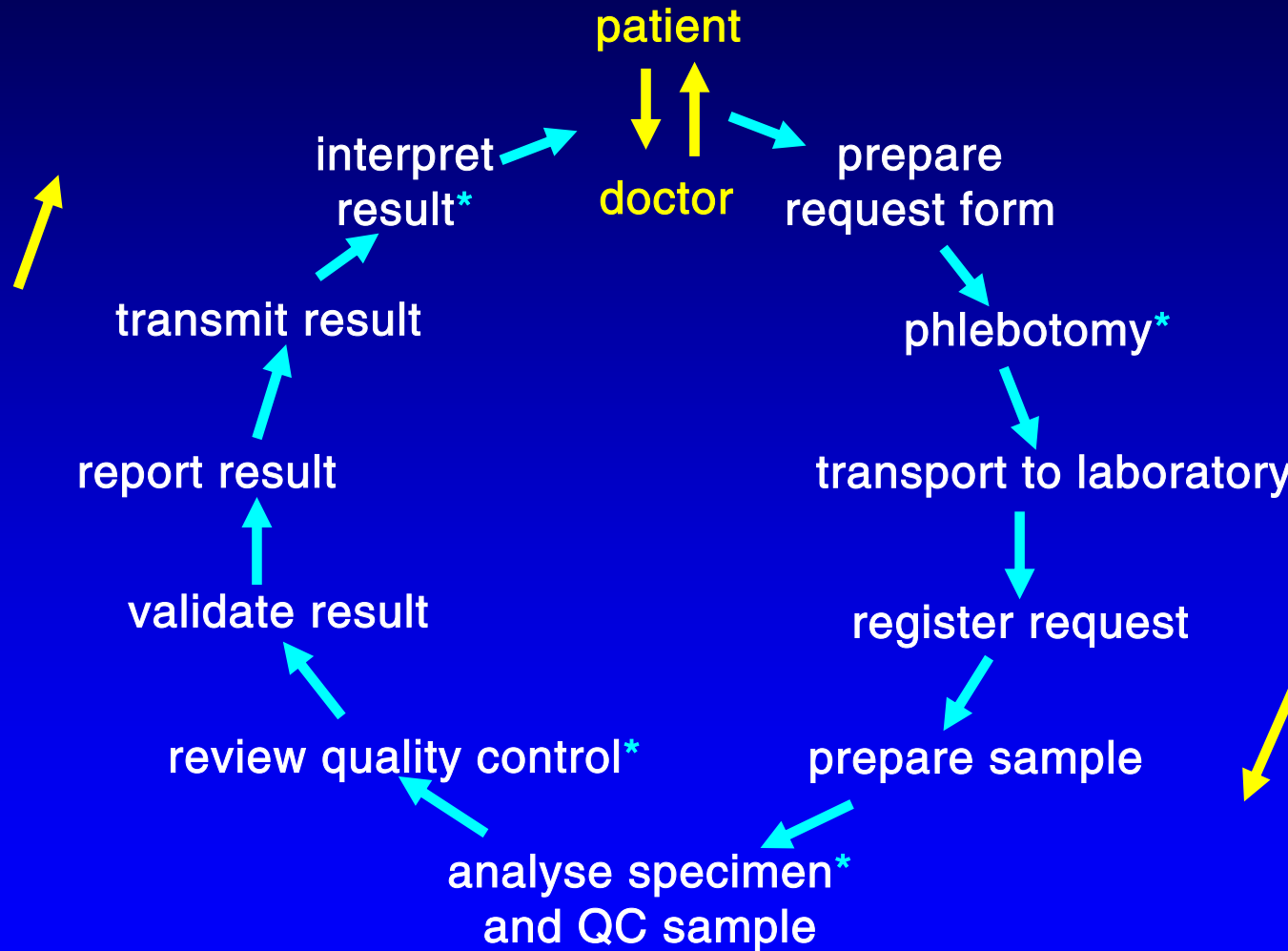
new diseases

new evidence

new technologies

health economic strategies

Improving Delivery of Results



Improving Delivery of Care

changes in clinical practice

treatment close to first point of contact

patient focussed care

one stop clinics

elective *vs* emergency care

ambulatory care

primary care

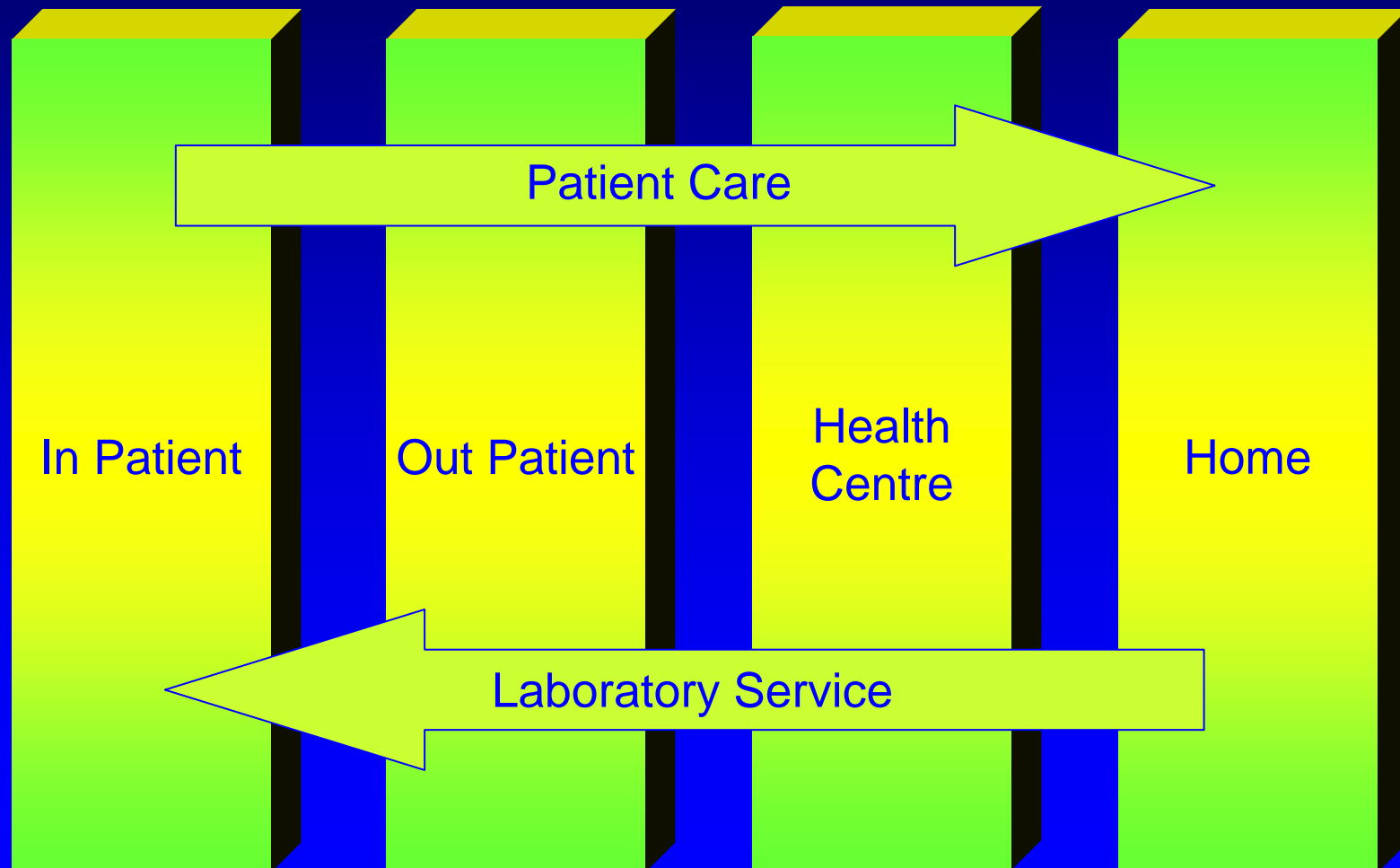
home care

Point of Care Testing where?

home
work and leisure place
pharmacy
health centre (inc DTC)
paramedical vehicle
emergency room
operating room
outpatient clinic
ward
(laboratory)

Changes in Health Care Delivery

conflicts of change



Improving Health Outcomes

what is a health outcome?

care of individual patients

maximisation of benefit

minimisation of risk

reasonable cost

Point of Care Testing

clinical outcomes; the 5Ds

Improving on .. death

.. disease

.. disability

.. discomfort

.. dissatisfaction

Point of Care Testing

clinical outcomes:surrogates

faster decision making

earlier treatment

improved compliance

reduced complications

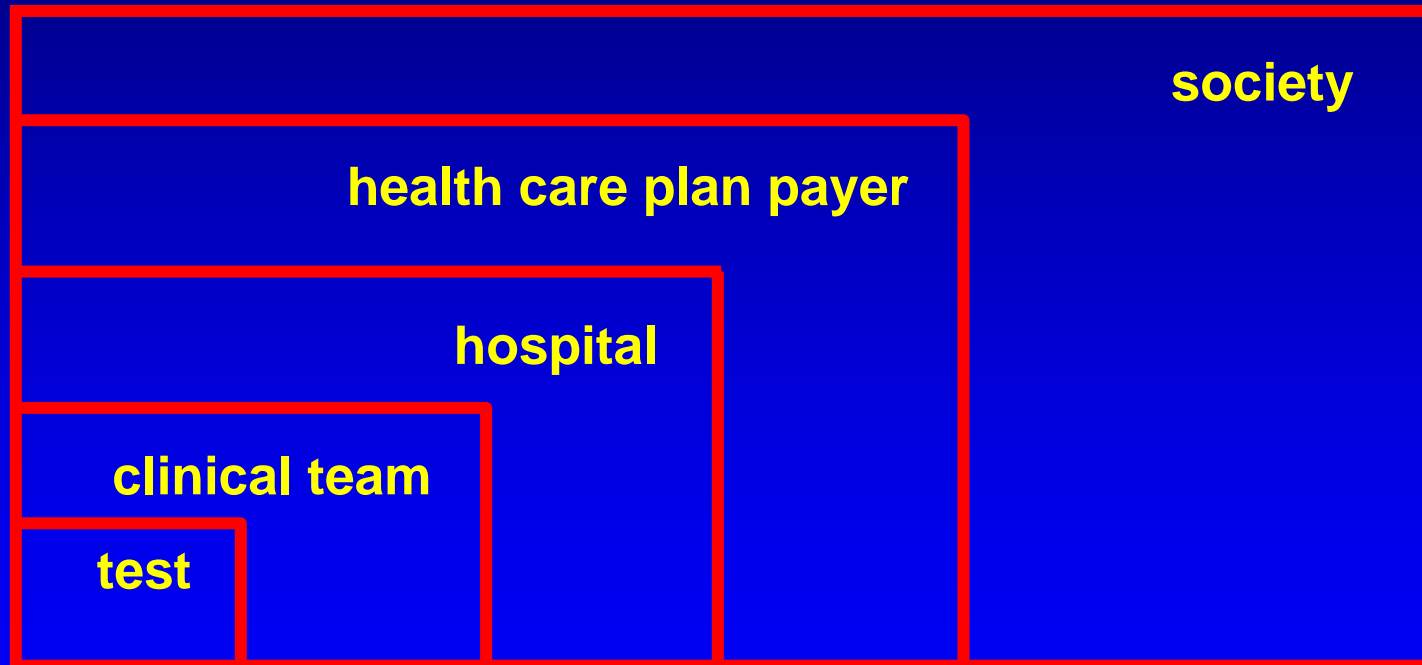
faster optimisation

reduced readmission

patient satisfaction

Point of Care Testing

health economic perspectives



Point of Care Testing

economic outcomes:surrogates

clinic visits

length of stay

readmission rate

intervention rate

working days lost

productive years gained

Point of Care Testing why?

make a quicker decision?

instigate urgent treatment?

counsel a patient?

empower a patient?

improve a patient outcome?

save money?

Point of Care Testing

information

decision

action

outcome

Point of Care Testing efficacy



Point of Care Testing primary care

1057 publications identified

92 extracted

“... there is little evidence to support
the introduction of NPT in *primary care* ...”

Hobbs et al. 1997

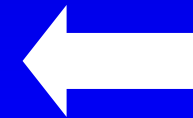
Point of Care Testing effectiveness

information

decision

action

outcome



good

quality

management

Point of Care Testing challenges

information

decision ★

action ★

outcome

Point of Care Testing

prompting action

start

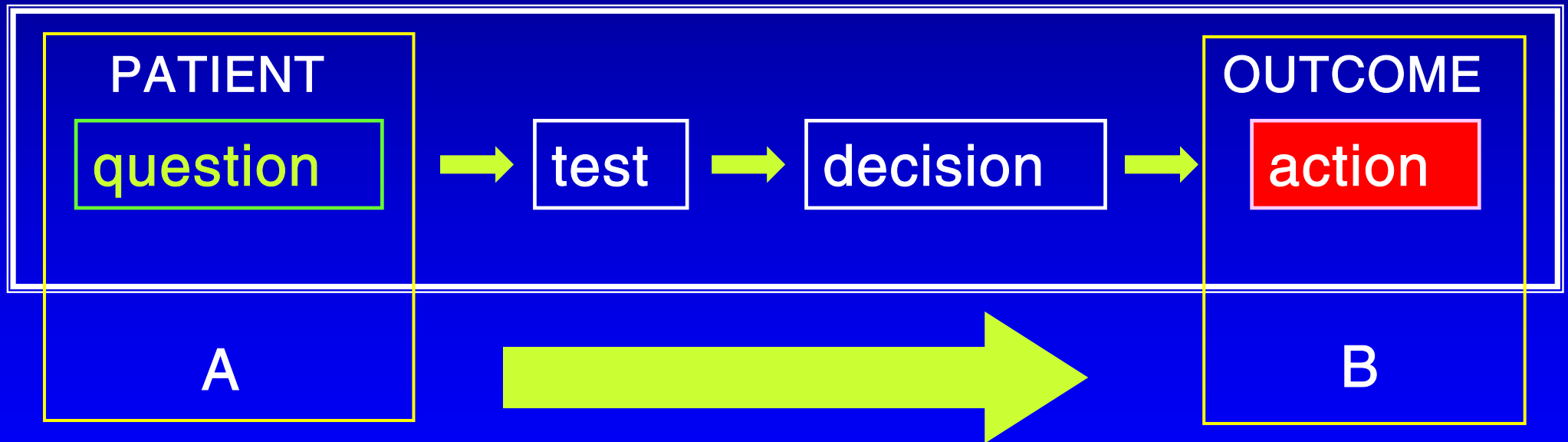
withhold

modify

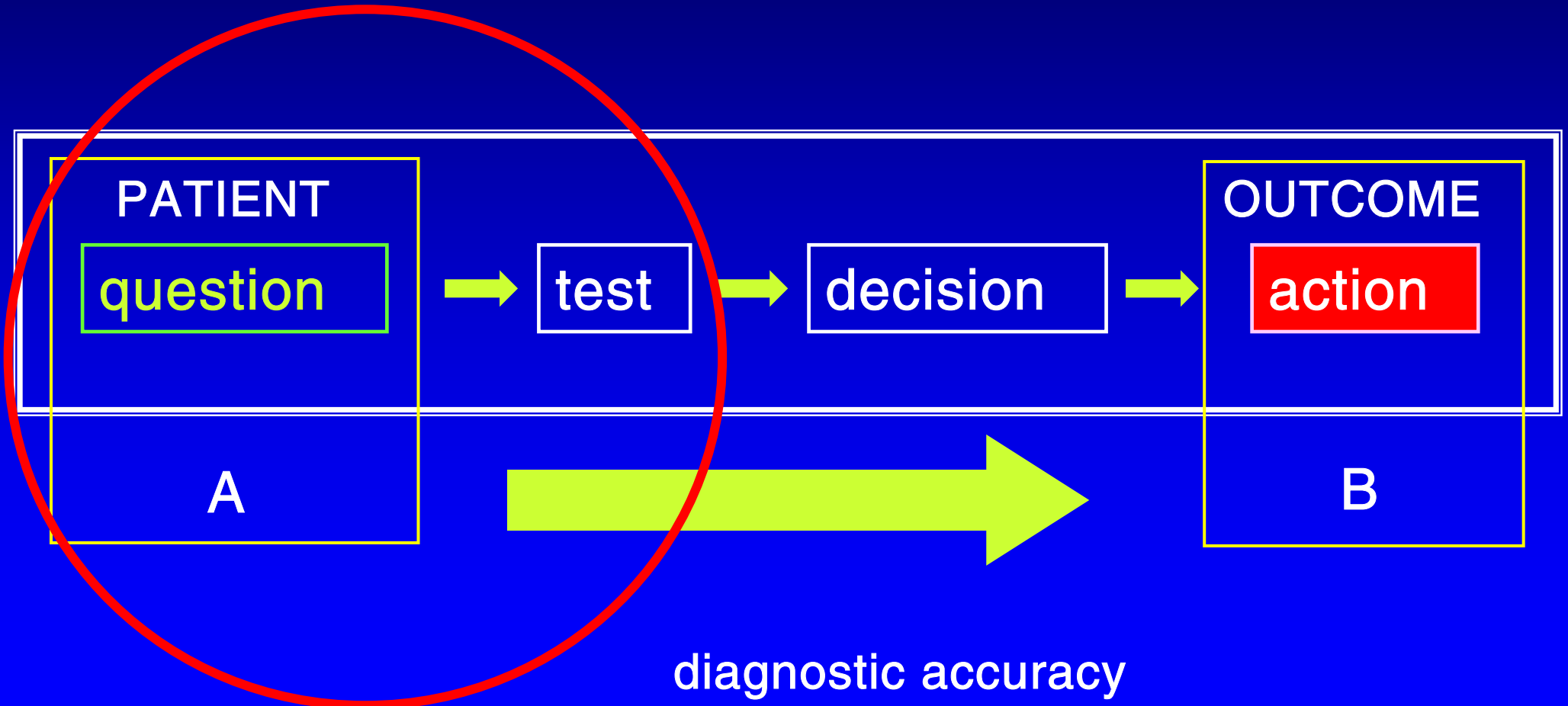
stop

.....treatment

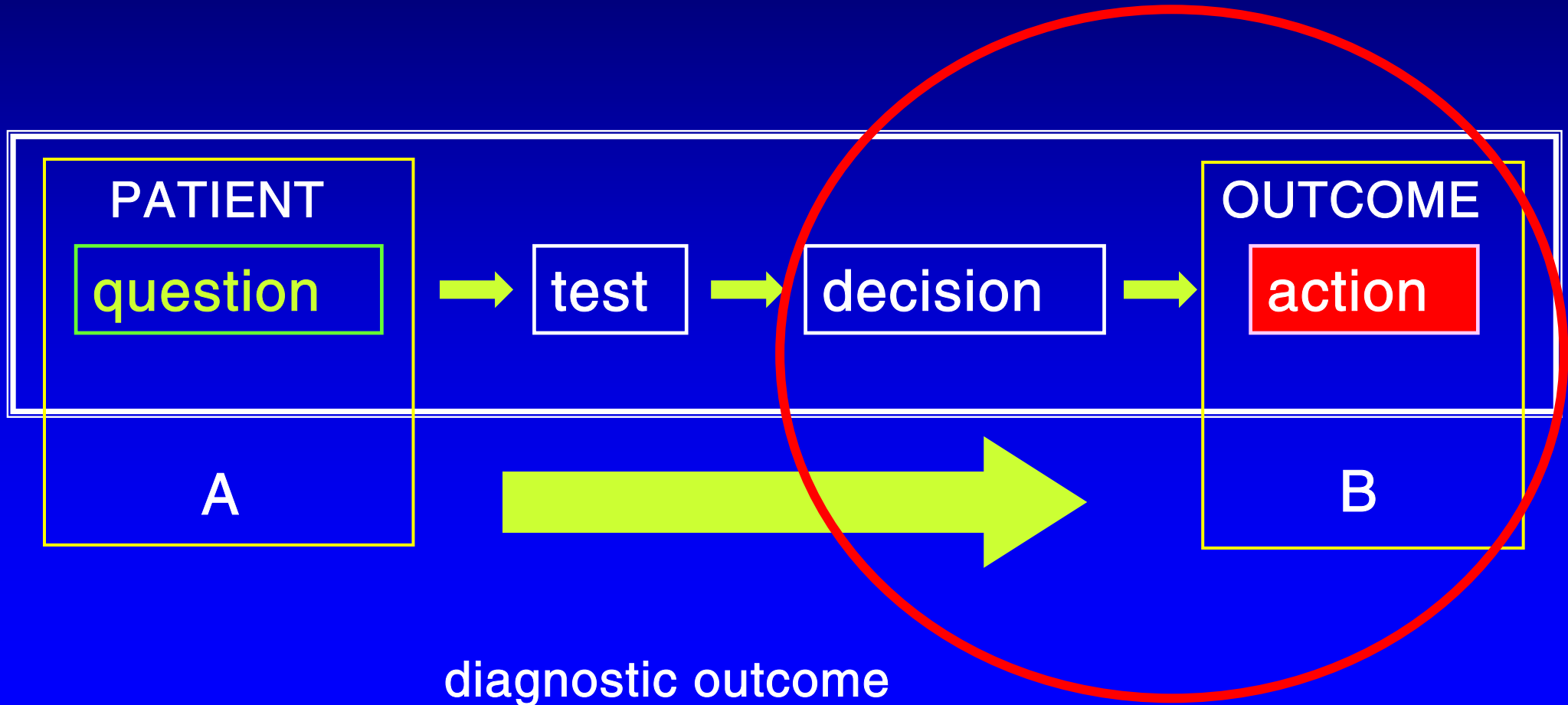
Point of Care Testing an integrated sequence



Point of Care Testing an integrated process



Point of Care Testing an integrated process



decisions

cost
effectiveness

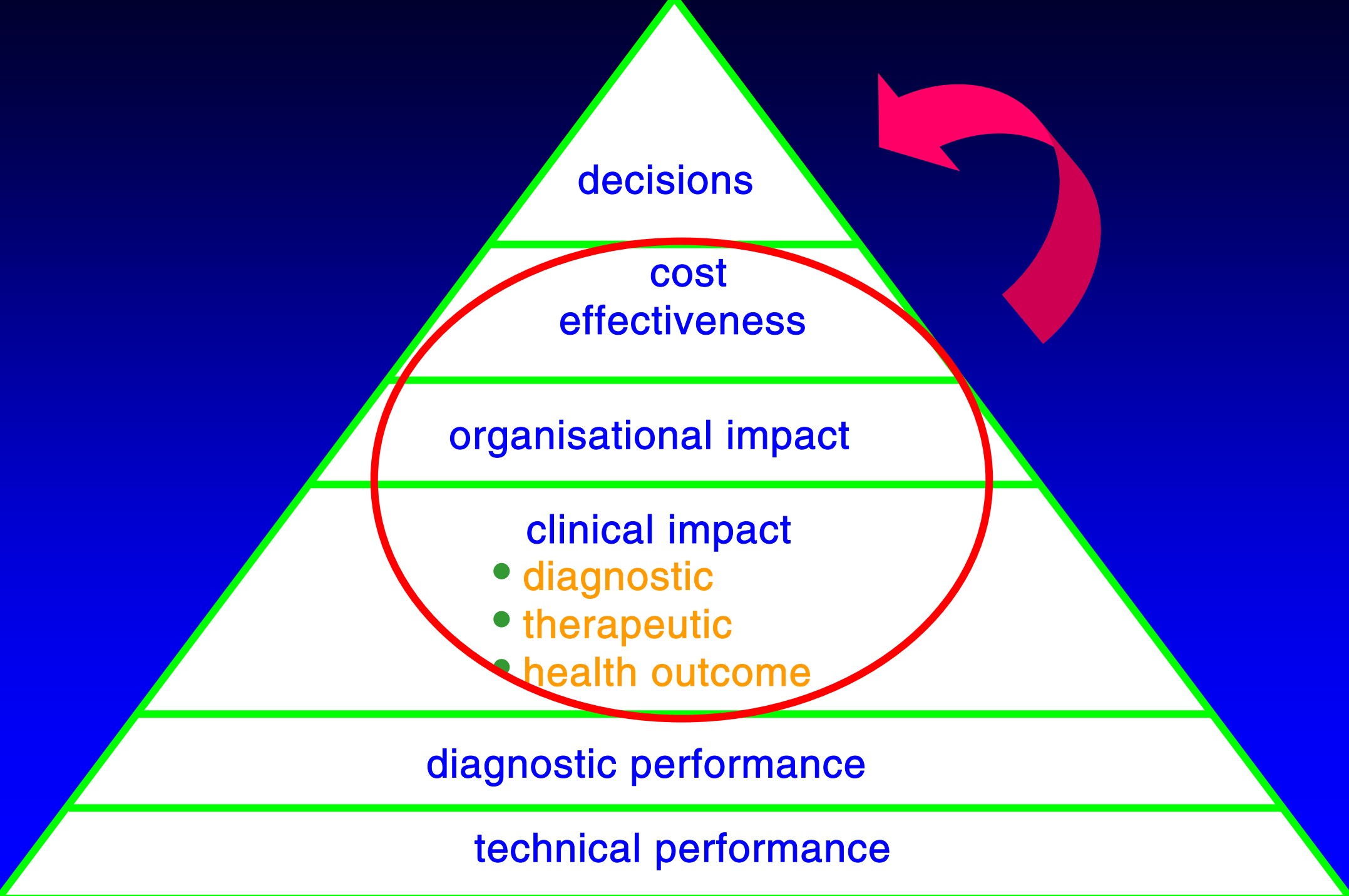
organisational impact

clinical impact

- diagnostic
- therapeutic
- health outcome

diagnostic performance

technical performance



decisions

cost
effectiveness

organisational impact

clinical impact

- diagnostic
- therapeutic
- health outcome

diagnostic performance

technical performance

Point of Care Testing

keys to success

organisation and management

changing clinical
practice

Briefly, some examples

decisions

cost effectiveness

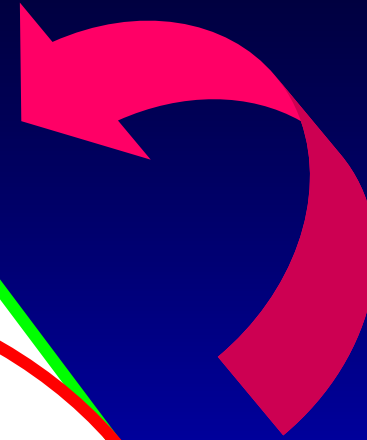
organisational impact

clinical impact

- diagnostic
- therapeutic
- health outcome

diagnostic performance

technical performance



Point of Care Testing emergency room

Tsai et al. 1994

28% patient course altered

Sands et al. 1995

9% patient course altered

11% admission/discharge altered

Kendall et al. 1998

7% patient treatment altered

Point of Care Testing

turnaround times: before and after

Test Change (%)	TAT (min)		
	Laboratory	POCT	
Urinalysis (90)	40	4	- 36
Pregnancy (94)	78	5	- 73
Glucose (60)	10	6	- 4
Cardiac	110	17	- 93

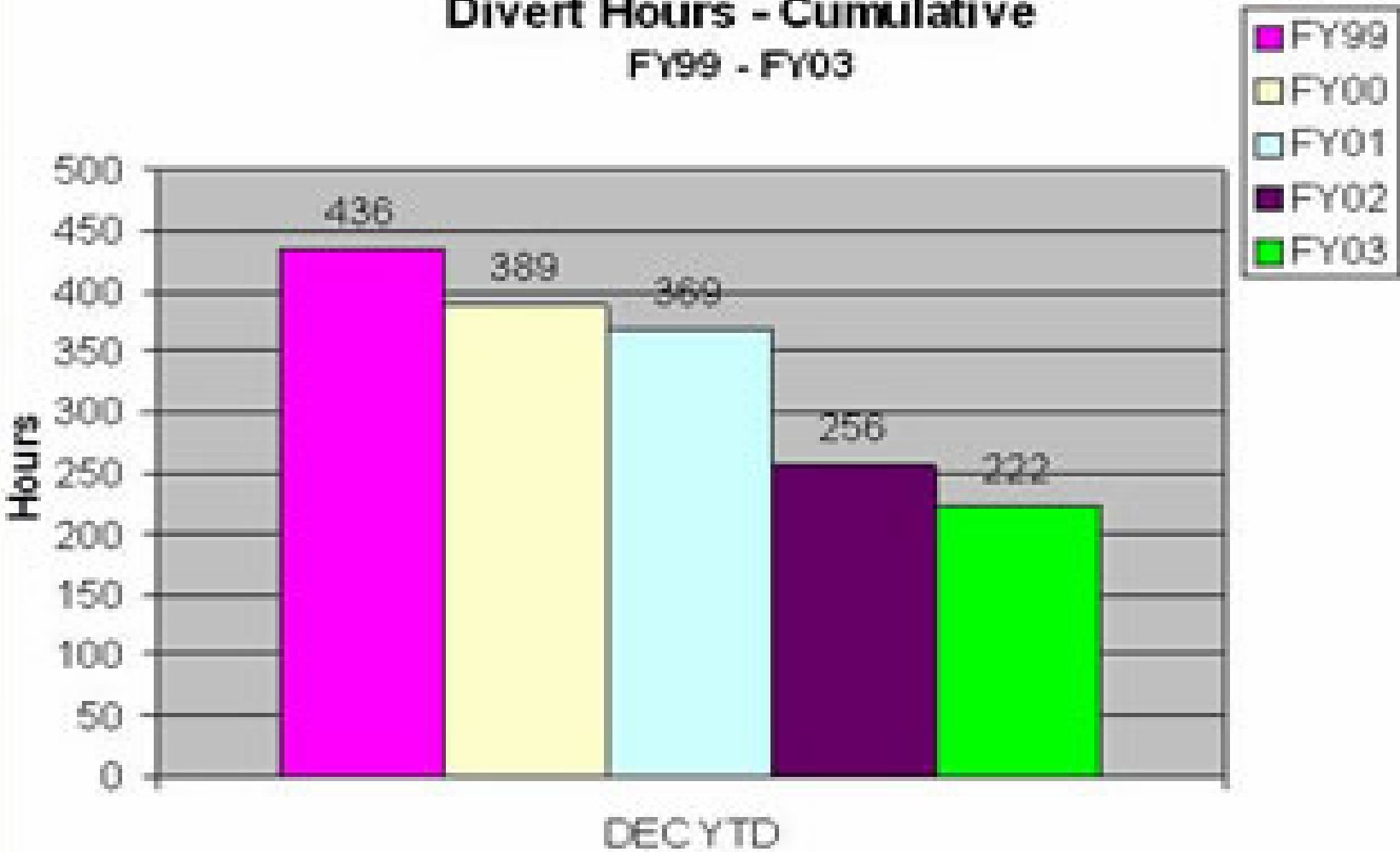
Point of Care Testing

ED length of stay: before and after

Test	ED LOS (min)	ED LOS (min)	Change
	Pre POCT	Post POCT	
Urinalysis	395	358	- 37
Pregnancy	386	346	- 40
Glucose	N/A	N/A	N/A
Cardiac	386	338	- 47
Mean	389	347	- 41

p=0.006

Divert Hours - Cumulative FY99 - FY03



Point of Care Testing the MGH ED 'financials'

- POCT unit cost: \$19.20 per test
- Lab unit cost: \$2.94 per test
- productivity: 5,162 per FTE
- total testing volume: 25,812 per year
- total POCT cost: \$495,590 (7d - 16h)

Point of Care Testing

the broader perspective: MGH

- bed minutes saved per test: 41
- bed hours saved per year: 17,638
- cost of a bed: \$402,960
- cost of two beds: \$805,920
- total saving: \$805,920 - \$495,590
= \$310,330

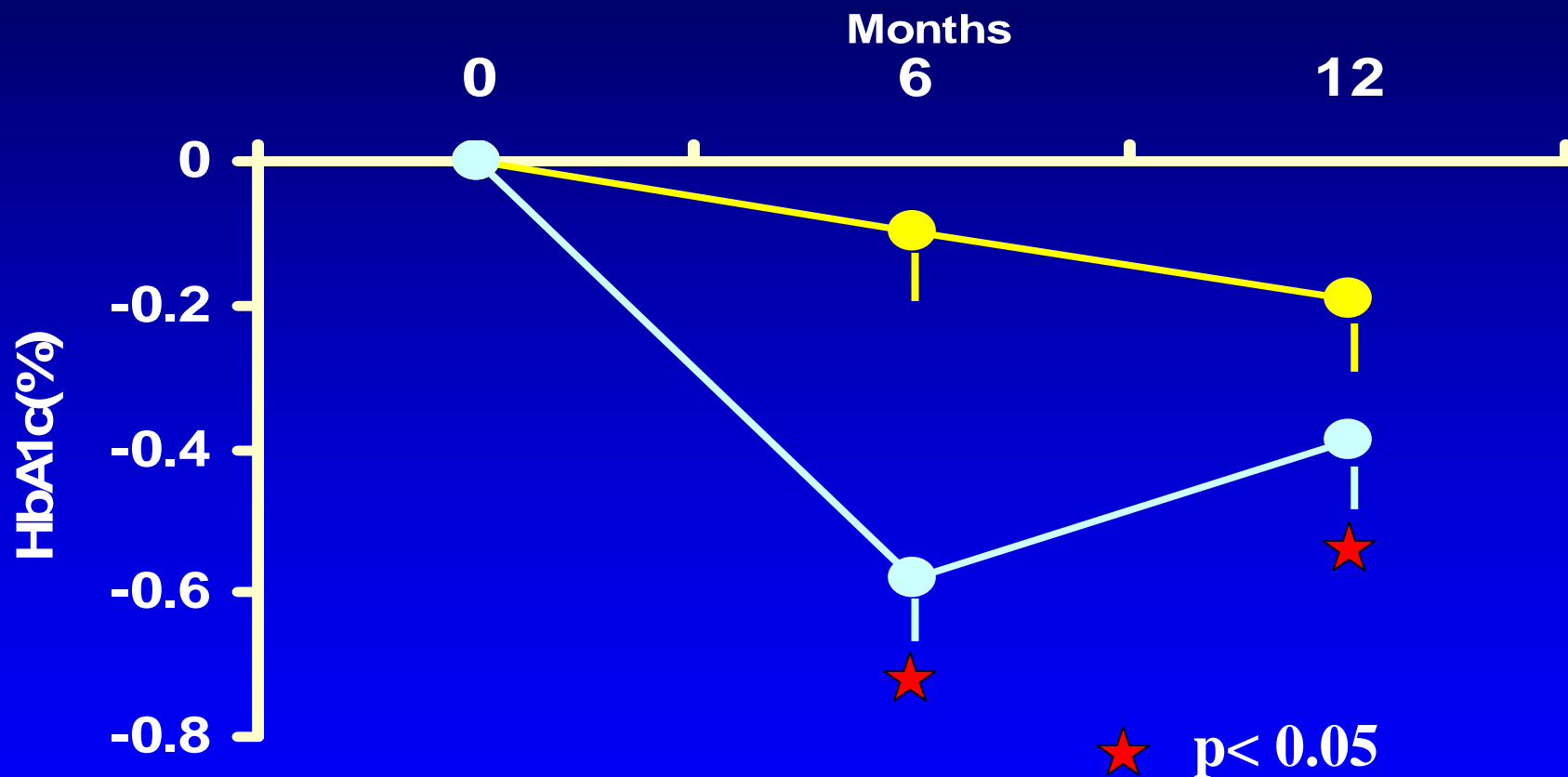
Impact of Point of Care Monitoring on Epilepsy Management

	laboratory	monitoring: clinic
for optimal control:		
weeks from first visit	22.9	4.5*
number of dose changes	2.0	1.5
number of drug assays	4.5	2.5*

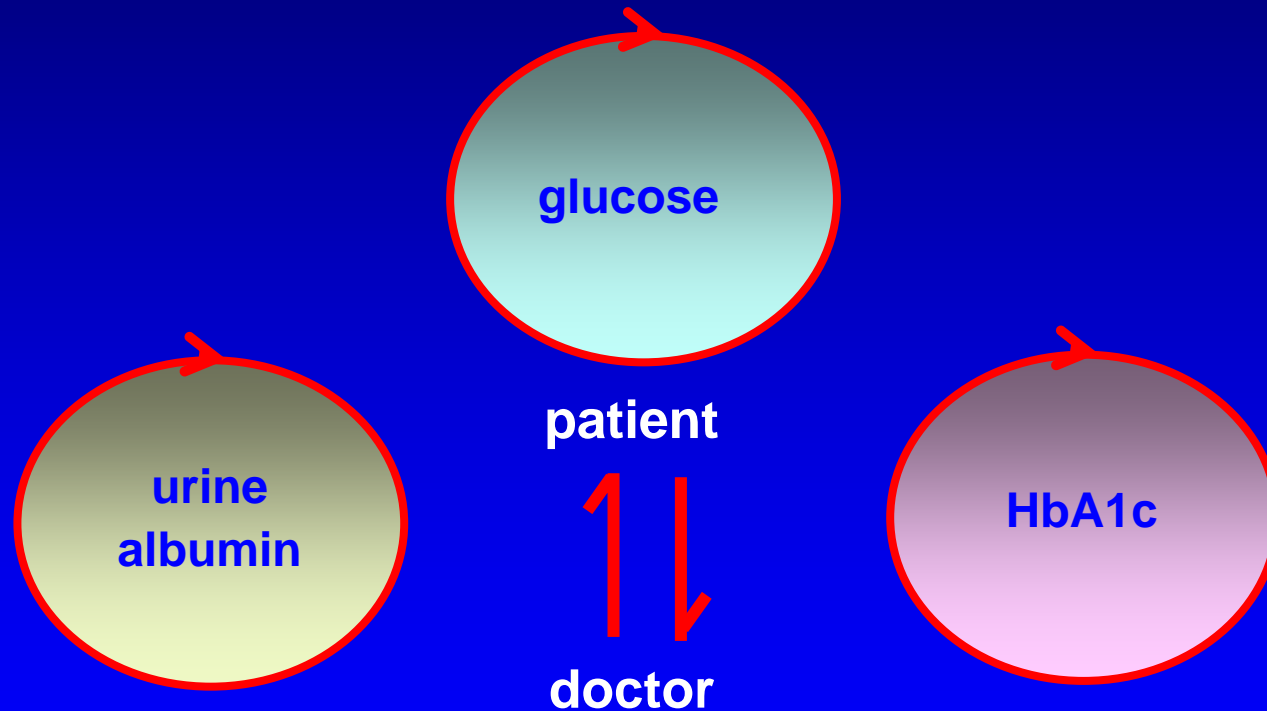
*P<0.05

(Patsalos et al., Lancet 1987; ii: 39)

POCT for HbA1c in Diabetes Clinic



Point of Care Testing compliance



Point of Care Testing

intraoperative PTH measurement

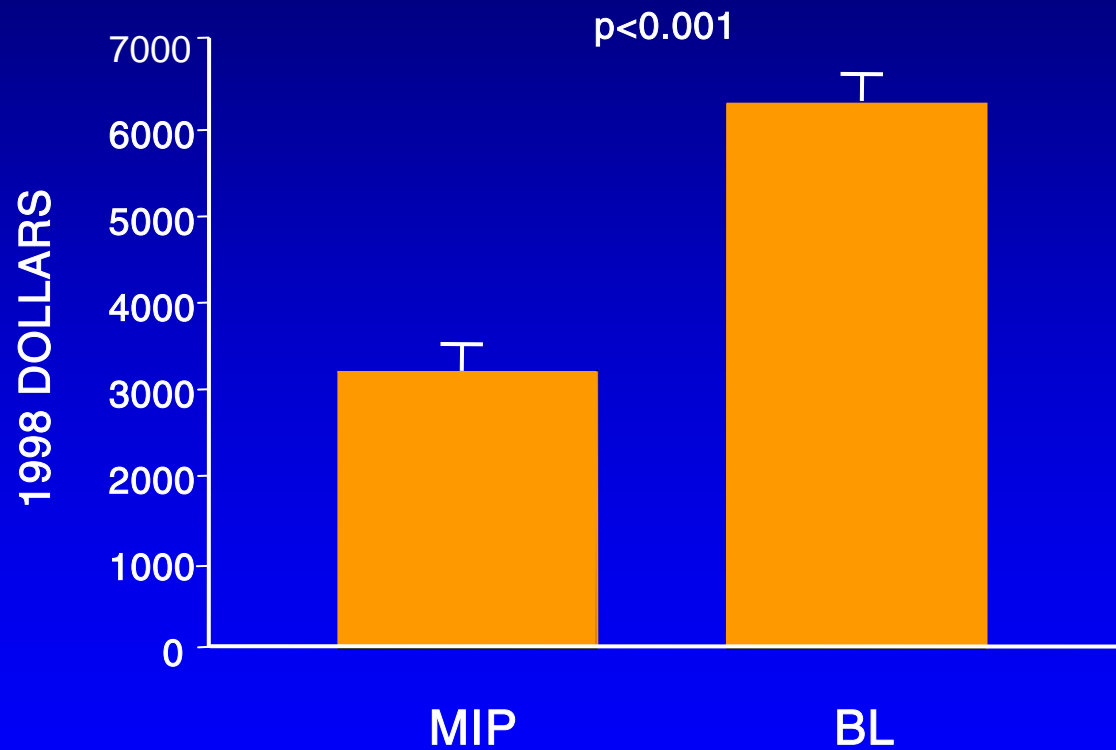
reduces reoperation rate

enables day case surgery

reduces length of stay

reduces cost per procedure

Intraoperative PTH



Chen et al. 1999

Point of Care Testing haematology

whole blood PT and APTT

monitor cardiopulmonary bypass

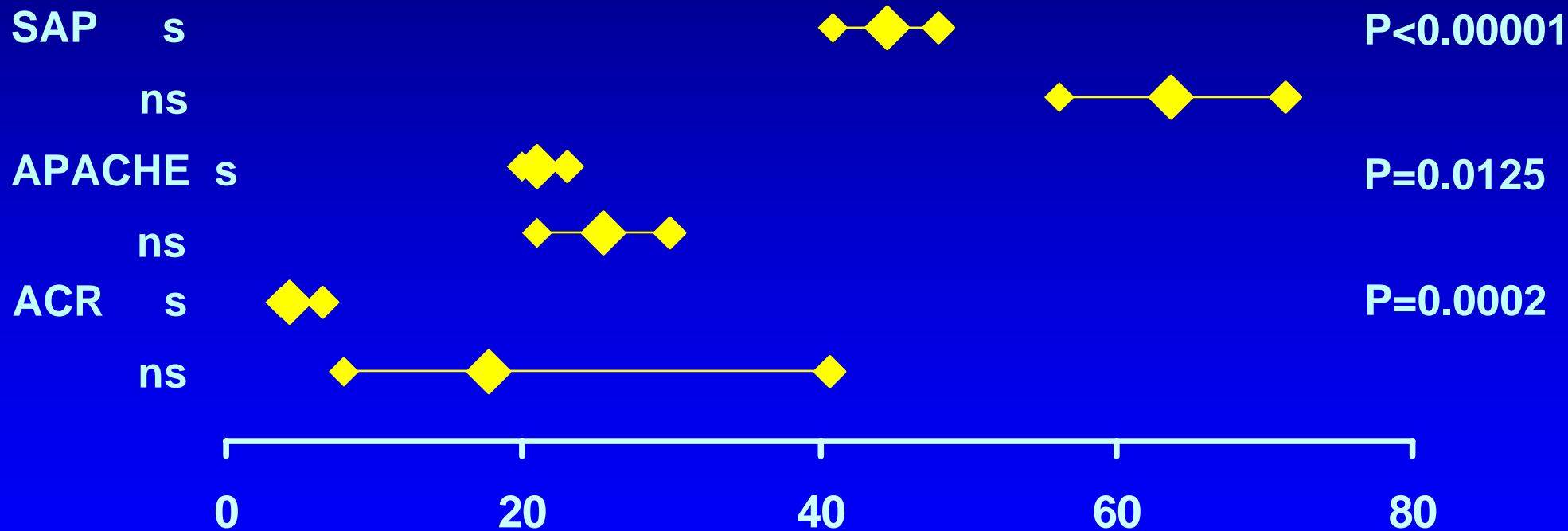
reduces erythrocyte, FFP and platelet
requirement

annual saving \$265,658

Despotis et al. 1994

Outcome Measures in Intensive Care

Admission ACR + 24 hrs Scores



Point of Care Testing

monitoring anticoagulation therapy

primary care setting

- computerised decision support
 - improvement in INR control, 23% to 86%, $p > 0.001$
 - recall time extended, $p = 0.033$
 - improvement in time spent in target range, $p = 0.008$
 - proportion of tests in target range increased, $p = 0.015$
 - 'primary care as safe as secondary care'

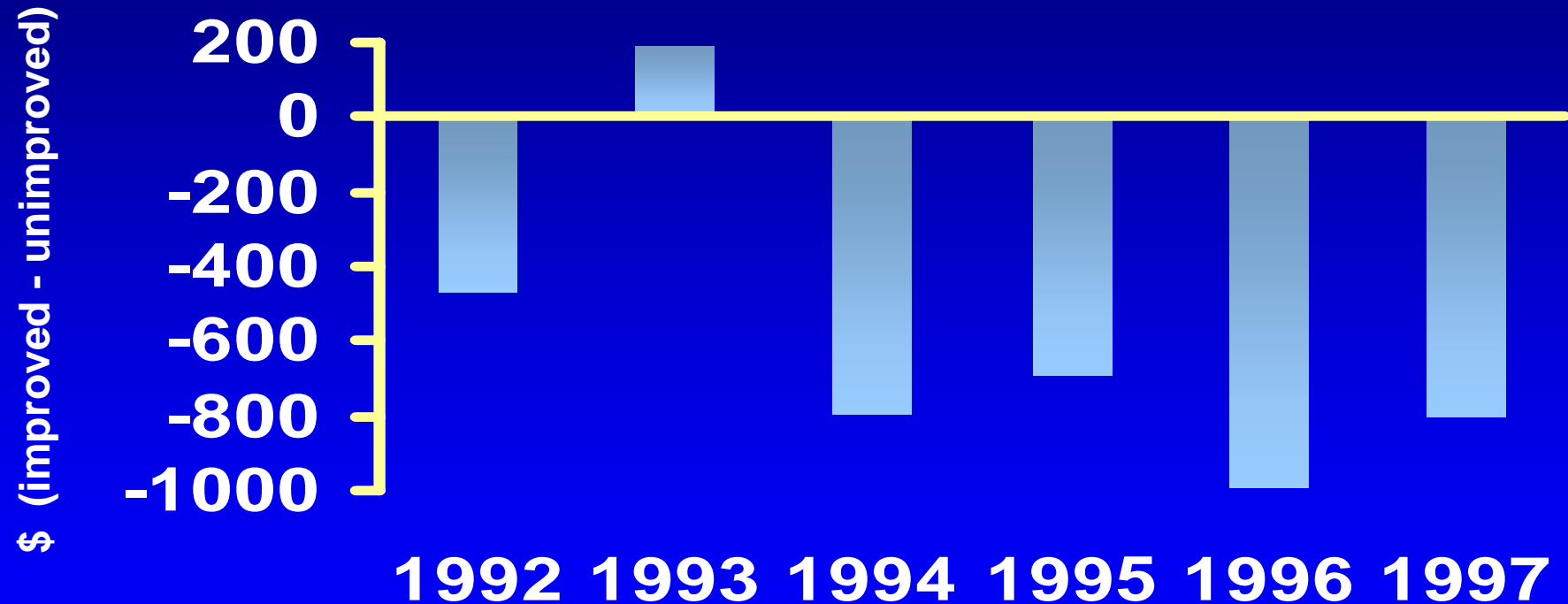
Fitzmaurice et al 1996, 2000, 2001, 2002

Point of Care Testing

microeconomic cost analysis

	glucose: cost / test (\$)	
	POCT	laboratory
Lee-Lewandrowski et al., 1994	13.49	3.84
Winkelman et al., 1994	6.62	3.30
Greendyke, 1992	11.50	3.91
Nosanchuk et al., 1995	7.14	6.88

Improved Glycaemic Control healthcare costs



Point of Care Testing today's challenges

maintaining good quality systems

**CHANGING CLINICAL
PRACTICE**