

pHealthLab, a need for effective pHealthCare!

Define an unmet need!

Provide a simple solution for the user!!

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What's lab about?

What do we produce?

Numbers?

Medical information!!

Medical knowledge!!



Lab Tests Online®

A public resource on clinical lab testing from the laboratory professionals who do the testing

Peer-reviewed
Non-commercial
Patient-centered



 HOME

 AU

 CA

 DE

 ES

 FR

 HU

 IT

 PL

 UK

Use the search box and menus below to quickly navigate the Lab Tests Online site!

CRP: The Test

...Also known as: **CRP** Formal name: C-Reactive Protein Related tests: High-sensitivity C-reactive protein (hs-CRP); Erythrocyte sedimentation rate...
[http://labtestsonline.org/understanding/analytes/crp/...](http://labtestsonline.org/understanding/analytes/crp/)

CRP: Test Sample

...Also known as: **CRP** Formal name: C-Reactive Protein Related tests: High-sensitivity C-reactive protein (hs-CRP); Erythrocyte sedimentation rate...
[http://labtestsonline.org/understanding/analytes/crp/...](http://labtestsonline.org/understanding/analytes/crp/)

CRP: At a Glance

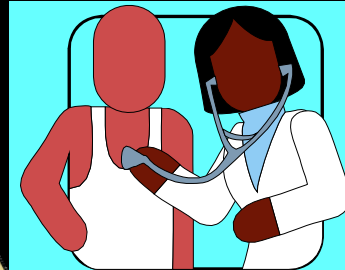
...Also known as: **CRP** Formal name: C-Reactive Protein Related tests: High-sensitivity C-reactive protein (hs-CRP); Erythrocyte sedimentation rate...
[http://labtestsonline.org/understanding/analytes/crp/...](http://labtestsonline.org/understanding/analytes/crp/)

hs-CRP: The Test

...hs-CRP Also known as: High-sensitivity CRP; Ultra-sensitive CRP Formal name: High-sensitivity C-reactive protein Related tests: Lipid profile, ...
[http://labtestsonline.org/understanding/analytes/hscrp/...](http://labtestsonline.org/understanding/analytes/hscrp/)

Central Lab testing

The Clinic



Request

Preparation for Sampling

Sampling



Transport of Samples

Data-entry

- Arrival control
- Sample preparation
- Commenting
- Centrifugation
- Decapping
- Aliquoting
- Sorting

Archiving reports

Interpreting reports

Reception of reports

Reporting

Transforming numbers into medical information

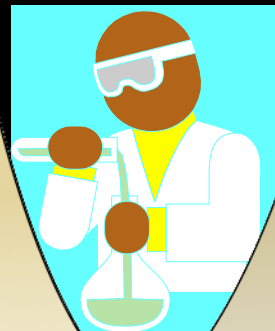
Modifying/Recalculating analytical data

Quality control

Validation

Commenting

Production control



Assaying

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Pre-analytical factors

The patient

Fasting
Medications
Exercise
Sitting or laying
When?

morning
random
diurnal variation

Requests

Electronic
Paper

Post-analytical

Reporting

Transforming numbers
into medical information
Electronic

Sampling

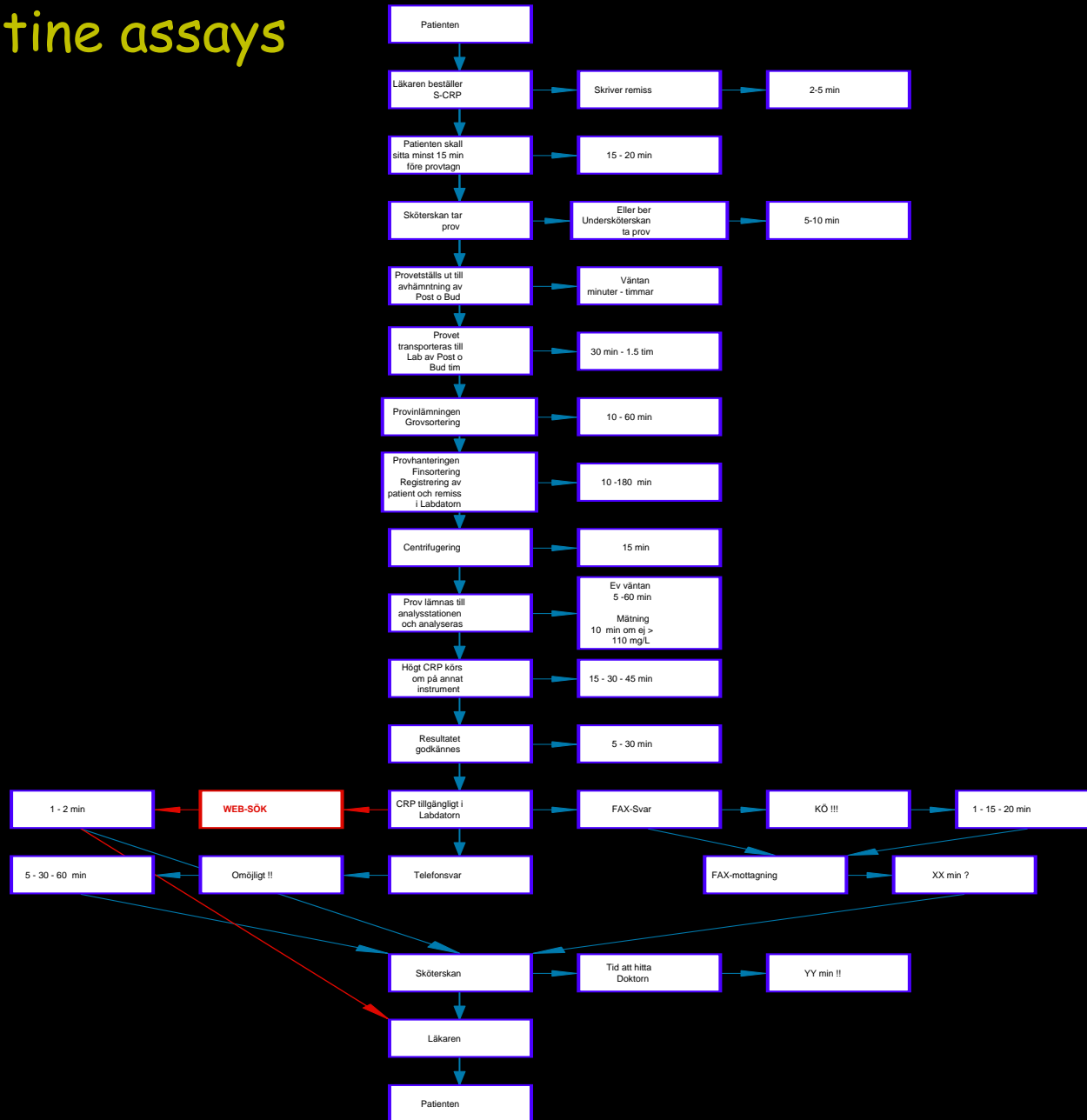
Labeling / bar-code
LID-numbers
Prefix
Extinction
Additives
Volume
Venous
Capillary

Why POCT ?

Why, where and by whom shall lab-test be done

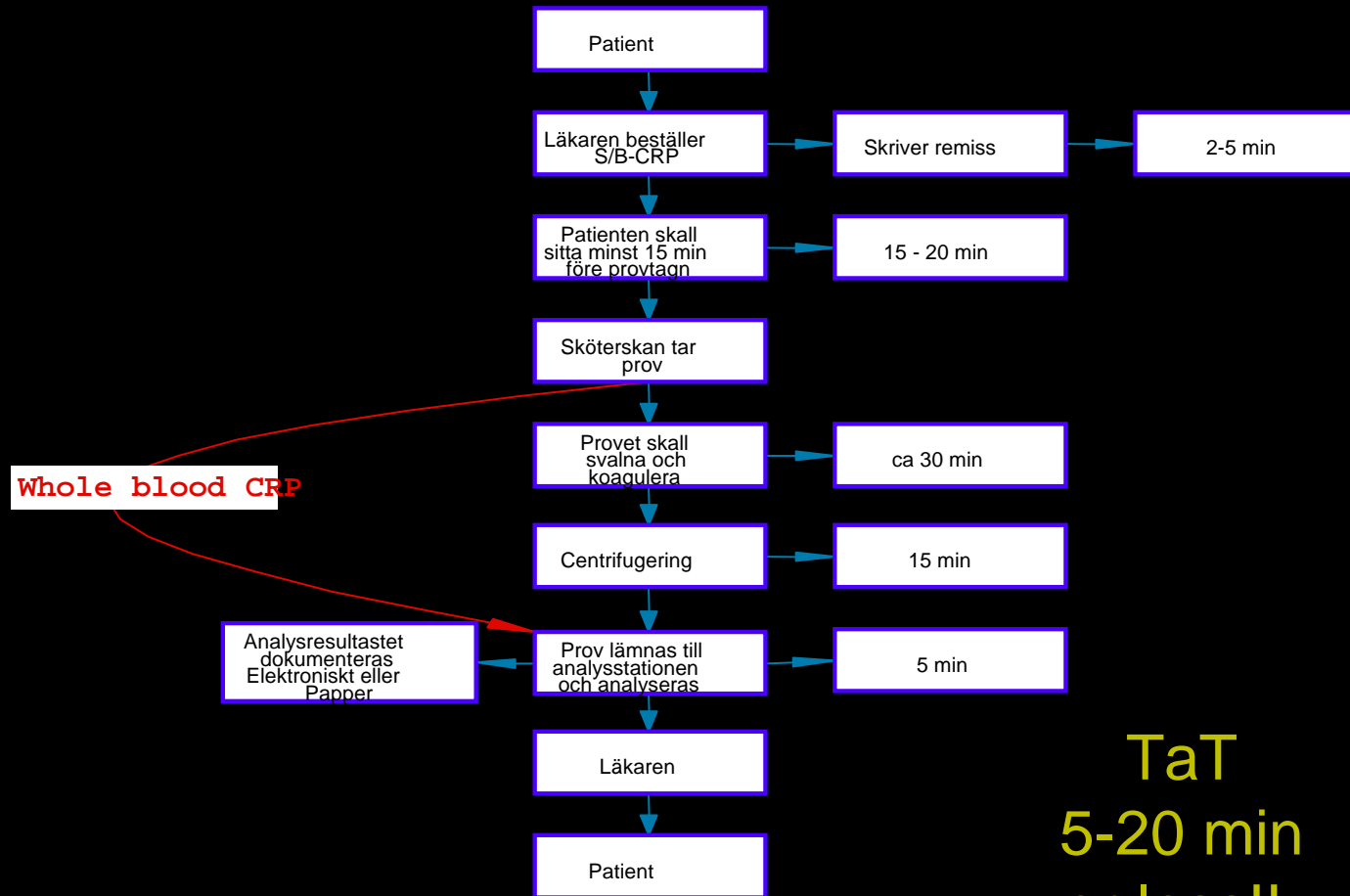
- To facilitate patient care !
- To decrease health-care cost/pat !
- By decreasing patient TaT
- By decreasing lab TaT
- But not always !

Routine assays



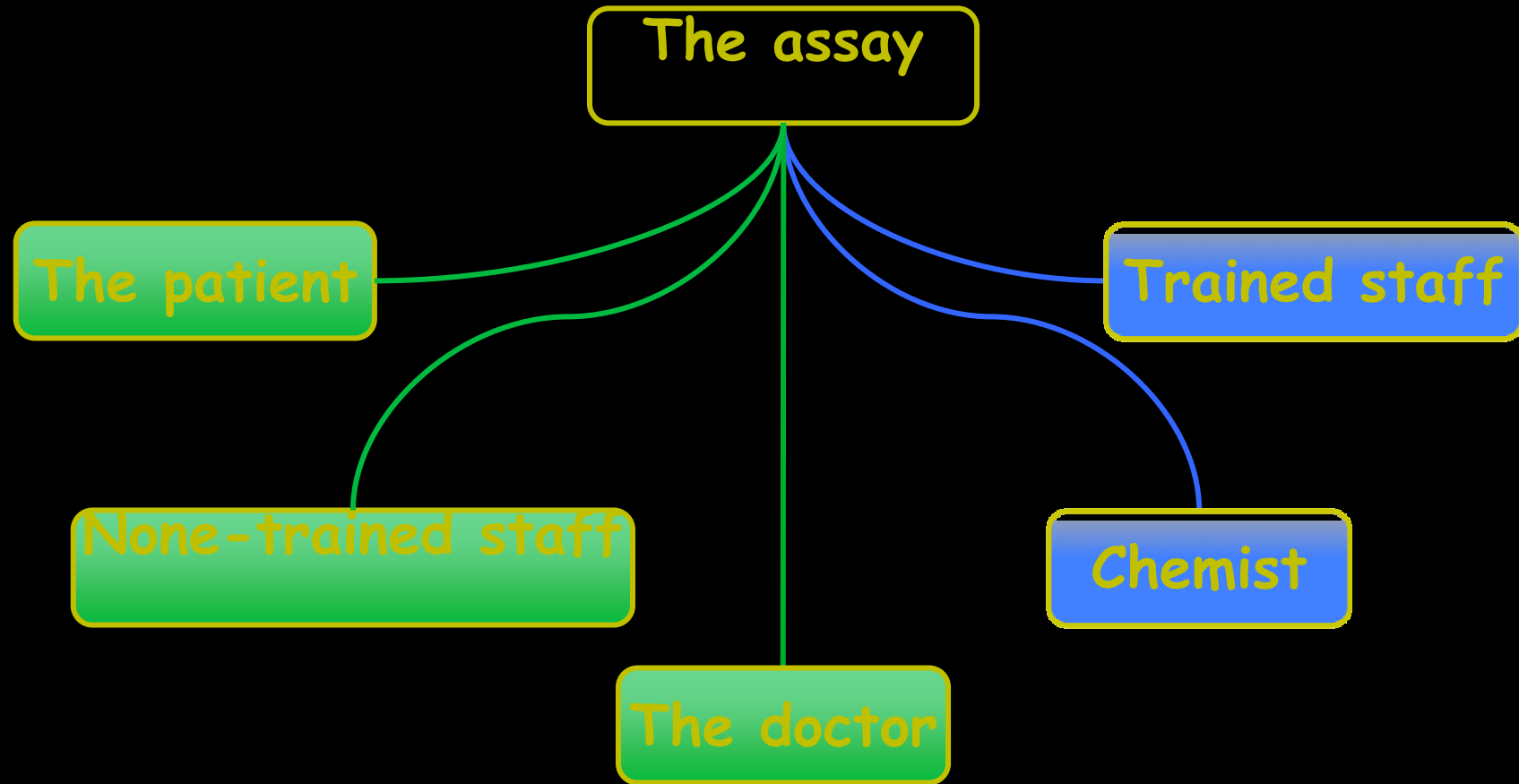
TaT
2-24 h
or much
more!!

POC assays



TaT
5-20 min
or less!!

By whom shall the POC assay be done



Important with support from the Clinical Chemistry Lab

Where shall the POC assay be done

Point of Care Testing

At home

GPs office

Health care centers

General ward unit

Intensive care unit

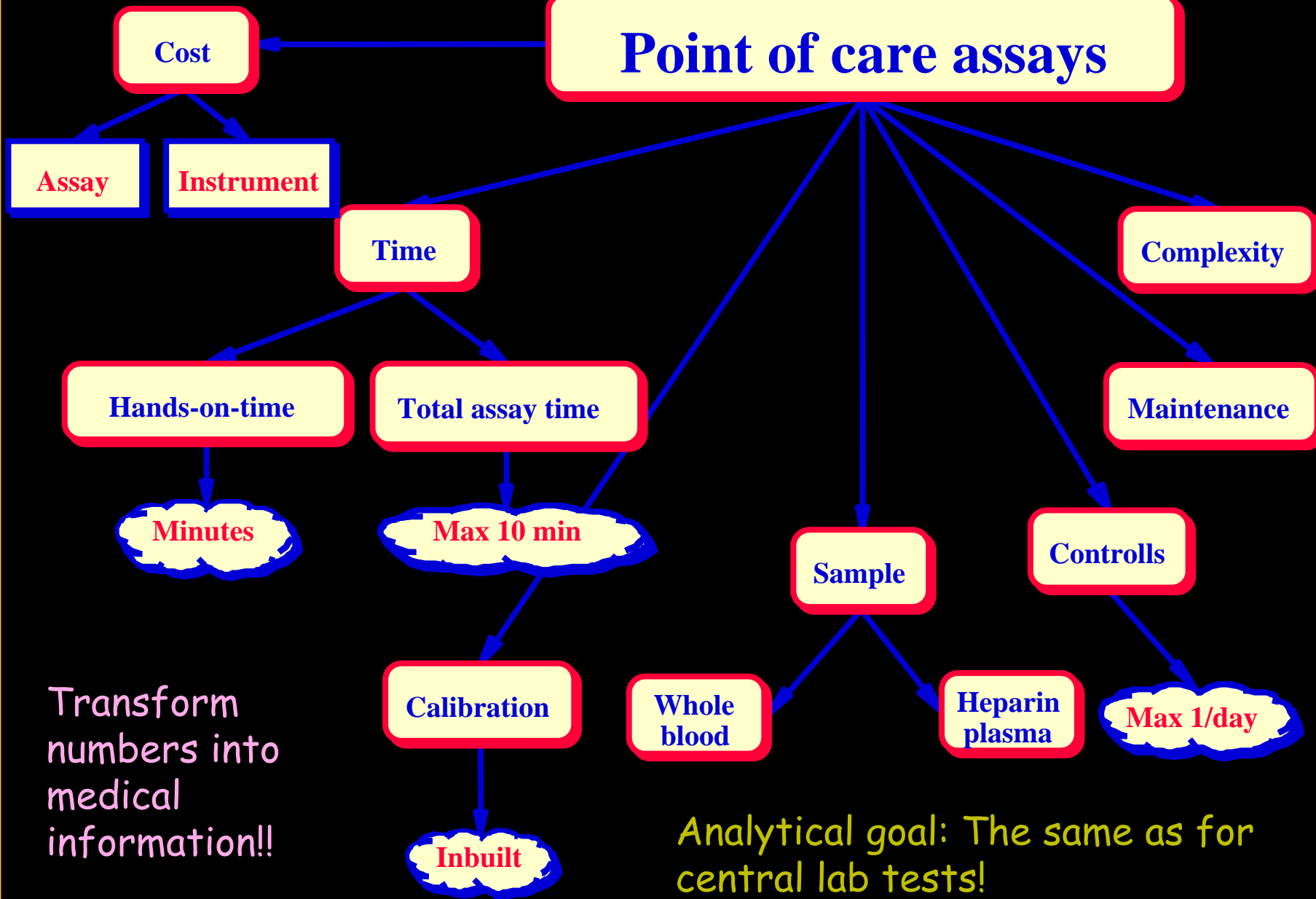
Cardiac intensive
care unit

Emergency room

Infectious ward unit

Important with support from the Clinical Chemistry Lab

Point of care assays



Transform numbers into medical information!!

Analytical goal: The same as for central lab tests!

POCT at Akademiska Hospital 2007

250.000	Bloodgas assays /year
170.000	Blood glucose /year
60.000	Hemoglobin /year
≈15.000	Troponin I /year (>50%)

- 2 Stratus in the Cardiac intensive care unit and
- 2 Stratus in the emergency department
- 4 Micro-dialysis systems at the neuro-surgery dept
- 3 Micros CRP blood cell analyzers

Also urine tests, ESR and CRP, HbA1c, coagulation tests
and Strep A

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Is there an unmet need for POC tests?

Define an unmet need! - Provide a simple solution!!

Which lab-tests? Acute diseases in the intensive care and the emergency room

Inflammatory markers	CRP, Cytokines, Inflammation Cell markers, Lactate
Infectious disease markers	Fast typing of virus / bacteria
Cardiac markers	Troponin, BNP
Kidney function markers	Cystatin C, NGAL, U-Albumin, others?
Brain markers	S-100 B, GFAP, NFL, Tau, ??
Coagulation markers	D-dimer, AT, Prothrombin F1+2, Activated protein C-protein C inhib (APC-PCI-complex), APT-time, AT
Pancreatic marker	Lipase ?
Hepatic markers	Function markers, fibrosis markers, ??
Diabetes	Glucose, HbA1c, Cystatin C
Nutrition markers	Transthyretin, Albumin, others, ??

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Which lab-tests? - Chronic diseases

Is there an unmet need?

Inflammatory

RA, SLE, IBD

Infectious disease

Viral load

Cardiac

Heart failure (BNP / NT-pro BNP)

Renal diseases

Cystatin C, others?

Coagulation

Prothrombin time, APT-time, D-dimer

Diabetes

Glucose, HbA1c, Cystatin C,

Urine albumin/crea

Cancers (different types)

Tests to monitor disease stability ??

Nutrition markers

Transthyretin, Albumin, others, ??

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Which lab-tests? - Health care and future risk reduction

Inflammatory diseases

Cardio-vascular diseases

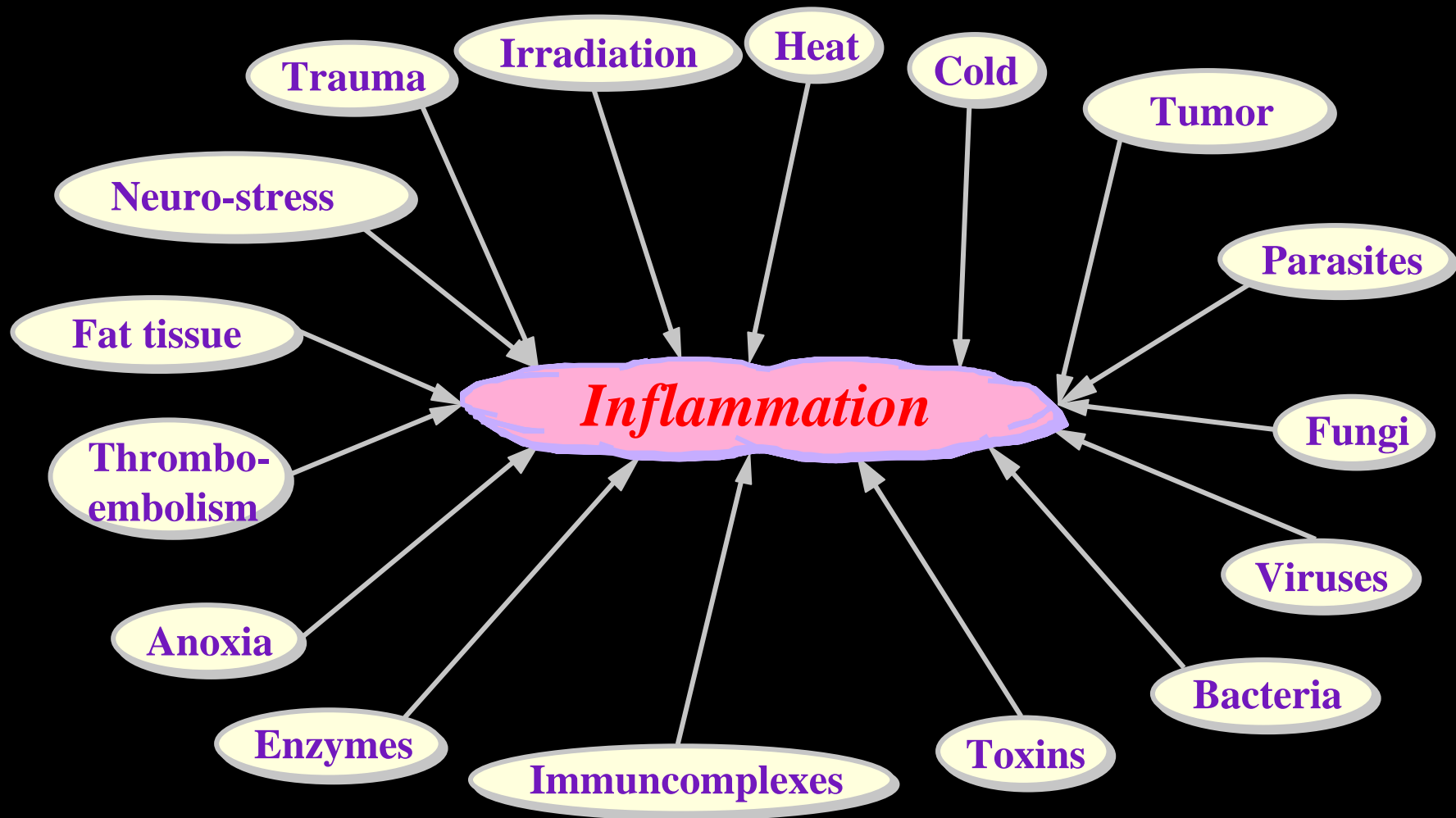
Kidney function

Metabolic syndrom and diabetes

Cancer

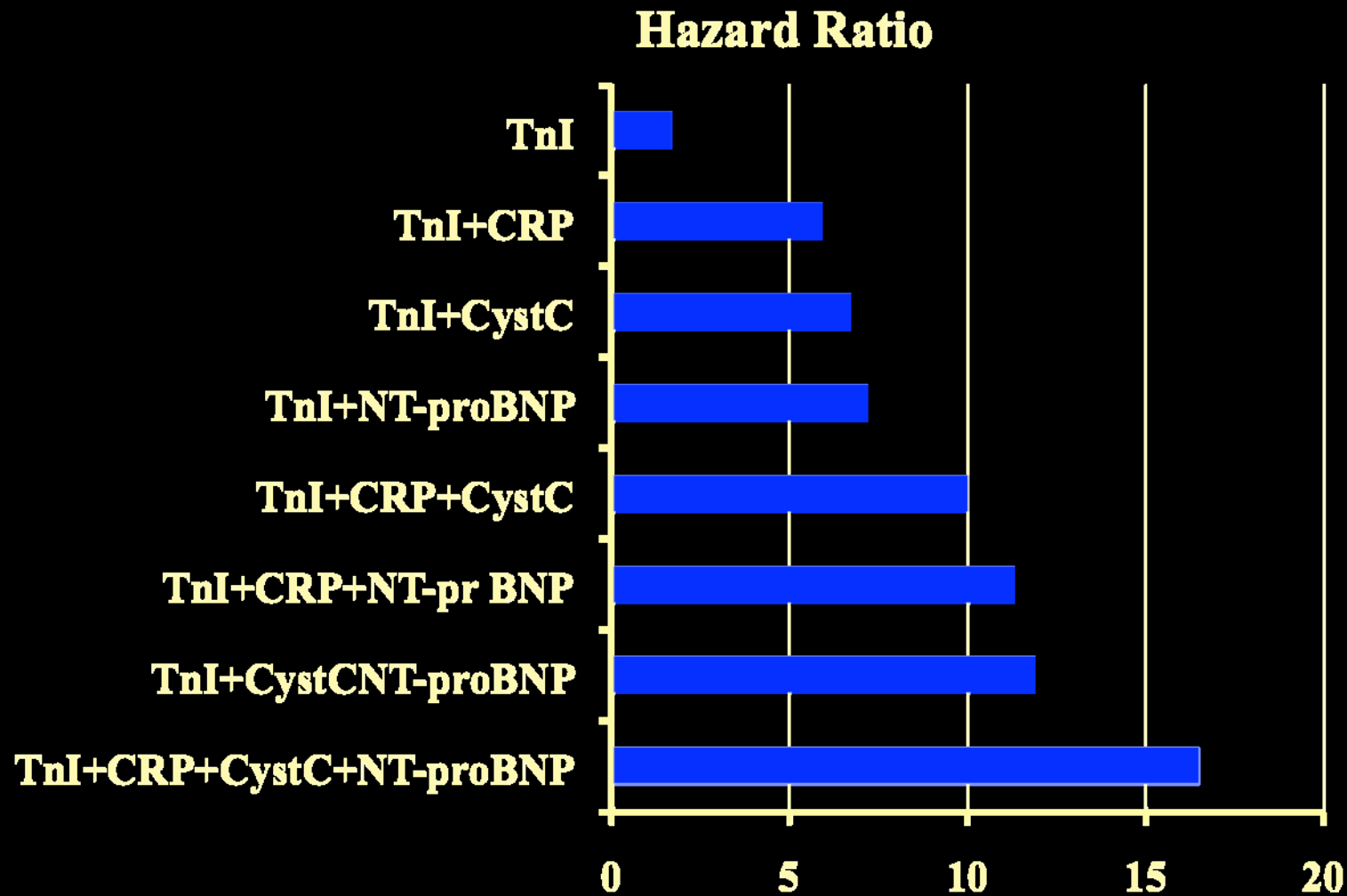
Define an unmet need! - Provide a simple solution!!

Inflammatory stimuli



Different inflammatory stimuli inducing release of pro-inflammatory cytokines (IL-6, IL-8 and tumor necrosis factor alfa (TNF- α))

Use of Multiple Biomarkers to Improve the Prediction of Death from Cardiovascular Causes: ULSAM



ULSAM: a community-based cohort of elderly men

B Zethelius et al N Engl J Med 2008;358:2107-16.

How can new diagnostic methods contribute in healthcare?

What are doctors looking for?

Better support in their clinical decision makings, which includes:

- more accurate diagnosis

- reliable prognostic estimation

- tools for therapy stratification and monitoring

Rapid answers to the patient in order to:

- reduce the need for later reevaluation of the patient

- provide the patient with maximal information at the doctor's visit

How can new diagnostic methods contribute in healthcare?

What are doctors looking for?

More accurate diagnostic and prognostic markers for cardio-vascular disease

Markers for the distinction between bacterial and viral causes of acute infections

Markers for inflammatory and/or chronic diseases

Should my patient be prescribed antibiotics?

49% of all patients visiting a primary health care unit in Sweden called the doctor because of symptoms of acute infection.

And how can we slow down the increase in antibiotic resistance?

Some conclusions

Internists base their clinical management to 70-80% on laboratory tests

Primary care doctors base their clinical management to 10-20% on laboratory tests

Laboratory testing is an efficient means to save money in health care since it provides the doctor with:

- more accurate diagnosis
- more reliable prognostic estimation
- better tools for therapy stratification and monitoring

Transform numbers into medical information!!

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Why easy in Sweden to decentralize Lab-tests

- No reimbursement system
- Certified lab-staff in primary health care labs

A photograph of a sunset over the ocean. The sun is a bright yellow-orange orb on the horizon, with a gradient of colors from orange to brown in the sky above. The water below is dark blue with small waves. The entire image is framed by a black border with four yellow star-shaped corner markers.

Merci beaucoup!

Thank you!

Tack för mig!