

**Bone Scan Index (BSI) –
A Nuclear Medicine Imaging Biomarker in
Metastatic Prostate Cancer**

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13:00 Introduction

Prof. Lars Edenbrandt, Medical and Scientific Director, EXINI Diagnostics AB, Sweden.

13:10 What is BSI? - Its History and Technique

Clinical Prof. Kenichi Nakajima, Department of Nuclear Medicine, Kanazawa University, Japan.

13:20 BSI as an Analytically Validated Imaging Modality

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13:40 Clinical Impact of BSI

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13:50 Clinical Utility of BSI in Sweden

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14:00 Round Up and Q&A

Clinical Prof. Kenichi Nakajima, Prof. Lars Edenbrandt

EXINI

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metastatic burden in bone

<http://bonescanindex.org>

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Biomarker –

A characteristic that is **objectively** measured and evaluated as an indicator of

- normal biological processes,
- pathogenic processes, or
- pharmacologic responses to a therapeutic intervention.

The biomarker definitions working group of the National Institutes of Health

Clinical need – Imaging

Diagnostic imaging is an important part of the evaluation of patients with for example known or suspected cancer

- diagnosis
- prognosis
- treatment response
-
-

Clinical need – Biomarkers

Personalized medicine – tailoring medical treatment to the individual characteristics, needs and preferences of each patient

Biomarkers – useful tools in the decision-making process for personalized treatment

Clinical need – Imaging

The European Society of Cardiology recommends that patients with stable angina or silent ischemia with “**proven large area of ischemia (>10%)**” should receive revascularization




Table 8 Indications for revascularization in stable angina or silent ischaemia

	Subset of CAD by anatomy	Class ^a	Level ^b	Ref. ^c
For prognosis	Left main >50% ^d	I	A	30, 31, 54
	Any proximal LAD >50% ^d	I	A	30–37
	2VD or 3VD with impaired LV function ^d	I	B	30–37
	Proven large area of ischaemia (>10% LV)	I	B	13, 14, 38
	Single remaining patent vessel >50% stenosis ^d	I	C	—
	IVD without proximal LAD and without >10% ischaemia	III	A	39, 40, 53
For symptoms	Any stenosis >50% with limiting angina or angina equivalent, unresponsive to OMT	I	A	30, 31, 39–43
	Dyspnoea/CHF and >10% LV ischaemia/viability supplied by >50% stenotic artery	IIa	B	14, 38
	No limiting symptoms with OMT	III	C	—


^aClass of recommendation.

^bLevel of evidence.


^cReferences.



European Heart Journal (2010) **31**, 2501–2555
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ESC/EACTS GUIDELINES



Guidelines on myocardial revascularization

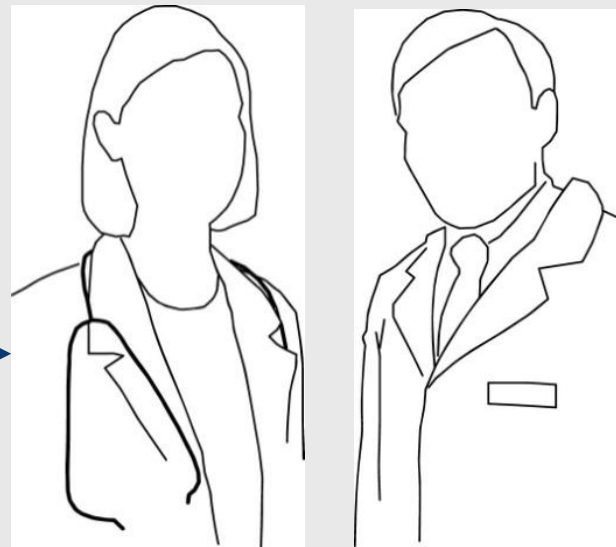
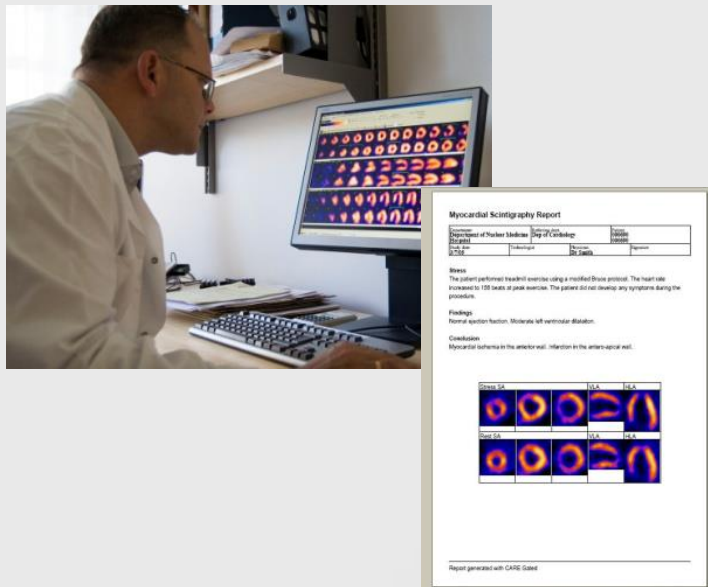
The Task Force on Myocardial Revascularization of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Developed with the special contribution of the European Association for Percutaneous Cardiovascular Interventions (EAPCI)[‡]

Authors/Task Force Members: William Wijns (Chairperson) (Belgium)*, Philippe Kolh (Chairperson) (Belgium)*, Nicolas Danchin (France), Carlo Di Mario (UK), Volkmar Falk (Switzerland), Thierry Folliguet (France), Scot Garg (The Netherlands),

Downloaded from <https://eurheartj.ahajournals.org/>

Problem – Imaging Report



Trägårdh et al. *EJNMMI Research* 2012, **2**:27
<http://www.ejnmires.com/content/2/1/27>

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ORIGINAL RESEARCH

Open Access

Referring physicians underestimate the extent of abnormalities in final reports from myocardial perfusion imaging

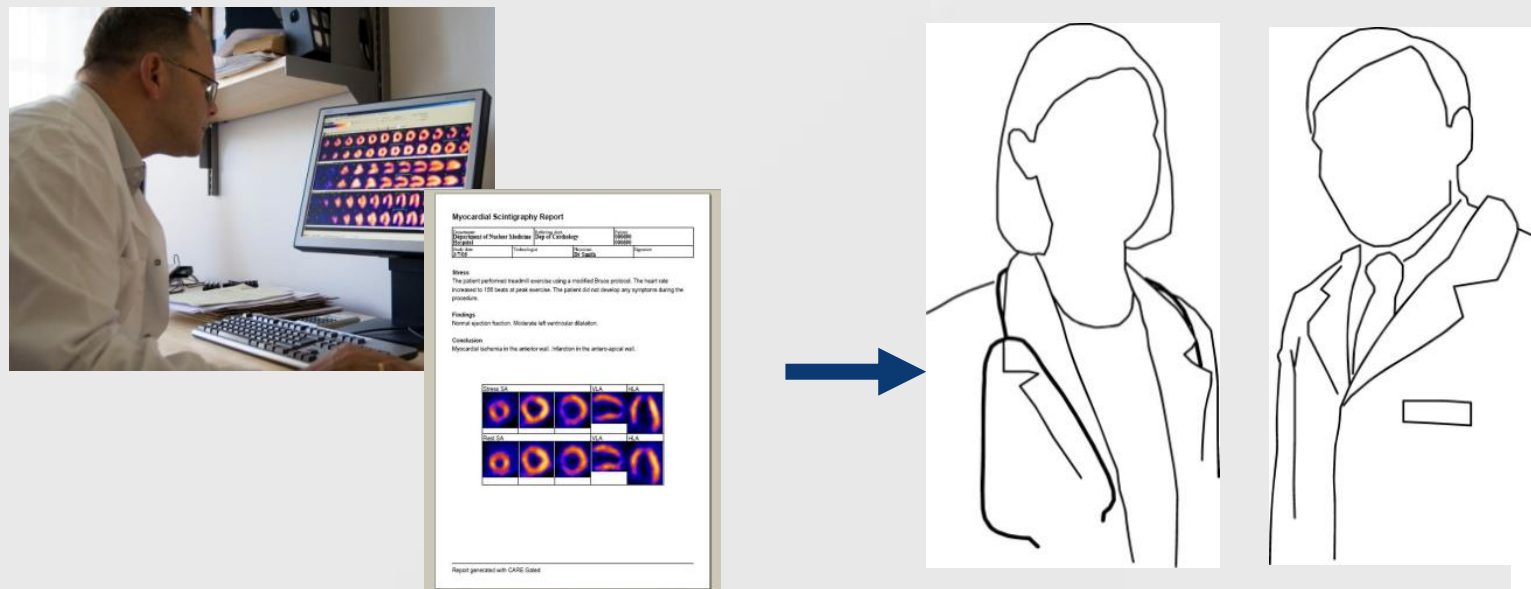
Elin Trägårdh^{1*}, Peter Höglund², Mattias Ohlsson³, Mattias Wieloch⁴ and Lars Edenbrandt¹

Abstract

Background: It is important that referring physicians and other treating clinicians properly understand the final reports from diagnostic tests. The aim of the study was to investigate whether referring physicians interpret a final

not “objectively measured”

Solution – Imaging Biomarker



**Biomarker candidates
extent, SDS,**

Trägårdh et al. *EJNMMI Research* 2012, **2**:27
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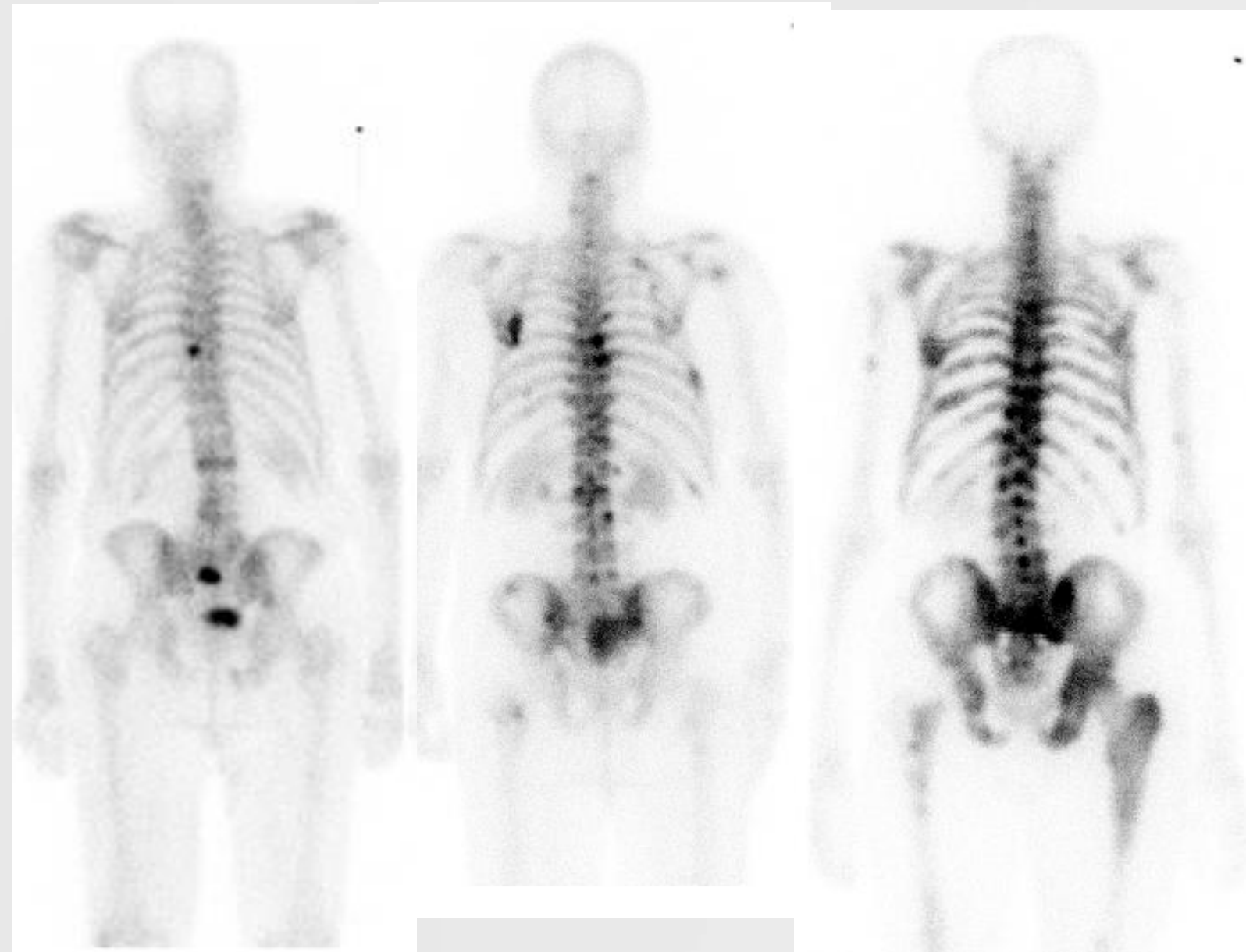
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EXINI

Imaging – Opportunity



Imaging – Problem

How to incorporate information from imaging reports with other data

Memorial Sloan-Kettering Cancer Center
[Prediction Tools](#) ▶ [Prostate Cancer Nomograms](#) ▶ [Hormone Refractory](#)

mskcc.org
PREDICTION TOOLS
 Change Prediction Tool ▼

TEXT SIZE ⏴ ⏵

Prostate Cancer Nomograms: Hormone Refractory

For patients with advanced, metastatic prostate cancer that has been treated maximally with hormone therapy to control the effects of the male hormone, androgen. The nomogram predicts the survival probability one to two years later. To learn more, visit our [frequently asked questions](#).

Enter Your Information Clear Calculate ▶


To gather the information required below, download our PDF [worksheet](#).

Current Age	<input type="text" value="75"/> (40 to 85 yrs)
KPS (Karnofsky Performance Status) <small>KPS value, assigned by a physician, nearest to the planned treatment start date or today's date.</small>	<input type="text" value="70"/>
Hemoglobin <small>HGB value from the laboratory report nearest to the planned treatment start date or today's date.</small>	<input type="text" value="10"/> (6 to 17 g/dl)
PSA <small>PSA value from the laboratory report closest to the planned treatment start date or today's date.</small>	<input type="text" value="75"/> (0.01 and 8450 ng/ml)
LDH (Lactate Dehydrogenase) <small>LDH value from the laboratory report closest to the planned treatment start date or today's date.</small>	<input type="text" value="200"/> (116 to 1955 IU/L)
ALK (Alkaline Phosphatase) <small>ALK value from the laboratory report closest to the planned treatment start date or today's date.</small>	<input type="text" value="50"/> (19 to 3079 IU/L)
Albumin <small>Albumin value from the laboratory report closest to the planned treatment start date or today's date.</small>	<input type="text" value="4"/> (2.6 to 5.2 g/dl)

Your Results

[Learn more](#) about your results below.


Survival Probability	1 Year	44%
	2 Year	12%
Median Survival Months	11	

 **Print These Results**

Make an Appointment

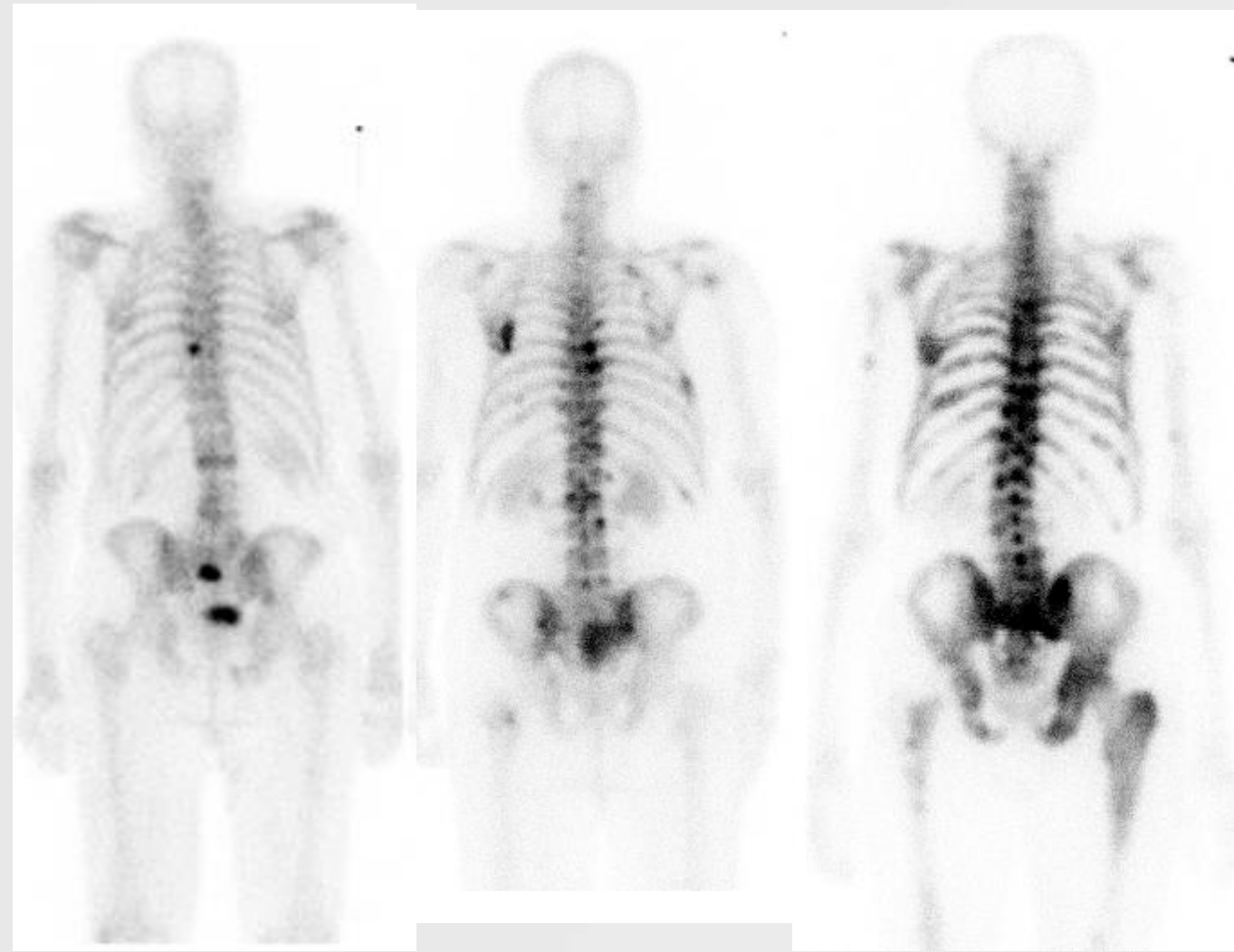
Call us to schedule an appointment or contact us online

[Contact Us ▶](#)



Imaging – Solution an Imaging Biomarker

Bone Scan Index	0.7	2.2	8.1
5 year survival probability	42%	31%	0%



5 year survival probability for all patients with bone metastases
24%

BSI – A Nuclear Medicine Imaging Biomarker in Metastatic Prostate Cancer

It is time to be quantitative in our image analysis of cancer patients

BSI is an **objectively measured** quantitative expression of
skeletal tumour burden as seen on bone scans

=

Imaging Biomarker

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