Croatia and the EU:
Together
Against Cancer

IMPROVEMENT OF QUALITY OF THE NATIONAL CANCER SCREENING PROGRAMMES IMPLEMENTATION (CRO SCREENING)

MINISTRY OF HEALTH OF THE REPUBLIC OF LITHUANIA
NCI
LITHUANIAN UNIVERSITY OF HEALTH SCIENCES
CPVA
NIJZ Nacionalni institut za javno zdravje
Ministry of Health
HZJZ HRVATSKI ZAVOD ZA JAVNO ZDRAVSTVO

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Training in Organization and implementation of Breast Cancer Screening Programmes

Lecture and related workshop:

"Diagnostic histopathology of breast diseases and breast biopsy in screening" by Dr. Nives Jonjić

Rijeka, Wednesday, February 01, 2017

Croatia and the EU: Together Against Cancer

Breast Imaging reporting and data System (BI-RADS)

Category	Probability of malignancy	Action
0 need additional imaging evaulation		spot compression, manif., add. views, US
1 negative	0%	screening
2 benign finding	0%	screening
3 probably benign	?	shorter interval of monitoring
4 suspicious abnormality	> 2%	assessment - minimal invasive biopsy
5 highly suggestive of malignancy	>95%	assessment - minimal invasive biopsy
6 prove of malignancy		

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Minimal invasive breast biopsy is performed when a mammogram shows a breast abnormality such as:

- a suspicious solid mass
- microcalcifications (a tiny cluster of small calcium deposits)
- a distortion in the structure of the breast tissue
- an area of abnormal tissue change
- a new mass or area of calcium deposits present at a previous surgery site

Sampling technique

- Fine needle aspiration cytology (FNAC)
- Core needle biopsy (NCB)

Wide core techniques:

- Vacum-assisted biopsy (VAB)
- Large core radiofrequency assisted biopsy

VAB under ultrasound guidance in an outpatient setting with local anaesthesia and using the free hand technique

Minimal invasive breast biopsy (MIB)

Core needle biopsy (NCB):

- Ultrasound quided core biopsy
- Stereotactic quided core biopsy
- Prone sterotactic core biopsy

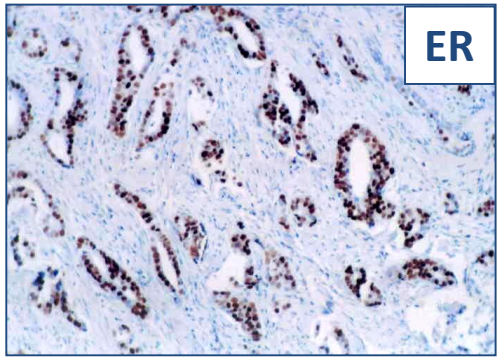
Needle core biopsy (NCB)

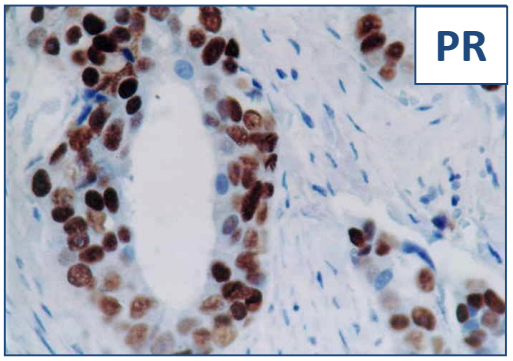
- well suited to palpable or non-palpable masses
- able to characterize lesions more completely than FNAC and can provide a definitive diagnosis in a higher proportion of cases
- allows better characterization of lesions associated with microcalcification than FNAC
- may differentiate between invasive and in situ carcinoma

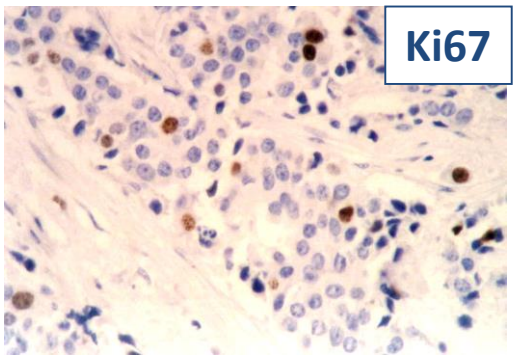
Needle core biopsy (NCB)

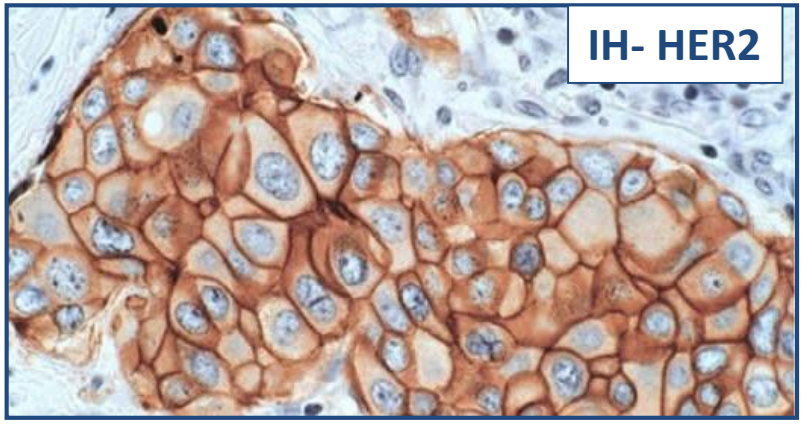
Advantages:

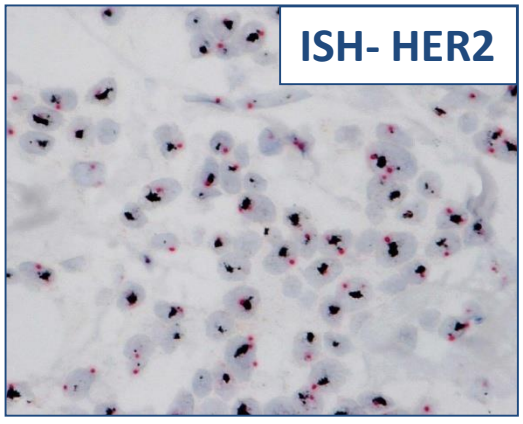
- helps in differential diagnosis
- allows the use of immunohistochemistry
- allows assessment of steroid receptors and Her2 status for neoadjuvant treatment











Needle core biopsy (NCB)

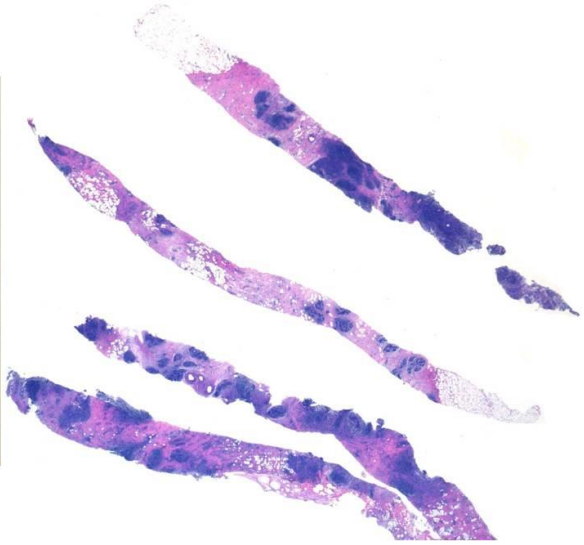
Disadvantages:

- may be insufficient for microcalcification

Interpretation of NCB requires experience and knowledge of complex breast lesions!

Core biopsy specimen information (required):

- clinical data: details of medical history and clinical dana (location of biopsy, clinical findings)
- imaging classification should be used to indicate the radiologist's degree of suspicion such as BI-RADS
- radiologic features of the lesion (i.e. spiculate mass, stellate lesion, well defined mass, microcalcificationS, architectural distortion), including size, and distribution especially in case of microcalcification
- number of cylindres



- histologic sections 4μm thick and of high quality
- at least 3 levels from each block for masses and/or arhitectural distorsions
- 4 levels at 20μm intervals for microcalcifications

The Royal College of Pathologists
Pathology: the science behind the cure

Guidelines for non-operative diagnostic procedures and reporting in breast cancer screening. June 2016

Core biopsy reporting categories

- **B categories** do not represent a pathologic diagnosis but a code for the assessment of histological status which without a definitive diagnosis, may guide a decision on further management. Thus, most of the samples can be immediately categorized as normal, benign or malignant.
- The system consists of 5 reporting catogeries.
- Should be used outside the screening program but not for excision specimens including those by vacum-assisted techniques (excision).
- Five categories – designed histological nature and not clinical or imaging characteristic
- Multidisciplinary discussion – for judgement wheather a sample is adequate

Core biopsy reporting categories

Category		Description
B1		Normal tissue/uninterpretable
B2		Benign lesion
B3		Lesion of uncertain malignant potential
B4		Suspicious of malignancy
B5		Malignant
	B5a	In situ carcinoma
	B5b	Invasive carcinoma
	B5c	Invasive status not assessable
	B5d	Other malignancy

B1. - Normal tissue

Appropriate for normal tissue whether or not breast glandular structures are present:

- normal breast ducts and lobules
- mature adipose/fibrous tissue

May indicate – lesion is not sampled - but correlates with hamartomas and lipomas

B1. - Normal tissue

Appropriate for normal tissue whether or not breast glandular structures are present:

- minor architectural distortions (sligh increase in stromal fibrous)*
- involuted lobules and microcalcifications < 100µm*
- minor degrees of fibrocystic change*
- lactational changes

* Correlation with mammogram (multidisciplinary meeting)

Loss of microcalcification

Reason	Microcacification detection (MC)		Solution
	Specimen radiogram	Histoloy	
No MC in MIB	-	-	Re-MIB
Aspiration ofMC during VACNB	-	-	Radiogram od aspirate debris
Fixation in Glyoxal	+	-	Avoid Glyoxal fixation
Eccentric superficial localisation of MC	+	-	Careful trimming to the very first level of paraffin blocks, avoid frozen sectioning

B1. - Normal tissue/uninterpretable

Uninterpretable:

- excessive crush artefact or composed of blood clot only

B1 report should include a description of the components present and comment should be made regarding the presence of breast epithelial structures.

B2. - Benign lesion (abnormality)

- Fibroadenoma
- Fibrocystic change
- Sclerosing adenosis
- Duct ectasia
- Abscess
- Fat necrosis

Skin lesion – definitive diagnosis for adnexal tumors difficult – B3

B3. - Lesion of uncertain malignant potential

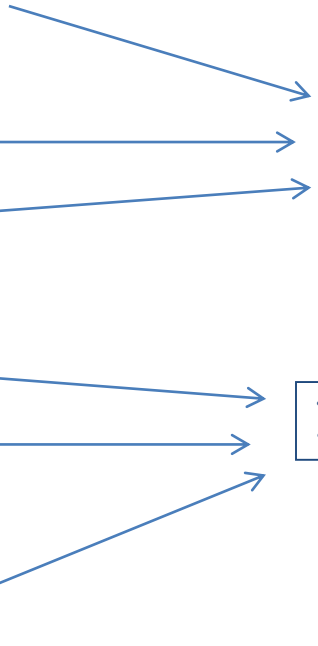
- Benign abnormal findings with an incrased risk of synchronously associated malignancy.

- Lessions more often associated with malignancy which may be missed in the biopsy (sampling error)

- Lesions with heterogeneous composition - atypical or malignant proliferation may not be detected

B3. - Lesion of uncertain malignant potential

- Atypical intraductal epithelial proliferation
- Flat epithelial atypia
- Lobular neoplasia
- Phyllodes tumor
- Papillary lesion
- Radial scar
- Mucocele-like lesion
- Rare lesions



Well documented association with DCIS or invasive carcinoma

Intralesional heterogeneity

B4 - Suspicious

Malignant features present but insufficient for definite diagnosis

- crushed or poorly fixed cores
- small groups of neoplastic cells contained within blood clot or adherent to the outer aspect of the sample
- small foci suspicious of invasive carcinoma (insufficient for IH)
- incomplete involvement of duct space by highly atypical epithelial process (necrosis noT present)

B4 - Suspicious

Malignant features present but insufficient for definite diagnosis

- non-high grade intraductal proliferation with few involved duct spaces – "at least ADH, probably low-grade DCIS"
- lobular neoplasia – difficult to classify LCIS or DCIS, or non-pleomorhic LCIS with necrosis – B4 category

B5 - Malignant

- B5a- in situ malignancies

  DCIS of all grades and pleomorphic LCIS (classical lobular neoplasia is B3)

- B5b- all invasive primary breast carcinomas and rare invasive malignancies including malignant phyllodes, lymphoma and metastatis tumours

- B5c - invasive status not assessable

B5b - invasive

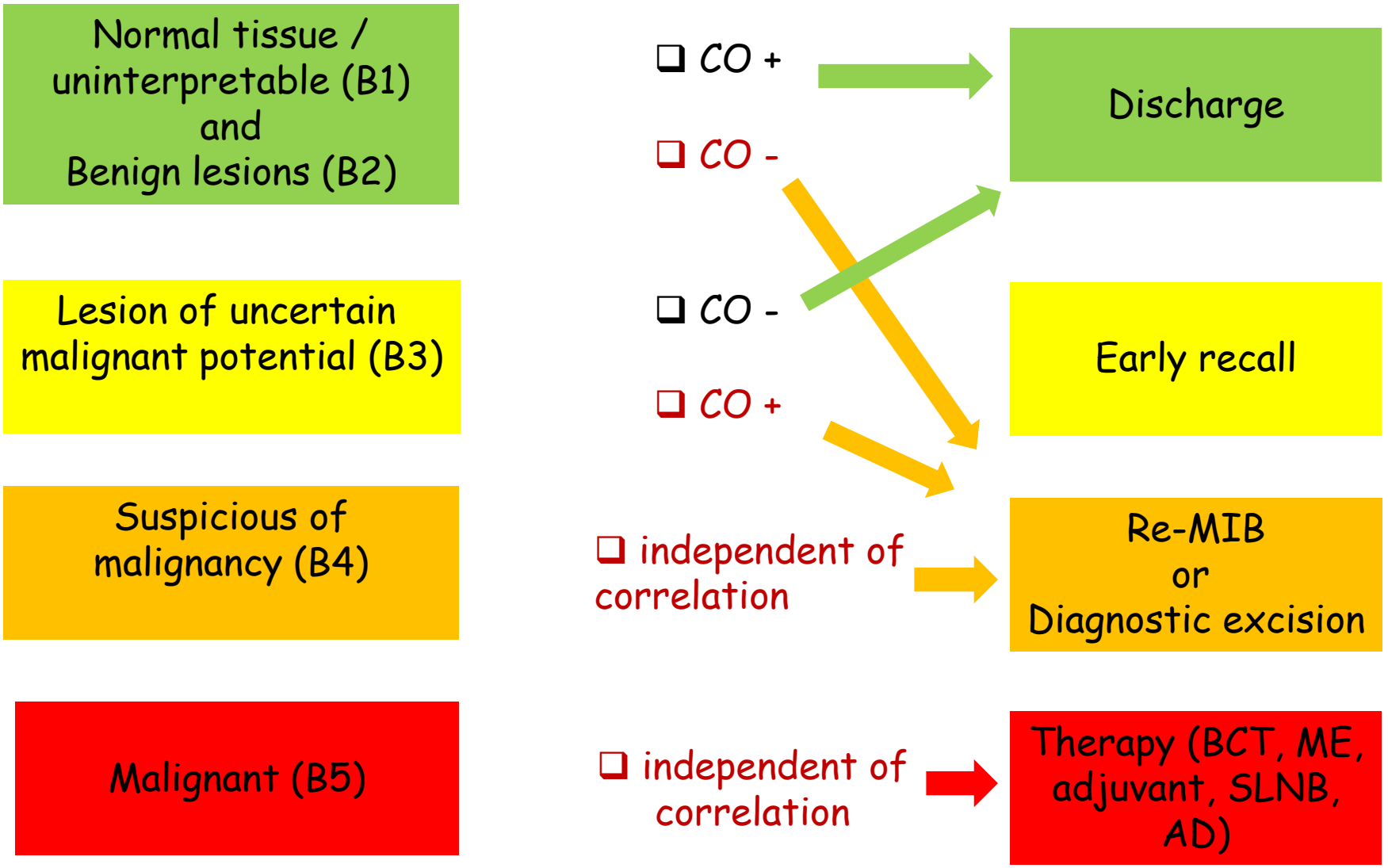
Assessment of prognostic and predictive factors

- grade and type of invasive carcinoma
- concordance between grade on NCB and definitive excision appr. 70% (provisional core grade – suggested, particular mitotic count lower)
- histological grade on core biopsy of nodal metastases
- histological type useful – identifaction of patients with invasive lobular carcinomas (MRI – conserving surgery – identification of multifocal disease)
- grade and type useful – neo-adjuvent therapy – no residual tumor
- ER and HER2 – correlate with subsequent excision specimens (standard protocol and methods of assessment)

The team approach in MIB

1. **To correlate radiology and pathology**
2. To decide the final assessment outcome
3. To formulate a recommendation for the patient's management

Influence of radiologic-pathologic correlation on interpretation of B categories



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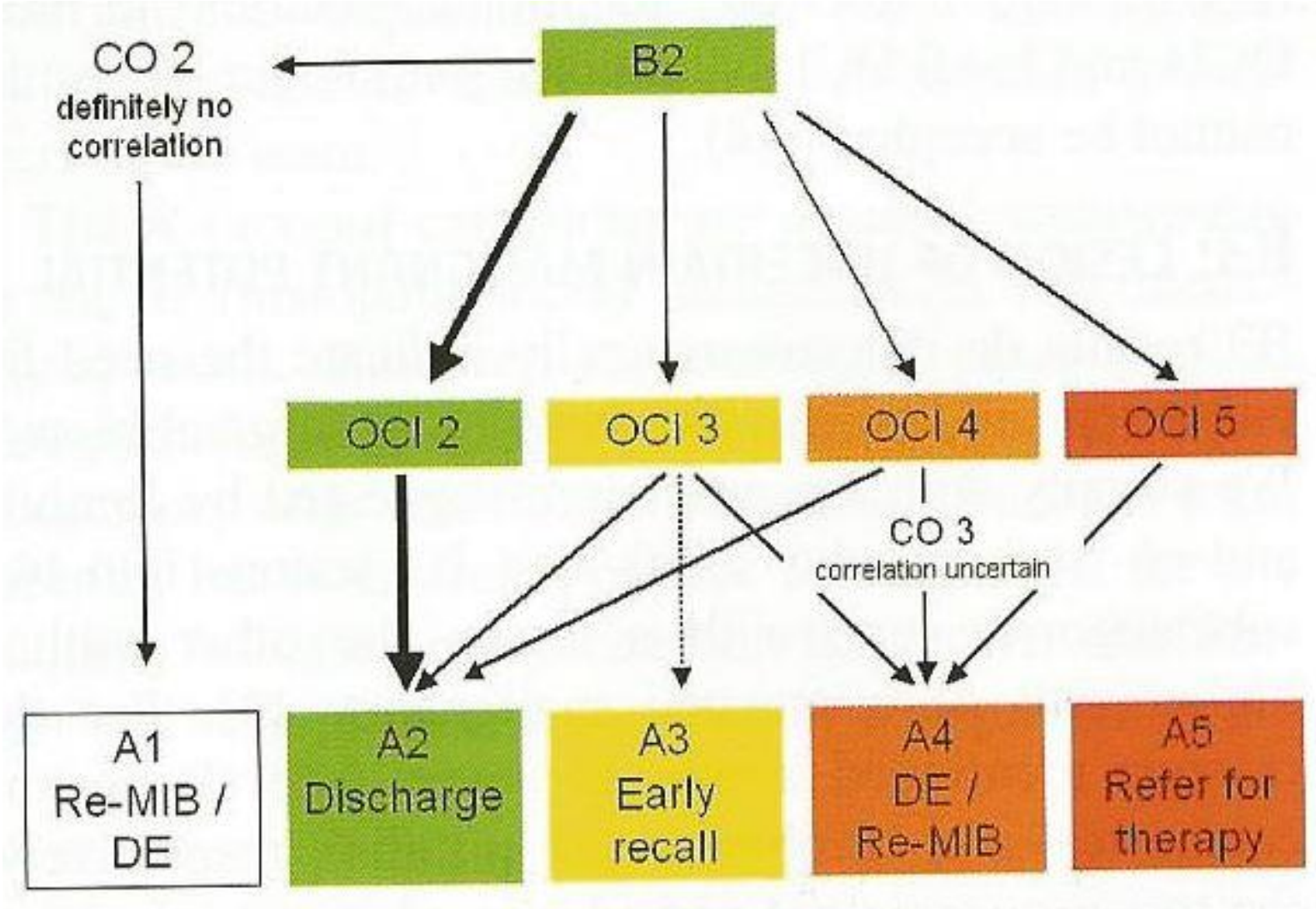
Algoritam for outcome decision – in the multidisciplinary team



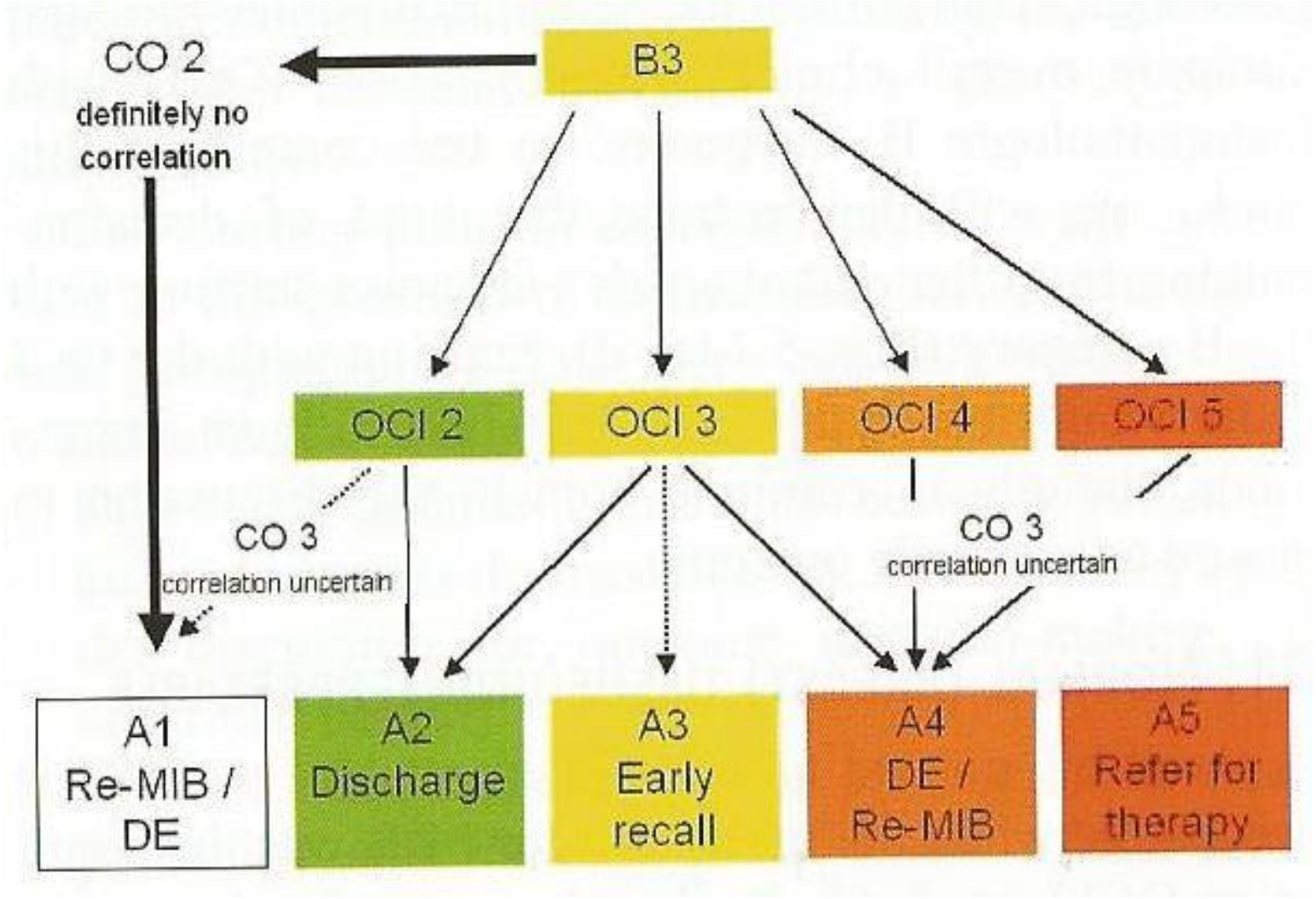
CORRELATION SCORE (CO)

CO 1 – definite correlation
CO 2 – definite lack of correlation
CO 3 – correlation uncertain

OVERALL CLINICAL AND IMAGING SCORE (OCI)

OCI 1 - normal
OCI 2 - benign
OCI 3 – indeterminate
OCI 4 – probably malignant
OCI 5 – definitely malignant

Preneoplasia of the breast. W. Boecker



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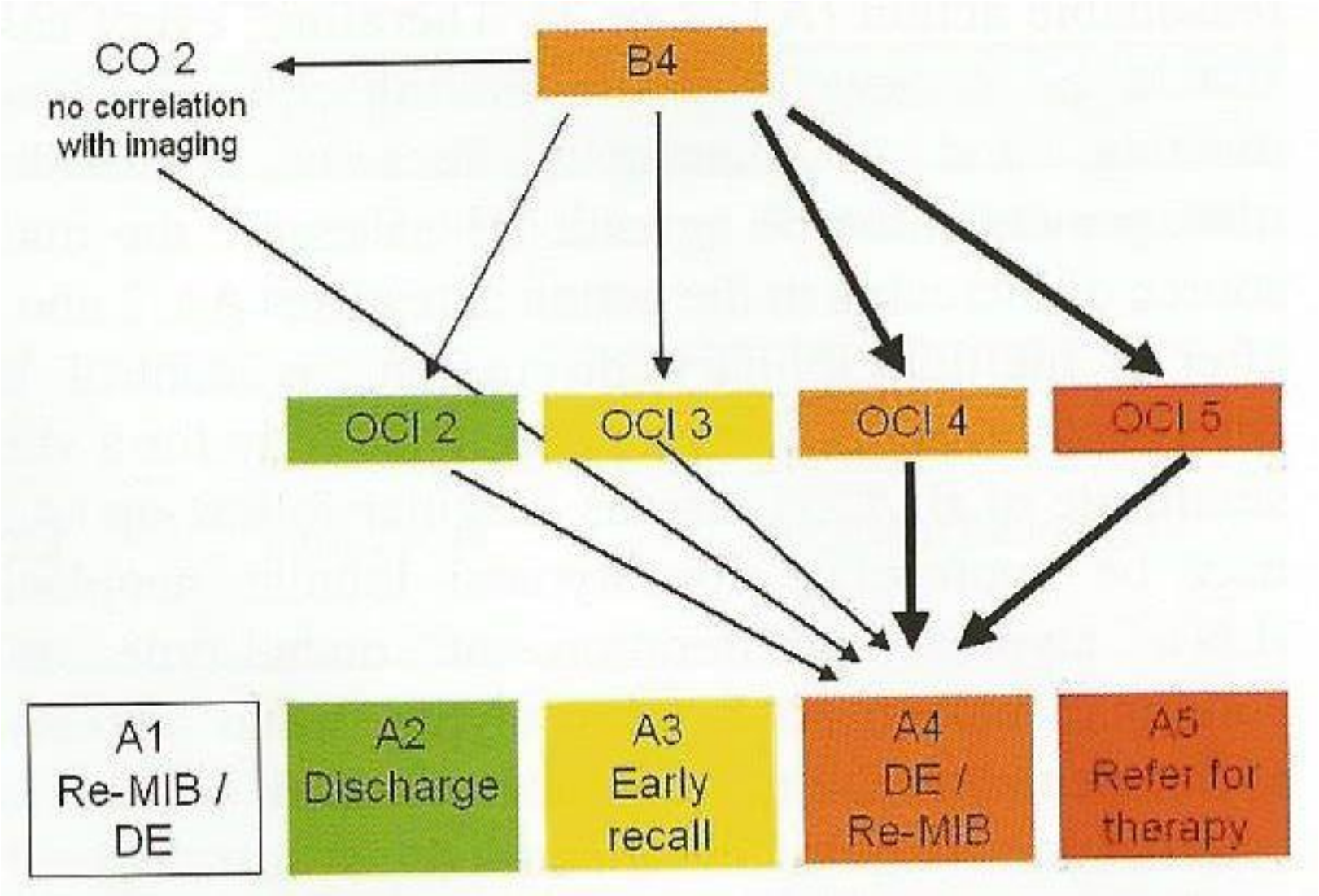

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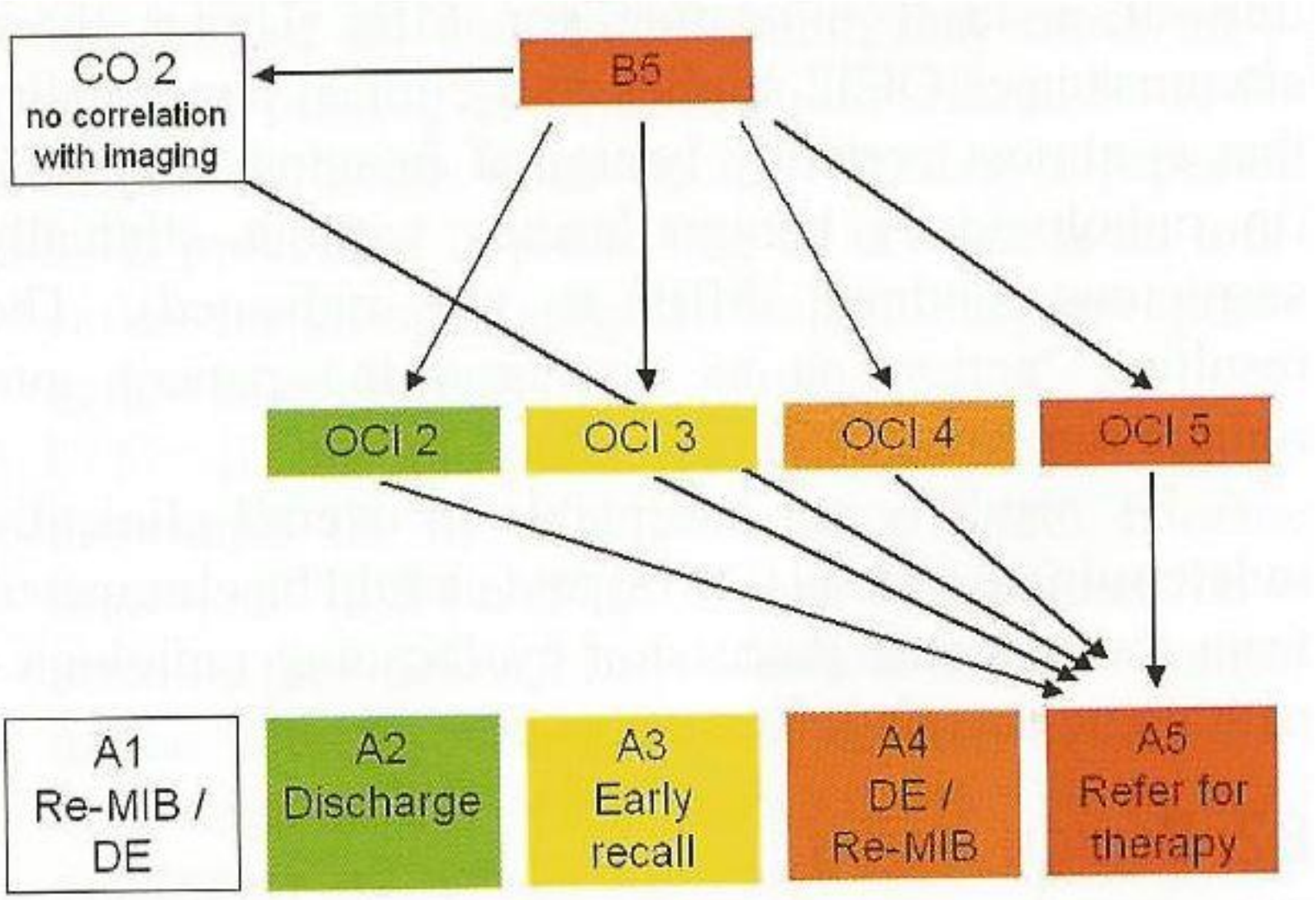

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Conclusion

FNAC and NCB diagnosis should be part of triple assessment in a multidisciplinary meeting to decide on therapy, as overdiagnosis and underdiagnosis may occur.