

Updated Cologne ABC Risk Score for implant treatment – Guideline 2022

Risk assessment at a glance

Among the many continuing professional development (CPD) events in the dental field, the Expert Symposium by BDIZ EDI – European Association of Dental Implantologists is an event that sets standards. After ten years, the paper on the Cologne ABC Risk Score has now been revised and updated. The 17th European Consensus Conference of BDIZ EDI (EuCC) conducted this year's proceedings using remote communication technology. Prof. Dr Jörg Neugebauer presented the results at the 17th Expert Symposium in Cologne.

Held in conjunction with the Expert Symposium, the European Consensus Conference (EuCC) discussed the topic "Cologne ABC Risk Score for Implant Treatment". As every year, the results of the Consensus Conference were condensed into a BDIZ EDI Guideline designed to assist dental implantologists in assessing, ahead of time, in advance the individual complexity of a given implantological procedure, thereby contributing to minimizing risks associated with implant therapy.

On 26 April 2022, the EuCC, hosted by Professor Hans-Joachim Nickenig, discussed a working paper submitted by members of the University of Cologne. Using a simple ABC system, possibly and attractively visualized in four colours, clinicians are given the opportunity to assess the risk of their planned implant treatment.

There are four partial scores:

1. Medical history
2. Local findings
3. Surgical
4. Restorative

Each partial score is given a summary rating, with the results – like the criteria – expressed in terms of the colours green, yellow and orange, corresponding to A, B and C (Always – Between – Complex). If two or more criteria for a partial score are assessed as yellow (for B, medium risk), the entire partial score is deemed to be B (yellow, medium risk). Similarly, four yellow or two orange criteria result in an overall partial score of C (orange, increased risk). The ABC classification is defined as follows:

- **A = Always**
lowest assessed risk, green
- **B = Between**
medium risk, yellow
- **C = Complex**
increased risk, orange

Red is reserved for cases where the risk assessment shows that treatment at issue may not be recommended (which is not the same as being contraindicated). "We do not want to issue any contraindications, but if a partial score is red, the therapy in question may not be recommended," Neugebauer said.

The overall patient assessment for the Cologne ABC Risk Score works as follows:

- If all four partial scores are green, the patient case as a whole is assessed as low-risk (A for Always).
- If at least two of the four partial scores are yellow, the patient case is assessed as medium-risk (B for Between)
- If all four partial scores are yellow, the patient case is assessed as high-risk (C for Complex). The same is true if at least two of the four partial scores are orange or yellow.

Compared to the previous version of the ABC Risk Score, Neugebauer pointed out, certain changes have been made, particularly in the area of medication. One innovation was the classification of antiresorptive drugs (ARD). At high doses, the respective partial score is assessed as red: no bone augmentation and no immediate implant placement recommended. Further drugs were included to reflect new developments in recent years. Local findings now incorporate the prevailing occlusal situation.

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Info

The Cologne ABC Risk Score can be determined as a total score for findings and treatment planning or separately for the different partial scores. The Cologne ABC Risk Score developed by the 17th European Consensus



Conference of BDIZ EDI is available to members as a download, including literature references, at www.bdizedi.org/en/european-consensus-conference/ or using the QR code in this box.



Bundesverband der
implantologisch
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in Europa

European
Association of
Dental
Implantologists

Guideline 2022

Cologne ABC Risk Score for Implant Treatment (Update)

17th European Consensus Conference (EuCC) 2022

April 26, 2022

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1. Methods

1.1. Purpose

This updated Guideline was designed to help dental implantologists to assess, in advance, the individual complexity of a given implantological procedure, contributing to minimizing risks associated with implant therapy. It is an update of the 2007 Guideline.

1.2. Introduction

This consensus paper addresses the general aspects (i.e., those aspects not specific to a given implant design) of implant treatment to eliminate diagnostic and therapeutic uncertainties and to avoid complications. All consensus recommendations in this paper should be considered as guidelines only. The patient's specific situation is always an important consideration and may justify a deviation from the recommendations of this consensus paper.

1.3. Background

Since the first elaboration of the Cologne ABC Risk Score, overall medical treatment concepts with a bearing on implant treatment have evolved. For this reason, Partial Score (Medical history) had to be revised extensively- The more strictly implantological partial scores 2 to 4 were revised according to reflect the current state of our knowledge.

1.4. Literature search

The Cochrane Library, EMBASE, DIMDI and Medline literature databases were used to conduct the search. The searching strategy included selected search terms specific to the corresponding fields and issues. The studies returned by the search were screened by reading the abstracts. Studies found to be irrelevant to the subject were identified and excluded on this basis. All articles that were found to be (potentially) relevant were obtained in full-text form. Few if any randomized controlled trials (RCT) or other systematic clinical studies were available on the various topics.

1.5. Procedure for developing the Guideline/consensus paper

A first draft of the Cologne ABC Risk Score (authored by Professors *Hans-Joachim Nickenig*, *Joachim E. Zöller* and *Jörg Neugebauer*, Interdisciplinary Polyclinic for Oral Surgery and Implantology and Department of Oral and Maxillofacial Plastic Surgery, University of Cologne, Director: Professor Joachim E. Zöller) was made available online to the members of the working group on the day of the consensus conference.

The agenda of the Consensus Conference consisted of four steps: Reviewing the preliminary draft; collecting alternative proposals; discussing non-consensual issues; final voting.

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2. Practical application of the Cologne ABC Risk Score

2.1. Introduction

Descriptions in the literature are limited mainly to classifications or scores applicable only to partial aspects of implant therapy (e.g., classifications for indications). There are only few classifications intended to assess the overall risk involved with a potential implantological patient case (e.g., the SAC Classification). The Cologne ABC Risk Score is intended to allow a professional assessment of an individual case with regard to medical history, local findings, surgical aspects and restorative aspects to be made simply and quickly and in a well-structured manner. Only a few scattered RCT on the subject matter of the partial scores were available at the time of the consensus conference. The studies that were available for review were mainly retrospective studies (evidence levels IIb/III), so the level of recommendation of these guidelines falls into class B (indicating "should"-type recommendations).

2.2. Principles of the Cologne ABC Risk Score (see enclosed form)

- Any evaluation or risk assessment using the Cologne ABC Risk Score is made specifically for an individual patient.
- The Cologne ABC Risk Score can be assessed only by the treating physician (or team of physicians).
- The Cologne ABC Risk Score is unsuitable for assessing risks based on patient records or diagnostic casts.
- The Cologne ABC Risk Score can be determined as a total score for overall findings (medical history and local findings) and treatment planning (surgical and restorative).
- Partial scores of the Cologne ABC Risk Score can be used if appropriate (e.g., for restorative aspects only, in the case of patient referrals).

2.3. Evaluation of the Cologne ABC Risk Score

Each of the partial scores of the Cologne ABC Risk Score should be assessed as completely as possible.

2.3.1 Criteria

- Each criterion or issue within a partial score receives its own appropriate rating, where green stands for A (Always, lowest assessed risk), yellow stands for B (Between, medium risk) and orange stands for C (Complex, high risk)
- Red is strictly reserved for situations where the risk profile indicates that treatment may not be recommended (which is not the same as a contraindication).

2.3.2. Partial scores (Medical history – Local findings – Surgical – Restorative)

- Each partial score is given a summary rating, with the results – like the criteria – expressed in terms of the colours green, yellow and orange, corresponding to A, B and C (Always – Between – Complex).
- If two or more criteria for a partial score are assessed as yellow (for B, medium risk), the entire partial score is deemed to be B (yellow, medium risk). Four yellow or two orange criteria result in an overall partial score of C (orange, high risk).

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2.3.3 Overall assessment of a given patient case

- If all four partial scores are green, the patient case as a whole is assessed as low-risk (A for Always).
- If at least two of the four partial scores are yellow, the patient case is assessed as medium-risk (B for Between).
- If all four partial scores are yellow, the patient case is assessed as high-risk (C for Complex).

The same is true if at least two of the four partial scores are orange or yellow.



Cologne, 7 May 2022



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PARTIAL SCORE 1: MEDICAL HISTORY

Health status	ASA classification [11]	ASA = 1, 2	Small risk
		ASA = 3	Medium risk
		ASA ≥ 4	High risk
Pre-existing conditions	diabetes mellitus [5, 15, 17, 18, 44, 45, 54, 55, 61, 78]	HbA1c < 6.5	Small risk
		HbA1c 6.5–7.5	Medium risk
		HbA1c > 7.5	High risk
	irradiated jaw [18, 25, 62, 79, 88]	< 55 Gy	Medium risk
		< 55 Gy: maxilla or augmented areas	Therapy not recommended (no AI)
		> 55 Gy	Therapy not recommended (no AI)
		in past 12 months	Therapy not recommended (no AI)
	periodontal disease [6, 21, 28, 53, 72, 76, 87]	no evidence of periodontal disease	Small risk
		treated or history of periodontal disease	Medium risk
		inadequate supportive periodontal therapy	High risk
untreated periodontal disease		Therapy not recommended (no AI)	
Medications	no medication		Small risk
	anti-resorptive drugs (ARD) [7, 16, 40, 63, 67, 77, 81, 85]	lower dose, for osteoporosis (oral and systemic)	Small risk
		• low dose with bone augmentation, immediate implant placement	Medium risk
		higher dose, for the prevention of osseous tumour-related complications	Medium risk
		• higher dose with augmentation, immediate implant placement	Therapy not recommended (no AI)
		high dose, > 4 × yearly for the treatment of osseous metastases	High risk
		• high dose with bone augmentation, immediate implant placement	Therapy not recommended (no AI)
		ARD and other infection risks (e.g., periodontal disease)	Therapy not recommended (no AI)
		ARD and drug-related cofactors (e.g., immunosuppression)	Therapy not recommended (no AI)
	immunosuppression [32, 33, 68]	low dose steroid therapy	Medium risk
		cytotoxic medication	High risk
	anticoagulation	prophylactic	Small risk
therapeutic		Medium risk	
proton pump inhibitors [1, 4, 27]		Medium risk	
Smoking [18, 24, 59]	non-smoker	Small risk	
	mild smoking habit	< 10 cigarettes per day	Medium risk
	severe smoking habit	≥ 10 cigarettes per day	High risk
Bruxism [10, 22, 26, 49–51, 89]	no	Small risk	
	yes	High risk	
Patient expectations [86]	appropriate	Small risk	
	over-demanding	Medium risk	

KEY TO COLOURS

	Small risk		Medium risk		High risk		Therapy not recommended (no AI)
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PARTIAL SCORE 2: LOCAL FINDINGS

Aesthetic risk factors	outside the aesthetic zone		Green
	smile line [83]	low	Green
		medium	Yellow
		high	Orange
Soft tissue	attached gingiva [14, 56]	adequate	Green
		inadequate	Yellow
	periodontal biotype [3, 35, 43, 46, 75]	thick biotype	Green
		thin biotype	Orange
previous surgeries/scar tissue		Orange	
Cologne Classification of Alveolar Ridge Defects (CCARD)	no or small defect		Green
	horizontal, > 4 mm		Yellow
	vertical or combined, > 4 mm		Orange
	outside the alveolar ridge		Orange
Jaw position	regular	Green	
	unfavourable	Orange	
Periapical lesions, pathologies of adjacent teeth [31, 66, 69]	no	Green	
	present	Orange	
Oral hygiene [29]	adequate	Green	
	inadequate	Orange	

PARTIAL SCORE 3: SURGICAL

Anatomical risks [38, 80]	none		Green
	close proximity to adjacent structures (nerves, roots, papillae, etc.)		Yellow
Healing period after tooth loss [9, 19, 23, 37]	late implant placement		Green
	early or delayed implant placement		Green
	immediate implant placement		Yellow
Loading after insertion [13, 20, 37, 73]	conventional healing (at least 8 weeks)		Green
	early loading (within 4 to 8 weeks)		Green
	early restoration/loading (within 72 hours)		Yellow
Augmentation techniques [2, 57]	Cologne Classification of Alveolar Ridge Defects (CCARD)	no augmentation required	Green
		horizontal, > 4 mm	Yellow
		vertical or combined, > 4 mm	Orange
		outside the alveolar ridge	Orange
	sinus floor elevation [34, 48, 60]	with septae	Yellow
		Internal sinus lift with < 2 mm residual bone height	Orange

PARTIAL SCORE 4: RESTORATIVE

Biomechanics [39]	no biomechanical problems expected		
	implant/tooth connection [12, 42, 47, 82, 84]	rigid	
		mobile	
	extension required [36, 70, 71, 74]		
	unfavourable load distribution [65] (crown-to-implant ratio/single-tooth restoration)		
	non-matching implant diameter [52]		
	need for repair, superstructure revision		
multiple implant systems in same restoration			
Aesthetics [41, 52, 58]	adjacent tooth situation	tooth	
		pontic	
		Implant	
Type of restoration [39, 52, 64]	number and distribution of implants	adequate	
		not adequate	
	fixed restoration	cross-arch fixed restoration	
	removable	bridge design	
Complexity exceeding patient capabilities [64, 86]	handling or cleansability	favourable	
		difficult or impossible	

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