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 desivzgned 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 tätigen Zahnärzte 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 Policlinic 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 6core 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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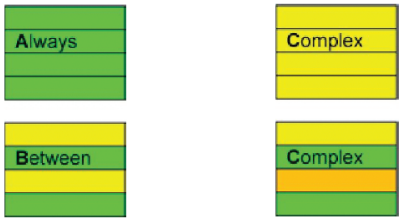
2.3.3 Overall assessment of a given patient case

- 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	
		ASA = 3	
		ASA ≥ 4	
Pre-existing conditions	diabetes mellitus [5, 15, 17, 18, 44, 45, 54, 55, 61, 78]	HbA1c < 6.5	
		HbA1c 6.5–7.5	
		HbA1c > 7.5	
	irradiated jaw [18, 25, 62, 79, 88]	< 55 Gy	
		< 55 Gy: maxilla or augmented areas	
		> 55 Gy	
		in past 12 months	
	periodontal disease [6, 21, 28, 53, 72, 76, 87]	no evidence of periodontal disease	
		treated or history of periodontal disease	
		inadequate supportive periodontal therapy	
		untreated periodontal disease	
Medications	no medication		
	anti-resorptive drugs (ARD) [7, 16, 40, 63, 67, 77, 81, 85]	lower dose, for osteoporosis (oral and systemic)	
		• low dose with bone augmentation, immediate implant placement	
		higher dose, for the prevention of osseous tumour-related complications	
		• higher dose with augmentation, immediate implant placement	
		high dose, > 4 × yearly for the treatment of osseous metastases	
		• high dose with bone augmentation, immediate implant placement	
		ARD and other infection risks (e.g., periodontal disease)	
		ARD and drug-related cofactors (e.g., immunosuppression)	
	immunosuppression [32, 33, 68]	low dose steroid therapy	
		cytotoxic medication	
	anticoagulation	prophylactic	
		therapeutic	
	proton pump inhibitors [1, 4, 27]		
Smoking [18, 24, 59]	non-smoker		
	mild smoking habit	< 10 cigarettes per day	
	severe smoking habit	≥ 10 cigarettes per day	
Bruxism [10, 22, 26, 49–51, 89]	no		
	yes		
Patient expectations [86]	appropriate		
	over-demanding		

KEY TO COLOURS

Small risk

Medium risk

High risk

Therapy not recommended (no AI)

PARTIAL SCORE 2: LOCAL FINDINGS

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

PARTIAL SCORE 3: SURGICAL

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

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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