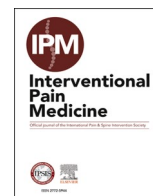


## Time to standardize: the German Spine Society national clinical guideline on epidural injections

Stephan Klessinger, Rezvan Ahmadi, Christopher Büttner, Hans-Raimund Casser, Christian Ewelt, Robert Fessler, Holger Koepp, Heike Norda, Hela-F. Petereit, Philipp Pieroh, Matthias Pumberger, Heike Rittner, Markus Schneider, Christoph Trumm, Hayrettin Tumani, Patrick Weidle, Daniel A. Weiss, Karsten Wiechert

### Angaben zur Veröffentlichung / Publication details:

Klessinger, Stephan, Rezvan Ahmadi, Christopher Büttner, Hans-Raimund Casser, Christian Ewelt, Robert Fessler, Holger Koepp, et al. 2026. "Time to standardize: the German Spine Society national clinical guideline on epidural injections." *Interventional Pain Medicine* 5 (1): 100720. <https://doi.org/10.1016/j.inpm.2025.100720>.



## Time to standardize: The German Spine Society national clinical guideline on epidural injections

Pain originating in the cervical or lumbar spine remains a major clinical and socioeconomic burden. It is important to distinguish between axial pain and radicular pain, the latter arising from a nerve root and radiating toward the arm or leg, presenting as neuropathic pain. Epidural injections targeting the ventral and dorsal nerve roots are very frequently performed interventions for disc herniations and lumbar sciatica. Therefore, epidural injections are often used for radicular pain but also sometimes for axial pain. Typically, anti-inflammatory and analgesic medications are used.

In Germany, there is a historical practice of administering spinal injections without imaging, which continues to be taught. Numerous anatomical structures can be targeted in this manner, including the joint space of a facet joint, the joint capsule, the spinal nerve, a nerve root, or the epidural space. However, uniform terminology for these procedures is lacking; broad and imprecise terms such as “spinal” or “paravertebral” injections are common, and the abbreviation “PRT” (“periradicular therapy”) is often used indiscriminately. Procedures using imaging and considerations of the evidence for individual injection methods are only very slowly being accepted, resulting in substantial heterogeneity in techniques, medications, and indications. Therefore, the German Spine Society (Deutsche Wirbelsäulengesellschaft, DWG) commissioned a guideline on epidural injections, which was published via the Association of the Scientific Medical Societies of Germany (AWMF) [1].

To evaluate effectiveness and formulate clear recommendations, the guideline systematically examined different injection techniques and anatomical regions, separately addressing cervical and lumbar procedures and transforaminal, interlaminar, and caudal approaches. The role of imaging guidance was also assessed. The overall goal was a structured risk–benefit evaluation that supports clinical decision-making regarding access routes, indications, technical implementation, pharmacologic agents, and potential risks.

The guideline was published by the AWMF on June 27, 2025. It comprises a long version, a short version, a patient-oriented summary, a detailed methodological report, and comprehensive evidence tables (including GRADE assessments). All materials are freely accessible at <https://register.awmf.org/de/leitlinien/detail/151-005>.

Evidence appraisal followed a structured literature review using the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) methodology [2]. Evidence quality was categorized as high, moderate, low, or very low, reflecting the confidence that observed effect sizes represent true effects [3]. The completed guideline was further evaluated using the AGREE II instrument to ensure methodological rigor and transparency [4].

A multidisciplinary workgroup comprising anesthesiologists, neurologists, neuroradiologists, neurosurgeons, orthopedic and trauma

surgeons, radiologists, physiotherapists, and patient representatives participated in all stages of the process. Together, they formulated 14 clinical PICO questions, selected and evaluated the literature, and drafted recommendations [5]. Recommendation strength followed three levels (A: strong; B: weak; 0: open), with expert consensus (EC) applied where evidence was lacking.

Consensus was achieved through a modified Delphi process and finalized during a conference moderated by the AWMF. Internal and external reviews were systematically documented, including all major revisions and final voting results. The AWMF confirmed full compliance with criteria for an guideline according to AGREE II standards.

**Question 1: How are epidural injections defined?**

- |     |   |   |
|-----|---|---|
| 1.1 | There are three different access routes to the epidural space (transforaminal, interlaminar and caudal), which should be differentiated regarding indication, efficacy, risks and implementation. | Recommendation: A<br>Quality of evidence: high.<br>100 % consensus (11 of 11 elected officials) |
| 1.2 | The term periradicular therapy, abbreviated PRT, refers to an image-guided transforaminal injection into the epidural space at a defined nerve root.  | Quality of evidence: high 100 % consensus (11 of 11 elected officials)                          |
| 1.3 | In a transforaminal injection, the contrast agent or medication should reach the preganglionic epidural space.  | Recommendation: B<br>Quality of evidence: low.<br>100 % consensus (11 of 11 elected officials)  |
| 1.4 | In an interlaminar injection, the drug should reach the ventral epidural space.   | Recommendation: B<br>Quality of evidence: low.<br>100 % consensus (11 of 11 elected officials)  |

**Question 2: What are the indications and evidence for diagnostic transforaminal epidural injections?**

- |     |   |   |
|-----|---|---|
| 2.1 | A transforaminal diagnostic injection may be performed to identify a painful nerve root.                        | Recommendation: 0<br>Quality of evidence: very low.<br>100 % consensus (11 of 11 elected officials) |
| 2.2 | A diagnostic transforaminal injection should be performed with a small amount of local anesthetic (0.2–0.3 ml). | Recommendation: B<br>Quality of evidence: very low.<br>100 % consensus (11 of 11 elected officials) |

**Question 3: What are the indications and evidence for therapeutic transforaminal injections?**

- |     |  |   |
|-----|--|---|
| 3.1 | Transforaminal therapeutic injections with fluoroscopy can be considered for radicular complaints originating from the cervical spine. | Recommendation: 0<br>Quality of evidence: very low.<br>100 % consensus (11 of 11 elected officials) |
| 3.2 | Transforaminal therapeutic injections with fluoroscopy should be offered for radicular pain due to lumbar disc herniation.             | Recommendation: B<br>Quality of evidence: high.<br>100 % consensus (11 of 11 elected officials)     |

(continued on next page)

<https://doi.org/10.1016/j.inpm.2025.100720>

Received 14 October 2025; Received in revised form 26 November 2025; Accepted 26 November 2025

Available online 18 December 2025

2772-5944/© 2025 The Authors. Published by Elsevier Inc. on behalf of International Pain & Spine Intervention Society. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

(continued)

<b>Question 4: What are the indications and evidence for interlaminar injections?</b>		
4.1	Interlaminar injections with fluoroscopy can be considered for radicular complaints originating from the cervical spine.	Recommendation: 0 Quality of evidence: high. 100 % consensus (11 of 11 elected officials)
4.2	Interlaminar injections can be considered for radicular complaints originating from the lumbar spine.	Recommendation: 0 Quality of evidence: moderate. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
4.3	Interlaminar injections should not be performed in patients with back pain without a morphological correlate or without a radicular component.	Recommendation: B Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
4.4	Interlaminar injections in the lumbar spine should be performed using imaging techniques if the technical requirements are met.	Recommendation: B Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
<b>Question 5: What are the indications and evidence for caudal injections?</b>		
5.1	A caudal injection may be considered for lumbosciatica.	Recommendation: 0 Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
5.2	A caudal injection should be performed using imaging guidance.	Recommendation: B Quality of evidence: low. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
<b>Question 6: Is non-interventional, conservative therapy a prerequisite before an epidural injection?</b>		
6.1	An epidural injection can be performed for acute, subacute, and chronic pain. The timing of an epidural injection must be individually determined for each patient.	Recommendation: 0 Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
6.2	Patients with chronic pain should undergo drug therapy and physiotherapy before an epidural injection.	Recommendation: B Quality of evidence: low. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
6.3	In patients with chronic pain, epidural injection should be embedded in an interdisciplinary overall concept based on the biopsychosocial model.	Expert consensus. 100 % consensus (11 of 11 elected officials)
<b>Question 7: What imaging guidance is necessary for an epidural injection?</b>		
7.1	The gold standard for transforaminal and interlaminar injections is fluoroscopy. Transforaminal injections and interlaminar injections in the cervical and lumbar spine should be performed under fluoroscopy.	Recommendation: B Quality of evidence: high. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
7.2	CT or ultrasound can be used for transforaminal and interlaminar injection.	Recommendation: 0 Quality of evidence: low. 81.8 % consensus (9 of 11 elected officials, 2 abstentions)
7.3	If CT is used as an imaging modality, CT fluoroscopy can be performed without the need for a planning scan.	Recommendation: 0 Quality of evidence: low. 81.8 % consensus (9 of 11 elected officials, 2 abstentions)
7.4	Caudal epidural injections should be performed with fluoroscopy.	Recommendation: B Quality of evidence: low. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
7.5	Ultrasound can be used for a caudal injection.	Recommendation: 0 Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
<b>Question 8: What technical considerations should be made when performing an epi-dural injection?</b>		
8.1	8.1 Sedation with a responsive patient can be performed with adequate monitoring during an epidural injection.	Recommendation: 0 Quality of evidence: moderate. 100 % consensus (11 of 11 elected officials)
8.2	When planning the access for a transforaminal injection of the lumbar spine, the infraneural approach should be considered in addition to the classic subpedicular (supraneural) approach.	Recommendation: A Quality of evidence: high. 100 % consensus (11 of 11 elected officials)

(continued on next column)

(continued)

8.3	For an interlaminar approach to the cervical or lumbar spine, a parasagittal approach should be used.	Recommendation: A Quality of evidence: high. 100 % consensus (11 of 11 elected officials)
8.4	A contralateral oblique view should be used to detect needle depth and contrast medium spread during an interlaminar approach under fluoroscopy.	Recommendation: B Quality of evidence: moderate. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
8.5	A cervical interlaminar injection should be performed at the level of C7-T1 but not cranial to C6-7.	Recommendation: B Quality of evidence: very low. 81.8 % consensus (9 of 11 elected officials, 2 abstentions)
<b>Question 9: Which medications are suitable for an epidural injection?</b>		
9.1	A mixture of ropivacaine with dexamethasone should not be used for transforaminal epidural injection because crystals may form which may cause embolism if injected intra-arterially.	Recommendation: A Quality of evidence: low. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
9.2	A recommendation as to whether steroid improves the efficacy of an epidural injection and in what dosage it should be used cannot be given.	Quality of evidence: high. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
9.3	For a transforaminal injection in the cervical spine, only non-particulate steroid (e.g. dexamethasone) should be used.	Recommendation: A Quality of evidence: high. 100 % consensus (11 of 11 elected officials)
9.4	For a transforaminal injection in the lumbar spine, a non-particulate steroid (e.g., dexamethasone) should be the first choice.	Recommendation: B Quality of evidence: low. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
9.5	For epidural use, steroid preparations without preservatives (such as benzyl alcohol) should be preferred.	Recommendation: B Quality of evidence: low. 81.8 % consensus (9 of 11 elected officials, 2 abstentions)
9.6	At the time of publication of this guideline, steroid preparations are not approved for epidural use (interlaminar, transforaminal, periradicular). Their use is therefore off-label.	Quality of evidence: low. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
<b>Question 10: Do anticoagulants and antiplatelet drugs need to be discontinued before an epidural injection?</b>		
10.1	With interlaminar injections there is a non-negligible risk of epidural hematoma.	Quality of evidence: moderate. 100 % consensus (11 of 11 elected officials)
10.2	In the case of an epidural injection, an individual risk/benefit assessment should be made for each patient regarding the continuation or discontinuation of anticoagulants or platelet aggregation inhibitors.	Recommendation: A Quality of evidence: moderate. 100 % consensus (11 of 11 elected officials)
<b>Question 11: Are epidural injections safe? What are typical complications?</b>		
11.1	Complications after epidural interventions are very rare overall, but very severe complications have been described in case reports in the literature.	Quality of evidence: moderate. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
11.2	The available imaging (especially MRI) should be evaluated before an epidural injection regarding anatomical abnormalities (e.g. course of the vertebral artery).	Recommendation: A Quality of evidence: low. 90.9 % consensus (10 of 11 elected officials, 1 abstention)
11.3	After an intervention, the patient should be neurologically examined and monitored to detect early complications.	Recommendation: A Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
11.4	Patient feedback (in person, in writing, by telephone) should be provided within the first 14 days after the intervention to detect late complications.	Recommendation: B Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
<b>Question 12: Are there different indications and evidence for an interlaminar, caudal or transforaminal injection?</b>		
12.1	In the case of radicular complaints originating from the cervical spine,	Recommendation: 0 Quality of evidence: moderate.

(continued on next page)

(continued)

	both a transforaminal approach and an interlaminar approach can be considered.	100 % consensus (11 of 11 elected officials)
12.2	In cases of radicular complaints originating from the lumbar spine, a transforaminal approach may be preferred over an interlaminar approach.	Recommendation: 0 Quality of evidence: high. 100 % consensus (11 of 11 elected officials)
<b>Question 13: When is it advisable to repeat an epidural injection?</b>		
13.1	A repeat of the same epidural injection should only be performed in the case of a previously positive response (e.g. reduction of the VAS by at least 2 points) with insufficient effect or recurring symptoms at least 1–3 weeks after the previous injection.	Recommendation: B Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
13.2	Repeating the same injection without the previous injection having shown an effect or series of injections without assessing the effect between injections should not be performed.	(Recommendation: B Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
13.3	The number of injections should be limited considering the maximum dose of 200 mg (3 mg/kg body weight) methylprednisolone equivalent/year.	Recommendation: B Quality of evidence: low. 100 % consensus (11 of 11 elected officials)
<b>Question 14: What healthcare aspects need to be considered when administering an epidural injection?</b>		
14.1	An epidural injection can be performed in an out- or inpatient setting.	Recommendation: 0 Quality of evidence: low. 100 % consensus (11 of 11 elected officials)

## Conflict of interest

No author was considered to be at moderate or high risk of conflict of interest. Potential conflicts of interest have been declared by all involved partners and made publicly available on the webpage of The Association of the Scientific Medical Societies of Germany (AWMF): <https://register.awmf.org/de/leitlinien/detail/151-005>.

## Publication

The national clinical guideline on epidural injections been published and is electronically available at <https://register.awmf.org/de/leitlinie/n/detail/151-005>.

## Funding

None.

## References

- [1] Klessinger S, Wiechert K. Leitlinie epidurale Injektionen. <https://register.awmf.org/de/leitlinien/detail/151-005>; 2025.
- [2] Guyatt GH, Oxman AD, Vist GE, Kunz R, Falck-Ytter Y, Alonso-Coello P, Schünemann HJ. GRADE working group. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. *BMJ* 2008;336:924–6. <https://doi.org/10.1136/bmj.39489.470347.AD>.
- [3] Balshem H, Helfand M, Schünemann HJ, Oxman AD, Kunz R, Brozek J, Vist GE, Falck-Ytter Y, Meerpohl J, Norris S, Guyatt GH. GRADE guidelines: 3. Rating the

- quality of evidence. *J Clin Epidemiol* 2011;64:401–6. <https://doi.org/10.1016/j.jclinepi.2010.07.015>.
- [4] Brouwers MC, Kho ME, Browman GP, Burgers JS, Cluzeau F, Feder G, Fervers B, Graham ID, Grimshaw J, Hanna SE, Littlejohns P, Makarski J, Zitzelsberger L. AGREE next steps consortium, AGREE II: advancing guideline development, reporting and evaluation in health care. *CMAJ (Can Med Assoc J)* 2010;182:E839–42. <https://doi.org/10.1503/cmaj.090449>.
  - [5] Guyatt GH, Oxman AD, Kunz R, Atkins D, Brozek J, Vist G, Alderson P, Glasziou P, Falck-Ytter Y, Schünemann HJ. GRADE guidelines: 2. Framing the question and deciding on important outcomes. *J Clin Epidemiol* 2011;64:395–400. <https://doi.org/10.1016/j.jclinepi.2010.09.012>.

Stephan Klessinger<sup>a,b,\*</sup>, Rezvan Ahmadi<sup>c</sup>, Christopher Büttner<sup>d</sup>, Hans-Raimund Casser<sup>e</sup>, Christian Ewelt<sup>f</sup>, Robert Fessel<sup>g</sup>, Holger Koepf<sup>h</sup>, Heike Norda<sup>i</sup>, Hela-F. Peterleit<sup>j</sup>, Philipp Pieroh<sup>k</sup>, Matthias Pumberger<sup>l</sup>, Heike Rittner<sup>m</sup>, Markus Schneider<sup>n</sup>, Christoph Trumm<sup>o</sup>, Hayrettin Tumani<sup>p</sup>, Patrick Weidle<sup>q</sup>, Daniel A. Weiss<sup>r</sup>, Karsten Wiechert<sup>s</sup>

<sup>a</sup> Neurochirurgie Biberach, Eichendorffweg 5, 88400, Biberach, Germany

<sup>b</sup> University of Ulm, Department of Neurosurgery, Albert-Einstein-Allee 23, 89081, Ulm, Germany

<sup>c</sup> Medizinische Fakultät Heidelberg, Klinik für Neurochirurgie, Im Neuenheimer Feld 672, 69120, Heidelberg, Germany

<sup>d</sup> German Association for Physiotherapy, Bonner Straße 143, 50968, Cologne, Germany

<sup>e</sup> DRK Schmerz-Zentrum, Auf der Steig 16, 55131, Mainz, Germany

<sup>f</sup> Saint Barbara Hospital Hamm, Academic Hospital of the University of Muenster. Department of Neurosurgery, Am Heessener Wald 1, 59073, Hamm, Germany

<sup>g</sup> Department of Diagnostic and Interventional Neuroradiology, University Hospital Augsburg, Stenglinstraße 2, 86156, Augsburg, Germany

<sup>h</sup> Wirbelsäulenzentrum, St. Josefs-Hospital, Beethovenstraße 20, 65189, Wiesbaden, Germany

<sup>i</sup> UVSD SchmerzLOS e.V., Fürstthof 24, 24534, Neumünster, Germany

<sup>j</sup> Praxis Rechts vom Rhein, Böckingstr. 54–56, 51063, Köln, Germany

<sup>k</sup> Department of Orthopedic, Trauma, and Plastic Surgery, University of Leipzig, Liebigstraße 20, 04103, Leipzig, Germany

<sup>l</sup> Charité – Universitätsmedizin Berlin, Centrum für Muskuloskeletale Chirurgie, Charitéplatz 1, 10117, Berlin, Germany

<sup>m</sup> Lehrstuhl Schmerzmedizin, Zentrum für interdisziplinäre Schmerzmedizin, Klinik und Poliklinik für Anästhesiologie, Intensivmedizin, Notfallmedizin und Schmerztherapie, Universitätsklinikum Würzburg, 97080, Würzburg, Germany

<sup>n</sup> Alphamed Bamberg, Kärntenstr. 2, 96052, Bamberg, Germany

<sup>o</sup> Radiologie Augsburg-Friedberg, Frölichstr. 17, 86150, Augsburg, Germany

<sup>p</sup> Universitätsklinikum Ulm, Neurologische Uniklinik im RKU, Oberer Eselsberg, 45, 89081, Ulm, Germany

<sup>q</sup> Krankenhaus Neuwerk, Dünner Str. 214–216, 41066, Mönchengladbach, Germany

<sup>r</sup> Department of Diagnostic and Interventional Radiology, Medical Faculty and University Hospital Düsseldorf, Heinrich-Heine-University Düsseldorf, Germany

<sup>s</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>t</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>u</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>v</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>w</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>x</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>y</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>z</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>aa</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ab</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ac</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ad</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ae</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>af</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ag</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ah</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ai</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>aj</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ak</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>al</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>am</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>an</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ao</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ap</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>aq</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ar</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>as</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>at</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>au</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>av</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>aw</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ax</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ay</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>az</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ba</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bb</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bc</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bd</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>be</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bf</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bg</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bh</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bi</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bj</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bk</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bl</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bm</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bn</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bo</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bp</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bq</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>br</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bs</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bt</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bu</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bv</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bw</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bx</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>by</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>bz</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ca</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cb</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cc</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cd</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ce</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cf</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cg</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ch</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ci</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cj</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ck</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cl</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cm</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cn</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>co</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cp</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cq</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cr</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cs</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ct</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cu</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cv</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cw</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cx</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cy</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cz</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ca</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cb</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cc</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cd</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ce</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cf</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cg</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ch</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ci</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cj</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ck</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cl</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cm</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cn</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>co</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cp</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cq</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cr</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cs</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ct</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cu</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cv</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cw</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cx</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cy</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cz</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ca</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cb</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cc</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cd</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ce</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cf</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cg</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ch</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ci</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cj</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>ck</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cl</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cm</sup> Rückenzentrum am Michel, Ludwig-Erhard-Str. 18, 20459, Hamburg, Germany

<sup>cn</sup> Rücken